

## CONTEMPORARY STATE OF ELECTRICITY SECTOR IN THE SLOVAK REPUBLIC AND PERSPECTIVES

Michal Kolcun, Daniel Hlubeň

### ABSTRACT

*The paper entitled “Contemporary state of electricity sector in the Slovak Republic and perspectives” deals with energy policy in the Slovak Republic and with changes after the transformation and privatization in the electricity sector in the Slovak Republic.*

### 1. INTRODUCTION

The electricity industry is the key factor influencing any industry of national economy and it is one of the basic pillars of economy. This sector influences progress of the society and it is a fundamental prerequisite for the economy progress and rise of living standard. The electricity industry is a cross-sectional sector and the development of this sector is the requirement of continuous economical progress [1].

The main role of each state is to provide a safe, reliable, technically and technologically developed, environmentally and economically efficient operation of an electric power system and a network. This task could be provided by measurements, which increase the safety and reliability of network and electric power system. It is necessary to prepare and realize the strategy of electric power safety of the Slovak Republic up to year 2030, the main goals are: self-sufficiency of electricity production, optimal price policy, the increase of export of the Slovak Republic and reinforcement of transport position in the field of electricity, gas and oil and reliable supply of heat energy and other energy.

### 2. HISTORY OF THE SLOVAK ELECTRICITY SECTOR TRANSFORMATION

On figure 1 can be seen the history of SE, a.s. transformation. The biggest changes started in year 1990. From SEP, š.p. were selected three distribution companies: ZSE š.p., SSE š.p. and VSE š.p. In 1994 SEP, š.p. was transformed into Slovenské elektrárne a.s. and in 2000 divided into the three companies: TEKO a.s., Slovenské elektrárne a.s. and SEPS a.s.

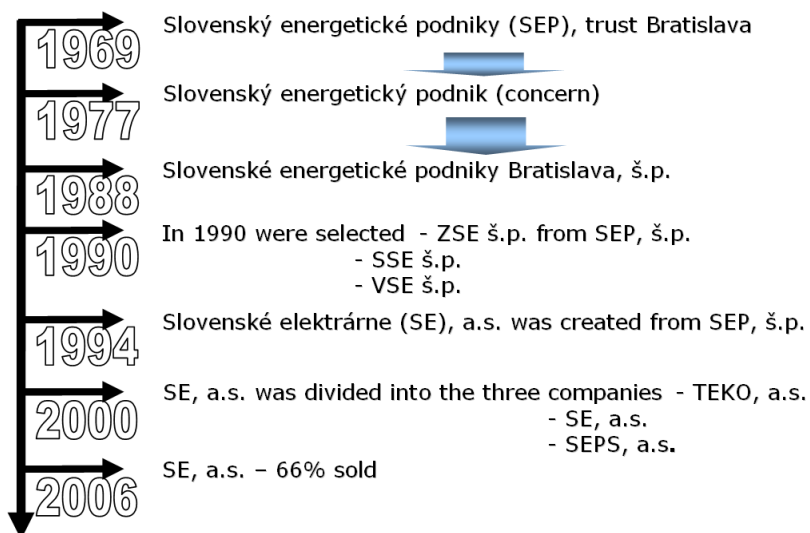


Figure 1: History of the electricity sector transformation in the Slovak Republic

On figure 2 is drawn the contemporary state of privatization of the electricity sector. In year 2001 the government decided to sell 49% of shares of distribution companies and management rights. In year 2006, 66% of SE, a.s. is sold to ENEL.

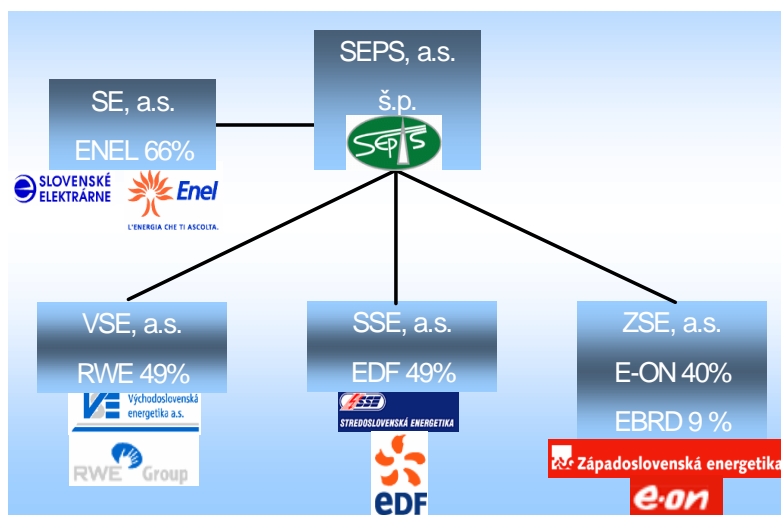


Figure 2: Contemporary state in the Slovak Republic

### 3. CONTEMPORARY STATE AND PERSPECTIVES OF ELECTRICITY SECTOR IN THE SR

In table 1 are shown power plants in the Slovak Republic. Beside SE, a.s., there are several other producers. The total consumption in year 2005 was 28 572 GWh. The Slovak Republic is a member of the UCTE and our transmission lines are used for big interstate electricity exchanges.

Table 1: Power plants in the Slovak Republic

SE, a.s.	Other producers
Nuclear power plants 2640 MW	
Thermal power plants 1838 MW	TEKO a.s. (121 MW), ZSE (62,9 MW) + SSE (135,4 MW)
Hydro power plants 2 399,24 MW	VD Žilina (72 MW), MVE ZSE (1,8 MW) + SSE (4,6 MW)
In-plant power stations	(804 MW), e.g. US STEEL Košice (183 MW)
Combined Cycles	PPC Bratislava (218 MW)
$\Sigma = 6877,24 \text{ MW (82,89 \%)}$	$\Sigma = 1419,7 \text{ MW (17,11 \%)}$

On figure 3 is shown the electricity production structure and development of electric energy consumption in the Slovak Republic. The Slovak Republic was self-sufficient in the electricity supply after the EMO 1, 2 completion. Nowadays, the Slovak Republic has surplus of power and is able to export energy. The condition for the admission of the Slovak Republic to EU was to stop the operation of nuclear plant V1 – Jaslovské Bohunice by the year 2006 and V2 by the year 2008. Therefore, the realization of these measures will lead to the deficit in the electricity sector.

Is is expected, that if the average annual increase in consumption is 1,6%, in year 2020 it will be needed to assure 2500 MW.

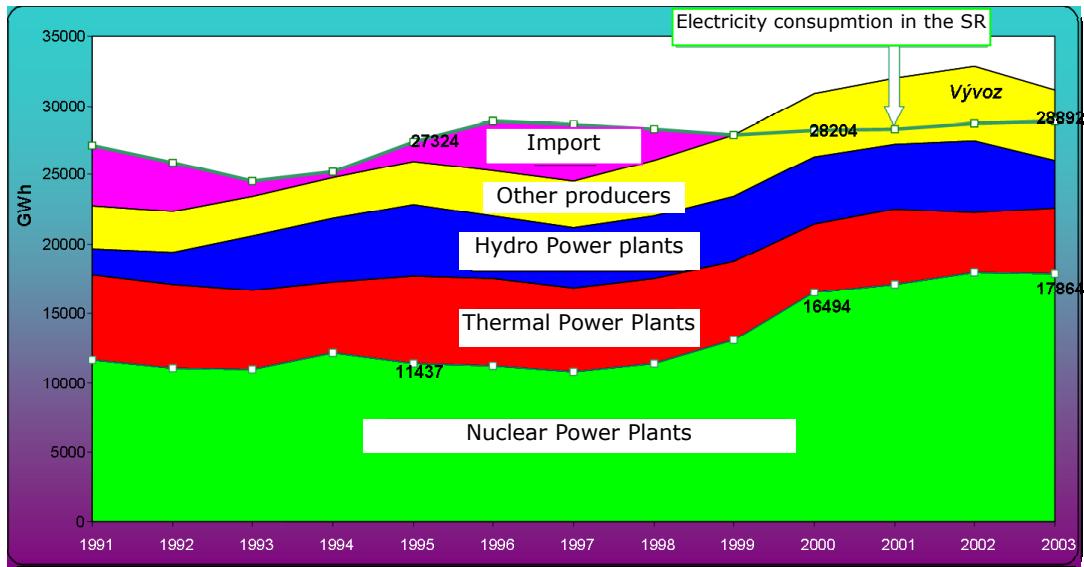


Figure 3: Electricity production structure and development of electric energy consumption in the Slovak Republic

*Electricity generation by type of power plant at SE, a. s. (%)*

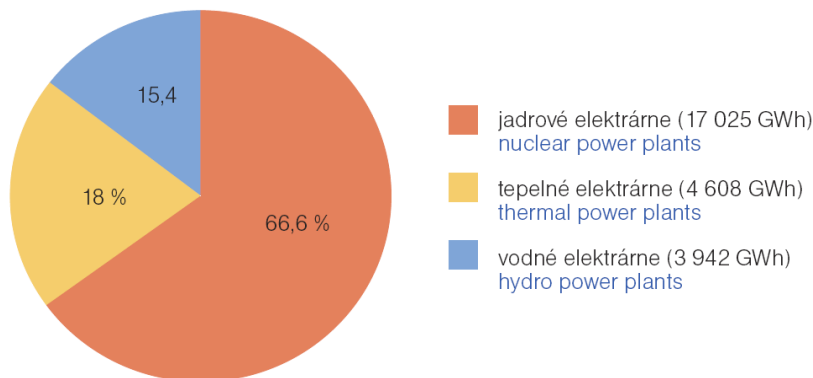


Figure 4: Electricity generation by type of power plant at SE, a.s.

#### 4. OUTLOOK FOR DIRECTION OF ELECTRICITY SECTOR OF THE SLOVAK REPUBLIC

It is needed to assure sufficiency of sources and it will be possible to reach one of the main goals of energy policy and to cover demands, based on economical and effective principles. It is possible to realize this main goal of energy policy

- by increasing of power of existing power plants,
- by building-up of new power plants,

The increase in power of existing power plants will be realized on the following sources:

- nuclear power plant V2 in Jaslovské Bohunice
- nuclear power plant Mochovce 1, 2
- thermal power plant Nováky
- thermal power plant Vojany

Decisions about measures oriented on build-up of new sources will be based on the satisfaction of electricity consumption. These sources are perspective in the future:

- thermal power plant, Vojany
- nuclear power plant Mochovce 3,4
- water power plant – a new power plant on Ipel' river
- renewable sources of energy
- combined cycles
- heat power plant

The main criterion will be the economic efficiency of proposed solution and economic return of investment.

It will be needed to reinforce the transmission capacity, due to V1 shut-down. And therefore it is necessary

- build-up new transmission lines.
- increase transmission capacity of existing lines
- build-up new interstate transmission lines.

The safety and reliability is based on real-time optimal network operation. Therefore is needed to update the control system, information system and telecommunication system, which are needed for reliable and safe operation. In order to increase supply reliability and quality, environment protection and services based on economic principles, it will be needed to take measures for the quality maintenance at the point of customer. It will be needed to build-up new lines, reconstruct and maintain lines, distribution points and transformers and IT. In order to solve unbalance in production and consumption, it will be needed to monitor offers and demands. And this monitoring plays the key role for the unbalance solving.

## 5. REFERENCES

- [1] Programové vyhlásenie vlády SR, Bratislava 2006
- [2] Energy policy of the Slovak Republic, Bratislava

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### *Author address:*

prof. Ing. Michal Kolcun, PhD.,  
Department of Electric Power Engineering  
Technical University of Košice  
Mäsiarska 74  
040 01 Košice, Slovak Republic  
E-mail: [michal.kolcun@tuke.sk](mailto:michal.kolcun@tuke.sk)  
Tel: +421 / 55 / 602 3550  
Fax: +421 / 55 / 602 3552

Ing. Daniel Hlubeň  
Department of Electric Power Engineering  
Technical University of Košice  
Mäsiarska 74  
040 01 Košice, Slovak Republic  
E-mail: [daniel.hluben@tuke.sk](mailto:daniel.hluben@tuke.sk)  
Tel: +421 / 55 / 602 355  
Fax: +421 / 55 / 602 3552