



JICA JFY 2010

Energy Policy (B)

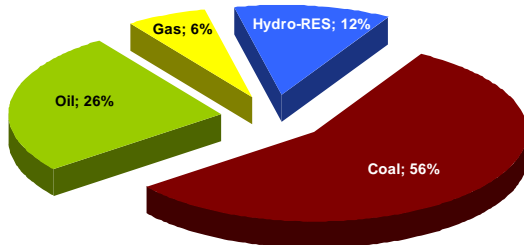
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Country Report: Bosnia and Herzegovina

March 2010

Prepared by JICA trainee Mile Srdanovic

Bosnia and Herzegovina – basic energy related figures

Population	3,843,000 data for 2007 estimated by the Agency for Statistics of BIH
Land area, thousand sq km (2009)	51.20 sq km
GDP / Capita	\$3,941 (nominal) data for 2007 estimated by the Agency for Statistics of BIH \$7,468 (PPP) data for 2007 estimated by the World Bank
Energy consumption / Capita	Average energy consumption in BH is about 45 GJ per capita, compared with a world average of 70 GJ per capita and OECD average of 236 GJ per capita
Total Primary Energy Consumption – TPES (average for last five years, negligible deviation) .	 <p>Dependence on Imported Energy – 32%</p>
Generation	Total: 13,942.0 GWh Fossil fuel: 8,933.0 GWh Nuclear: 0.0 GWh Hydro: 4,818.0 GWh
Electricity Market Size	10,450 GWh/year
Installed Capacity	3,659 MW
Peak Demand	2,117 MW
Net Electricity Exporter	1,701 GWh
Natural Gas Imported	0.31 bcm
Natural Gas Consumed	0.31 bcm

A) Energy Resources & Power Sector overview

Basic domestic energy - Coal

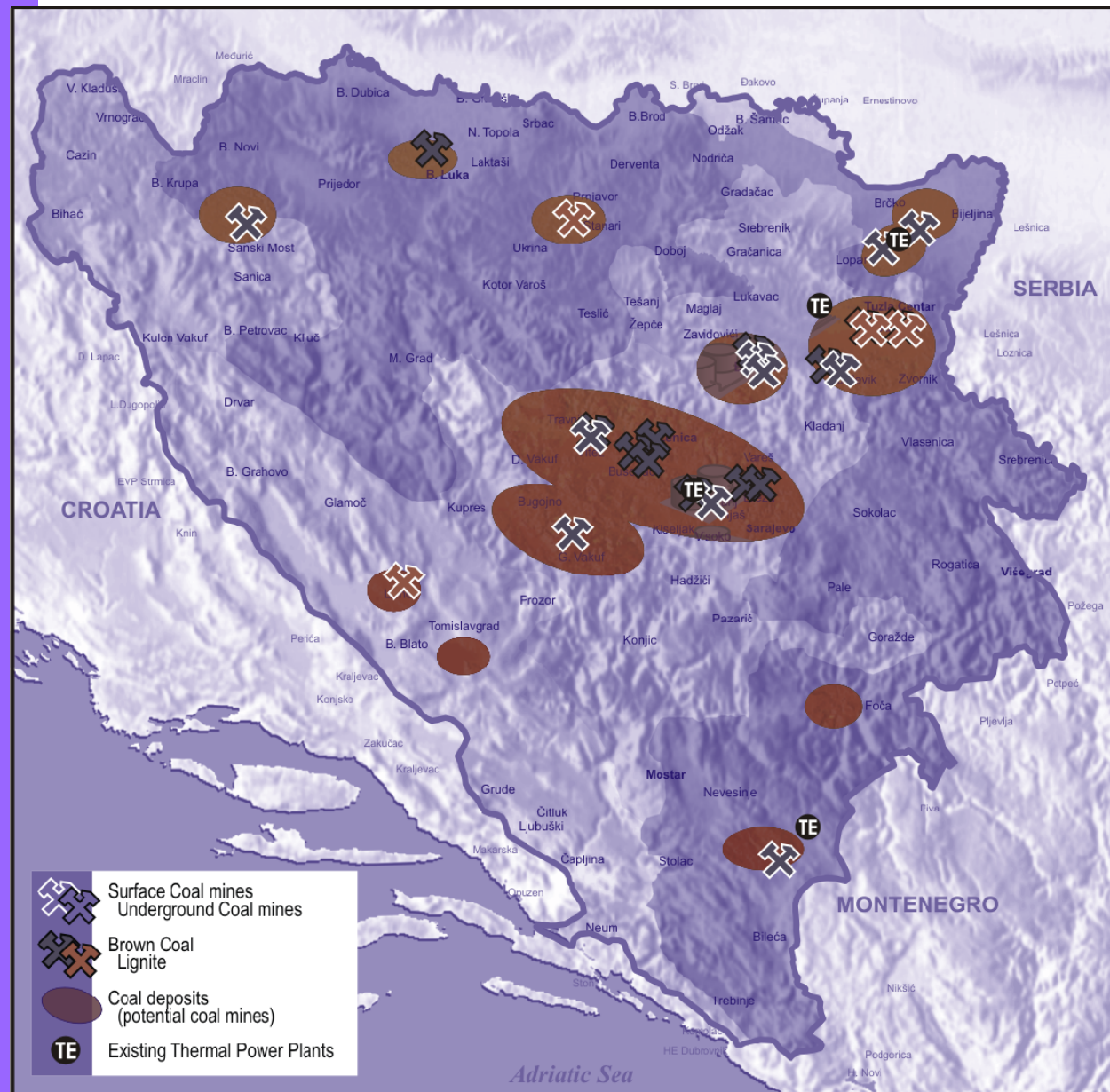
Bosnia and Herzegovina has available significant reserves of lignite and brown coal usable for generation of electricity applying existing (classic) technology or through new energy combustion and transformation technologies.

The existing TPPs in BiH consume average annually around 8 mil.tons of appropriate types and qualities of coal, that surely must be supplied until the end of the existing TPPs lifetime.

Estimates are that aggregate coal reserves in BiH amount:

a) Brown Coal	1.886 mil.tons
b) Lignite	3.578 mil.tons
Total	5.464 mil.tons.

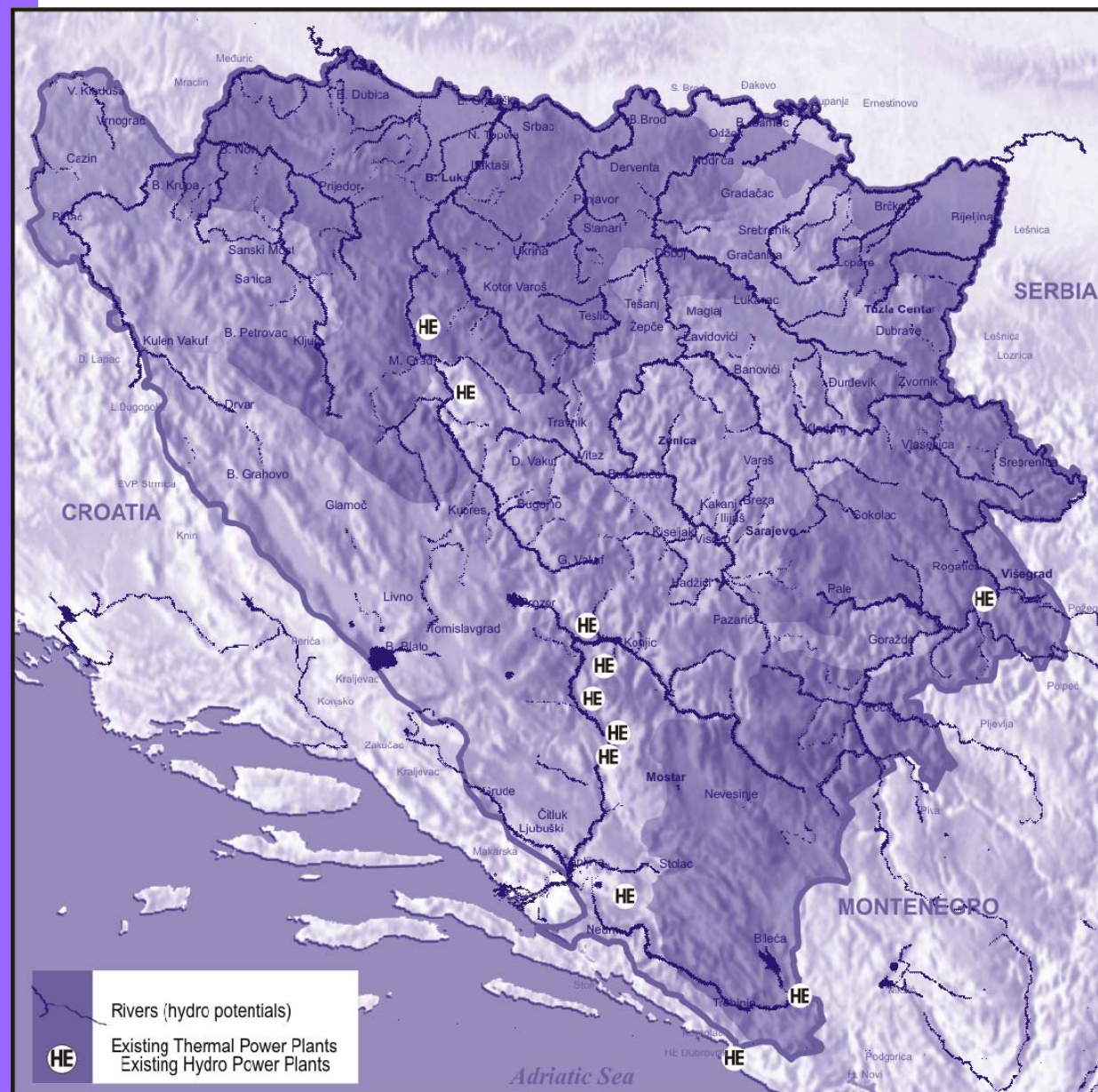
This is preconditions for long-run coal supply to the existing TPPs and for construction of new ones as well. When doing so, there must be taken care of optimal choice of new boilers in thermal power plants according to realistically available qualities and structures of coals.



Basic domestic energy - Hydro

Bosnia and Herzegovina's geography includes fast-flowing mountain streams and powerful rivers that are very well suited for hydroelectricity production. Currently, hydroelectric power stations exist with a generating capacity of around 6,500 MW. Most of these installations are more than 30 years old; modernization of the existing plants is in the pipeline. In 2007 Bosnia generated 6,140 GWh of hydroelectricity, which was a 5 percent generation increase from the previous year (EIA, 2006).

It is estimated that Bosnia has a hydropower potential of 23,400 GWh. Most of the potential is located within the Drina, Neretva and Trebisnjica river basins. The Drina River alone is estimated to have a power generating potential of about 6,000 GWh.



Alternative domestic energy (RES) – Small Hydros, Wind, Solar, Geothermal...

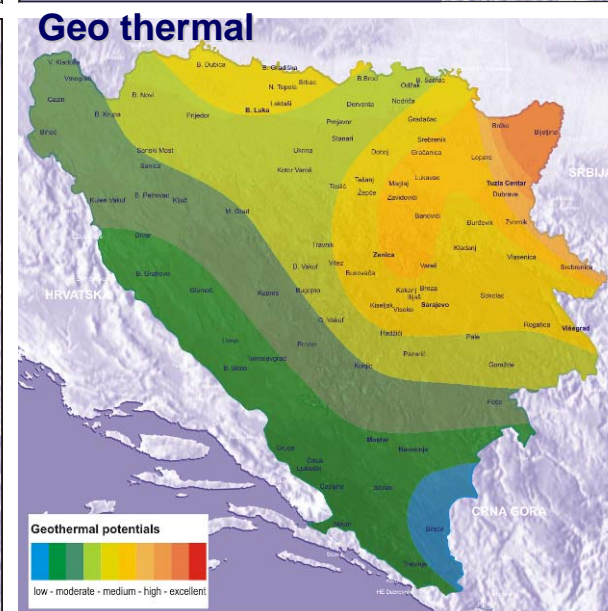
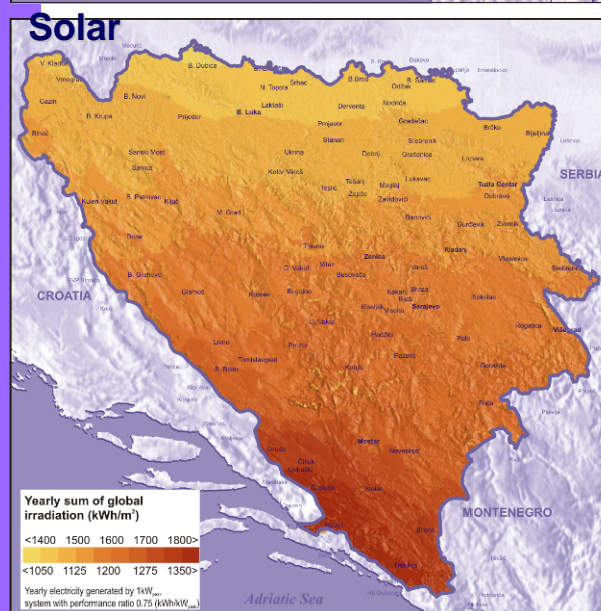
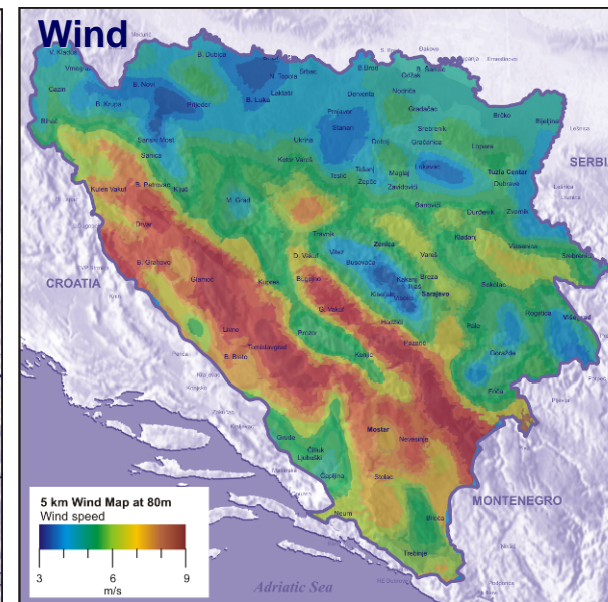
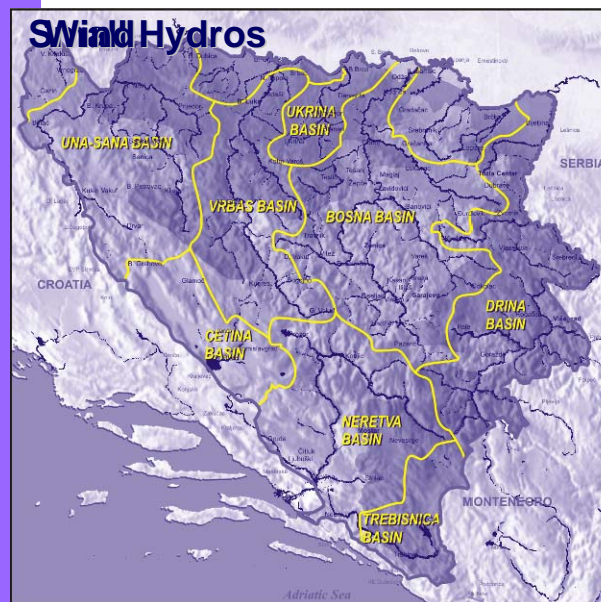
Small Hydros Bosnia has an estimated small hydro power potential of 2,500 GWh/yr., what is the potential to support app. 356 large and small hydroelectric power stations. Since 2006, a total of 120 licenses have been issued for new mini hydroelectric power stations; mini hydroelectric power stations have capacities not in excess of 10 MW.

Wind A wind atlas for Bosnia and Herzegovina was recently established. The assessment shows that Bosnia and Herzegovina has significant wind potential. It is estimated that the total wind power potential capacity is about 2,000 MW, but only 900 MW are usable. This potential has not yet been exploited.

Solar The solar irradiation values in Bosnia and Herzegovina vary accordingly with about 1,240 kWh/m² in the northern region to 1,600 kWh/m² in the southern region. In the southern region, the amount of sunny days can get up to about 270 days per year. The solar potential of the region is approximately 1,900 TWh.

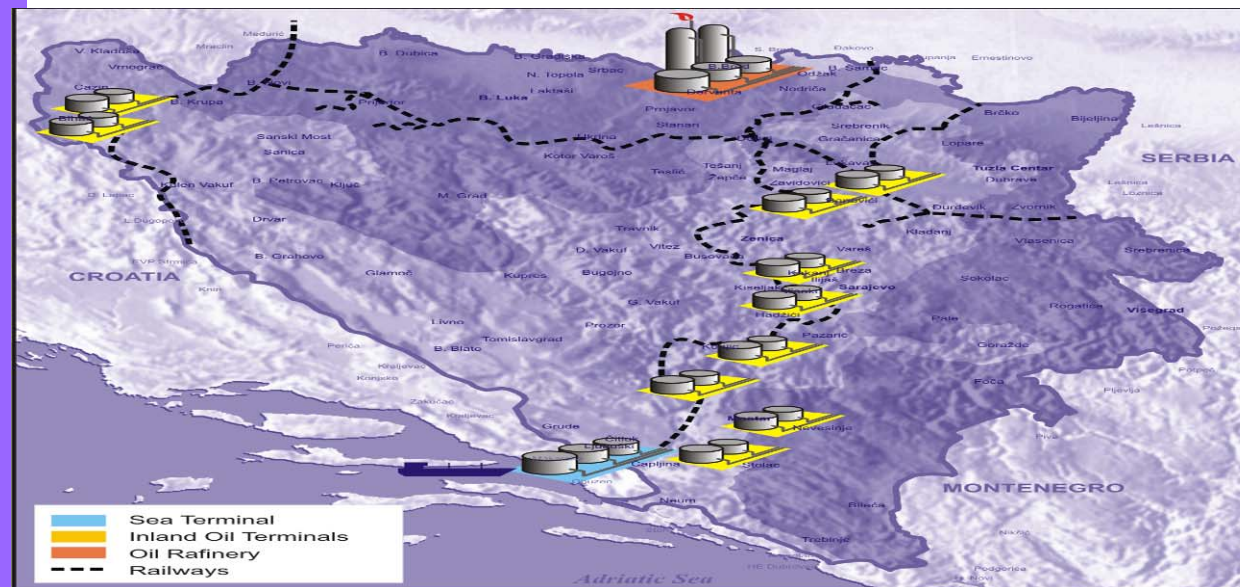
Geothermal energy According to available data, Bosnia & Herzegovina has a geothermal potential of 33 MWth. Due to the low temperatures, however, current activities relating to geothermal energy continue to be limited to exploitation for thermal use.

Biofuels, Biogas etc – negligible implementation, some pilot projects under preparation

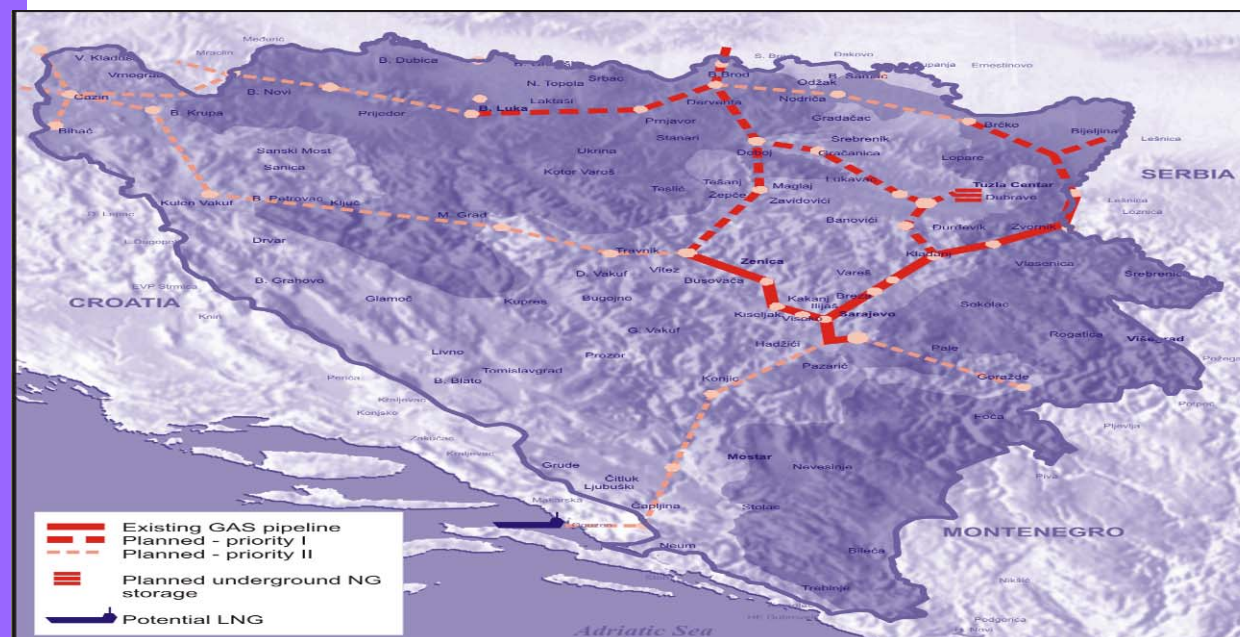


Imported energy – Oil & Gas

Oil sector Bosnia and Herzegovina Gas oil infrastructure comprises the oil products distribution capacities, especially for motor fuels, oils and lubricants. The greatest share of the market is covered by small private distributors. The demand for motor fuels on the domestic market in the present conditions is approximately 1.5 million tons annually. The oil refinery delivers around 500,000 tons to the market, and the rest is imported. Considering that the number of private petrol stations is on the increase and has reached approximately 300 stations, objective estimates suggest that the commercial capacities in BiH market are already oversized. Some preliminary investigations have proved significant Oil reserves in BiH.



Gas All natural gas is imported from the Russian Federation and is transported to BiH via the gas transport systems in Ukraine, Hungary and Yugoslavia. Due to the above mentioned post-war dissolution of the energy system, BiH is facing an absurd situation – in the entire gas transport (over 5000 km) from the gas wells in Siberia to Sarajevo (which is the main consumer in BiH) the intermediaries involved in the internal transport of gas in BiH outnumber the transport intermediaries up to the BiH border. The main features of the gas system in BiH are: length of 191 km and the projected annual capacities of 1 billion m³. The existing leased transport capacities to BiH are 750 million m³/year.

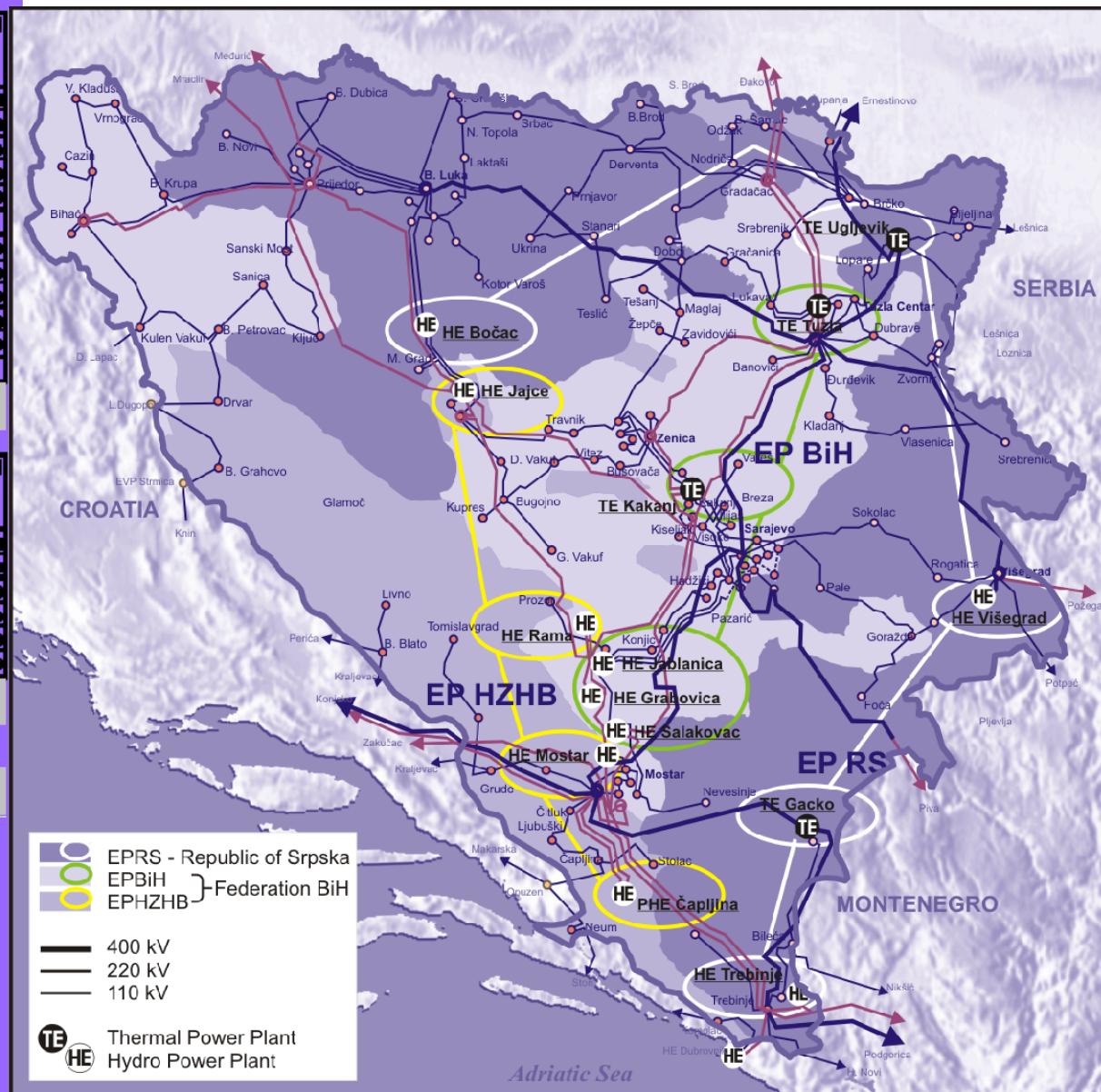


Power Sector – current status

		Total MW	Annual Production GWh	Fuel
FEDERATION BIH	TE Tuzla	630	2,000	Lignite/Brown
	TE Kakanj	305	1,000	Brown
	HE Jablanica	155	750	Hydro
	HE Grabovica	110	300	Hydro
	HE Salakovac	210	350	Hydro
		1,410	5,000	
FEDERATION BIH	HE Jajce 1&2	85	400	Hydro
	HE Rama	100	650	Hydro
	HE Mosor	75	250	Hydro
	PHE Čapljina	430	200	Hydro
	HE Pocinik	30	100	Hydro
		780	1,600	
FEDERATION BIH		2,279	7,400	
		MW (installed) Average Annually)		

		Total MW	Annual Production GWh	Fuel
REPUBLIC OF SRPSKA	RTE Gacko	300	950	Lignite
	RTE Ugljevik	300	1,250	Brown
	HE Bošac	110	300	Hydro
	HE Vrnjačka	915	600	Hydro
	HE Trebinje 1&2	170	450	Hydro
	HE Dobrova (95%)	210	500	Hydro
		1,417	4,350	
REPUBLIC OF SRPSKA		MW (installed) Average Annually)		

BOSNIA HERZEGOVINA	3,696	11,750	
	MW (installed) Average Annually)		



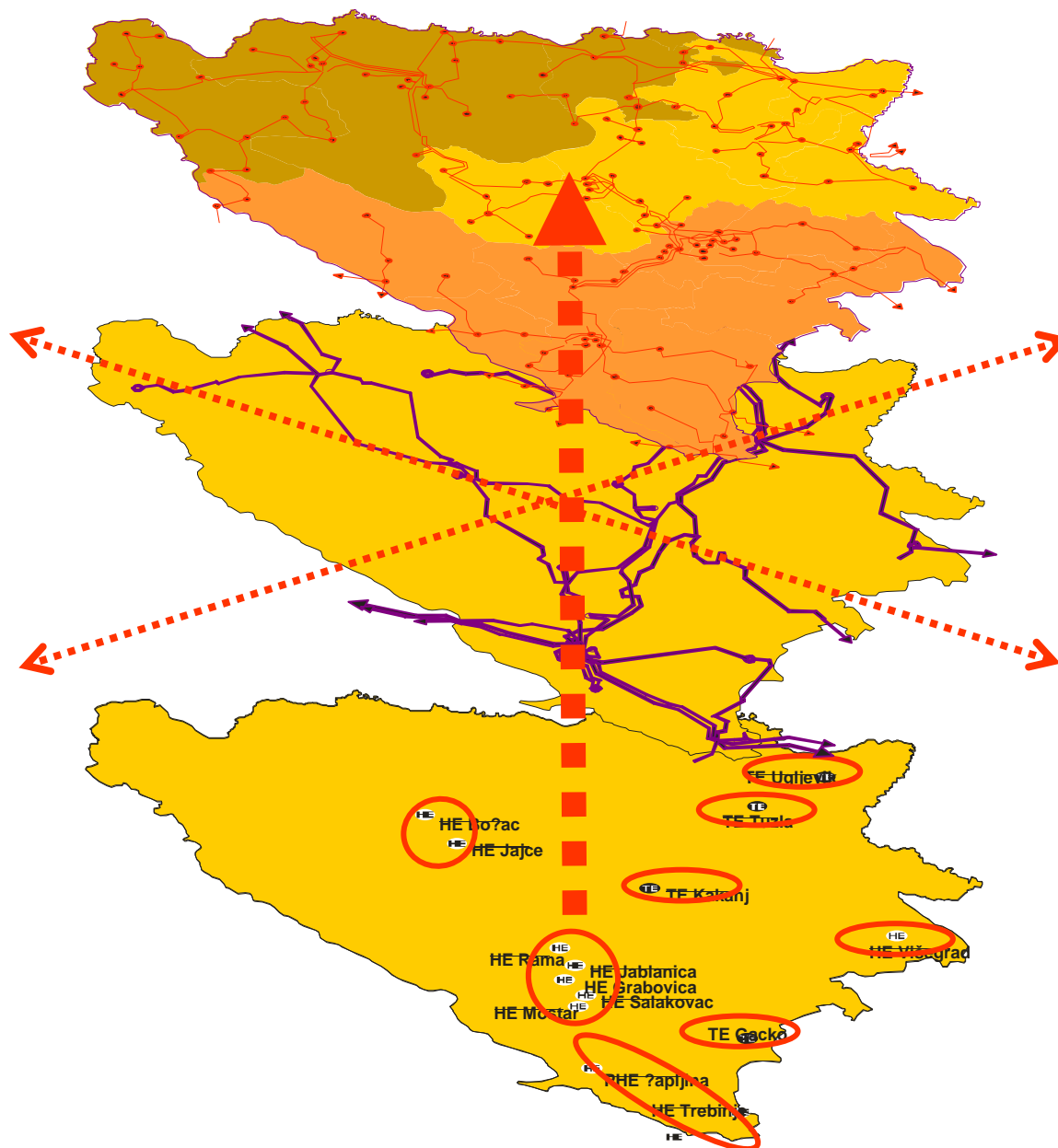
3 DISCOs:

- “North”,
- “Central”,
- “South”

- TRANSCO
- ISO
- SERC

- “UGLJEVIK”

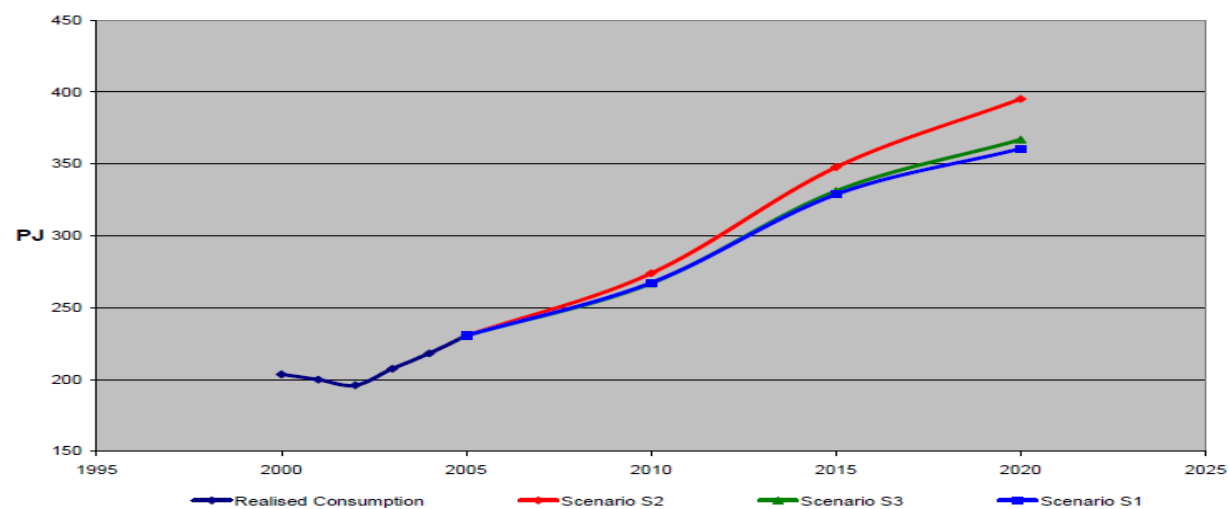
- “GACKO”
- “TUZLA”
- “KAKANJ”
- “DRINA”
- “NERETVA”
- “TREBIŠNJICA”
- “VRBAS”



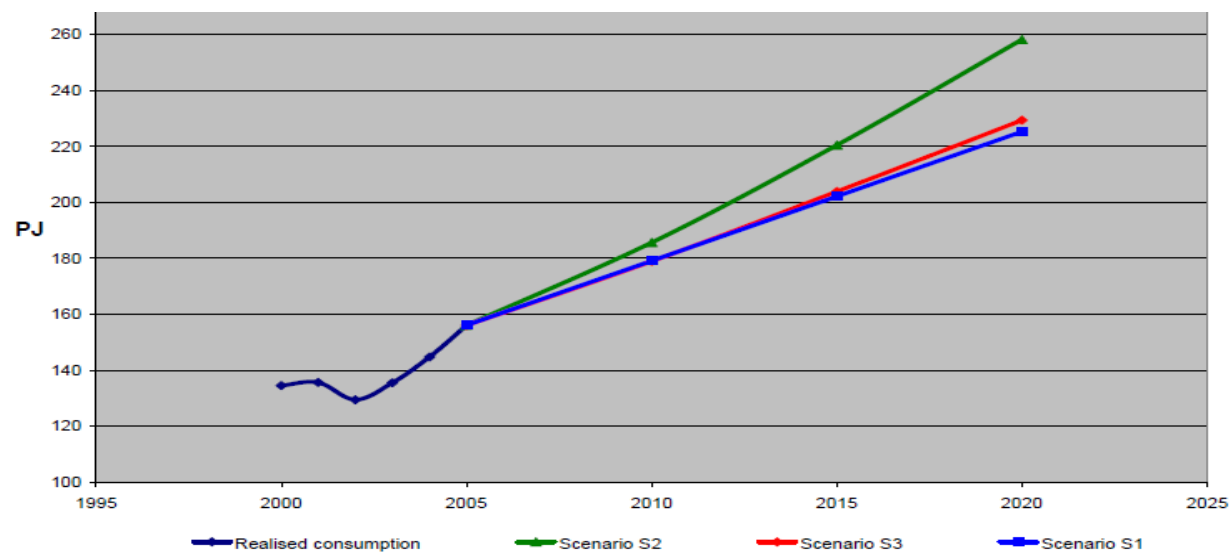
B) Energy Policy / Strategy

Energy Policy – Demand/Generation scenariosc

Total primary energy supply in BiH



Total final energy demand in BiH



Source: Energy Sector Study BiH,
2007, Energy Institute EIHP, Croatia

Energy Policy – key facts



❖ Rather complex political/administrative constitution of Bosnia-Herzegovina is affecting all segments of B-H economy, incl. Energy (Power) Sector:

❖ Energy policy should be just one segment of the overall national Economy policy (harmonized with other sectors) and, also harmonized with regional Energy sector:

❖ Bosnia-Herzegovina has no independent Energy Institute, all technical activities are performed by three ministries (two on the entity level – FMERI & MERI, and state level Department at the Ministry of Foreign trade and Economic Relations – MOFTER). This causes harmful effect – we do not have proper Energy Balance, Statistics, Analyses and Energy Forecasts.

❖ Bosnia-Herzegovina is in the middle of the EU integration process - “EU pressure” is the key driving force in all internal reforms, incl. Energy sector. This is the most important and most positive aspect.

❖ Bosnia-Herzegovina has promising energy resources and, there is one excellent opportunity to get the status of relevant regional energy exporter. Two thirds of total Power production was based on coal. This ratio is likely to remain, but new TPP technologies must be utilized:

❖ Bosnia-Herzegovina has significant RES potentials which were not seriously utilized, so far. New Tariff policy is the key prerequisite to this. New, RES encouraging tariffs are on the horizon:

Conclusion: The major goal of the B&H Energy policy, in the next decade, would be – to modernize (re-power) existing Generation capacities, new Energy related investments and development of the new Energy Management Infrastructure.

Thank you !

ありがとうございます



M. Srdanovic, BiH

Tokio, 11.May 2010.