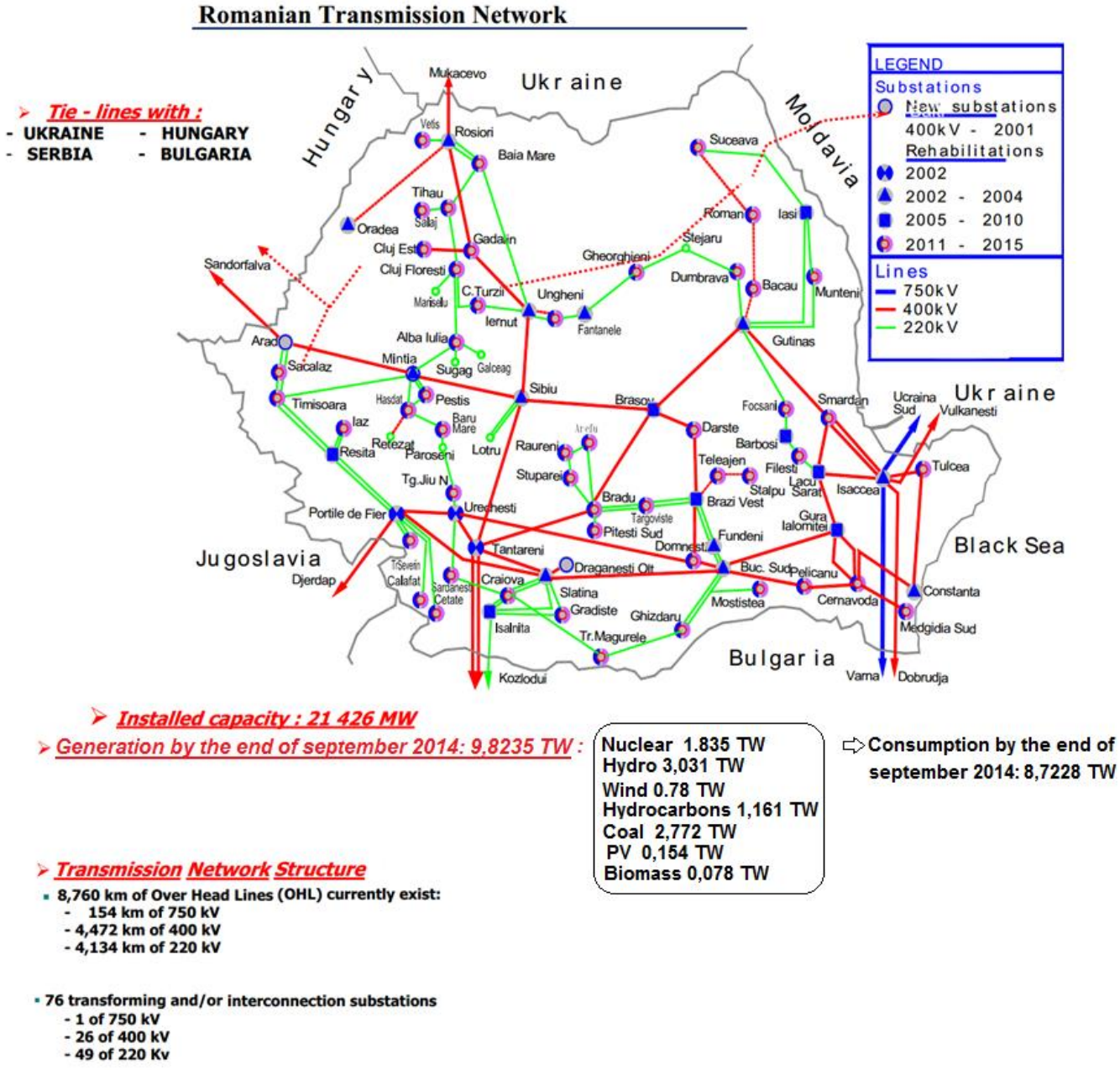
COURSE 1 – THE STRUCTURE AND OPERATION OF LOW VOLTAGE ELECTRICAL INSTALLATIONS

A. *Electricity market: players, mechanisms*

The Romanian energy system has undergone many changes over the years. Currently the system is decentralized. Generation, transmission, distribution and supply operate as separate activities, and customer interaction is provided by individual suppliers.



The energy markets are formed around a core group of transmission system - which provides technical coordination of the market – i.e. power exchange. This core is joined by other market players:

•Transmission System Operator (Legal person, holding a license for electricity transmission and system services - CN Transelectrica SA) and system operators (Transelectrica's 5 national dispatches);

• 8 distribution operators = Legal persons holding the License granted by the Competent Authority for the operation of a Distribution Network. They are: Enel Banat, Enel Dobrogea, Enel Muntenia Sud,

FDEE Electrica Muntenia Nord, EON Moldova, CEZ Oltenia, FDEE Electrica Transilvania Sud, FDEE Electrica Transilvania Nord.

• Producers = the physical or legal entities, owners of a license referring to the activity of electric power generation, as Termoelectrica Electrocentrale Bucharest, CE Rovinari, CE Turceni, CE Craiova, Electrocentrale Deva, Hidroelectrica, Nuclearelectrica and private producers - wind, solar, biogas, etc.;

• 150 suppliers = Legal persons, holders of a distribution License, which ensure the electricity supply for one or more consumers, based on a supply contract (including aggregators - who buy or sell energy in the system on behalf of several customers, usually small household and commercial)

• Consumers = Physical or legal persons that purchase or consume electricity for their own needs and, possibly, for sub-consumers connected to their installations. An eligible consumer is the one who may choose its supplier and directly contract the necessary energy with the supplier, having access to the transmission and/or distribution networks.

The electricity market players are subject to accreditation by **ANRE** = National Energy Regulation Authority, that:

- Emits, amend or withdraw authorizations and licenses,
- Govern the access to transmission and distribution networks,
- Emits methodology of price setting, determines the tariffs of natural monopoly activities,
- Emits technical and commercial regulations, in order to supervise the operation of market mechanisms,
- Protects the interests of investors and of end users.

The main regulations issued by **ANRE**:

- Commercial Code on wholesale electricity market (revised version)
- Technical Codes of electricity transmission and distribution networks,
- Performance Standards on supply, distribution and transmission
- Measuring Codes
- Technical regulations and trades
- Methodologies for setting tariffs
- Permits and licenses
- Rules of network connection
- Monitoring Rules of electricity markets

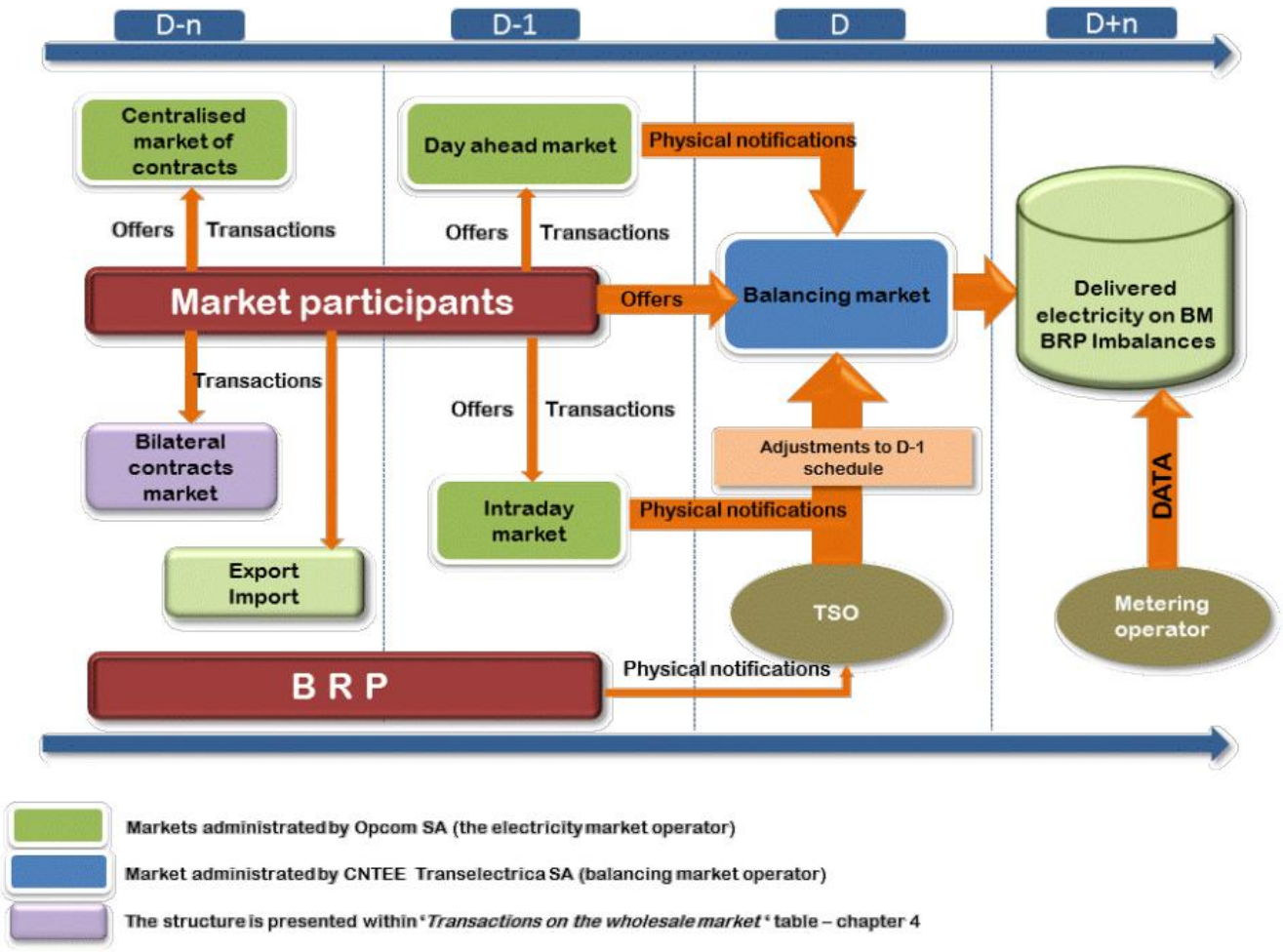
<u>Electricity market mechanisms (Source - ANRE):</u>

- Generated electricity is transmitted from its generation facility to customers through electricity transmission networks owned by Transelectrica, as well as through electricity distribution networks owned by distribution companies.
- Distribution companies are fully responsible for the continuity of electricity supply and its quality.
- Electricity is bought from producers, from another supplier or imported, and is sold to customers by electricity suppliers.
- Electricity supply and trading involves the provision of several services including: meter reading, billing, cashing, ensuring the smooth running of the customer-network operator interface, concluding the supply contract and running the contract according to legal provisions,

investigating and solving customer complaints and claims in due time, informing customers on any changes of the legal framework, consulting services, etc.

- The liberalization of the electricity market led to the setting up of electricity suppliers and of two major market segments: the wholesale market where companies purchase electricity, and the retail market where companies sell energy to customers using the services provided by network operators.

1. *Structure of the wholesale electricity market*

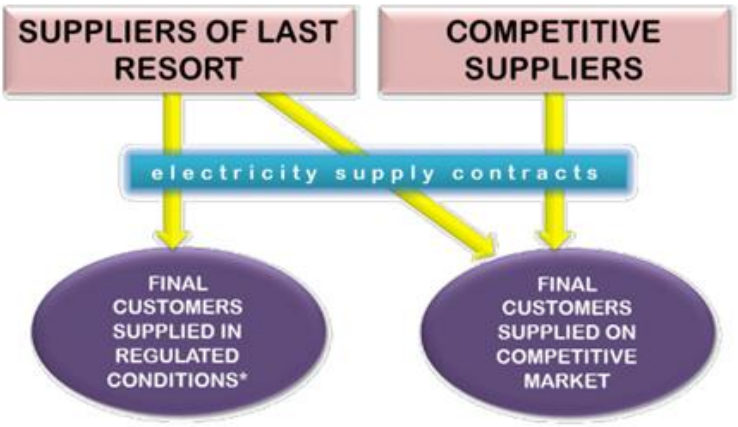


The size of wholesale market depends on the sum of all transactions performed by the market players, exceeding the quantities physically transmitted from generation to consumption; the total transactions include also resale transactions made in order to match the contractual obligations and to obtain financial benefit. Therefore, the wholesale electricity market includes regulated contracts and bilateral negotiated contracts between generators and suppliers, regulated contracts for covering the network losses, bilateral negotiated contracts between suppliers, as well as contracts concluded on centralized markets:

- CMBC (centralized market of bilateral contracts), CMBC-CN (centralized market of partially standardized bilateral contracts, with continuous negotiation),
- transactions on DAM (day-ahead market),
- on ID (Intraday Market) and

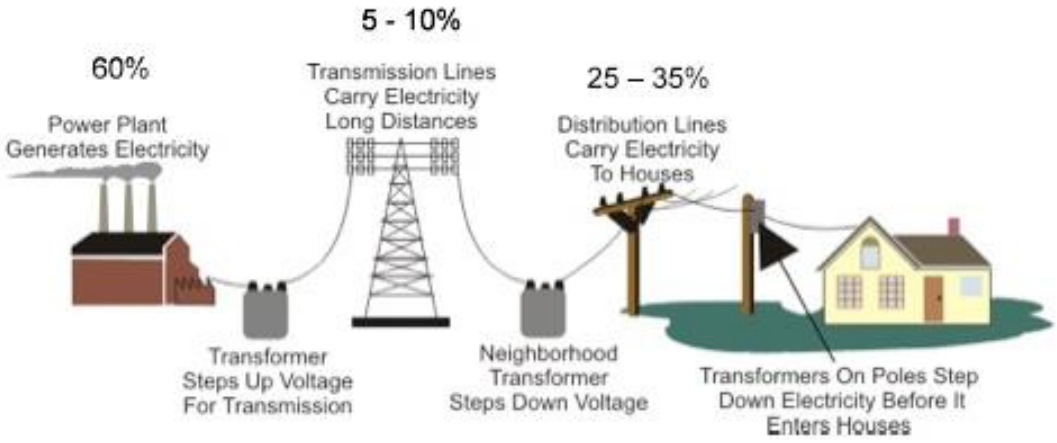
- on BM (Balancing Market).

2. *Structure of the retail electricity market*



*according to art. 53 and art. 55 from electricity and gas law nr.123/2012.

B. Electricity's price:



Average Cost of Electric Energy Unbundled to: Production and Delivery (High Voltage Transportation and Medium and Low Voltage Distribution)

Case study and discussions on:

- differentiated tariffs for electricity applied in Romania,

- green certificates,

- the component of competitive market.