

Basic City Data



Location: Central part of Serbia,
120 km from Belgrade

Latitude: 21 deg East,

Longitude: 44 deg North

Altitude: 173 m,

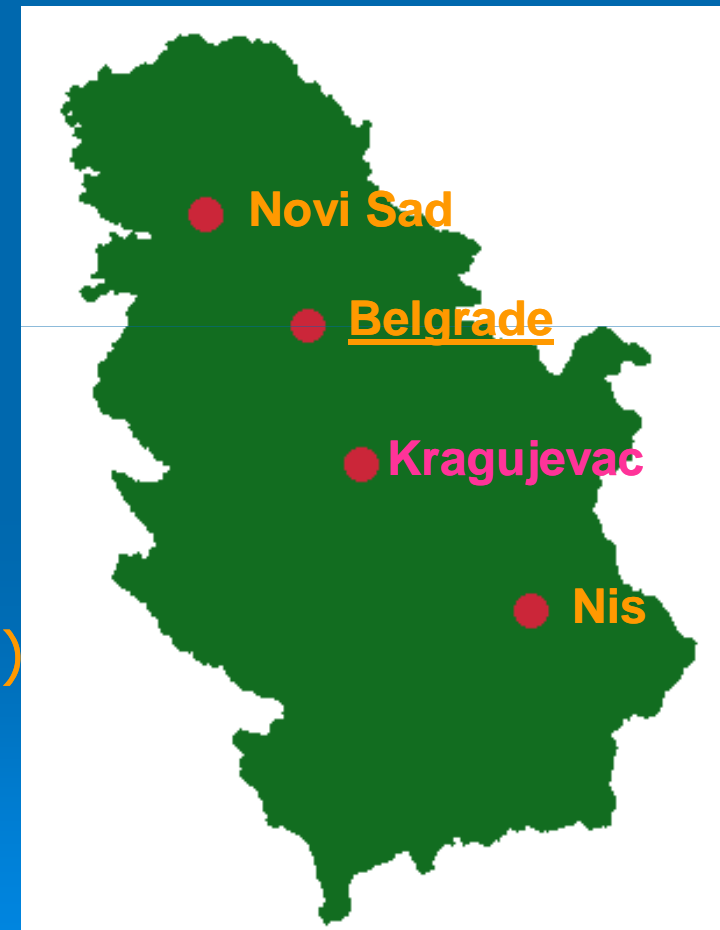
Municipality Area: 825 sq. km

Climate: mild-continental

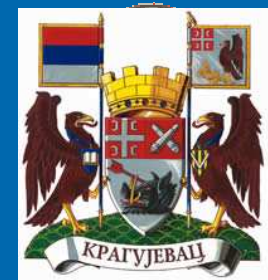
Population: 185,000

Past: First capital of modern Serbia (1818)

Today: Industrial, cultural, educational,
medical center of Central Serbia region.



Panoramic View of Kragujevac



08/10/2009

IRE_Salzburg

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THE SURVIVAL AND PROGRESS OF ANY SOCIETY ARE DOUBTLESSLY DEPENDENT ON ITS ACCESS TO ENERGY

Since the 1950s the question has no longer been **IF**, but **WHEN** the world will run out of fossil fuels.

1973 - **oil shock** placed the issue of **energy security on the world policy agenda**.

Today – energy security **ranks high among foreign policy priorities** in many countries.

Some even see the “gas crisis” as a continuation of the Cold War between Russia and Western Europe waged with different means.

ENERGY SECURITY

Condition in which a nation and all, or most, of its citizens and businesses have access to sufficient energy resources at reasonable prices for the foreseeable future free from serious risk of major disruption of service”.

Is Serbia energy dependent?

Every world energy crisis is inevitably reflected on Serbia.

Serbia's energy dependence registers a moderate growth.

2002 - 37% → 2005 - 43,6% → 2006 - 46.6%

Energy dependence - mostly due to imported oil and natural gas.

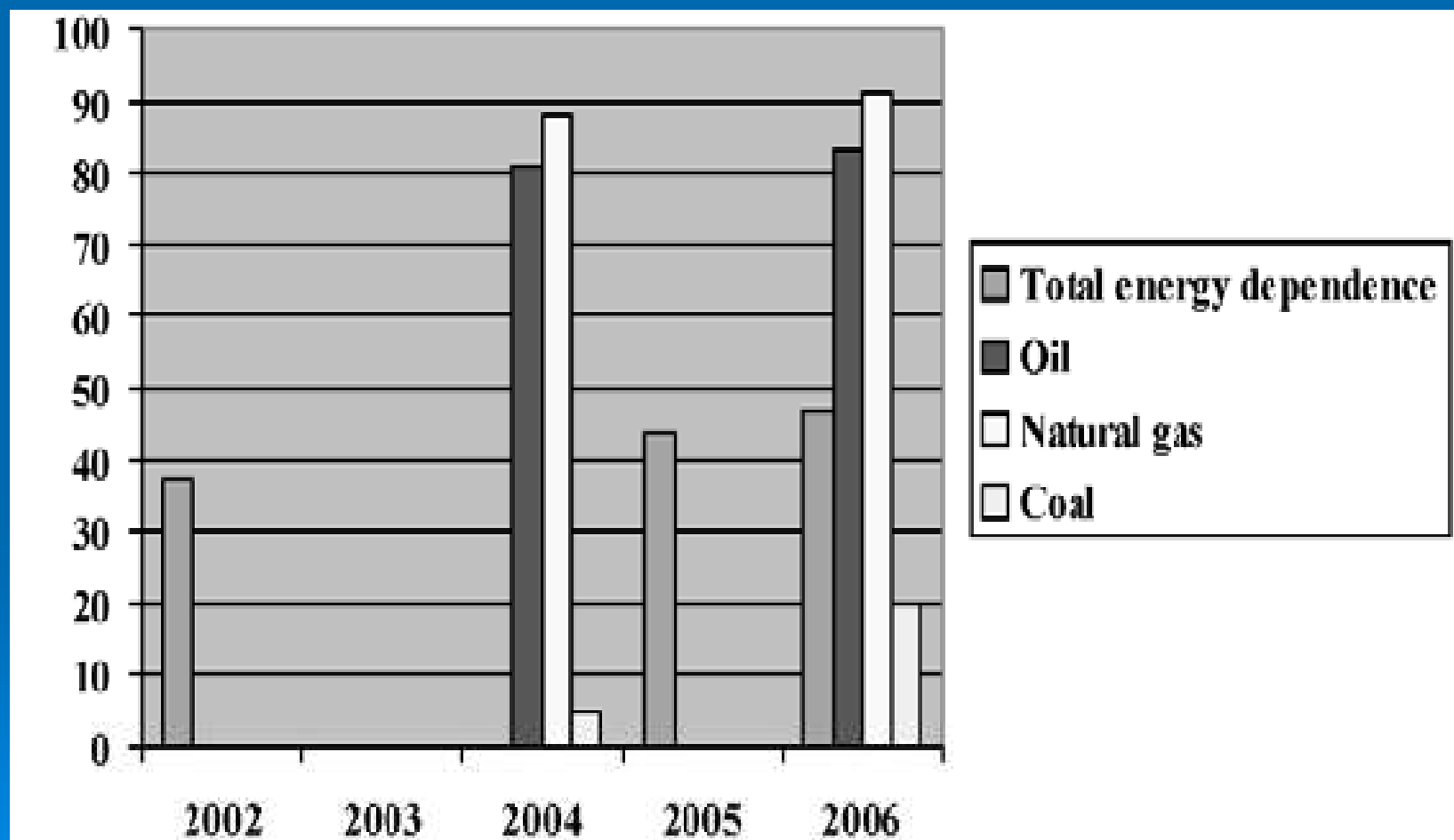
Natural gas: 2004 – 88% → 2006 - 91%

Crude oil: 2004 – 81% → 2006 - 83%

Coal production in Serbia reduces the country's energy dependence (production of domestic coal satisfied more than 90% of Serbia's needs).

Total import dependence on primary energy sources

Energy Balance of the Republic of Serbia, 2004–2006.



Current energy challenges in Serbia

- **High energy consumption in buildings** (above 180 kWh/m² per season - in EU about 100 kWh/m²) with **large share of use of electricity for heating**.
- **Low energy efficiency in industry** with out-dated energy-intensive manufacturing technologies (our industry consumption is 3 times more than world average)
- Technically deteriorated, **energy inefficient and polluting municipal energy supply services**
- **Low exploitation** of the available potential **RES**
- Unsustainable financial operation of energy supply companies due to **energy prices not meeting actual production costs**

Current energy challenges in Serbia – cont.

- **Need for large investments** in the energy sector to improve and modernize energy infrastructure
- **Need to develop** and implement a comprehensive **policy** designed to improve **EE and utilisation of RES**.
- Need for **efficient use of energy in the residential and commercial sectors** (improved cookers, new lighting technology, energy efficient buildings and metering).
- Need for **Improved efficiency in energy supply** (energy generation, transmission and distribution).

High energy dependence and low EE cause difficulties to Serbia's economy and brings out the question

Does Serbia have alternative energy sources? - those not dependent on coal and oil reserves and without negative effects on the environment

Serbia does have the conditions favouring the use of alternative energy sources such as biomass, wind, solar energy, geothermal sources and small water flows.

Energy Development Strategy in Serbia refers to alternative energy sources as a means to achieve EE.

However, energy balance for 2006 offers no data on energy obtained from alternative sources, which indicates that their use is still practically negligible.

In spite of this RES represent the mainstay of Serbia's energy independence for the future.

In the area of infrastructure Serbia faces two challenges:

- How the privatized **Oil Industry of Serbia (NIS)** will go on?
- What will be outcome of competition for the **construction of a new transit gas pipeline** linking the Black Sea ports with Western Europe.

Construction of a pipeline across Serbia's territory would bring **benefits** (secure supply, taxes and fees for the service)

What is an importance of adopting law on rational energy use?

So far in Serbia **energy has been an instrument of social politics**, so the **prices of energy** were and still are **not real ones**. It is not encouraging enough for EE initiatives and usage of RES. (esp. low electricity tariffs)

We **need new frame** defined by law. **Existing regulation does not impose direct responsibility** of all sectors of energy consumption in the light of EE.

Energy management at local level

- **Local communities - important role in the energy sector:**
 - they are producers and distributors of energy (district heating)
 - consumers (public buildings, water supply, heating, etc)
- **Energy Law in Serbia defines energy policy at the local level.** Among the others measures, local governments have the obligation to adopt **Energy Development Plans** which will identify energy needs as well as the conditions and the way of finding necessary energy capacities.
- **Serbian Energy Development Strategy (2007 – 2012)** clearly defines that **local governments have to promote and put into practice measures for EE** at the local level

Some measures:

- **Transfer from electric energy heating to other kind of heating**
- **Modernization of lighting** in all sectors (public, commercial , households)
- **Transfer from flat rate payment** to the payment based on metering
- **Enhancement of thermal insulation** in public, commercial and residential buildings.
- **Cogeneration** (Combined Heat and Power or CHP) - simultaneous production of electricity and heat

Efficiency of cogeneration plant can reach 90% or more. It offers energy savings between 15-40% when compared with the supply of electricity and heat from conventional power stations and boilers.

- **Energy consumption monitoring**
- **Trainings for operators and users.**

MUNICIPAL EE & RES PROJECTS IN SERBIA

A number of activities and projects within the **Strategy Programme 'Energy Efficiency in the Municipal Sector'** have been implemented under the supervision of **EU**, through the **European Agency for Reconstruction (EAR)**, which provided the necessary funds.

- Municipal Energy Management and Planning
- Energy Efficiency in Municipal Services
- Energy Efficiency in District Heating
- Awareness and Dissemination Campaigns

MUNICIPAL ENERGY MANAGEMENT IN SERBIA

(Training, institution strengthening)

Beneficiaries: 46 municipalities – project participants

Project description:

Training course for improving institutional capacity of municipalities in the area of Energy management

Lectures on: methodology of the energy data collection, EE indicators, energy audits and financial analyses, methodology of the municipal energy planning, technical measures, legal framework and energy policy in municipalities.

Results

- 46 municipal energy managers trained.
- Reports on EE indicators for public buildings, district heating systems, water and sewage water systems, street lighting

ENERGY EFFICIENCY IN DISTRICT HEATING

(Demonstration/ Investments Co-financing)

Beneficiaries: Public enterprises in 4 cities
(Pancevo, Kraljevo, Novi Pazar, Subotica)

Project objective:

- to demonstrate possibilities of the modernization of heating systems.

The activities:

- instalment of **heat meters**,
- automatic and **centralized monitoring and control of substations**,
- instalment of **variable flow pumps** in substations,
- instalment of **thermostatic valves** on radiator in flats.

Results:

- Improvement of EE in the selected Buildings Division
- Promotion of the Consumption based billing
- Promotion of modern technologies through exam. of good practice
- Raising Public Awareness of EE

ENERGY EFFICIENCY IN MUNICIPAL SERVICES

Demonstration/ Investments Co-financing

Beneficiaries: Public enterprises in 7 cities

(Leskovac, Uzice, Zrenjanin, Varvarin, N. Knezevac, Bor, Belgrade)

Project description:

- Introduction of **variable speed drives, variable flow pumps** and other EE measures
- Instalment of energy efficient lighting with lighting control

Results

- EE demonstration in water supply systems and street lighting
- Energy savings up to 40%
- Promotion of new technologies through examples of best practice
- Raising awareness about EE



Making Energy Consumption Visible: “Varvarin Energy Clock”

“ENERGY EFFICIENCY DAY” in KRAGUJEVAC

April, 24th, 2009

Participants:

Chief of OSCE in Serbia, Ambassador of Denmark, representatives of European Commission in Serbia, Serbian Ministries, Serbian Chamber of Commerce, SEEA, Standing conference of cities and municipalities, public enterprises, etc.

Agenda:

- Presentation of the project in the area of EE and RES
- Signing Memorandum of collaboration between City of Kragujevac and SEEA and Regional Energy Efficiency Centre

Some EE and RES project realized in Kragujevac

- Establishment of Regional Energy Efficiency Centre
- Instalment of variable speed drives, variable flow pumps and introduction of other EE measures in water supply system.
- Small hydro power plant at lake “Gruza”
- Modernization of district heating systems (replacement of boilers and burners at a few plants, instalment of heat meters, network data updating.
- Memorandum of collaboration between City of Kragujevac and SEEA and Regional Energy Efficiency Centre
- Improvement of EE in the selected public buildings (schools and faculties)
- Solid waste management - Optimization of the vehicles routes
- Instalment of 2 gas generators at Waste water treatment plant
- Education and trainings (TEMPUS, etc)

Ecological Training Courses for Capacity Building of Local Communities in Serbia

IB_JEP-41092-2006 (RS)

Objective: to contribute to the capacity building in the areas of EE and Solid Waste Management at local level in Central Serbia.

- Training courses (for municipal staff, professionals from public enterprises and industry and NGOs).
- Regional ECO Training centre established with new teaching/training facilities (modern audio-video equipment, related software).

Participating institutions:

- University of Technology and Live Science, Bydgoszcz (PL)
- University of Kragujevac
- Association of Local Democracy Agencies (ALDA), Strasbourg
- City of Kragujevac
- City of Bydgoszcz (PL)
- Serbian Energy Efficiency Agency
- Serbian Environmental Protection Agency

**Thank you very much
for your attention**

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