Country Report of the Republic of SERBIA

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Prepared by:
MIROSLAV SPASOJEVIC
Ministry of Mining and Energy
The Republic of Serbia

(1) ENERGY POLICY AND MEASURES

THE REPUBLIC OF SERBIA

(a) National Profile

(a) Population (2002)	7.478.820 (census 2002.)	without Kosovo and Metohija
(b) Land area	88.361	km^2
(c) GDP (2007)*	29.542*	Million €

* - Source-Ministry of finance Republic of Serbia (www.mfin.gov.rs)

Serbia is located, almost in the centre of the Balkan Peninsula in the South-eastern Europe. It shares borders with Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, the Former Yugoslav Republic of Macedonia and Romania. Serbia's terrain ranges from rich, fertile plains of the northern Vojvodina region, limestone ranges and basins in the east, geological old mountains and hills in the central and southeast, to the southwest.
The climate of Serbia varies from moderate continental climate in the northern Panonian lowlands along the river Sava and Danube and in the foothill zone inland of the country, to alpine climate in the high mountain regions.
Out of total land area of Serbia about 5.6 million ha (2001) is suitable for agriculture, out of which only 57,000 ha is irrigated. Forests cover approximately 30 percent of the Serbia's territory.
Serbia hosts a large variety of ecosystems ranging from Mediterranean-Sub-Mediterranean evergreen forests, various deciduous forests, and coniferous woods typical of the Euro-Siberian and North American regions, to freshwater bodies and marine ecosystems on the Adriatic. This makes Serbia one of the European centres of biological diversity. It is home to 39% of Europe's vascular plant species, 51% of its fish fauna, 74% of its bird fauna, and 68% of its mammalian fauna. Around 1.600 wild plant and animal species considered internationally significant inhabit the Republic of Serbia.

(b) Energy structure

The Energy sector of the Republic of Serbia consists of the following:

a) **Oil sector**, within which the following is performed:
- domestic exploitation of crude oil (annual production approximately 0.6 mil ton of crude oil),
- the import, export and transport of crude oil and oil derivates
- processing of crude oil in two refineries (annual production approximately 4.0 million ton of oil derivatives),
- the oil derivates distribution and trade.

Oil transport is performed predominantly through the trunk oil pipeline (Janaf) from Omisalj in Croatia to the oil refineries in Pančevo and Novi Sad. Total installed petroleum refineries capacityy is 7.8 million t per year (4.8 million tons in Pančevo and 3 million tons in Novi sad), while their current operating capacities are reduced to 6.6 million tons.

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b) **Natural gas sector** within which the following is performed:
- domestic exploitation of natural gas (annual production approximately 0.3 mil m3 of natural gas),
- import , transport and distribution to the natural gas end consumers

c) **Coal sector** which consists of:
- three open pit mines in three mining basins: Kolubara, Kostolac and Kosovo-Metohia basins (the latter temporarily not operated as part of the energy system of Serbia);
- underground mines.

Over 95 % of the total coal production from the open pit mines is used for power production.

d) **Power sector** consists of:
- electricity production in power plants with installed power of 7120 MW (3936 MW in lignite-operated thermal power plants, 2831 MW in hydropower plants and 353 MW in crude oil and thermal power plants-district heating companies, without thermal power plants on the territory of Kosovo and Metohia (1235 MW)[1]
- power transmission systems, with 10200 km of 400, 220 and 110 kV power lines and about 15.8 GVA installed in the transformer stations
- power distribution systems.

e) **District heating system**, existing in 50 cities of Serbia, consists of decentralized heat sources, with an installed power of about 6000 MJ/s and appropriate distribution networks. The system is used for heating residential and office space of about 450 000 equivalent flats.

f) **The industrial energy system** includes heating sources with 6300 MJ/s installed in several hundred industrial companies of Serbia. They are used for the production of industrial steam and heat for the production process purposes and for heating premises. In about 30 industrial companies, there are power plants which enable combined production of thermal energy and power (with a capacity of about 250 MW), the largest number of which has not been operational for a long time.

The basic characteristic of all energy system parts mentioned is a significant obsolescence of technology and low energy efficiency, as well as currently disturbing and in the long term unacceptable technological condition from the standpoint of environmental protection.

(c) Energy sources of the republic of Serbia

The volume and structure of energy reserves and resources of Serbia is very unfavorable. The reserves of quality energy products, such as oil and natural gas, are small (les than 1 % in total balance sheet reserves of Serbia), while the remaining 99 % of energy reserves consist of various types of coal, predominantly low-quality lignite, with the share of over 92 % in the total balance sheet reserves. Lignite is extracted from two open pit mines in Kolubara and Kostolac with yearly production of 35 million tons of lignite. Hard and brown coal are produced in underground mines with annual production of 0.6 million tons.

Domestic production of crude oil and gas is small and covers only 15 % of energy demand (More than 80% of oil and gas are imported).

The most important renewable energy resource of Serbia is its hydro potential (around 17 000 GWh annually), about 10 000 GWH of which has been used so far. Some 7000 GWh of hydropower potential in Serbia is still unused, which represents about 8.6% of the final energy consumption in 2003. Furthermore, there is room for the construction of individual medium size HPPs with power over 10 MW and an annual production of about 5 200 GWh. At about 900 potential locations on the Serbian rivers, including small rivers, the possibilities have been determined for the construction of small hydropower plants (of up to 10 MW), with a possible production of about 1800 GWh/year. The energy potential of biomass is very significant and amounts to over 3 Mtoe per year (the potential of small hydro power plants is about 0.4 M toe). The energy potential of the existing geothermal springs in Serbia is nearly 0.2 M toe, in the territory of Vojvodina, the Sava Basin, Macva, the Danube basin and the wider region of the Central Serbia as well as in the existing spas.

(d) <u>General energy policy</u>

In compliance with transition process and harmonization with EU, since October 2000 the Ministry of Mining and Energy started with establishment of the new legal, institutional, and regulatory framework for the energy sector in order to create a viable and efficient energy market environment through licensing, pricing, and energy services control by an independent regulatory body. Key elements for the sector reforms are:
- *Energy Law* - enforced on August 1, 2004

[1] Since June 1999, the EPS cannot manage its facilities on the territory of UNMIK)

- *Energy Sector Development Strategy of Republic of Serbia by 2015* (hereinafter referred to as the Strategy) - adopted by the Serbian Parliament in May 2005
- *Establishment of the Energy Agency* (Regulator), according to the Energy Law
- *Establishment of the Energy Efficiency Agency* (SEEA)
- *Ratification of Treaty establishing Energy Community* (between EU and Eastern European Counties) in July 2007 (which among other things puts obligation to the parties to implement directives on promotion of renewable energy sources (RES) for electricity production 2001/77/EC and biofules utilization in transport sector 2003/30/EC).
- *National Gasification Action Plan for the territory of Serbia*, adopted by the Serbian Government in 2005,
- *Programme for Implementation of Energy Sector Development Strategy for the period from 2007 to 2012*. (hereinafter referred to as the Programme[2]), adopted by the Government of Serbia in January 2007 (POS 2007-2012).

The main milestone of the reforms was entering into force the new Energy Law in August 2004. Within this Law, Directives 2003/54, 2003/55 and Regulation 1228/2003 are transposed in Serbian legal framework, since accession to EU is one of main overall objectives of our country.

According to **the Energy Law**, the main objectives of energy policy are:

- Safe, good quality and reliable supply of energy and energy sources;
- Balanced development of energy activities aimed at providing the required quantities of energy and energy sources for meeting the needs of consumers of energy and energy sources;
- Stimulating market competition based on the principles of non discrimination, transparency and market competition incentives;
- Creating conditions for the safe and reliable operation and functioning of energy systems;
- Ensuring the development of energy infrastructure and the introduction of state-of-the-art technologies;
- Providing conditions for promoting energy efficiency in carrying out energy activities and energy consumption;
- Creating transparent, attractive and stable conditions for investments in the construction, reconstruction and modernization of energy facilities and systems as well as conditions for linking them to the energy systems of other countries;
- Creating conditions for stimulating the use of renewable energy sources and combined heat and electrical power generation;
- Promoting environmental protection;
- Decentralization in energy sector development programmes planning and implementation.

The Law provides a framework for the development of the energy sector and for the establishment of the Energy Agency and the Energy Efficiency Agency.
The Energy Law regulates the generation, transmission, distribution and supply of electricity, the organization and functioning of the electricity market, the transportation, distribution, storage, trade and supply of petroleum products and gas and the production and distribution of heat
Secondary legislation is still partly missing. The Ministry established a Commission whit the task to prepare a draft of Amendments on the Energy Law.
The global objectives of the new Energy Policy and Energy Sector Development Strategy of the Republic of Serbia, promoted in the Energy Law, have arisen from the intention to establish, under the new circumstances in the country and neighboring countries, within the selected Priority Developmental Activities in the whole energy system, qualitatively new conditions of operation, business activity and development of energy production sectors and energy consumption sectors, which will stimulate the economic development of the country, environmental protection and international integrations, including faster integration of our country in the EU as well.
The Energy Sector Development Strategy of the Republic of Serbia by 2015 defines five basic priorities:

- The first basic Priority of continuous technological modernization of the existing energy facilities/systems/sources, in the following sectors: oil, natural gas, coal including strip mining and underground mining, power sector with production facilities- thermal power plants, hydropower plants and thermal power plants- district heating companies and transmission systems, i.e. distribution systems, and thermal energy sector- district heating companies and industrial power plants.
- The second Priority of economical use of quality energy products and increase in the energy efficiency in the production, distribution and utilization of energy by end consumers of energy-related services.
- The third Priority of use new renewable energy sources and new, more energy efficient and environmentally acceptable energy technologies and installations/equipment for energy utilization.

[2] *The Document* Programme for Implementation of Energy Sector Development Strategy for the period from 2007 to 2012*. has a status of the Decree.*

- The fourth Priority for extraordinary/urgent investments in new power sources, with new gas technologies.
- The fifth long term development and regional strategic Priority of constructing new energy infrastructure facilities and electric and thermal power sources within the energy sectors of Serbia, as well as capital-intensive energy infrastructure, within the frameworks of regional and pan European infrastructure systems connected with our systems.

According to the Energy Law and the Strategy, the Ministry of Mining and Energy prepared ***Programme for Implementation of Energy Sector Development Strategy for the period from 2007 to 2012.*** which was adopted by Serbian Government in January 2007. This Programme is Decree which defines the conditions, method and time schedule of the Strategy implementation in the next energy items:

- Coal sector: underground and open pit mines,
- Oil sector (domestic exploitation, refiners and transport)
- Gas sector ,
- Electric power sector (hydro power plants, thermal power plants, distribution and transmission)
- District heating system,
- Industrial energy sector,
- Energy efficiency in final energy consumption sectors (industry, transport, buildings), Fund for energy efficiency,
- Environmental protection in energy sector.

There are also several other strategies which are prepared or in the process of the preparation, but they will be of further relevance for the energy sector (Strategy for Sustainable Development, National Strategy for Sustainable Use of Natural Resources and Goods, Strategy for Introducing Cleaner Production).

The Energy Balance of the Republic of Serbia for the following year is adopted by the Serbian Government at the proposal of the Ministry of mining and energy by the end of October of the current year at the latest.
The forecast is revised every year. The document Energy Balance for the following year, is prepared in the format of the EUROSTAT Summary Energy Balance sheet, and compiles the energy data for the three years (the realization of the previous year, the estimation of the current year, the forecast for the following year). The Republic of Serbia is in the process of establishing energy statistics and because of that the availability and quality of energy data especially regarding final energy consumption is quite poor. The Ministry of mining and energy recognized the importance of energy statistics as the one of the main tools in creating and monitoring energy policy. In accordance to that the Strategy defines as one of five instruments for the realization of the objectives of the Energy Policy and Energy Sector Development Strategy by 2015, the establishment of a modern energy statistics system in accordance with the EUROSTAT system of the determination of and the presentation of the national energy/economic indicators. The Ministry of mining and energy was also organized the first workshop ***The establishing new modern system of energy statistics in Serbia*** in April 2005, with more then 30 participants from Republic Statistical office, Sweden Statistical office, German representatives (Twinning project), Chamber of Commerce of Serbia, Regional Secretariat for energy and mineral sources, Electric power Industry, Oil and gas Company, representatives of District heating system, JP PEU, and other participants from relevant energy utilities.

Existing laws and regulations relevant to Global Warming

The new legal framework - introduced in 2004 (O.J. 135)

- Law on Environmental Protection,
- Law on Strategic Environmental Assessment,
- Law on Environmental Impact Assessment and
- Law on Integrated Prevention and Pollution Control

The new laws are harmonized with the EU Directives on Environmental Impact Assessment (85/337/EEC), strategic impact assessment (2001/43/EC), IPPC (96/61/EC) and public participation (2003/35/EC).

- Law on Air Protection,
- Law on Waste and Waste Management

Two above mentioned laws pasted second reading in the Parliament and it is expected that will be approved by the end of May 2009.

Serbian capacities to implement the Convention on Climate Change are insufficient, especially in the areas of: preparation of greenhouse gases (GHG) emissions inventories and systematic reporting; planning and implementation of measures to facilitate adequate adaptation to climate change; and planning and implementation of measures to mitigate climate change. Financial, technical and capacity gaps and constraints are also identified for other specific areas pertinent to the Convention implementation, including available technology, research and

systematic monitoring, public awareness, education and training, information sharing and networking.
Relevant Ministries and Organizations of the Government of the Republic of Serbia are preparing a project which activities are related to the preparation of Initial National Communication of the Republic of Serbia to the United Nations Framework Convention on Climate Change - UNFCCC. It includes measures such as planning and capacity building, institutional strengthening, training, public participation and targeted research in support to implementation of the UNFCCC principles and objectives.
The project enables Serbia to present required Initial National Communication information in a consistent, transparent and comparable manner taking into account specific national circumstances.
Serbia has ratified the United Nations Framework Convention on Climate Change on May 12, 2001 and ratified Kyoto Protocol as non Annex 1 country on October 2007. Ratification of Kyoto Protocol, among other things, open new excellent possibilities for Serbia to implement its energy policy in the area of energy efficiency, renewable energy sources and CHP promotion through one of Kyoto Protocol flexible mechanisms called Clean Development Mechanism (CDM).
In order to be able to use CDM mechanisms, Government of Serbia has made the decision to develop a Strategy for CDM implementation in Serbia. According to that decision and some provisions of Energy Strategy, Ministry of Mining and Energy, in parallel with development of Programs for realization of Energy Strategy, developed Strategy for CDM implementation in energy sector. Both Poverty Reduction Strategy and Strategy of Sustainable development were taken in consideration during preparation of CDM Strategy.
The project: "Promoting investments for EE and RES through carbon financing in Serbia" have had main objectives to increase institutional capacity for participation in CDM of the Kyoto protocol through establishment of Designated National Authority (DNA), and development of procedures for selection and approval of CDM projects in Serbia.
DNA was established by the end of the 2008, composed of the representatives from all relevant ministries, and with Secretariat within Ministry of Environment and Spatial Planning.

(e) Government energy (and environmental) organizations

The Ministry of Mining and Energy (www.mre.gov.rs) manages the following state administration affairs that relate to:
- Mining,
- Energy,
- Energy policy, Energy Strategy, Energy Balance sheet of the Republic of Serbia,
- Energy permits,
- Oil and gas industry,
- Safe pipeline transport of gas and liquid carbohydrates,
- The drawing up of mineral raw materials balance sheet,
- Geological exploration which relate to exploitation of mineral raw materials, except for underground water,
- The drawing up of annual and middle term programs for detailed research papers on geological exploration which relate to mineral raw materials exploitation and the provision of financial and other conditions for these programs realization,
- Taking necessary measures for energy public enterprise functioning,
- Sustainable Development of Mining and Energy activities,
- The supervision of the activities within the scope of the Ministry.

The Ministry is organized in the following Departments:
- **General energy Department**, with the tasks: to define energy policy and energy strategy, to create energy balance sheet, to modernize of district heating system, to create framework for increased used renewable energy sources, to create framework for increased energy efficiency in all energy consumption sectors, to monitor and stimulate activities of Serbian energy efficiency agency, activities in the field of environmental protection, legislation and regulation,
- **Power Department, with the tasks:** supervising power balance, supervising companies in power sector, power development research, optimal exploitation of power resources, creating the legal framework for the facilitation of the investments in the power sector, inspection monitoring in the power sector,
- **Oil and gas Department** , with the following tasks: oil and gas strategic issues, oil and gas legislation, the monitoring and regulation of oil derivatives prices, oil and gas market analyses, supervising oil and gas energy balance, pressurized equipment inspection, the provision of the conditions for successful functioning of the companies in the oil and gas industry, issuing energy permits, supervision and development of national oil and gas pipelines and international connections, technical-technological and economic issues regarding the development of oil and gas industry,
- **Mining and Geology Department,** with the tasks: to supervise exploration and exploitation, to confirm mineral reserves, to maintain exploration and exploitation cadastres, to define the policy of mineral resources exploitation, to attract and facilitate foreign and domestic investments in exploration and mining in Serbia, to promote mining and improve its position within Serbian economy,

- **Department for public utilities,** with the tasks of restructuring public utilities in energy sector,
- **Department for international cooperation**, which is in charge for the activities regarding the process of accession with EU.
- **Department for Sustainable Development of Mining and Energy,** that is in charge of development of Strategy and Programs of environment protection in the field of energy and mining. Monitoring implementation of the environment protection activities in the field of mining and energy. Also, to participate in the legal drafting of the domestic law and regulation and in the process of harmonization with EU legislation and for implementation of the UNFCCC and Kyoto protocol activities, in particular in preparation of the projects within "clean development mechanism" of the Kyoto Protocol.

Serbian Energy Efficiency Agency (SEEA) was established in 2002 by the Programme of the Government of the Republic of Serbia and was reestablished in 2004 on the base of the Energy Law put in force 1 August 2004. Energy Law defines the establishment (Article 146), duties (Article 147) and beginning date of the regular operation of the Agency (Article 167). Energy Efficiency Agency (www.seea.sr.gov.yu) is formed as special republic organization meaning separate legal entity. The operation of the Agency is financed trough the budget of the Republic of Serbia. The Agency is direct user of the republic's budget. The Agency uses also EU donations (provided through European Agency for Reconstruction) for partly financing of its programmes and projects.

The task of SEEA is to organize and implement activities with the aim to improve energy efficiency and renewable energy sources use. Beside SEEA, the Serbian Government was founded National Programme for energy efficiency, in 2001. The Ministry for science and environmental protection is in charge for the implementation of that Programme.

There are also **five Regional centers for energy efficiency** in Belgrade, Novi Sad, Nis, Kragujevac and Kraljevo.

They were founded by donations of the Government of the Norway Kingdom in order to assist SEEA to implement energy efficiency and RES policy and further promote energy efficiency.

The Serbian Regulatory Authority - Energy Agency of Serbia EAS (www.aers.rs), officially established in June 2005. According to the Energy Law, the Energy Agency of the Republic of Serbia was established as a regulatory body for promoting and directing energy market development based on the principles of non discrimination and effective competition, monitoring the implementation of regulations and energy systems operation codes, adjusting the activities of energy entities in ensuring the regular supply of energy and services to consumers and their protection and equal position as well as other activities stipulated by this Law.

Technical Assistance project financed by European Agency for Reconstruction supported the process of establishment of the Agency. So far, the Energy Agency of the Republic of Serbia approved the methodology on criteria for setting costs for connection to electricity transmission and distribution system as well as methodologies for setting electricity and gas prices for tariff customers, for electricity generation, transmission and distribution as well as for distribution and transport of natural gas and transport of oil and oil derivates. These Methodologies enables transparency in the activities of all regulated energy entities in the area of price setting and unbundling so that cross-subsidies are prevented.

The Regulator has also set tariff systems for regulated activities (including UoS charges), as well as methodologies for calculation of connection charges for electricity. It is responsible for licensing the energy subjects.

Besides the Serbian Government, the important role in the field of energy planning, energy efficiency and renewable energy sources use lies with the Local Governments. According to the Energy Law, local governments are in charge for energy planning and energy balance on a local level. For that purpose it is necessary to establish energy managers on a local level.

The Ministry of Environmental and Physical Planning has the key responsibility in environmental protection:

- Environmental protection systems
- Sustainable use of natural resources
- Environmental protection measures in the process of spatial planning and construction
- Environmental monitoring, information system
- Trans-boundary waste movement
- Transboundary pollution of air and water
- Climate changes and the ozone layer
- Permitting relevant to EIA, ...
- Inspection
- International cooperation

The Environmental Protection Agency was established in 2004 as an institution within the Ministry for Science and Environment. The main functions of the EPA include:

- Management of the national environmental information system/inventories
- Collection and environmental data, reporting on environmental conditions and environmental policy implementation
- Development of procedures for processing and assessment of environmental data
- Updating data on the BAT
- Cooperation with EEA and EIONET

Some other ministries have competences for the environment include Ministry of Agriculture, Forestry and Water Management; Ministry of the Economy and Regional Development; Ministry of Health; Ministry for Infrastructure; Ministry for Mining and Energy; Ministry of Trade and Services, etc.
At the level of the autonomous province - Provincial Directorate for Environmental Protection and Sustainable Development
Water resources management and water quality - Directorate for Water
Municipalities/cities/local level - urban planning, environmental protection, EIA, IPPC, and improvement of the environment and public utilities.
Environmental monitoring - several institutions are responsible:

- The Institute for Nature Protection
- The Hydro-Meteorological Institute (monitoring of the ambient environmental quality)
- The Public Health Institutes (monitoring of local air quality in large urban areas, surface water, drinking water quality and noise)
- Self monitoring by industry and other polluters almost non-exist (besides some exception – one cement factory, several boilers on TPP)

(f) Outlook/ official forecasts of energy supply and demand

The Ministry of mining and energy is in charge for creating, implementation and monitoring of energy policy. Energy policy is pursued through the implementation of the Energy Sector Development Strategy of the Republic of Serbia, the Implementation Programme for that strategy and the Energy Balance (forecast for the next year). The Ministry prepares drafts of these documents for approval by the Government and the Parliament and adopts secondary legislation.
According to the Energy Law, ***the Strategy*** must be adopted by the Parliament at the proposal of the Government of the Republic of Serbia for a ten–year period at minimum. The Strategy shall be adjusted to the Development Strategy of the Republic of Serbia, the Regional Development Strategy of the Republic of Serbia, as well as the Strategy for the Sustainable Use of Natural Resources. The Government of the Republic of Serbia monitors the implementation of the Strategy and as required initiates its adjustment to the actual energy and energy sources needs.
Since there was no strategy for economical and industrial development of the Republic of Serbia and no complete and reliable data on the structure and volume of production activities as well as on the effectiveness of the energy used in production and service activities of the relevant sectors of Serbia, the Ministry of Mining and Energy formulated a base of macroeconomic and demographic parameters and energy indicators relevant t for the determination of the volume and structure of energy needs, as a material support to the described scenarios of economic and industrial development of Serbia by 2015. There are two assumed scenarios of Serbian economic development:

- Prosperous economic development of the country (the PED scenario), in the sense of gradual increase of a moderately high Gross Domestic Product (GDP) growth rate and the industrial value added (IVA), and particularly a favorable effect of economic reforms of the whole Serbian economy, including the favorable effects of the energy sector operation and business activity (in accordance with the Energy Law) aiming to increase the economic effectiveness and energy efficiency of the used energy in all energy consumption sectors.
- Slow economic development of the country (the SED scenario), in the sense of a slower growth of GDP as well as of the industrial value added within which, after the initial declaration of economic development and reforms in the energy sector, positive effects appear in the action of the new Energy Policy, based on the principles of economical and efficient energy use in the production and non production energy consumption sectors. In this scenario, a slower decline in energy intensity is expected, particularly of the final energy in industry, due to the domination of production activities of energy intensive industrial branches of Serbia.

Projections of energy needs of the Republic of Serbia by 2015 have been determined in order to harmonize the existing structure of the final energy in the appropriate consumption sectors with the production capabilities of energy sources, according to the criteria of economical use and increase in the energy use efficiency. Therefore for all consumption sectors, energy needs have been established by a deterministic approach, on the basis of analytical dependency of energy needs of the more influential macroeconomic and industrial development. The energy needs projected in that way have been adjusted later, taking into account the abilities of energy sources and objectives possibilities for investments in new energy sources and programs for the increase in energy efficiency, in final

energy use, as well as in its production, transmission and distribution…

Table 1: Prosperous economic development scenario

	1990.	1994.	1998.	2002.	2003.	2006.	2009.	2012.	2015.
PRIMARY ENERGY PRODUCTION	**9.601**	**8.561**	**8.764**	**7.843**	**8.43**	**9.25**	**9.68**	**11.07**	**11.09**
Coal	7.224	5.873	6.261	5.975	6.63	7.11	7.20	8.48	8.48
Oil	1.068	1.088	0.917	0.667	0.68	0.75	0.95	1.00	1.00
Gas	0.56	0.716	0.564	0.268	0.27	0.32	0.36	0.40	0.40
Hydro potential	0.749	0.884	1.022	0.934	0.85	0.95	1.00	1.01	1.01
Other (Biomass, Geothermal energy, Sun, wind)	0.000	0.000	0.000	0.000	0.000	0.12	0.17	0.18	0.20
NET ENERGY CARRIERS IMPORT	**6.243**	**0.568**	**3.465**	**4.599**	**5.12**	**5.44**	**5.78**	**6.01**	**6.91**
Coal	0.600	0.053	0.150	0.324	0.33	0.40	0.45	0.51	0.57
Oil	4.367	0.000	1.800	2.693	3.09	3.11	3.12	3.30	3.54
Gas	1.700	0.497	1.428	1.417	1.61	1.95	2.18	2.43	2.87
Power	-0.424	0.018	0.087	0.165	0.09	-0.02	0.03	-0.23	-0.07
TOTAL PRIMARY ENERGY(PE)CONSUMPTION	**15.844**	**9.129**	**12.229**	**12.442**	**13.55**	**14.69**	**15.46**	**17.08**	**18.00**
Coal	7.824	5.926	6.411	6.299	6.96	7.51	7.65	8.99	9.05
Oil	5.435	1.088	2.717	3.360	3.77	3.86	4.07	4.30	4.54
Gas	2.26	1.213	1.992	1.685	1.88	2.27	2.54	2.83	3.27
Power	-0.424	0.018	0.087	0.165	0.09	-0.02	0.03	-0.23	-0.07
Renewable sources (hydro power potential + other)	0.749	0.884	1.022	0.933	0.85	1.07	1.17	1.19	1.21
IMPORT DEPENDENCE (%)	**39.4**	**6.22**	**28.3**	**36.9**	**37.8**	**37.0**	**37.4**	**35.2**	**38.4**
POWER PRODUCTION**	**2.762**	**2.427**	**2.729**	**2.567**	**2.65**	**2.91**	**3.00**	**3.42**	**3.42**
TPP	1.912	1.474	1.700	1.609	1.74	1.89	1.93	2.34	2.34
HPP	0.749	0.884	1.022	0.933	0.85	0.95	1.00	1.01	1.01
TPPDHC	0.101	0.069	0.007	0.025	0.06	0.07	0.07	0.07	0.07
POWER GENERATION ENERGY CARRIERS	**7.003**	**5.49**	**6.047**	**5.75**	**6.06**	**6.78**	**6.86**	**8.10**	**8.23**
Coal	6.624	5.383	5.911	5.59	5.71	6.50	6.58	7.86	7.86
Oil	0.123	0.105	0.11	0.12	0.29	0.12	0.12	0.12	0.12
Gas	0.256	0.002	0.026	0.04	0.06	0.16	0.16	0.16	0.25
ENERGY CARRIERS FOR OTHER TRANSFORMATIONS	**-**	**-**	**-**	**4.15**	**4.44**	**4.53**	**4.91**	**5.21**	5.41
Refineries	-	-	-	3.36	3.77	3.68	4.07	4.30	4.54
TPP*	-	-	-	0.54	0.54	0.58	0.60	0.61	0.62
Other	-	-	-	0.25	0.22	0.22	0.24	0.26	0.26
ENERGY SECTOR CONSUMPTION	**0.685**	**0.217**	**0.412**	**0.65**	**0.71**	**0.78**	**0.85**	**0.96**	**1.02**
NON-ENERGY CONSUMPTION	**1.15**	**0.34**	**0.65**	**0.630**	**0.78**	**0.87**	**0.96**	**1.06**	**1.18**
T&D POWER LOSSES	**0.26**	**0.34**	**0.44**	**0.45**	**0.46**	**0.45**	**0.44**	**0.43**	**0.41**
FINAL ENERGY CONSUMPTION(FE)	**9.03**	**4.47**	**6.39**	**6.94**	**7.31**	**8.03**	**8.66**	**9.30**	**10.0**
Industry	3.92	1.52	2.84	2.42	2.39	2.53	2.65	2.80	2.98
Transport	1.82	0.50	1.16	1.58	1.76	1.95	2.13	2.30	2.49
Other (Households, P&C activities, agriculture)	3.29	2.45	2.39	2.94	3.16	3.55	3.86	4.20	4.53
FUEL STRUCTURE									
Solid fuels	1.40	0.69	0.70	0.88	0.91	0.98	1.04	1.11	1.17
Liquid fuels	3.89	0.64	1.86	2.38	2.71	2.88	3.05	3.24	3.44
Gas fuels	1.85	1.20	1.64	1.58	1.52	1.72	1.92	2.13	2.38
Power	1.89	1.93	2.19	2.10	2.16	2.33	2.48	2.64	2.81
New renewable energy sources	-	-	-	-	-	0.12	0.17	0.18	0.20
TRANSFORMATION EFFICIENCY (FE/PE):%	**0.64**	**0.52**	**0.57**	**0.61**	**0.54**	**0.54**	**0.56**	**0.55**	**0.56**
ENERGY INTENSITY (100% in 2003)									
- In primary energy consumption	**77.6**	**82.5**	**88.1**	**98.0**	**100.0**	**96.0**	**89.1**	**85.36**	**77.3**
-In industry energy consumption	**67.7**	**60.0**	**86.1**	**98.0**	**100.0**	**96.8**	**91.2**	**86.5**	**81.1**
-In power consumption	**55.0**	**103.8**	**93.1**	**98.8**	**100.0**	**95.8**	**89.74**	**82.7**	**75.5**
RELATIVE POWER SHARE IN FE (%)	**21.2**	**43.2**	**34.3**	**30.0**	**29.5**	**0.29**	**28.6**	**28.4**	**28.1**

Table 2: Slow economic development scenario

	1990.	1994.	1998.	2002.	2003.	2006.	2009.	2012.	2015.
PRIMARY ENERGY PRODUCTION	**9.601**	**8.561**	**8.764**	**7.843**	**8.43**	**9.10**	**9.52**	**9.65**	**10.90**
Coal	7.224	5.873	6.261	5.975	6.63	7.07	7.15	7.18	8.42
Oil	1.068	1.088	0.917	0.667	0.68	0.75	0.95	1.00	1.00
Gas	0.56	0.716	0.564	0.268	0.27	0.32	0.36	0.40	0.40
Hydro potential	0.749	0.884	1.022	0.934	0.85	0.95	1.00	1.01	1.01
Other (Biomass, Geothermal energy, Sun, wind)	0.000	0.000	0.000	0.000	0.00	0.01	0.06	0.06	0.07
NET ENERGY CARRIERS IMPORT	**6.243**	**0.568**	**3.465**	**4.599**	**5.12**	**5.20**	**5.34**	**5.85**	**6.11**
Coal	0.600	0.053	0.150	0.324	0.33	0.40	0.45	0.51	0.57
Oil	4.367	0.000	1.800	2.693	3.09	3.00	2.96	3.07	3.23
Gas	1.700	0.497	1.428	1.417	1.61	1.86	2.01	2.21	2.54
Power	-0.424	0.018	0.087	0.165	0.09	-0.06	-0.08	0.06	-0.23
TOTAL PRIMARY ENERGY(PE)CONSUMPTION	**15.844**	**9.129**	**12.229**	**12.442**	**13.55**	**14.30**	**14.86**	**15.50**	**17.01**
Coal	7.824	5.926	6.411	6.299	6.96	7.47	7.60	7.69	8.99
Oil	5.435	1.088	2.717	3.360	3.77	3.75	3.91	4.07	4.23
Gas	2.26	1.213	1.992	1.685	1.88	2.18	2.37	2.61	2.94
Power	-0.424	0.018	0.087	0.165	0.09	-0.06	-0.08	0.06	-0.23
Renewable sources (hydro power potential + other)	0.749	0.884	1.022	0.933	0.85	0.96	1.06	1.07	1.08
IMPORT DEPENDENCE (%)	**39.4**	**6.22**	**28.3**	**36.9**	**37.8**	**36.4**	**35.9**	**37.7**	**35.90**
POWER PRODUCTION**	**2.762**	**2.427**	**2.729**	**2.567**	**2.65**	**2.91**	**3.00**	**3.01**	**3.42**
TPP	1.912	1.474	1.700	1.609	1.74	1.89	1.93	1.93	2.34
HPP	0.749	0.884	1.022	0.933	0.85	0.95	1.00	1.01	1.01
TPPDHC	0.101	0.069	0.007	0.025	0.06	0.07	0.07	0.07	0.07
POWER GENERATION ENERGY CARRIERS	**7.003**	**5.49**	**6.047**	**5.75**	**6.06**	**6.78**	**6.86**	**6.90**	**8.23**
Coal	6.624	5.383	5.911	5.59	5.71	6.50	6.58	6.62	7.86
Oil	0.123	0.105	0.11	0.12	0.29	0.12	0.12	0.12	0.12
Gas	0.256	0.002	0.026	0.04	0.06	0.16	0.16	0.16	0.25
ENERGY CARRIERS FOR OTHER TRANSFORMATIONS	-	-	-	**4.15**	**4.44**	**4.55**	**4.75**	**4.94**	**5.11**
Refineries	-	-	-	3.36	3.68	3.75	3.91	4.07	4.23
TPP*	-	-	-	0.54	0.54	0.58	0.60	0.61	0.62
Other	-	-	-	0.25	0.22	0.22	0.24	0.26	0.26
ENERGY SECTOR CONSUMPTION	**0.685**	**0.217**	**0.412**	**0.65**	**0.71**	**0.78**	**0.85**	**0.89**	**0.96**
NON-ENERGY CONSUMPTION	**1.15**	**0.34**	**0.65**	**0.630**	**0.78**	**0.80**	**0.90**	**1.00**	**1.10**
T&D POWER LOSSES	**0.26**	**0.34**	**0.44**	**0.45**	**0.46**	**0.44**	**0.40**	**0.41**	**0.40**
FINAL ENERGY CONSUMPTION(FE)	**9.03**	**4.47**	**6.39**	**6.94**	**7.31**	**7.74**	**8.20**	**8.67**	**9.16**
Industry	3.92	1.52	2.84	2.42	2.39	2.47	2.58	2.69	2.82
Transport	1.82	0.50	1.16	1.58	1.76	1.87	1.97	2.08	2.20
Other (Households, P&C activities, agriculture)	3.29	2.45	2.39	2.94	3.16	3.40	3.65	3.90	4.14
FUEL STRUCTURE									
Solid fuels	1.40	0.69	0.70	0.88	0.91	0.95	0.99	1.04	1.09
Liquid fuels	3.89	0.64	1.86	2.38	2.71	2.82	2.92	3.05	3.17
Gas fuels	1.85	1.20	1.64	1.58	1.52	1.69	1.84	2.00	2.18
Power	1.89	1.93	2.19	2.10	2.16	2.27	2.39	2.52	2.65
New renewable energy sources	-	-	-	-	-	0.01	0.06	0.06	0.07
TRANSFORMATION EFFICIENCY (FE/PE):%	**0.64**	**0.52**	**0.57**	**0.61**	**0.60**	**0.54**	**0.55**	**0.56**	**0.54**
ENERGY INTENSITY (100% in 2003)									
- In primary energy consumption	**77.6**	**82.5**	**88.1**	**98.0**	**100.0**	**98.0**	**93.4**	**88.7**	**88.0**
-In industry energy consumption	**67.7**	**60.0**	**86.1**	**98.0**	**100.0**	**97.1**	**94.40**	**90.9**	**87.2**
-In power consumption	**55.0**	**103.8**	**93.1**	**98.8**	**100.0**	**97.6**	**94.3**	**90.4**	**86.0**
RELATIVE POWER SHARE IN FE (%)	**21.2**	**43.2**	**34.3**	**30.0**	**29.5**	**29.3**	**29.1**	**29.0**	**28.9**

In the defining of the future energy needs of the Republic of Serbia, the following demographic assumptions were adopted in both scenarios of economic and industrial development :

- There will be no significant demographic changes, i.e. in 2015 there will be still around 7.5 million citizens living in Serbia, without the part of the Kosovo and Metohija territory.
- There will be no significant changes in the volume or structure of residential space (around 2.65 million flats), while the office and public buildings will reach around 45 million m2 of space.
- Consumption by households will remain high and will be around 70% of GDP and the highest growth rate in final energy consumption is expected in this sector. with the target change in the structure of energy products.
- The energy sector reform, the price policy based on sustainable development and the stimulating tariff systems will enhance investments in the measures for the increase in energy use efficiency, and by this decelerate the growth in energy consumption, particularly the quality and the imported energy products, in the sectors in which

energy intensity and specific consumption of final energy increased significantly.

Figure 1: Total primary energy supply for optimistic and pessimistic scenario

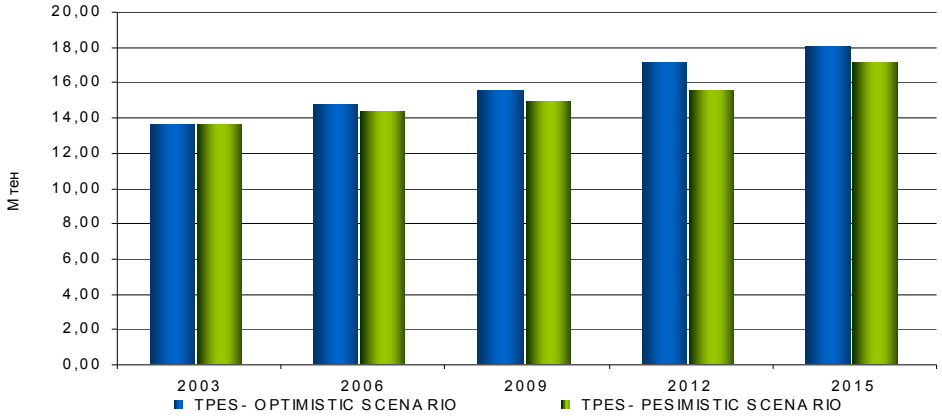

Figure 2: Final energy consumption for optimistic and pessimistic scenario

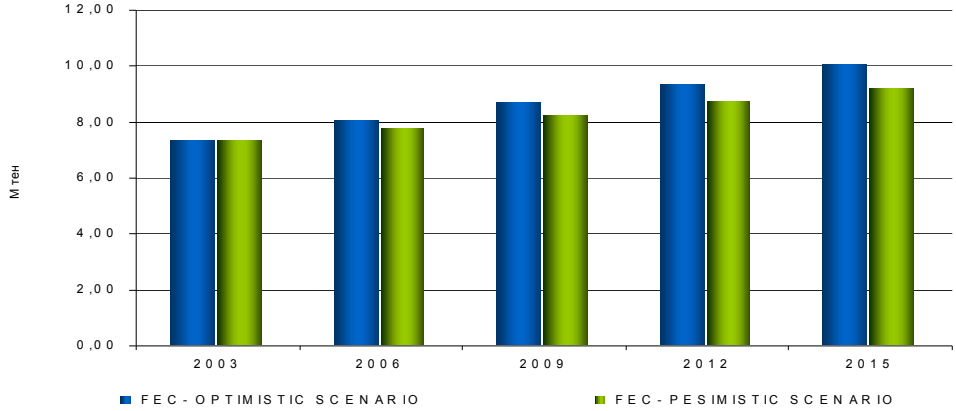

Table 3. Preliminary estimate of the volume and structure of investment in the Priority programs /sectors

Sector	Programs	Volume ($ M)	Implementation/investment subjects
Oil	1st Priority	360	Oil industry, Petrochemical industry
Gas	1st and 2nd Priority	840	Gas economy, chemical industry
Coal - UCE[1]	1st Priority	85	Industry, District heating companies , Private persons
Coal - OP	1st Priority	600	Power industry
Power industry	1st and 2nd Priority	4279	Power industry, EA[2], Private entities
Households	"Gasification" (2nd Priority)	320	Natural gas industry, Local Self-government, Small industry, Consumers
	Total:	6375	
Households	"District heating introduction" (2nd Priority)	280	District heating companies , Municipalities, Consumers
Industry, District heating companies	"Heat losses" (2nd Priority)	330	Industry, District heating companies , Consumers
Households	"Energy saving lamps" (2nd Priority)	20	EPS, Municipalities, Consumers
	Total:	950	
Industry and municipalities	"Biomass" (3rd Priority)	100	Industry, District heating companies , Small companies
Local self-government	"Small HPP" (3rd Priority)	130	Municipalities, Private persons, Industry
District heating companies	"Modernization" (3rd Priority)	120	Municipalities, District heating companies , Small industry
	Total:	350	

[1]UCE - underground coal exploitation; OP - open pit
[2] EA - Energy Agency

(g) Restructuring and unbundling

Public utilities for production of coal, gas and electricity are state-owned, whereas district heating companies are in ownership of local communities. Public enterprise NIS (Naftna Industrija Srbije- NIS) producer of 10 % of oil recently was privatized in that way that Russian Co., Gasprom became owner of 51% and Serbian State 49% of the total shares. Until 2005 there were two largest companies in the Serbian energy sector EPS (Electric Power Industry

of Serbia) and NIS (Petroleum Industry of Serbia). The commitment of the Government of Serbia led by the Ministry of Energy and Mining, was to start with restructuring of the electric power sector and oil and gas sector.
The first phase of restructuring of EPS has realized with separating underground mines, as well as other non-core companies, In 2005, the Government established two separate public companies:

- Public enterprise EPS which is in charge for electricity production and distribution and trade, and
- Public enterprise EMS which is in charge of electricity transmission system operation and market operation

EPS is vertically organized enterprise comprising 11 Economic Associations. EPS is 100% owned by the Republic of Serbia. The number of employees has been drastically reduced from 58,662 in 2001 to less than 35,900 in 2006, including the employees from Kosovo and Metohija.
The Electric Power Industry of Serbia is the largest producer of lignite in the country, with a potential annual production of around 50 million tons. The coal basins of Kolubara, Kostolac as well as Kosovo and Metohija are in the direct vicinity of thermal power plants. Supply and sales of electric power to almost 3.3 million customers on the territory of Serbia (without Kosovo and Metohija) are carried out in the scope of the electric power distribution activities of EPS.

EPS launched the tender, approved by the Government, at the end of 2005, with two lots:

1. Organizational and Financial Restructuring of the company
2. Improvement of Investment Activities

2.1. Selection and attraction of strategic partners for the purpose of completion of TPP Kolubara B construction
2.2 Selection and attraction of strategic partners for the reconstruction projects of Panonske CHPs

According to the Strategy, EPS's first priority was to abandon the inefficient and dangerous mode of operation, by rehabilitating and upgrading its capacities. The ecological projects, after the Treaty EC is put on force, have significant importance-desulphurization, deNOx, reducing the CO_2 emissions etc, are in focus.

Before privatization , during 2005 significant activities in the reorganization sphere of the PE Petroleum Industry of Serbia were performed.
The Law on the abolishment of the Law on the Establishment of the Public Enterprise for exploration, production, processing and trade of oil and natural gas was adopted and the following decisions came into force:

- The Decision on the establishment of the Public Enterprise for the transport of oil by the oil transportation pipelines and oil derivatives by product pipelines ("The Official Gazette of the Republic of Serbia", No.60/05);
- The Decision on the establishment of the Public Enterprise for natural gas transport, storage, distribution and trade ("The Official Gazette of the Republic of Serbia", No.60/05);
- The Decision on the establishment of the Joint Stock Company for exploration, production, processing, distribution and trade of oil and oil derivatives and for exploration and production of natural gas ("The Official Gazette of the Republic of Serbia", No.60/05);

The Joint Stock Company for exploration, production, processing, distribution and trade of oil and oil derivatives and for exploration and production of natural gas, "NIS" a.d. (a.d. – joint stock company) which started working on October 1, 2005 was organized into three branches:

- NIS – NAFTAGAS – the branch for exploration and production of oil and natural gas, underground water and geothermal energy, for engineering in oil industry and for design and construction of the facilities;
- NIS – PETROL – the branch for processing and trade of oil and oil derivatives;
- NIS – TNG – the branch for liquid oil gas production and trade.

Within NIS – PETROL, there are two oil refineries: NIS Petroleum Refinery Pancevo and NIS Oil Refinery of Novi Sad. The annual primary capacities of the refineries are 6, 5 million tones of crude oil. NIS Petroleum Refinery Pancevo has the 5, 0 MT capacity of primary processing and NIS Petroleum Refinery Novi Sad has the 1, 5 MT capacity of primary processing.

Apart from the primary capacities, there are secondary capacities in which further processing of the products gained from the primary oil processing and they represent the qualitative limiting factor for primary capacities. The existing secondary facilities enable the crude oil processing of around 5 Mt.

Oil derivatives trade within NIS – PETROL is performed by NIS PETROL JUGOPETROL and NIS PETROL NAP.

There are around 1250 petrol stations on the territory of the Republic of Serbia; the 487 of them or 39% belong to NIS a.d...

Apart from NIS a.d., many other companies perform energy activities in the oil field in the Republic of Serbia. The most important of them are the following: Lukoil – Beopetrol, Nafta a.d., Petrobart Ltd. Trizon Group, OMV, EKO YU and MOL. There are also many smaller private companies which mainly conduct oil derivatives trade.

PE" Srbijagas", has started to work on October 1, 2005, and performs the activities related to natural gas transport, storage, distribution and trade. Apart form PE "Srbijagas", there are around 30 natural gas distributors which conduct natural gas distribution and they are mainly located on the territory of Vojvodina.

PE "Transnafta" performs the activities related to the oil transport by the oil transportation pipelines and oil derivatives by product pipelines and it has started to work on October 1, 2005.

(h) Access to regional (international) market

In July 2006, the Parliament ratified the Treaty establishing Energy Community.

Due to the market structure of the Serbian power industry, competition (as the most efficient way to keep the prices down) will be pursued at regional and pan-European level. Initial eligibility threshold is 25 GWh/year, but both EPS and future IPPs will be able to bilaterally contract throughout Europe (having ratified the EC Treaty). EAS has introduced eligibility threshold 3 GWh/year from the January 1, 2007 enabling 350 customers to be eligible (so far 38) and increasing level of the market opening to 21%.

Regulated TPA is introduced to networks in order to ensure transparent and non- discriminatory conditions for all players on the market. The Energy Community Treaty fosters further opening of the market as of January 1 2008 and MoME is drafting a Law amendment to facilitate this process.

Technical preparations for market liberalization and regional integration were:
- Large maintenance works and modernization of key power plants - increased generation; increased reliability of power plants; increased security of supply;
- Improved revenue collection;
- Reaching the cost-reflective energy tariffs;
- Investment in the transmission grid and new interconnection lines;
- Investment in new telecommunication and IT system.

One of the first milestones for future regional market in Serbia signed the South East Europe TSO Cross Border Trade (Inter TSO Compensation Mechanism) Agreement. It is expected cross border trade to be an important part of our country's power market going forward. Temporary cross-border capacity allocation rules were applied.

Market Rules and Grid Code are about to be adopted by the EAS. The Market Rules are in compliance with dominant solutions in continental Europe (EU). The market will comprised of bilateral contracts, balancing mechanism, settlement of balance responsible parties, eligible customers that can buy electricity from both domestic and foreign producers, traders and suppliers.

EPS will be able to provide variety of electricity products in the regional market (secondary, tertiary reserves, balancing power, emergency power, base and peak power etc.) due to good generation mix and power plants characteristics. EMS controls the majority of interconnection links; direct links with almost all countries in the region

EMS realizes the largest transit volumes in the region enabling higher security of supply in countries with energy shortages.

After successful UCTE reconnection in October 2004 and associated reconstruction program all electric power utilities in the SEE region consider further new transmission interconnections. Some of the interconnections are just at the concept level, while some projects are just about to start up or already being started up.

One of the aims of the Strategy is to build transport routes of oil and gas and integration into regional and international infrastructure systems. Increase of natural gas consumption, diversification of direction and source supply and achievement of a transit country position, are some of the most important strategic directions in the development of Serbia's energy sector. Therefore the most important project in gas sector are:
- connection to the other gas pipeline systems in the region,
- construction of the underground gas storage.

Construction of main gas pipeline Nis-Dimitrovgrad would ensure another direction of supply connecting Serbian gas pipeline system with the Bulgarian system. This project would increase the security and quality of supply significantly, transit costs would be lower and systematic gasification of Central Serbia connecting Serbian gas pipeline system with the Bulgarian system. This project would increase the security and quality of supply significantly, transit costs would be lower and systematic gasification of Central Serbia would be possible. For this reason, as well as in order to increase the security of supply to our consumers, it is necessary to connect our regional transport system with their counterparts in Romania and Croatia.
Another also very important capital investment in gas infrastructure is the construction of underground gas storage. The realization of this project would enable flat import profile during the year, and therefore lower import and transit costs. Potential location for underground gas storage is already defined in Banatski Dvor where significant financial resources were already invested would be possible. For this reason, as well as in order to increase the security of supply to our consumers, it is necessary to connect our regional transport system with their counterparts in Romania and Croatia.

Another also very important capital investment in gas infrastructure is the construction of underground gas storage. The realization of this project would enable flat import profile during the year, and therefore lower import and transit costs. Potential location for underground gas storage is already defined in Banatski Dvor where significant financial resources were already invested. It is expected that by the end of this year first phase of the underground gas storage will be finished to be able to store 600 million m3 of the gas.

In 2008 Serbian Government sign the agreement with the Government of the Russian Federation to take part in realization of international gas pipe line, so called "Southern Stream", connection Russia with Western Europe. Capacity of the gas pipeline is estimated at the minimum of 10 billion m3 / year. However, final decision was not taken and it could happen that its capacity will be larger.

Also, Serbia is partner in negotiations for construction Pan European Oil Pipeline that connecting Russia with EU countries. It is expected that the decision will be made early 2010 after preparation and adoption of the appropriate investment study.

The Republic of Serbia is in the process of the access to the Energy Charter Treaty and the related Protocol on Energy Efficiency and the related environmental aspects...

(2) ENERGY DEMAND AND SUPPLY

It could be generally concluded, the period from 1990 to 2003 can not be taken as energy consumption and energy production representative period in Serbia. In distinction to other transition countries, there were special factors which had influence to Serbian energy sector: the disintegration of former Yugoslavia, economic sanctions during the period and NATO campaign against Serbia in 1999. Since the economy transition in Serbia started after 2000, the period from 2001 to 2003 was not satisfactory for long term energy analyses.

The absence of regular imports of energy products during the economic sanctions prevented the reliable and full supply of appropriate energy products to the economic sector and citiziens, which directed the consumers to use energy products from domestic production, primarily power and partly the thermal energy from district heating companies. Because of the above mentioned as well as the long period during which the prices were kept low of these energy products (far below the production costs), in addition to a decreased operating safety in the operation of energy sources, all energy industry sectors were also brought to a very unfavorable economic situation, also partly due to a reduced energy production, which was also caused by the damage in vital facilities and systems during the war.

More than 70% of Serbian refinery capacities were destroyed during the NATO bombing in 1999. Estimated damage was more than USD 360 million in the case of "Pancevo Oil Refinery", and USD 320 million for "Novi Sad Oil Refinery". As a result of mentioned destruction of oil refineries imports in crude oil and oil derivatives was liberalized during the period 1999 – 2001. At the same time, efforts were made in order to repair destroyed refineries in Serbia and restore domestic oil industry. Nevertheless, available investments were insufficient for a successful recovery of the Serbian oil industry.

After democratic changes and suspension of the UN sanctions, new Serbian Government inherited a serious problem of high level of illegal activities in the oil sector in 2001. In order to solve problem of the "black market" to introduce standard manipulation of oil products and fiscal order on the market, as well as to make possible the renewal and normal operating of the oil industry, the Government of Serbia adopted **the Decree on Specific Conditions for the Importation and Processing of Crude Oil and Oil Derivates.** At the moment, Government of Serbia is in process of adjustment Decree with EU requirement, and WTO rules.

The relations between energy and economy in Serbia were radically changed over the last ten years. Wars and international isolation have resulted in a sharp decline of the economy. While GDP, industrial production, employment, and incomes rapidly declined, the costs of living increased considerably. Visible trend of economy recovery during the period from1994 to1999, after NATO actions started getting worse again, as it can be seen from the diagram (fig. 1) Gross Domestic Product (GDP), Gross Inland Energy Consumption (GIC) and Final Energy Consumption (FEC).

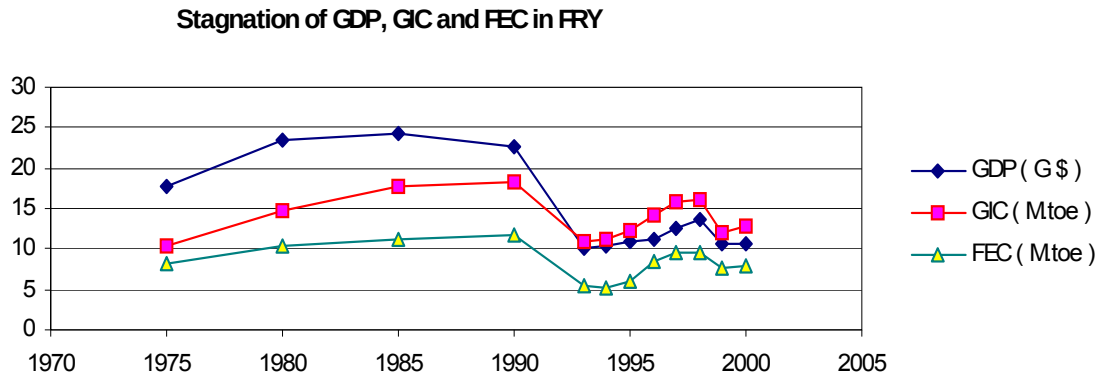

Figure 3. Comparative review of GDP, GIC and FEC in Serbia form 1975 up to 2002

The energy sector was characterized by various kinds of distortions, such as price distortion (mostly caused by subsidies), wrongly allocated resources (due to the past policy to replace other fuels by electricity), poorly maintained and damaged equipment. The electricity consumption has been gradually shifted to household sector during last ten years, so the share of this sector in the total consumption increased from 42 % in 1990. to almost to 58 % in the year 2000, while the industry sector share dropped from 51 % in 1990 to 31.3 % in 2000 due to production decline. Generally, the main reason for increased electricity consumption in the industry was a lack of other fuel carriers due to the sanctions imposed on Yugoslavia, on one side and low electricity price for both industry and household sector on the other side.

During the last ten years, the industrial activity in Serbia generated about 40% of the gross national product; for example: 41% in 1990 and 38% in 1998, and the share of the final energy consumption in industry dropped from about 46% in 1990 to 36% in 1998. Three industrial branches; Iron and steel metallurgy, Basic chemical products and Industry of construction materials consume approximately 50% of total energy used in the industrial sector, although the gross national product from these branches is below 15%. During the last ten years, the production activities in all branches of Serbian industry declined, while industrial energy intensity increased. According to the energy indicators energy, consumption in Serbian industry has very low economic effectiveness, regarding to high energy intensity and relatively low energy efficiency, regarding to higher energy consumption per products, in comparison with a similar production technologies in European countries. In this context there are great potentials for increasing the energy effectiveness through measures for improvement of the efficiency of final energy conversion into useful energy in technology /devices for energy services, as well as by increasing the quality and monetary values of the products.

Only 16% of 2.65 million households in Serbia are connected to district heating system (DHS) and 9% consume heat from autonomous heat sources, using fossil fuels, mainly heating oil and coal. Due to the lack of fuel market during the last decade, use of electricity for space heating was the only choice for many families in the urban areas. In past two years started new projects concerning revitalization and development of DHS in Serbia- e.g. in Belgrade started project: "21,000 household's connection on DHS - Beogradske elektrane" which should decrease electrical energy consumption for space heating (similar projects are conducted in many larger towns in Serbia).

According to the previously presented facts, the main conclusion about energy consumption in the Sector of residential and public/commercial buildings, shows very high specific consumption of thermal energy, due to the very bad conditions of building' envelopes, in many of the old and ruined buildings, and lack of money for investment in rehabilitation of the windows, roofs, insulation etc (e.g. the specific heat flux that is commonly used in design of heating system for residential buildings is 150 to 200 W/m^2). The building stock offers one of the largest potentials for energy savings and once again especially in the heating sector.
In the Transport sector, the main energy consumers are passenger cars and trucks for freight transport of various products and materials. The high energy intensity in this sector arises from the fact that all transportation means are very old and roads are in very bad conditions. Besides, high energy intensity, as well as low economic effectiveness of passengers and goods transportation means, has very high and negative impact on the environment. Transportation sector should be considered in light of development reliable and efficient public transportation in all larger towns of Serbia.

Table 4: Structure of primary energy production (Mtoe)

	2002	**2003**	**2004**	**2005**	**2006**
	7.84	**8.43**	**8.35**	**8.49**	**8.85**
Coal (including lignite)	5.98	6.63	6.48	6.56	7.04
Crude Oil	0.67	0.68	0.66	0.66	0.66
Natural Gas	0.27	0.27	0.24	0.23	0.21
Hydro potential	0.93	0.85	0.96	1.02	0.94
Other (Biomass[3], Geothermal, Solar, Wind)	0	0	0	0	0

Table 5: Structure of primary energy imports (Mtoe)

	2002	**2003**	**2004**	**2005**	**2006**
	4.59	5.12	5.77	5.93	5.82
Coal	0.32	0.33	0.58	0.68	0.96
Crude	2.69	3.09	3.36	3.52	3.23
Natural Gas	1.42	1.61	1.80	1.79	1.66
Electricity	0.17	0.09	0.02	-0.06	-0.02

Table 6: Structure of the primary energy consumption (Mtoe)	**2002**	**2003**	**2004**	**2005**	**2006**
Total primary energy supply	**12.44**	**13.55**	**14.11**	**14.49**	**14.54**
Coal	6.30	6.96	7.06	7.25	7.99
Crude	3.36	3.77	4.02	4.25	3.76
Natural Gas	1.69	1.88	2.05	2.02	1.87
Electricity	0.17	0.09	0.02	-0.06	-0.02
Renewable sources [4](including Hydro)	0.93	0.85	0.96	1.02	0.94

Table 7: Structure of the Final energy Consumption (Mtoe)	**2002**	**2003**	**2004**	**2005**	**2006**
Final Energy consumption					
All sectors	**6.943**	7.31	7.66	7.7	7.36
Industry	2.425	2.39	2.09	2.22	2.59
Transport	1.580	1.76	2.25	1.98	1.78
Residential, public and communal, agriculture	2.938	3.16	3.32	3.17	3.00

Table 8: Structure of the final energy consumption per fuels (Mtoe)	**2002**	**2003**	**2004**	**2005**	**2006**
All Fuels	**6.943**	**7.31**	**7.66**	**7.37**	**7.36**
Solid fuels	0.877	0.91	1.08	0.66	1.10
Liquid Fuels	2.378	2.71	2.79	2.51	2.33
Gaseous Fuels	1.587	1.51	1.06	0.93	0.81
Electricity	2.100	2.16	2.12	2.25	2.16
Heat	-	-	0.62	1.02	0.97

Source: Ministry of mining and energy

Fuel wood is not included into this provisional table. Serbia Statistical Office reports stable use of fuel wood at about 2 million cubic meters per year already for number of years. However, applied statistical methodology does not consider small forests (below 0.05 hectares), orchards, irregular, young and dedicated forests and is largely based on reports from the public company SrbijaSume. For example Statistical Yearbook 2003 reports distribution of land ownership between households reporting considerable possession and use of land for these wood sources. However, this massive use of fuel wood is not considered within the scope of the energy policy that also demonstrates little inter-sector coordination, lack of comprehensive statistics and dominance of the public companies in the energy policy creation.

During the nineties, the Serbian gross domestic product (GDP) has been reduced by about 50 %, while the industrial energy consumption has only been reduced by about 30 %, which means that the energy efficiency of the industry has been significantly reduced. Another important trend the last 10 years is that the consumption of electricity has increased dramatically, mainly in the housing sector. Increased use of electricity for heating purposes is today one of the most serious problems in the Serbian energy system.

The electricity consumption has during the last ten years gradually shifted to the household sector. The share of this sector has increased from 42 % in 1990 to almost 58 % in 2000, while in the industry sector shares has dropped from 51 % in 1990 to 31.3 % in 2000. The main reason for the increased electricity consumption in the household sector was that the electricity price has been heavily subsidised during many years.

Table 9: Energy End Use Price

Types of energy	1990	1995	1999	2000	2001	**2004**
Heavy fuel oil for industries ($/ toe)			299.1	299.1	183.1	**254.8**
Electricity for industries (US cent/ kWh)	3.17	1.57	1.44	0.68	1.16	**2.69 h.r.** **0.89 l.r.**
Electricity for households (US cent/ kWh)	3.24	1.85	1.86	0.93	1.62	**3.07 h.r.** **1.02 l.r.**
Natural Gas for industries ($/ 10^3 m^3)	111.761	121.355	108.0016	114.912	136.52	**255.62**
Steam Coal ($/ ton)	57.08	28.00	28.06	23.73	20.56	**N.A.**

h.r. - high rate electricity, l.r. - low rate electricity

Types of energy	07/16/1996	05/16/1998	08/26/1999	10/16/2000	11/17/2003	2005
Gasoline (US cent/ l)	62.8	61.6	44.89	38.55	54.65	cca 1.1 US$

Source: MoME/SEEA

Serbia's total primary energy supply (TPES) is roughly 15 Mtoe (2005), of which 60% is produced domestically. Imports of crude oil and natural gas account for the rest of TPES. Coal (mainly lignite) dominates TPES accounting for 50%, crude oil about 30%, natural gas 14%, hydropower 7%. Lignite-fired power plants generate two-thirds of Serbia's electricity needs.

Domestic energy production consists of low quality and low density energy with significant environmental impacts (largely related to lignite mining and burning). While import dependence is currently relatively low, the increasing costs of inefficient domestic production could lead to higher energy imports in the future

My current task

My current position in the Ministry of mining and energy is Head of the office for strategic planning. Main objective of the position is to organize, coordinate and manage work within the office for strategic planning and the work with the external consultants; prepare high level business correspondence, reports and presentations for international and domestic events; organize and coordinate the activities regarding the preparation of Energy sector development strategy; organize and coordinate the activities regarding the preparation of Strategy implementation Program; prepare the national energy balance sheet; managing of the projects in the energy field.

(3) MAJOR DIFFICULTIES AND BOTTLENECKS CURRENTLY FACED IN FORMULATING ENERGY POLICIES

- The lack of statistical data. Serbian Statistical office is in the process of establishing energy statistic. Statistics on energy, environment and transport still lack scope and reliability to support the development of strategies and their implementation.
- Available energy data were not reliable enough for period 1990 to 2003. Taking into account irregular economy conditions for energy operation in that period, full and reliable production data base could not be established, especially data base on total import and energy consumption as well as on consumption in each of these sectors.
- The lack of capacity within the Ministry of Mining and Energy and Serbian Energy Efficiency Agency regarding monitoring energy policy.
- There is no adequate Institute as a support to the Ministry of mining and energy in the preparation, implementation and monitor energy policy.
- There is no law on energy efficiency and adequate energy efficiency policy.
- The bases of energy indicators are not yet established. The lack of relevant data as well as lack of capacity is the cause of that.
- The communication between the Ministry and the municipalities should be improved in the field of energy planning. The Ministry has started with the process of establishing energy managers on a local level. The municipalities are not interested and usually they have not capacity.
- It is necessary to adopt and implement EU energy efficiency directives and best practices in particular for building standards, appliance labelling and minimum performance standards, CHP, as soon as possible.
- It is necessary to improve the measures for increasing use of Renewable energy sources.
- The cadastre of renewable energy sources and their potential should be developed with the aim to identify the market potential of RES.

Contact : report@tky.ieej.or.jp