

# Albania Electricity Network

**ELECTRICITY STAKEHOLDER EVENT ON TRANSIT  
AND CROSS-BORDER COOPERATION**

**28 March 2012  
Brussels**



# Situation

The Albanian system has become a net electricity importer over the past 10 years, while in the early and mid nineties it had been a net exporter. Over the last twenty-three years not a single power station has been built in the country, so there has been no increase in installed generation capacity. At same time, Albania has experienced an abnormally high growth rate of electrical consumption.

As generation is virtually only hydro (98%-100%), the system is totally dependent on hydrological conditions, which makes it vulnerable and unreliable.

Certain transmission lines, especially in north-eastern, central and southern Albania are highly loaded or overloaded depending on peak load.

Albania has undertaken a series of important reforms in the power sector aimed at the liberalization and development of the Albanian Electricity Market.

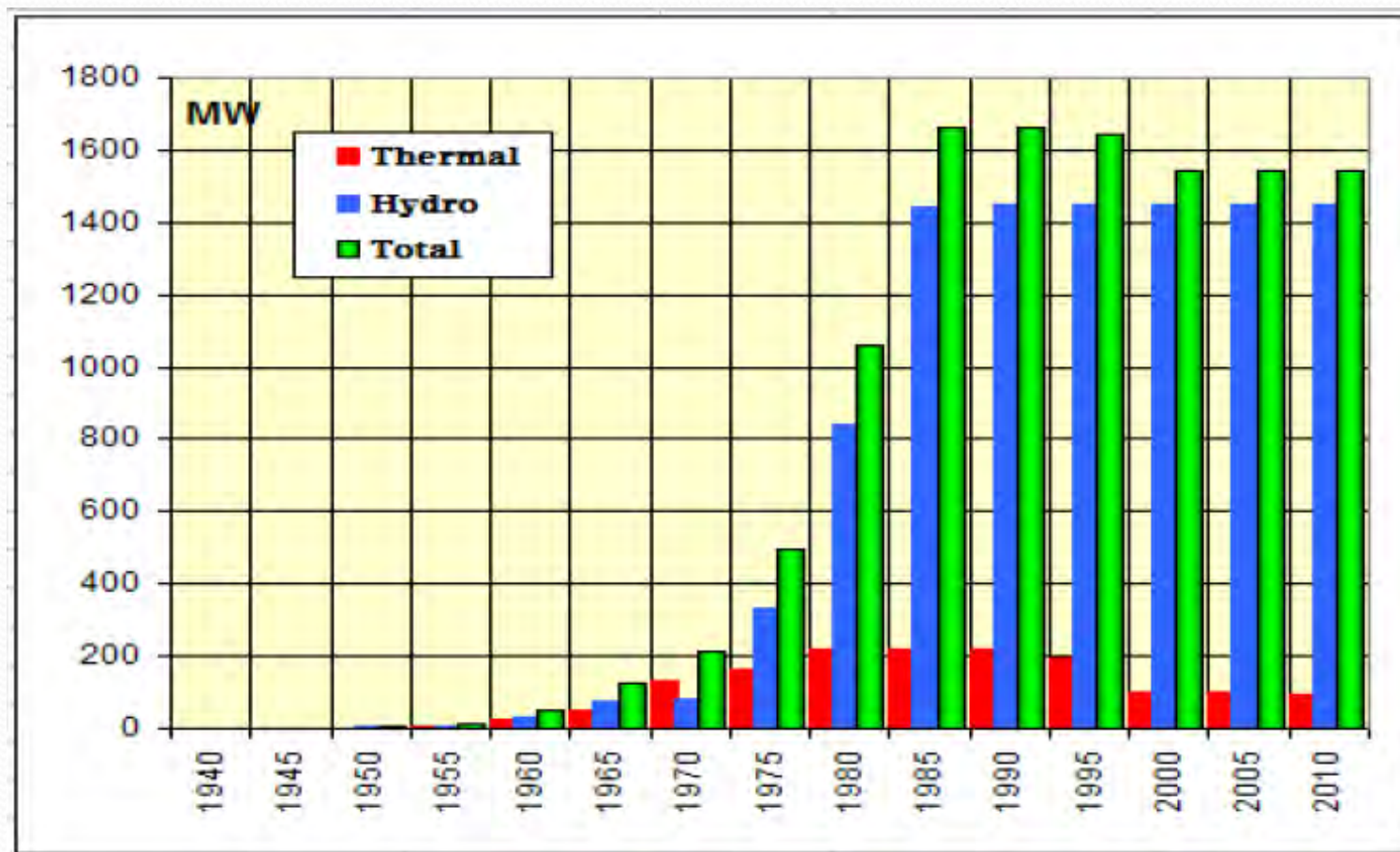
# Electricity Reforms

Now the Albanian Power Sector (Or KESH as vertically integrated company before) is completely unbundled into three main companies.

- (i) KESH responsible for production of the electricity, maintain and develop the generation assets. KESH has a license as Wholesale Public Supplier of electricity for the tariff customer and could play the role of the supplier of last resort for the Eligible Customers;
- (ii) Transmission, System and Market Operator (OST sha) with responsibility to operate, maintain and develop the transmission system 400-220-110 kV including the high voltage substations, to operate the power system in Albania and to organize the electricity market in Albania;
- (iii) Distribution System Operator (OSSH sha) responsible to operate, maintain and develop the distribution system 110-35-MV-LV kV including the substations and transformation points at each level of voltage and has also the license for Retail Public Supplier for essentially the billing and revenue collection associated with the Tariff Customers;

# Existing Generation System in Albania

Hydro power plants dominate the power generation sector of Albania. Out of a total generation installed capacity of 1,544 MW, a total of 1,448 MW is hydro based.



# Albania investment in Electricity Generation

## Hydro Power Plants

- (i) Ashta HPP (48 MW) in Drin River – 2009-2012 (160 MEuro - private fund) as concessionaire;
- (ii) Kalivaci HPP (93 MW) in Vjosa River - 2008-2012 (120 MEuro - private fund) as concessionaire;
- (iii) Devolli River Cascade with three hydro power plants (3x15+2x20 +2x80 MW) in Devoll River - 2009 – 2015 (930 MEuro);

## Small Hydro power plant:

Are signed by Ministry of Economy, Trade & Energy 107 concessionary contracts for the construction of 264 hydro power plants

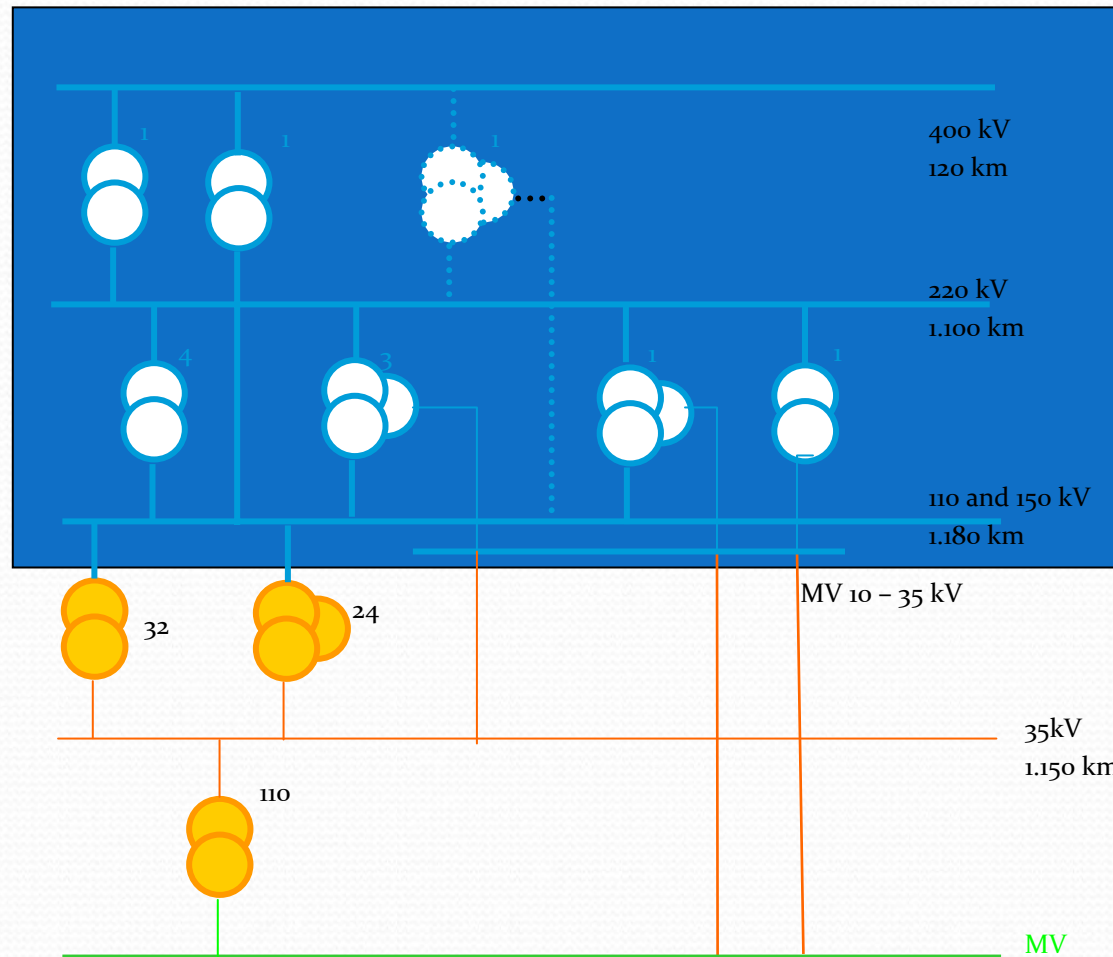
# Transmission System in Albania

The Transmission System in Albania is composed of the 400, 220 and 110 kV level networks and has 120.2 km 400 kV lines, 1102.8 km 220 kV lines, 34.4 km 150 kV lines and 1202.2 km 110 kV lines. The 220 kV network is completely meshed and connects the main plants in the North of Albania with load centres in areas of Tirana, Elbasan and Fieri.

The 110 kV network is used for the supply of the Distribution System. Part of this network is meshed and other part is radial. The 12 substation 220 kV and 400 kV are generally constructed with double busbar in 220 kV and 400 kV side. The 110 kV side in these Substations generally have a single busbar.

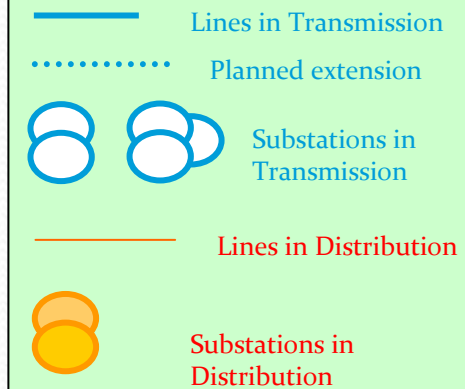
The Albanian Power System is composed in such away that the main Power Plants are concentrated in the north of Albania and the main loads are in the centre (Tirana – Elbasan areas) and in the south (Fieri area). As the generation is located mainly in the north of the country, voltage profile trends to be slightly low in the southern part of the network.

# Unbundling of functions between TSO and Distribution



|            |         |
|------------|---------|
| 400/220 kV | 600 MVA |
| 400/110 kV | 150 MVA |

|               |         |
|---------------|---------|
| 220/110 kV    | 540 MVA |
| 220/110/35 kV | 990 MVA |
| 220/110/11 kV | 180 MVA |
| 220/20 kV     | 126 MVA |
| 110/150 kV    | 40 MVA  |

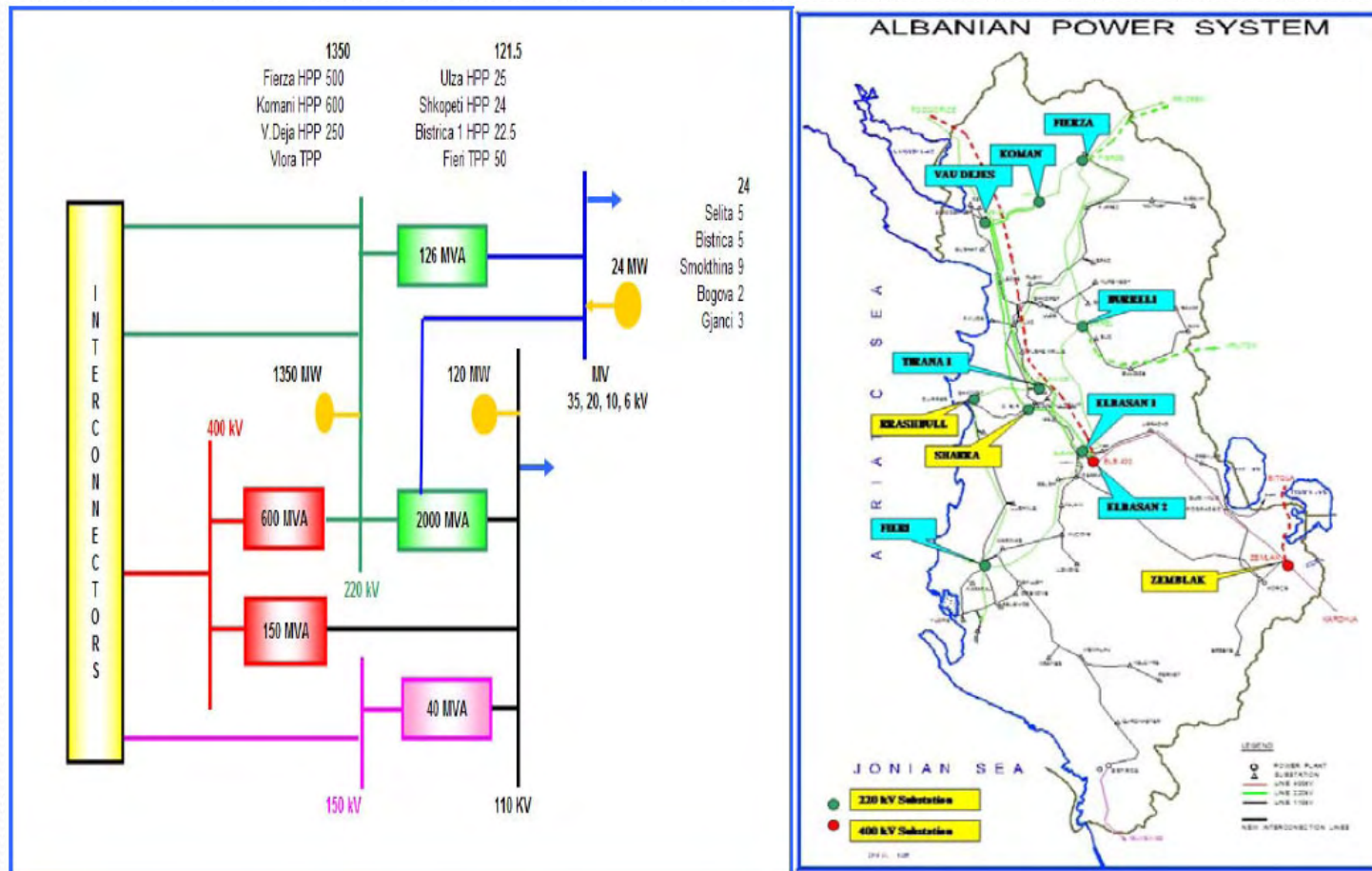


# Electricity Grid in Albania

The power system of Albania is connected via four single-circuit transmission lines to the neighboring countries Greece, Montenegro and Kosovo as shown below:

- 400 kV Elbasan 2 - Kardina (Greece)
- Rated power: 1200 MVA and Transmittable power: 700 MVA due to the 400/220 kV transformer at Elbasan2 and Zemblak.
- 220 kV Vau Dejes - Podgorica (Montenegro) now is 400 kV
- Transmittable power: 311 MVA now 1200 kV
- 220 kV Fierze - Prizren (Kosovo)
- Transmittable power: 311 MVA
- 150 kV Bistrice - Igumenice (Greece)
- Rated power: 138 MVA, Transmittable power: 40 MVA only, due to the installed transformer at Bistrice.

# Structure of Transmission System and the Map with lines and substations



## Legal Framework

Albania has approved:

Albanian Electricity Market Model-AMM, (March 2008)

Law No 9072, dated 22.5.2003, “On power sector”,

An independent and transparent regulator

Grid Operation Code,

The *Law “On Concessions*

Law “On the creation of facilitating conditions for the construction of new power plants”, which provides custom duty exemption for equipment and machinery that are part of the object of the RE production and for all other power plants with capacity more than 5 MW;

# HV Transmission system upgrade

## **Upgrade of Transmission System in Albania, Year 2015**

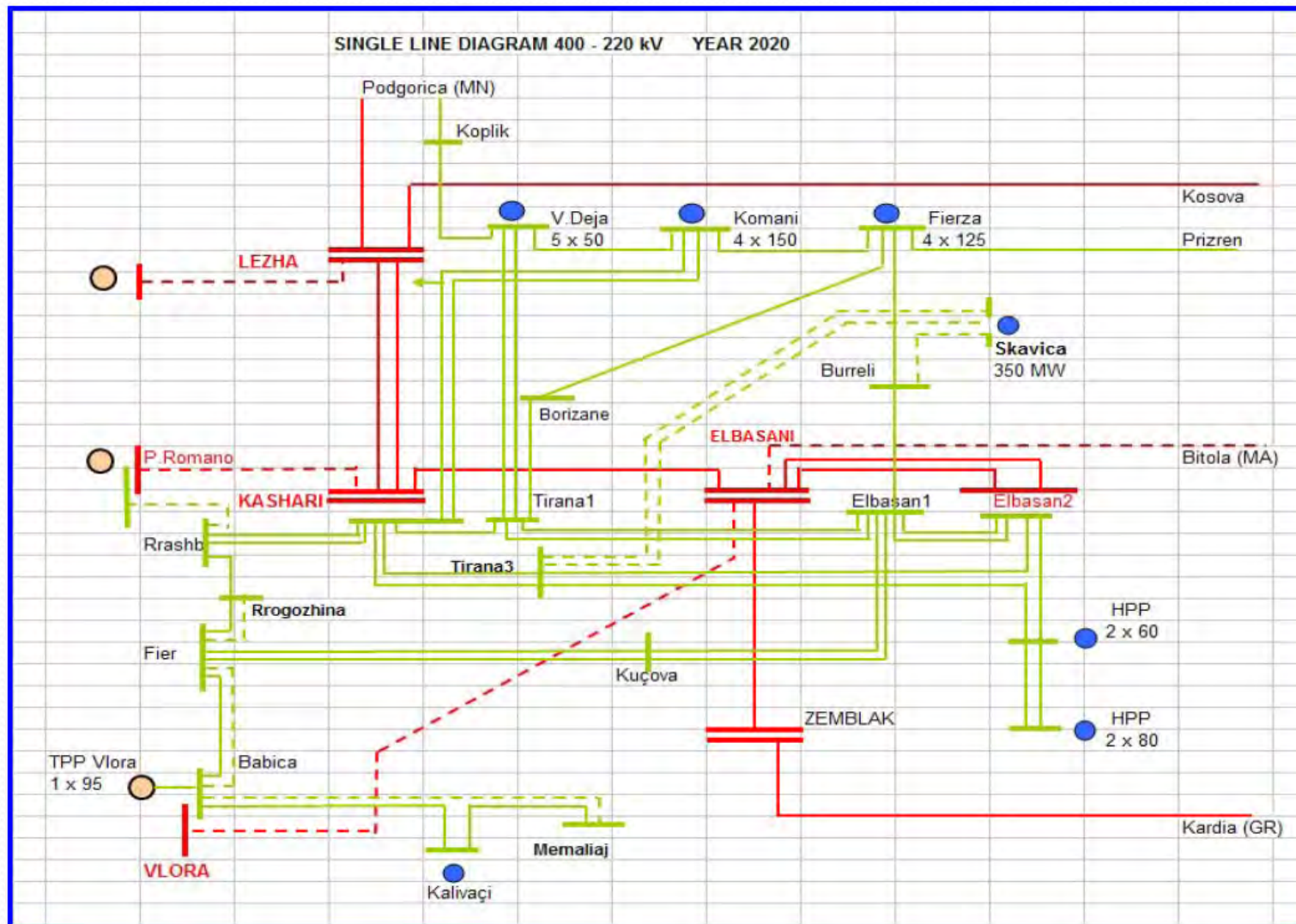
Albania has four lines available for interconnections with neighbouring countries:

- 400 kV Substation (busbar) Lezha Commutation Point.
- 400 kV Interconnection between Albania and Kosovo - OHTL (Over Head Transmission Line) Lezha – Kosovo Re and doubling the 400 kV OHTL Kashari (Tirana2) – Lezha (this project is already committed to be financed by KfW of Germany)
- 400 kV Substation (busbar) Elbasan New Commutation Point
- 400 kV Interconnection between Albania and Macedonia - OHTL Elbasan New- Macedonia
- Reinforcement of 400/110 kV Zemblak Substation with another transformer 150 MVA (this project is already committed to be financed by KfW of Germany)

## **Upgrade of Transmission System in Albania, Year 2020**

- We have to clarify here that this is one of the three possibilities of extensions of the 400 kV Albanian transmission network to facilitate the interconnection with Italy and Macedonia.
- The total length of the OHTL sections from Bitola-Macedonia to Vlore is approximately 225 km. This includes 65 km from Bitola to the border, 63 km from the border to Elbasan New, and 97 km from Elbasan to the Vlore.
- Two other variants are related to extension of 400 kV to Porto Romano (400 kV double circuit OHTL Porto Romano- Tirana 2/Kashari) proposed to be done by the developer of
- the Porto Romano Thermal Power plant) and extension of 400 kV to Lezha Biomass
- Thermal power plant (400 kV single OHTL Lezha Biomass TPP – Lezha 400 kV).

## Single line diagram year 2020





## INTERCONNECTION OF ALBANIA WITH UCTE

- The Albanian Power System operates synchronously with Greece, Montenegro and Kosova through interconnection lines 400kV Zemlak-Kardia and lines 220kV Fierza-Prizeren and Vau Dejes- Podgorica
- Albanian Power System is currently part of the 2<sup>nd</sup> synchronous zone and it will be connected to the main synchronous zone with other countries of the 2<sup>nd</sup> synchronous zone ,but Albania is not an UCTE member
- The main goal of TSO is to be member of UCTE and for this reason one group ad-hoc “Technical committee of UCTE for Albania” has identify the requirements that must be fulfilled for parallel operation with UCTE and for membership in it





## INTERCONNECTION OF ALBANIA WITH UCTE

### Objectives of technical Committee

- To list the standards to which the Albanian Power System should comply in due time, to define the time schedule for the process and to monitor progress in carrying out investment in order to comply with UCTE standards
- Establishment of a competitive electricity market in accordance with EU requirements for the reforms and Albania's obligations under the EC SEE Treaty to support the energy sector integration into the South-East Europe Regional Electricity Market and the interconnection with UCTE network.
- To determine the minimum technical enhancements to be fulfilled by TSO in the short term in order to carry out the minimum of activities for which UCTE TSO-s are responsible, in particular concerning the exchange of energy
- To determine all technical enhancements to be fulfilled by TSO in order to join UCTE as a full member
- To verify the commitments of TSO to fulfill UCTE requirements
- To propose a procedure for TSO to become a full UCTE member

*Thank you for your attention !*

