SLOVENIA

SLOVENIA[1]

1. GENERAL INFORMATION

1. General Overview

The Republic of Slovenia is a small European country bordering on the west to Italy and the Adriatic Sea, on the north to Austria, on the east to Hungary, and on the south to Croatia. Its capital is Ljubljana. Before 1918, Slovenia belonged to Austrian and Hungarian empire; from 1918 to 1991 it was part of Yugoslavia. It declared its independence on 25 June 1991 and on 22 May 1992 the country became member state of the United Nations.

Slovenia is a mountainous land. In the north are the Julian and Karavanke Alps, and in the south, the Dinaric Alps. The highest elevation, mount Triglav (2.864 m) is in the Julian range. The climate is moderate, with mean temperatures of 0 °C to 2 °C in January and 18 °C to 19 °C in July. Precipitation varies between 800 mm and 1,200 mm per year, although it can exceed 2,000 mm in some locations.

About 23 percent of the land is arable; about 28 percent consists of meadows and pastures and about 50 percent is forested. The principal rivers are the Sava and the Drava. Slovenia has both mountain glacial lakes – such as the popular tourist resort, Lake Bled – and Karst lakes. At the lower levels, forests consist mostly of beech and oak trees; at higher elevations, coniferous trees predominate. The Postojna Caves, in the Karst, are the third – largest caverns in the world.

Ethnic Slovenes, a South Slav people related to the Croats and Serbs, comprise about 88 percent of the population (see Table 1). About 2.8 percent is Croatian, 2.4 percent Serb, 0.4 percent Hungarian and 0.2 percent is Italian. In the 1990's, about 60,000 refugees from Bosnia and Herzegovina were also living in Slovenia.

TABLE 1. POPULATION INFORMATION

										Growth rate (%)
	1960	1970	1980	1990	1996	1997	1998	1999	2000	1980 to 2000
Population (millions)	1.6	1.7	1.9	2.0	2.0	2.0	2.0	2.0	2.0	0.4
Population density (inhabitants/km²)	78	85	94	99	98	98	99	98	98	0.4
Urban population as percent of total	28	37	48	50	50	50	50	50	50	-
Area (1000 km²)	20.3									

Source: IAEA Energy and Economic Data Base; Data & Statistics/The World Bank.

1.2. Economic Indicators

The economic development of the county after the Second World War was significantly influenced by the centrally planned economy. After a relatively high economic decline, starting in late 70's, economic recession was accompanied with a rather high inflation rate that escalated at the end of 80's into a hyperinflation. After the independence, Slovenia lost the whole market of the rest of Yugoslavia, which contributed almost 35% to the total Slovenian export. The country undertook great efforts to overcome the economic decline. Its exports had to be reoriented to other markets, mostly western ones, which were much more demanding then the former Yugoslav ones. Production has been reorganized in many sectors to match the new standards and market requirements. Unemployment became a severe problem, reaching in 1997 a level of 14.5%. Nevertheless, the undertaken efforts resulted in a stabilization of Gross Domestic Product (GDP) in 1993. In 1994, an economic swing

[1] The Slovenian profile has been updated by the Secretariat, mainly by replacing the statistical information in the Tables with EEDB and World Bank data and updating the international agreements in Section 5.3.

upwards was registered. GDP grew 4.5% (Table 2) and the industrial production had an increase of 8%. Above average growth was seen in tourism, manufacturing, construction and transport. The recent economic expansion was mostly spurred by fast growth of exports, facilitated by a favourable situation on west European markets, and a revival of investment activity.

As seen from the shown indicators, Slovenia is facing many challenges as it develops towards a market economy. Following the split from the former Yugoslavia, new infrastructure, including additional connections to neighbouring countries, may also be required. The Slovenian economy is heavily export oriented and as such very sensitive to any regional or world recession.

TABLE 2. GROSS DOMESTIC PRODUCT (GDP)

	1995	1996	1997	1998	1999
GDP at market prices (current billion US$)	18.7	18.9	18.2	19.6	20.0
GDP growth (annual %)	4.1	3.5	4.6	3.8	4.9
GDP by Sector (%):					
Agriculture, value added	4.64	4.54	4.32	4.18	3.72
Industry, value added	38.48	38.48	38.23	38.5	38.44
Services, etc., value added	56.88	56.98	57.44	57.32	57.83

Source: data & Statistics/The World Bank.

1.3. Energy Situation

Slovenia has rather limited energy reserves (Table 3). The proven and recoverable reserve of low quality brown coal and lignite amount to 190 million tons. Oil reserves are very scarce, 850,000 tons with annual exploitation of 2,500 tons. The estimated hydro reserves of Slovenia are up to 9 TW·h per year, out which 3.5 TW·h are already exploited. Oil and gas are imported entirely. The country is connected to two gas pipelines from Algeria and Russia respectively. In 1998, the energy dependency of the country was 74%.

TABLE 3. ESTIMATED ENERGY RESERVES

Exajoule

	Solid	Liquid	Gas	Uranium (1)	Hydro (2)	Total
Total amount in place	1.59	0.0	0.0	1.20	1.25	4.05

(1) This total represents essentially recoverable reserves.

(2) For comparison purposes a rough attempt is made to convert hydro capacity to energy by multiplying the gross theoretical annual capability (World Energy Council - 1998) by a factor of 10.

Source: IAEA Energy and Economic Data Base.

The severe economic recession and political turbulence that affected the country has also been reflected in the energy sector. The relatively high energy growth rate stabilized in the 80's. The final energy consumption grew during the early 80's with an average yearly growth rate of 2.1% and reached the value 185 PJ in 1987. During the period 1987-1992 the primary energy consumption decreased by 18%. Table 4 shows the historical energy statistics.

A significant share of Slovenian industrial production is very energy intensive such as steel production, aluminium, chemicals, paper industry, building material and manufacturing. In 1987, energy demand of the industry sector accounted for 50% of the total final energy demand, a much higher share than seen in most West European economies. The high energy consumption in industry is also reflected in high energy use per unit of Gross Domestic Product, compared to most West European Countries. Energy use per capita is lower than the average for EU countries. The analysis of specific final energy consumption for Slovenia and the European Union shows that the ratio of final energy consumption to GDP in Slovenia is unfavourable compared to the European Union (Table 5). In 1997, this ratio was 218 toe/mio ECU for Slovenia versus 184 toe/mio ECU for the EU (in 1992).

TABLE 4. BASIC ENERGY SITUATION

Exajoule

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Energy consumption													
- Total [1]	0.142	0.202	0.253	0.238	0.226	0.231	0.247	0.261	0.273	0.278	0.273	0.27	0.29
- Solids [2]	0.084	0.087	0.075	0.070	0.077	0.073	0.071	0.070	0.066	0.070	0.072	0.06	0.07
- Liquids	0.045	0.084	0.083	0.072	0.068	0.082	0.089	0.097	0.115	0.111	0.101	0.12	0.12
- Gases	0.002	0.018	0.030	0.029	0.025	0.024	0.025	0.030	0.029	0.032	0.033	0.04	0.04
- Primary electricity [3]	0.011	0.013	0.064	0.067	0.056	0.052	0.063	0.064	0.063	0.066	0.068	0.06	0.06
Energy production													
- Total	0.085	0.087	0.131	0.132	0.125	0.116	0.124	0.126	0.122	0.126	0.128	0.13	0.13
- Solids	0.075	0.073	0.067	0.065	0.069	0.065	0.062	0.062	0.058	0.060	0.060	0.05	0.05
- Primary electricity [3]	0.011	0.013	0.064	0.067	0.056	0.052	0.063	0.064	0.063	0.066	0.068	0.08	0.08
Net import (import - export)													
- Total	0.056	0.114	0.119	0.106	0.098	0.114	0.121	0.136	0.152	0.158	0.149	0.16	0.16
- Solids	0.009	0.012	0.005	0.005	0.005	0.008	0.007	0.009	0.011	0.009	0.011	0.01	0.01
- Liquids	0.045	0.084	0.084	0.072	0.068	0.082	0.089	0.097	0.113	0.117	0.106	0.11	0.11
- Gases	0.002	0.018	0.030	0.029	0.025	0.024	0.025	0.030	0.029	0.032	0.033	0.04	0.04

[1] Energy consumption = Primary energy consumption + Net import (Import - Export) of secondary energy.
[2] Solid fuels include coal, lignite and commercial wood.
[3] Primary electricity = Hydro + Geothermal + Nuclear + Wind.
Source: IAEA Energy and Economic Data Base; Ministry of Economic Affairs.

TABLE 5. COMPARISON OF SOME INDICATORS WITH EU

Indicator	Region	Unit	1985	1990	1992
Energy Intensity	Slovenia	toe/mio ECU	720	770	811
Energy Intensity	EU	toe/mio ECU	308	286	203
Primary energy consumption per capita	Slovenia	toe/cap	3.09	3.07	2.73
Primary energy consumption per capita	EU	toe/cap	3.2	3.4	3.5

Source: Country Information.

1.4. Energy Policy

The Government of Slovenia laid down its energy policy objectives and main priorities for the development of energy system in its Resolution on the Strategy of Energy Use and Supply of Slovenia (adopted in January 1996) and with the new Energy Law (September 1999). The time horizon tackled in the Strategy was 1995-2020. In the optimistic scenario the GDP will grow 5.4% annually and in the pessimistic one it will have a slower pace at 3.0% annually.

According to high scenario total primary energy demand will grow in the period 1995-2020 by 19% relative to 1995 in the low scenario a drop of – 3.1% is expected. In order to achieve the positive targets the following measures will be required:

- refurbishment and upgrading of the existing generating capacities;
- to make all the necessary incentives for the efficient use of energy;
- energy prices should gradually reach the European level through a new tariff system;
- market liberation for primary energy sources as well as for the power sector in compliance with provisions of the European Union, European Energy Charter and the respective protocols.

The aim of the Energy Law is to ensure conditions for the development of a society with safe, permanent, reliable supplies of energy and its efficient use, and the economical use of renewable energy resources with respect to environment protection. In addition the Energy Act should ensure competition on the energy market under the principle of equality, respect for consumer protection and the implementation of supervision of a reliable and safe supply of energy.

2. ELECTRICITY SECTOR

2.1. Structure of the Electricity Sector

In the past the electric power sector was entirely State owned as well as transmission and distribution of power. Slovenian Electric Utility (ELES) is responsible for the transmission, wholesale purchase and sales of electricity. Electric power is generated in seven dislocated centres, whereas, the distribution retail sales are performed by five distribution companies. ELES is also monitoring the imports and exports of electric power in Slovenia. All companies involved in the power sector operate as independent entities. At this moment in time, institutional and ownership structure is changing, i.e., the power sector will be privatized, whereas the State will keep a fixed share.

For the time being, power sector is state owned, though with the new Energy Act production and distribution will be privatized according to a set time schedule. The main challenge and expectation, as well as concern will be the opening of the European electricity market. The national power sector will be exposed to international competition what might cause pressure to the local supply system. The national energy policy should enable secure and quality energy supply at competitive prices, bearing in mind the environmental issues in terms of reducing hazardous impacts on the environment. In other words the country should stick to the requirements of the Kyoto Protocol (for Slovenia it means reduction of greenhouse gases by 8% in the period of 2008-2012).

2.2. Decision Making Process

The Ministry of Economic Affairs is responsible for the development of the power sector of the country in close contact with the Ministry of Finance. The objective of Slovenia's electricity policy is to supply reliable and cost – effective power. The Slovenian Government has set up a severe programme for energy conversation and efficient use of energy in order to reduce the growing energy needs. According to EU experience it is possible to improve energy efficiency (useful energy/final energy) by 2% per annum when applying appropriate energy efficiency programmes. The following measures will be implemented to achieve a more efficient power system:

- implementation of integral energy planning, global cost minimization and least – cost planning;
- establishing national energy efficiency agencies to promote the efficient use of energy;
- applying new regulations in power sector as well as in construction sector reducing further losses in industry, service and household sectors;
- local energy concepts;
- energy auditing.

The Slovenia Government controls energy prices. As a result of former economic policy in Slovenia, some energy prices, in particular the electricity price, are currently, still lower than the equivalent prices in Western European countries. Current policy aims to allow energy prices to increase and reflect all costs and meet competitive level. To avoid undue economic and social hardship, the increase of energy prices will be introduced over a period of several years. A goal is set to achieve the level of electricity prices prior to taxation that will be comparable to the EU countries and will cover internal and external costs. This goal will apply to all consumer groups of electric power. It is expected that the real electric power prices will gradually grow by 7% per annum in the period of the next five years.

With the new Energy Law the Government made the first attempt to give up the role of the sole regulator in the power sector. This is a crucial decision that will strongly influence the future development of the Slovenian power market. According to the Energy Act, electricity shall be sold on the organized market, which is organized by legal entity, the market organizer. The Government shall determine a public company, which shall perform the distribution of electricity on behalf of the market organizer.

Environmental issues seem to play a major role concerning the further expansion of the power sector. Due to the very small size of the country, there is a rather strong reluctance for new generating capacities. For the time being, there is no firm plan how to fulfil the requirements from the Kyoto protocol, would that be an overall reduction of greenhouse gases or should the country implement the instrument of transboundary trading with the greenhouse gases. The Government will make broad investigations to come up with an optimum solution that may fulfil the environmental expectations as well as to maintain the power sector competitive.

2.3. Main Indicators

In 2000, the Slovenian power system produced 14,370 GW·h. The generation breakdown by type of production was 25% by hydro, 43% by thermal and 32% by nuclear. Table 6 shows the electricity production data and installed capacities. The total installed capacity at the end of 2000 was 2,600 MW(e). The country is undertaking significant efforts to refurbish and upgrade the existing capacities. The largest chain of power plants on the Drava river is undergoing major refurbishment and upgrading, financed by an EBDR loan. Upgrading and refurbishment process is also taking place at the Soèa river hydro chain. Two new gas turbines, each 115 MW(e) will be added to the Slovenian power system within next five years. The only nuclear power plant at Krško is in the process of steam generator replacement (first half of 2000) together with an up rate of 6 percent regarding to existing installed capacity (632 MW(e)). Table 7 shows the energy related ratios.

TABLE 6. ELECTRICITY PRODUCTION AND INSTALLED CAPACITIES

	1970	1980	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Electricity production (TW·h)													
- Total [1]	4.37	7.09	11.20	11.59	10.95	10.61	11.48	11.46	11.51	11.89	12.39	14.01	14.37
- Thermal	1.82	3.86	3.96	3.45	3.93	3.98	3.88	3.86	3.72	4.21	4.36	6.04	6.25
- Hydro	2.55	3.23	2.86	3.44	3.26	2.87	3.20	3.04	3.43	2.90	3.22	3.49	3.58
- Nuclear	0.00	0.00	4.38	4.71	3.76	3.75	4.39	4.56	4.36	4.79	4.81	4.48	4.54
Capacity of electrical plants (GW(e))													
- Total	1.64	1.64	2.36	2.36	2.36	2.36	2.40	2.39	2.39	2.39	2.39	2.58	2.60
- Thermal	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.08	1.08
- Hydro	0.62	0.62	0.71	0.71	0.71	0.71	0.74	0.74	0.74	0.74	0.74	0.83	0.84
- Nuclear	0.00	0.00	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.68	0.68

[1] Electricity losses are not deducted.

Source: IAEA Energy and Economic Data Base; Ministry of Economic Activities.

TABLE 7. ENERGY RELATED RATIOS

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Energy consumption per capita (GJ/capita)	101	107	98	N/A	121	N/A	128	138	144
Electricity per capita (kW·h/capita)	4,935	4,957	5,169	N/A	5,190	N/A	5,498	5,638	5,782
Electricity production/Energy production (%)	96	99	100	N/A	106	N/A	96	99	100
Nuclear/Total electricity (%)	33	34	37	40	36	40	37	34	34
Ratio of external dependency (%) [1]	50	53	50	N/A	62	N/A	56	58	57
Load factor of electricity plants									
- Total (%)	55	54	57	N/A	58	N/A	61	62	63
- Thermal	49	51	49	N/A	48	N/A	58	64	66
- Hydro	52	46	51	N/A	57	N/A	49	48	48
- Nuclear	68	68	79	84	79	86	81	76	77

[1] Net import / Total energy consumption

Source: IAEA Energy and Economic Database; Ministry of Economic Affairs.

Thermal generation has the largest share in electricity generation. This has caused severe impacts on the environment, especially what concerns sulphur emissions. A large desulphurization device was accomplished in 1997 on the largest thermal block in TPP Šoštanj. With the new devices, the SO_2 emission will be essentially reduced.

It is also foreseen to improve and enlarge the transmission and distribution network in the country. Within the long-term plan until 2010, 163 km of 110 kV lines are expected to come in line, 5100 km of 20 kV lines and 1100 km of 400 V lines are anticipated to come into operation with respective control centres.

3. NUCLEAR POWER SITUATION

3.1. Historical Development

Slovenia has one nuclear power plant in commercial operation since 1983, the NPP Krško. The NPP Krško is a pressurized water reactor plant of 632 MW(e), delivered and constructed by Westinghouse, and is jointly owned with the Republic of Croatia. The operational and safety record of Krško NPP is good and complies with all international standards and highest safety requirements. The safety status of the plant has been supervised by the Slovenian Nuclear Safety Administration as well as by international expert missions organized by IAEA, EU, WANO, etc. Apart from power generation, Slovenia has a research reactor TRIGA Mark II used mainly for R&D and for training activities.

3.2. Status and Trends of Nuclear Power

In 2000, the NPP Krško produced 4.54 TW·h or about 37% of total electricity generation of the country. The load factor was 77%. Domestic and international institutions, including IAEA, were involved in safety missions to the NPP and they all rated the level of safety as good and the level is still improving. The designed lifetime is 40 years; Table 8 shows its current status.

TABLE 8. STATUS OF NUCLEAR POWER PLANTS

Station	Type	Capacity	Operator	Status	Reactor Supplier
KRSKO	PWR	676	NEK	Operational	WEST

Station	Construction Date	Criticality Date	Grid Date	Commercial Date	Shutdown Date
KRSKO	30-Mar-75	11-Sep-81	02-Oct-81	01-Jan-83	

Source: IAEA Power Reactor Information System as of 31 December 2000.

3.3. Current Policy Issues

The lifetime of steam generators is slowly phasing out due to tube deterioration, caused by corrosion processes and the Slovenian Government endorsed the replacement. With the replacement of the steam generators the generating capacity will be uprated by 6.6% (42.5 MW(e)). The replacement will enable the plant to reach its design lifetime with the possibility of its extension.

In 1992, the former Ministry of Energy submitted a study on a possible early shut down of NPP Krško. The analysis was a multi-aspect one, concerning legal, political, social, economic, safety, technical, ecological and power system issues. The results clearly showed that an early shut down is not justified by any of the mentioned criteria, as long as the plant is achieving high safety and operational standards. A new nuclear law is under preparation.

3.4. Organizational Chart

The organizational structure of Nuklearna Elektrarna Krško (NEK) is shown in Figures 1 and 2 below.

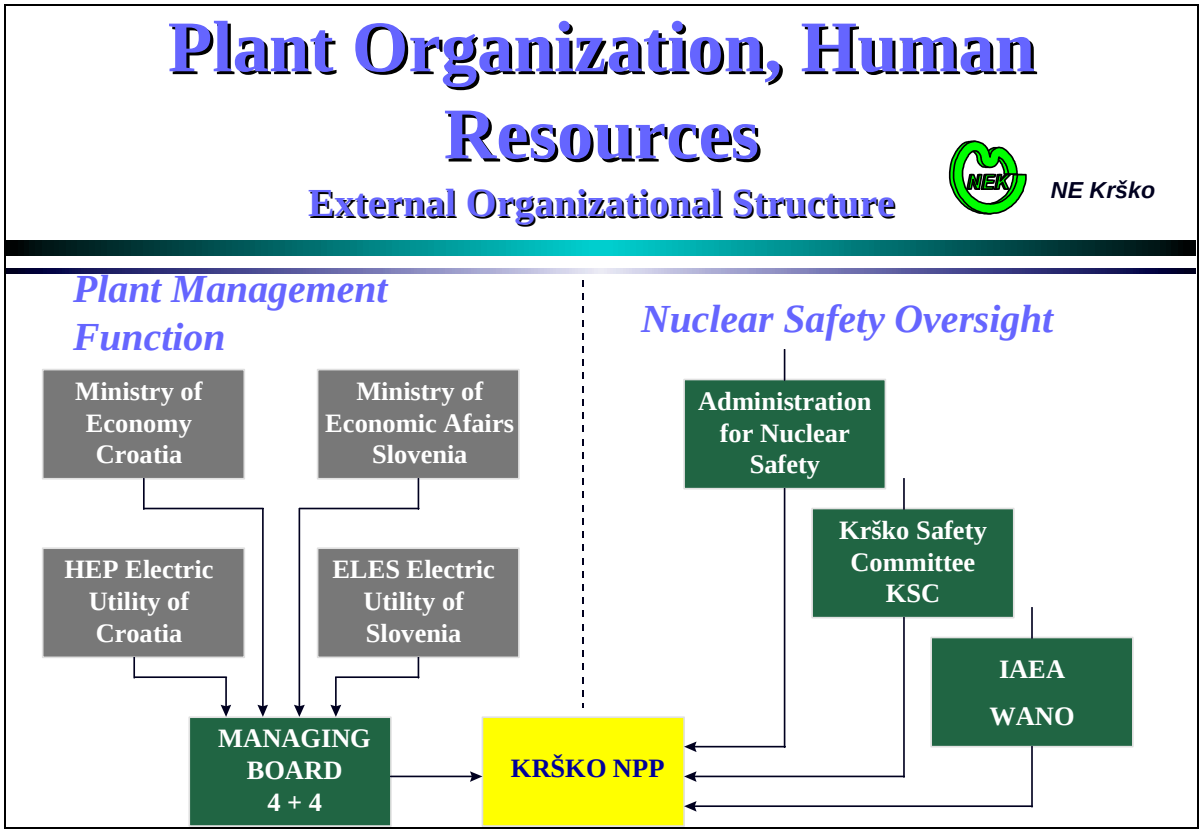

FIG. 1. External Organization Structure

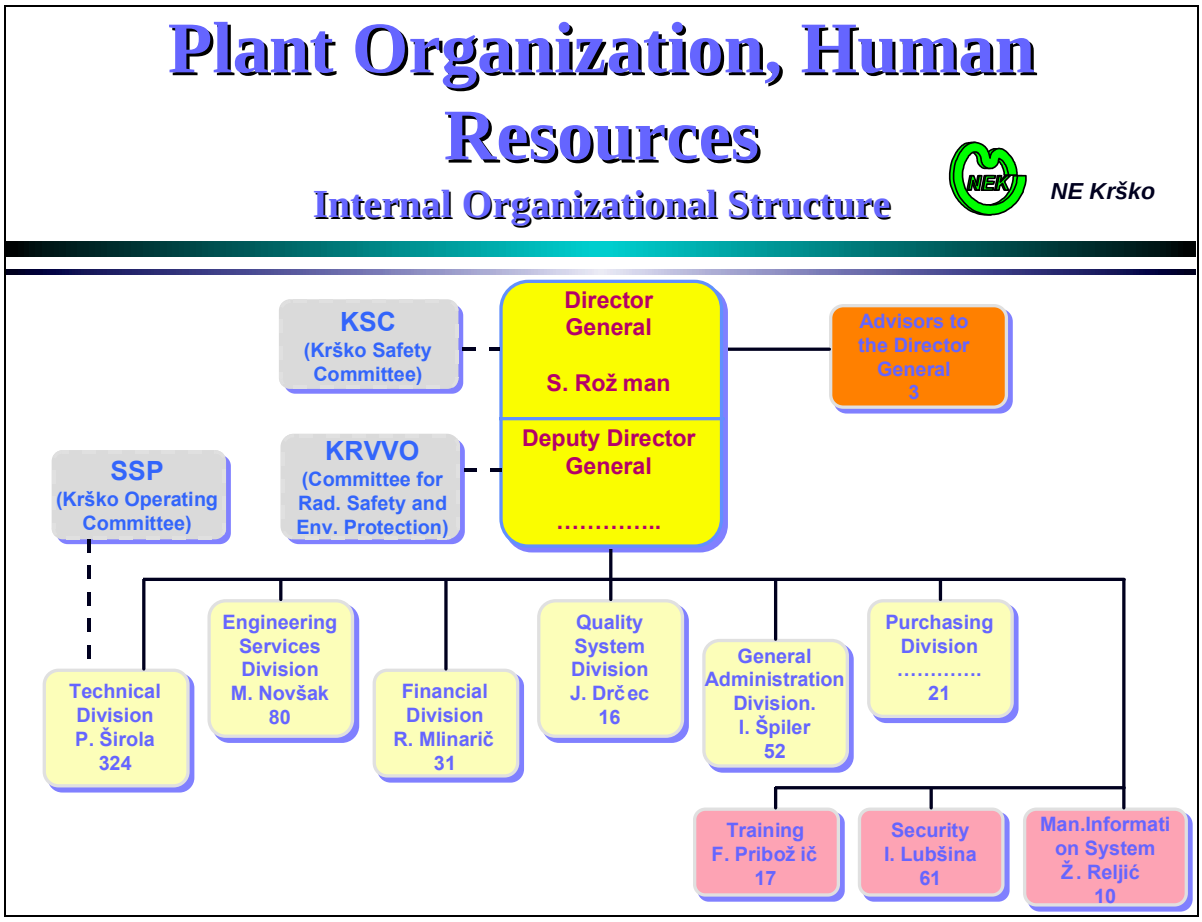

FIG. 2. Internal Organization Structure

4. NUCLEAR POWER INDUSTRY

4.1. Supply of NPPs

There are no suppliers of NPPs in Slovenia. The only plant is the Krsko unit, which was imported from the USA.

4.2. Operation of NPPs

The Krško plant, the only NPP in Slovenia, has been in commercial operation since 1983. The unit is essential to electricity production in Slovenia. Eventually, the present Slovenian government envisions, that nuclear power will not be used after NPP Krško is closed. However, operation of Krško to the year 2023 is one of the long-range energy considerations.

4.3. Fuel Cycle and Waste Management Service Supply

A long-term decision on disposition of spent fuel has not been made. One possibility is that a number of small countries will agree on a regional storage facility. This decision has not yet been made. In 1996, the government of Slovenia adopted a long-term strategy for spent fuel management. This strategy observed that the unresolved question of joint ownership with Croatia included the cost of spent fuel disposition. Until that is settled, a final decision cannot be made. The short-term strategy includes storage in the pool, expanded if possible, and possibly using dry cask storage at the Krško site.

Spent fuel elements are stored at the power plant in the spent fuel pool which has enough space for 17 refuellings and the entire reactor core (121 fuel elements) as a permanent available reserve if, for any reason, it would be necessary to empty the reactor core. The capacity of the spent fuel pool is therefore sufficient for the storage of used fuel elements until the end of year 2003. The plant operator is making great efforts to increase the duration of the fuel cycle and to achieve better efficiency by improving the nuclear core design.

In the area of radwaste policy, there were no significant changes. The waste from the plant is temporarily stored on site pending selection of the final low- and intermediate-level waste repository.

4.4. Research and Development Activities

The Institute Jozef Stefan is the largest scientific and research institution in the country with over 740 staff, active in nuclear physics, solid state physics, chemistry, reactor physics and engineering, energy and process control. The facilities include a research reactor and a laboratory for nuclear spectroscopy based around a 2 MV Van de Graaff accelerator, which continues to receive assistance through the TC Programme. The Institute also operates a Nuclear Training Centre in premises completed in 1988. It provides training for NPP Krško personnel, organizes radiological protection courses and carries out public information activities. The Centre also regularly organizes and hosts training activities and workshops for the IAEA. The Institute plans to establish a multi-purpose irradiation facility with TC assistance.

The Institute Jozef Stefan has been operating a 250 kW(th) TRIGA Mark II research reactor since 1966. In 1992, the reactor was refurbished including the core, electronics and electrical systems and ventilation, and upgraded with 2 MW(th) pulsed mode capabilities. In August 1999, 219 spent fuel elements were returned to the USA which financed the operation. About 60 fuel elements remain in the core with about 20 fresh fuel elements in reserve. A new fuel element storage area is nevertheless available. At the end of the 1980s, the reactor was operating some 4,000 hours a year and producing isotopes for medical use. The decline of the research and the reduced cost effectiveness of producing isotopes for medical applications locally has meant a substantial reduction in reactor use.

Current applications are neutron activation analysis (NAA), operator training, neutron radiography, and research.

4.5. International Co-operation in the Field of Nuclear Power Development and Implementation

Slovenia was admitted to full membership of the IAEA in 1992. Co-operation with the IAEA covers a wide range of activities, of which the most important are:

- Preparation of International Conventions;
- IAEA missions to Slovenia;
- Technical co-operation including attendance of Slovenian experts on Agency's sponsored seminars and training courses, scholarship, scientific visits, research contracts;
- Co-operation with the EU Commission's PHARE programme on nuclear safety;
- Bilateral co-operation with national administrative agencies for nuclear and radiological protection and the use of nuclear energy.

5. REGULATORY FRAMEWORK

5.1. Safety Authority and the Licensing Process

Safety Authority and the Licensing Process

The Slovenian Nuclear Safety Administration (SNSA) is responsible for nuclear safety, trade of nuclear and radioactive materials, safeguarding nuclear materials and conducting regulatory process related to liability for nuclear damage, qualification and training of operators at nuclear facilities, quality assurance and inspection of nuclear facilities.

The SNSA is a part of the Ministry for Environment and Regional Planning. In accordance with the recommendations of the International Atomic Energy Agency, the SNSA is not supposed to promote nuclear power, therefore it is independent from the Ministry of Energy, which is in charge of power utilities.

The major nuclear facility supervised by the SNSA is the NPP Krsko. Besides the NPP, the TRIGA Mark II research reactor of 250 kW thermal power operates within the Reactor Centre of the Jozef Stefan Institute. There is an interim storage of low and medium radioactive waste at the Reactor Centre site. Also the closed uranium mine Zirovski Vrh was supervised by the SNSA.

Activity of the Slovenian Nuclear Safety Administration

The activities of the SNSA cover four main areas:

- systematic issues and international relations;
- nuclear safety;
- nuclear materials;
- inspection.

At the legislation level, the SNSA continuously works on the preparation of a new Slovenian law on nuclear and radiological safety and a new Slovenian law on liability for nuclear damage. A standing committee set up by IAEA is preparing draft changes to the Vienna convention.

The SNSA sector for inspection of nuclear facilities supervises in accordance with its competence the management of nuclear facilities. It abides by the effective legislation, standards, technical specifications and other regulations relating to the enforcement of all nuclear safety measures regarding the siting, design and construction, the installation of systems and components, functional and drive tests, trial run, operation, verification of the work quality and built-in material,

emergency planning and preparedness, verification of personnel qualification, responsible for the plant operation, maintenance, audits, overhauls and safety equipment modifications, the accounting of nuclear materials and the responsibility of nuclear damage.

5.2. Main National Laws and Regulations

In the process of establishing sovereign and independent state the Constitutional Law on the Enforcement of the Basic Constitutional Charter on the Autonomy and Independence of the Republic of Slovenia was passed, which provides that all those laws which in the past had been passed by the former Yugoslav (federal) authorities, and which do not conflict with the Slovenian legal system, remain in force also in the Republic of Slovenia until adequate laws are passed by the Slovenian Parliament.

Among other acts and laws which were adopted in the Slovenian legal system is also the one related to nuclear safety in the ex-Yugoslav Act on Protection Against Ionizing Radiation and Special Safety Measures in the Use of Nuclear Energy, (referred to hereafter as 1984 Act) and 15 regulations based upon this law.

The legal basis for regulating framework in the field of nuclear safety and inspection control (function) on nuclear installation are given by:

- Act on Organization and Field of Activity of the Administration;
- Act on Government of the Republic of Slovenia;
- Act on Energy Economy;
- Act on Protection Against Ionizing Radiation and Special Safety Measures in the Use of the Nuclear Energy (1984 Act);
- Constitutional law on the Enforcement of the Basic Constitutional Charter on the Autonomy and the Independence of the Republic of Slovenia;
- Regulations based on 1984 Act.

Since the 1984 Act was adopted, several very important regulations for carrying out nuclear safety provisions of this act have been prepared and adopted. Most of them concern radiation protection:

- monitoring of radioactivity in the environment;
- monitoring of radioactivity around nuclear facilities;
- storage and disposal of radioactive waste;
- trading and utilization of radioactive materials;
- qualification of persons who work with ionizing radiation sources;
- dose limits for the members of the public and for occupational exposure;
- application of sources of ionizing radiation for medicine;
- limiting activities for trade of foodstuff;
- limiting activities for radioactive contamination and decontamination;
- records and accounting of sources, doses to population and workers;
- conditions for siting, construction, commissioning;
- trial operation of nuclear facilities, format and scope of safety reports, qualifications and tests required for operators.

5.3. International, Multilateral and Bilateral Agreements

The Republic of Slovenia accepted succession of the following treaties to which the former Socialist Republic of Yugoslavia was a party:

AGREEMENTS WITH THE IAEA

• Amendments of Article VI &XIV.A of the IAEA Statute	Ratified:	3 April 2000
• NPT related agreement INFCIRC No:538	Entry into force:	1 August 1997
• Additional Protocol	Entry into force:	22 August 2000
• Improved procedures for designation of safeguards inspectors	Accepted	
• Supplementary agreement on provision of technical assistance by the IAEA	Not signed	
• Agreement on privileges and immunities	Entry into force:	21 September 1992

OTHER RELEVANT INTERNATIONAL TREATIES.

• NPT	Succession:	7 April 1992
• EURATOM	Non-Member	
• Convention on physical protection of nuclear material	Entry into force:	25 June 1991
• Convention on early notification of a nuclear accident	Entry into force:	25 June 1991
• Convention on assistance in the case of a nuclear accident or radiological emergency	Entry into force:	25 June 1991
• Vienna convention on civil liability for nuclear damage	Succesion:	25 June 1991
• Paris convention on third party liability in the field of nuclear energy	Accession:	16 October 2001
• Joint protocol	Entry into force:	27 April 1995
• Protocol to amend the Vienna convention on civil liability for nuclear damage	Not signed	
• Convention on supplementary compensation for nuclear damage	Not signed	
• Convention on nuclear safety	Entry into force:	18 February 1997
• Joint convention on the safety of spent fuel management and on the safety of radioactive waste management	Entry into force:	18 June 2001

- ZANGGER Committee — Non-Member
- Nuclear Suppliers Group — Non-Member
- Nuclear Export Guidelines — Not adopted
- Acceptance of NUSS Codes — Accepted
- Partial Test-Ban Treaty — Non-Party

REFERENCES

[1] Strategy of Efficient Energy Use and Supply of Slovenia, Ministry for Economic Activities, Republic of Slovenia, Ljubljana, (May 1994).

[2] Operation of Nuclear Facilities in Slovenia, Annual Report 1993, Slovenian Nuclear Safety Administration, Ljubljana, (1994).

[3] Energy Data Profile by World Energy Council, Slovenian National Committee, Ljubljana, (April 1993).

[4] Data & Statistics, the World Bank, www.worldbank.ord/data.

[5] IAEA Energy and Economic Data Base (EEDB).

[6] IAEA Power Reactor Information System (PRIS).

Appendix

DIRECTORY OF THE MAIN ORGANISATIONS, INSTITUTIONS AND COMPANIES INVOLVED IN NUCLEAR POWER RELATED ACTIVITIES

NATIONAL ATOMIC ENERGY AUTHORITY

Slovenian Nuclear Safety Administration Ministry of Environment and Physical Planning Vojkova 59 SI- 1113 Ljubljana, Slovenia	Tel: +386-61-172 1100 Fax: +386-61-172 1199 Telex: 39437 URSJV SI http://www.sigov.si/ursjv/index.html
Agency for Radioactive Waste Management	http://www.sigov.si/cgi-bin/spl/arao/sarao.html

NUCLEAR RESEARCH INSTITUTES

Jozef Stefan Institute Jamova 39 61000 Ljubljana, Slovenia	Tel: +386 61 159 199 Fax: +386 61 161 029 http://www.ijs.si/
Reactor Centre Podgorica	http://www-rcp.ijs.si/index-e.html

ENERGY RESEARCH INSTITUTE

Milan Vidmar Institute for Power Economy and Electrical Industry Hajdrihova 2 61000 Ljubljana, Slovenia	 Tel: +386 61 1250 333 Fax: +386 61 1250 341

OTHER NUCLEAR ORGANIZATIONS

NPP Krsko Vrbina 12 68270 Krsko, Slovenia	 Tel: +386 608 21 621 Fax: +386 608 21 528
Slovenian Electric Utilities - ELES Hajdrihova 2 61000 Ljubljana, Slovenia	 Tel: +386 61 216 405 Fax: +386 61 219 389
Milan Copic Nuclear Training Centre Ljubljana	http://www2.ijs.si/~icjt/
Nuclear Society of Slovenia (NSS)	http://www.drustvo-js.si/index_eng.htm

OTHER ORGANIZATIONS

University of Ljubljana	http://www.uni-lj.si/
University of Maribor	http://www.uni-mb.si/
IJS Science Information Centre	http://libra.ijs.si/
Ljublijana Technology Park	http://www.tp-lj.si/documents/default.htm
Academic and Research Net Work of Slovenia	http://www.arnes.si/english/