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Electricity Sector Developments in FYR of Macedonia

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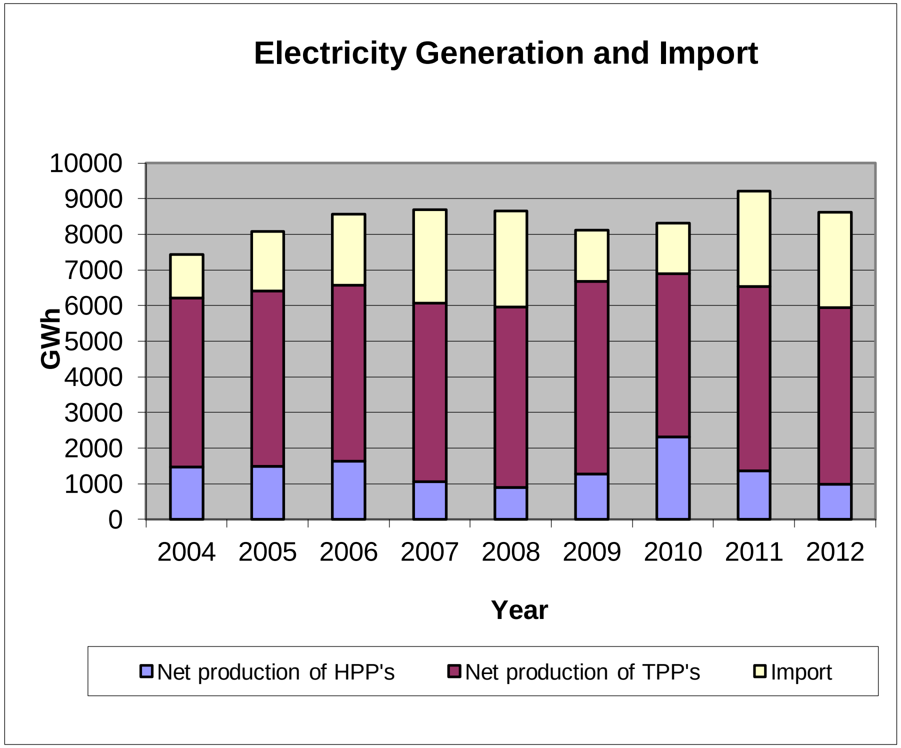
1. ELECTRICITY BALANCE



2013

<u>Total consumption: 8,167 GWh</u>

Regulated producer (ELEM): 62.60%

Independent producers (CHP TE-TO, CHPs KOGEL): 4.22%

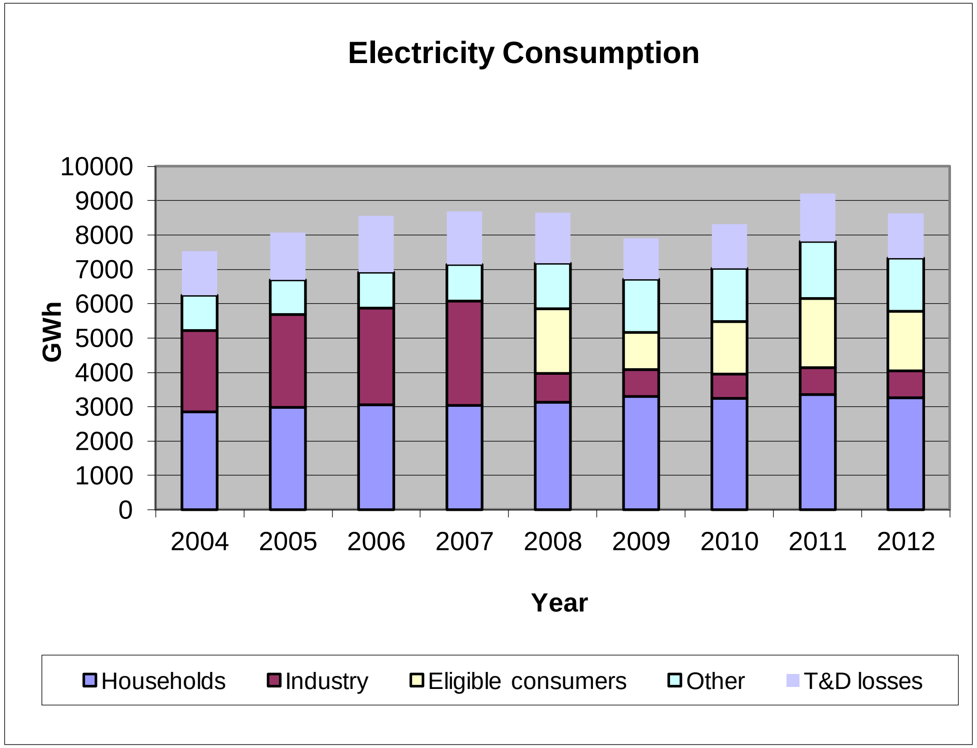
Small Hydro PPs: 2.57%

Solar PPs: 0.11%

Import: 30.50%

Source: State Statistical Office and Energy Regulatory Commission (ERC)

1. ELECTRICITY BALANCE



2013

Total consumption: 8,167 GWh

Households: 37.43%

Light industry: 8.84%

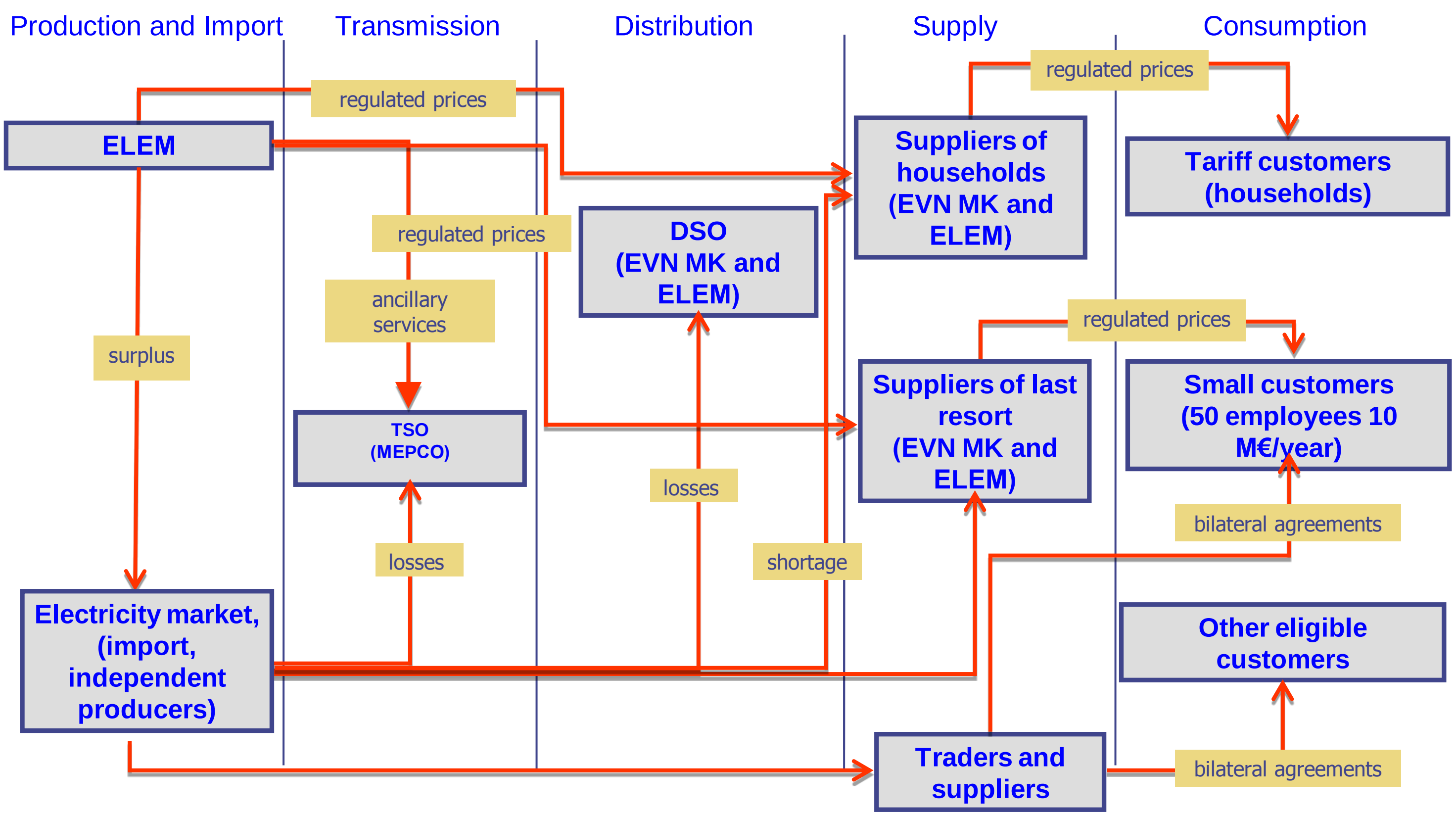
Eligible consumers (Hard industry): 24.01%

Other: 13.27%

T&D losses: 16.45%

Source: State Statistical Office and Energy Regulatory Commission (ERC)

2. ELECTRICITY MARKET



Source: Ministry of Economy

Electricity market model 2012 - 2015

2. ELECTRICITY MARKET

Eligibility of Customers

2004 - (9) HV TN Industrial Customers : **formal opening around 30%**

2007 - (9) HV TN Industrial Customers: **real opening around 30%**

2012 - (11) System Operators – losses**: real opening around 35%**

April 2014 - (222) Medium Size DN Customers (over 50 employees &10 mil EUR annual turnover)**: real opening around 45%** (currently facing 27% - 40% reduction of prices!)

November 2014 - (15 000 - 20 000) LV DN Small Size Customers: **formal opening around 60%** (expecting 35% - 40% reduction of prices)

January 2015 - (All Customers) Households: **formal opening 100%** (essential increase of prices!)

Main challenge – Protection of vulnerable customers

Good news – Final elimination of cross subsidies

2. ELECTRICITY MARKET

Market Operator (MEPSO)

2005 - Established

2008 - Equipped and started activities

April 2014 - Hopefully **Operational**

Market Rules

2006 – MEPSO's submitted proposal refused by ERC

2009 – again, MEPSO's submitted proposal refused by ERC

2012 - Established introducing simple balancing mechanism based on Balancing Groups Model

2014 - Amended to accommodate the real situation in the field before the second wave of market opening

2. ELECTRICITY MARKET

Market Model

Bilateral Regulated and Free Market -

Free - 51 Licensed Traders and **8** Licensed Suppliers

Regulated power producer and supplier of tariff customers, until 1 January 2015

Regulated supplier of last resort

Intraday Market –

Organized by MO, based on a list of priorities (matching bids and offers of Balancing Groups' Responsible Parties)

Ancillary Services Market -

Organized by TSO, but regulated until 1 January 2015

Cross Border Capacity Allocation

Explicit auctions for both directions (export/import), capacity split 50:50

Participation in SEE CAO prevented by VAT incompliance

3. ELECTRICITY INFRASTRUCTURE

Available Generation Capacities (source: ERC)

Fossil fuels: 1087 MW + 210 MW (oil - obsolete)
Renewable Sources: 60 MW
Hydro: 649 MW

Development Scenarios 2020 (source: ENTSOe SOAF 2014)

Scenario A – Considered as certain (commissioning can not be delayed further)

Fossil fuels: 1153 MW
Renewable sources: 186 MW
Hydro: 808 MW

Scenario B – Considered as real (according to the information available to the TSO)

Fossil fuels: 1383 MW
Renewable Sources: 239 MW
Hydro: 1150 MW

3. ELECTRICITY INFRASTRUCTURE

Transmission Network: 1,514 km - 110 kV and 507 km - 400kV)

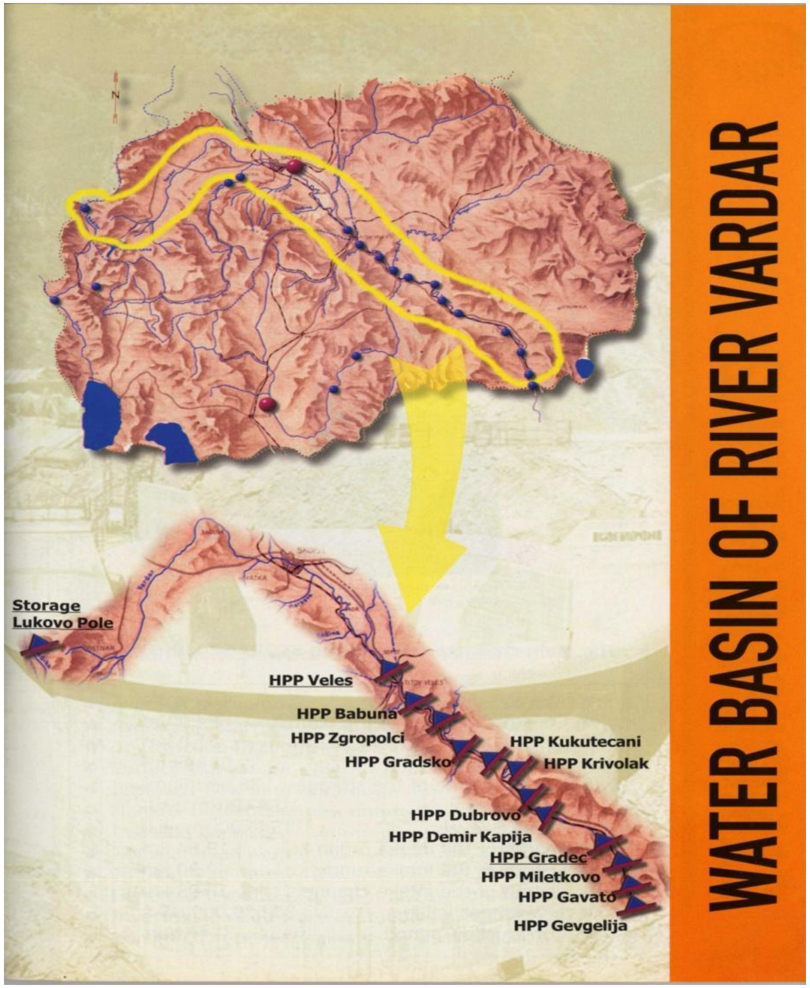
4. INVESTMENT PROJECTS

1. HPP CEBREN *REVERSIBLE*	H=192.5 m 333/347 MW 840/876 GWh €338.38 million
2. HPP GALISTE	H=141.5 m 193.50 MW 262.50 GWh €200.24 million
3. HPP BOSKOV MOST	H=44.4 m 68.2 MW 117.54 GWh €70 million
4. CHP ENERGETIKA combined heat &power	300 MW (e), 150 MWt (h) 2.000 GWh (e), 500 GWh (h) €250 million

4. INVESTMENT PROJECTS

5. VARDAR VALLEY

12 HPPs
Installed capacity 320 MW
Annual production 1050 GWh
Estimated investment €1.2 billon



4. INVESTMENT PROJECTS

6. ELECTRICITY TRANSMISSION LINES

400 KV OHTL

Ongoing

- Stip (MK) - Nis (SR) (2014 in operation)
- Bitola (MK) – Elbasan (AL) (2020 in operation)

Future

- Skopje (MK) – Kosovo C (KS) (depends on the realization of TPP New Kosovo)

Source: MEPSO

5. RENEWABLES

Large hydro power plants (LHPPs)
– 603.2 MW, 1.165 GWh/year

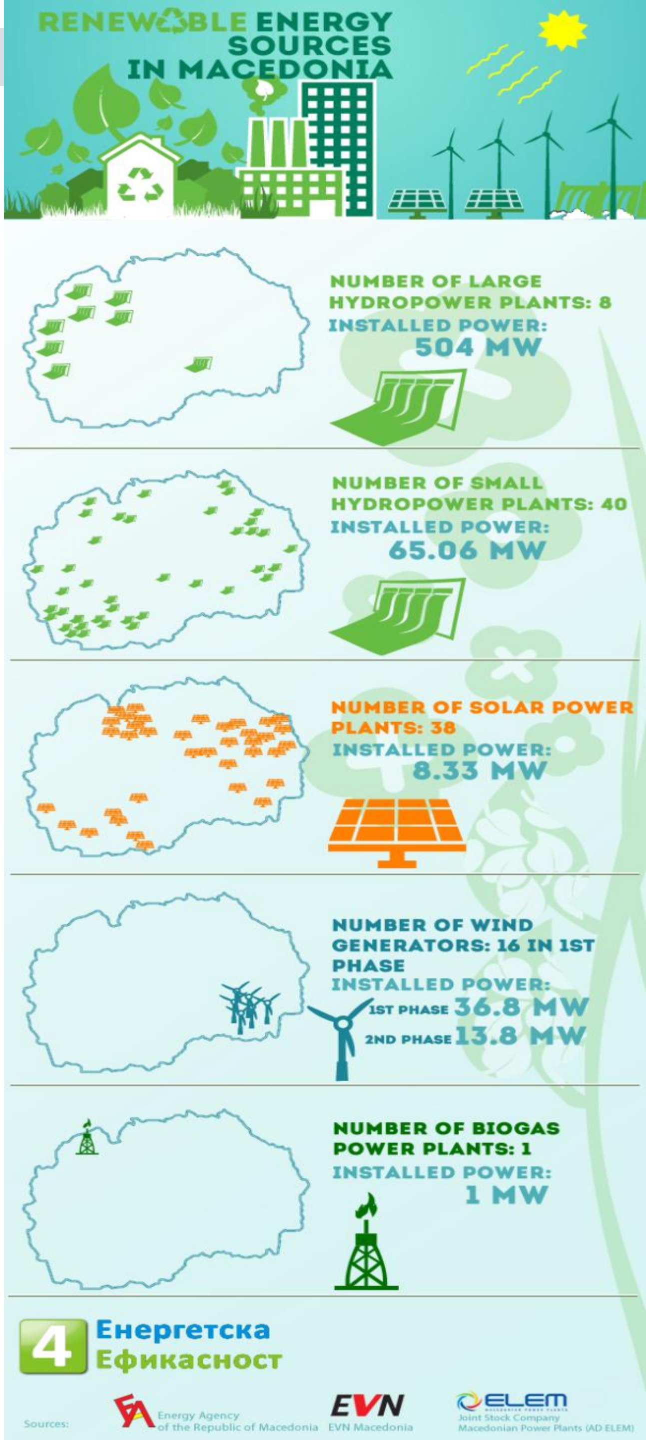
Small hydro power plants (SHPPs)
– 45.8 MW, 210 GWh/year

Solar power plants (SPPs)
– 8.33 MW, 2.8 GWh/year

Wind generators (WG)
– 50 MW, 100 GWh/year

Biogas power plants (BPPs)
– 1 MW

Source: Energy Regulatory Commission (ERC) and ELEM



5. RENEWABLES

National target 2020 -

24.2 % participation of renewables in the production of electricity

Support scheme for electricity -

Feed-in-tariffs - Preferential Producers (PfPs) of electricity

Implementation -

2011 – 16 PfPs, 5.16 MW, 9.62 GWh

2012 – 29 PfPs, 10.16 MW, 18.11 GWh

2013 – 61 PfPs, 24.5 MW, 38.44 GWh

Participation in the average price of electricity -

2011 – arround 1 %

2015 – 0.67 %-1,72 % (105 MW, 254 GWh)

2020 – 0.10 %-2.73 % (220-310 MW, 520-710 GWh)

CONCLUSION

Electricity Sector

Requires investments of €1.1 bn in the period 2012 - 2016 in over 30 strategic projects, such as:

- Conventional power plants (€0.75 bn)
- Transmissions lines (€0.11 bn)
- Renewables (€0.24 bn)

Market Development

Follows the pattern of Energy Community

Source: 2012 – 2016 Implementation Program for the National Energy Strategy until 2030

Thank you for the attention!

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