Czech Republic

(Updated July 2010)

1. GENERAL INFORMATION

1.1 Country overview

The Czech Republic (CR) is together with Slovakia the successor country of former Czechoslovakia, which was divided on January 1, 1993. On May 2004 the Czech Republic joined the European Union. The country is a member of many international organizations, among others the IAEA the OECD (since 1995), NATO (since 1999).

1.1.1 Governmental System

The Czech Republic is democratic country with parliamentary regime. The head of the state is the President but the Government (Cabinet) is headed by the Prime Minister who has the main executive power. The Parliament has two chambers: Chamber of Deputies and Senate.

1.1.2 Geography and Climate

The CR is a relatively small country of 79 thousand km^2 consisting mostly of two historic regions of Bohemia and Moravia. The country's topography is quite varied from plains, hills to highlands and mountains, and regions in the range from 200 to 500 m above sea level make up about 74% of the country. The country is situated in the centre of Europe and borders Austria to the south, Germany to the west and northwest, Poland to the northeast and Slovakia to the southeast (see Figure 1).

The country has a mild climate influenced mainly by west wind from Atlantic Ocean.

FIGURE 1: Map of the Czech Republic

1.1.3 Population

Czech Republic has a population of 10.5 million inhabitants at the end of 2009. Three quarters of the population live in urban areas. The population density is approximately 133 inhabitants per sq. km. The population after decline in 90th is slightly raising but it is expected to decline again.

TABLE 1: POPULATION INFORMATION

	1970	1980	1990	2000	2001	2002	2003	2004	2005	2010
Population (Millions)	9.8	10.3	10.3	10.3	10.2	10.2	10.2	10.2	10.2	10.5
Population Density (Inhabitants/km^2)	124.3	130.4	130.7	130.2	129.6	129.3	129.4	129.4	129.8	
Area (1000 km^2)		78.9								

1.1.4 Economic Data

The development of the Czech economy after the year 1989 has been characterized particularly by the process of the economic reform. The reform has been finished during 90th and continued in less substantial changes (in some areas) until 2004 when full membership of EU has been reached. GDP development in USD is in Table 2, but a better picture can be given in local currency because of rapid changes in exchange rates.

TABLE 2: GROSS DOMESTIC PRODUCT

	1980	1990	2000	2005	2006
GDP (Millions of Current US$)	29.1	34.9	50.8	125.0	143.0
GDP (Millions of Constant 2000 US$)	28.4	34.9	56.7	68.3	72.5
GDP Per Capita (Current US$/Capita)	2,830	5,336	5,521	6,675	7,056

Source: IAEA Energy and Economic Database.

1.2 Energy Information

1.2.1 Estimated available energy

The country has almost no gas or oil and very limited hydro resources. (see Table 3).

TABLE 3: ESTIMATED AVAILABLE ENERGY RESOURCES

	Fossil Fuels			***Nuclear***	***Renewables***	
	Solid	**Liquid**	**Gas**	**Uranium**	**Hydro**	**Other Renewable**
Total Amount in Specific Units*	106.21	0.46	0.14	3.82	1.16	111.80

(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 - 2002) by a factor of 10.

Source: IAEA Energy and Economic Database.

1.2.2 Energy Statistics

General energy balance (energy statistics) is in the Table 4 (for electricity see table 5). Both primary and final energy consumption have decreased in 2005 (latest final data) in comparison to 1990. The year 1995 can be taken as a bottom of U-curve i.e. bottom of economic activity after restructuring.

The structure of the consumption has changed. Brown coal remained the main source of the energy. It still covers almost 50% of the primary energy sources. But in absolute numbers its use has decreased by about 30% in comparison to 1990. Both

import of crude oil (mainly for transport) and natural gas has increased mainly as result of road transport expansion and replacement of coal by gas for heating. An increase in “Primary heat and electricity” (mainly nuclear) 2002 – 2004 is a result of commissioning of Temelin NPP.

INDICATOR [PETA-JOULES]	**1990**	**1995**	**2000**	**2002**	**2004**	**2005**	**2006**
ENERGY PRODUCTION TOTALS	1 730.5	1 409.8	1 246.7	1 258.2	1 350.6	1 343.0	1363.8
Solid fuel	1 571.7	1 253.6	1 078.4	1 029.0	1 037.9	1 045.8	1056.0
Liquid fuel	2.1	6.1	7.4	11.1	14.1	13.3	12.1
Gaseous fuel	8.4	8.6	7.1	4.8	6.8	6.5	6.2
Primary heat and electricity	148.4	141.5	153.8	213.3	291.8	277.	289.6
IMPORT TOTALS	592.1	726.1	728.3	785.3	785.7	840.7	880.9
Solid fuel	45.3	63.3	45.0	46.5	61.6	43.7	74.9
Liquid fuel	317.1	350.7	333.5	367.5	383.0	428.4	423.7
Gaseous fuel	209.8	270.0	318.3	337.1	306.5	324.4	341.0
EXPORT TOTALS	158.9	397.3	338.5	345.9	333.5	329.5	365.5
Solid fuel	105.1	341.0	229.7	218.5	207.3	196.2	232.7
Liquid fuel	21.8	33.6	39.9	50.3	28.2	36.1	36.0
Gaseous fuel	24.1	0.0	1.5	1.9	6.1	7.1	10.0
NET IMPORT (IMPORT – EXPORT)	433.2	328.8	389.8	439.4	452.2	511.4	515.5
Solid fuel	-59.8	-277.7	-184.7	-172.0	-145.7	-152.5	-157.8
Liquid fuel	295.3	317.1	293.6	317.2	354.8	392.3	387.8
Gaseous fuel	185.7	270.0	316.8	335.2	300.4	317.3	331.0
GROSS CONSUMPTION OF PRIMARY ENERGY RESOURCES (TOTAL)	2 076.1	1 749.7	1 656.7	1 704.8	1 849.5	1 855.7	1878.7
Solid fuel	1 348.2	1 005.8	906.4	887.3	907.6	899.4	914.9
Liquid fuel	355.5	321.6	314.7	313.3	371.4	389.8	390.9
Gaseous fuel	226.4	279.3	317.8	331.9	335.4	334.6	328.9
Primary heat and electricity	146.0	143.0	117.8	172.3	235.1	231.9	244.0
FINAL CONSUMPTION (TOTAL)	**1 303.2**	**1 091.3**	**1 002.6**	**1 036.8**	**1 118.8**	**1 130.8**	**1146.9**

Source: Czech Statistical Office

TABLE 4. Energy Statistics

1.2.3 Energy policy

The State Energy Policy of the CR has been prepared by the Ministry of Industry and Trade as an official document with a horizon of the next 30 years and approved by

the Czech Government in March 2004. The Energy Policy specifies a comprehensive set of priorities and long-term goals taking into account energy, environmental, economic and social aspects (see http://www.mpo.cz/dokument12265.html). A new version of the energy policy has been elaborated in 2009 and at moment (Feb. 2010) is in intergovernmental discussion.

1.3 The electricity system

1.3.1 Electricity policy and decision making process

As the energy sector is mostly privatized, there is no special electricity policy – parts of energy policy can be interpreted as electricity policy and decision making process is grounded on decision of individual companies inside of legal and institutional frame which is describe below.

The energy sector has been privatized and is now in a standard business shape. The state still owns about 64% of shares of ČEZ, the major energy production and distribution company. In a long-term perspective, the state influence in the energy sector is anticipated, only, in a form of indirect measures (legislation, pricing, tax), regulating natural monopolies in particular industries and of course assuring energy security (mainly by management of ownership rights).

The legislative background is as follows:

- The Act on Business Conditions and Public Administration in the Energy Sectors (**Energy Act** No. 458/2000 Coll. in latest novelty Act 158/2009 Coll.) establishing a new regulatory regime regulates the business in the electrical power sector. According the Energy Act, the electricity generation, distribution, transmission and electricity trading is subject of licensing. Support for cogeneration of electricity and heat in form of duty to buy the produced electricity and its financial support is stated also there. The Energy Act introduces the market environment, opens the electricity and gas markets and establishes relevant institutions: the Energy Regulatory Office (ERO, www.eru.cz), the Electricity Market Operator (EMO, www.ote-cr.cz) and State Energy Inspection (www.cr-sei.cz/sei_en.htm).
- Energy Management Act (The Act No. 61/2008 Coll.) stipulates the rights and obligations of natural and legal bodies in the management of energy, in particular electricity and heat, as well as gas and other fuels. It shall contribute to the economical use of natural resources and protection of the environment, as well as to more efficient use of energy, enhanced competitiveness, more reliable energy supplies and to the sustainable development of society.
- The Act on Promotion of Electricity Production from Renewable Energy Sources (Act 180/2005 Coll.) frames state support to production of electricity from renewable resources; the conditions and prices are defined in subordinate decrees.

Electricity trade is organized and regulated by the Electricity Market Operator (EMO) which is a state-owned stock company. The key role of the EMO is to organize the electricity market and flow of information between the market players.

Regulatory role is performed by two state bodies: technical status is inspected by State Energy Inspection which is a body of the government and supervises energy facilities.

From economic point of view the regulatory function is performed by Energy Regulatory Office as defined in the Energy Act. It is a central state administration body appointed and responsible to the Cabinet. Its operating costs are covered by the state budget approved every year by the Parliament. The general mission of the ERO

is to support economic competition and protect consumers' interests in energy sector, aiming to meet all reasonable requirements for energy supply, i.e. electricity, gas and heat supplies.

1.3.2 Structure of electric power sector

About two thirds of the electricity production is concentrated in CEZ Production, a.s., (Czech Power Company, www.cez.cz), the joint-stock company which owns 15 coal power plants in the CR territory, the Dukovany and Temelin NPPs, 7 large and 27 small hydro power plants and three pumped-storage hydro power plants and some solar power stations. The remaining electrical power production is provided by plants owned largely by independent producers (e.g. International Power Opatovice a.s., Elektrárna Kolín a.s.) or by auto producers in industry and local heat producers (co-generation) and by regional utilities.

Electricity is distributed (and imported and exported) by ČEPS a.s. www.ceps.cz , (Česká elektrická přenosová soustava, Czech electricity transmission system), state owned shareholding company, which owns and operates the backbone high voltage power transmission system (400 kV, 220 kV and some 110 kV lines) and a dispatching center.

The electricity distribution to final consumers has been provided by eight electrical power distribution companies (utilities) based on area monopoly. Six of them are now part of ČEZ a.s. and two are now part of international company E-on (www.eon.com). Since 2006 consumer of any size (including households) can select its electricity supplier and the role of former utilities is in servicing of distribution lines and providing them to delivery organization at cost defined by ERO.

1.3.3 Main indicators

Table 5 shows the electricity production and installed capacity and Table 6 the energy related indicators. The energy sources for electricity production were quite stable for several years since the nuclear power plant (NPP) Temelin is in full operation and the main hydro potential, which can not be further substantially increased due to physical conditions, was utilized. In 2006, 62% of total electricity generation was: generated from fossil fuel (mostly coal), the Dukovany and Temelin NPPs provided 31%, hydro power plants less than 4%, wind and other alternative power plants about 3%.

TABLE 5: ELECTRICITY PRODUCTION, CONSUMPTION & CAPACITY

Capacity of Electrical Plants [GWe]	1991	2000	2001	2002	2003	2004	2005	2006
TOTAL**	14.96	15.32	15.44	16.31	17.34	17.43	17.41	17.51
- Steam Power Plants	11.63	11.43	11.51	11.37	11.41	11.49	10.70	10.74
- Hydroelectric Plants (3)	1.36	2.10	2.15	2.16	2.16	2.16	2.17	2.18
- Nuclear Plants (2)	1.76	1.76	1.76	2.76	3.76	3.76	3.76	3.76
- Internal Combustion/Gas Turbine Plants	0.21	0.04	0.03	0.02	0.02	0.01	0.01	0.02
- Nuclear Share (%)	11.80	11.50	11.40	16.90	21.70	21.60	21.60	21.40

Electricity Production (TWh)	1991	2000	2001	2002	2003	2004	2005	2006
TOTAL**	60.53	73.47	74.65	76.35	83.23	84.33	82.58	84.36
- Steam Power Plants	47.14	57.55	57.42	54.75	55.55	52.89	52.27	52.53
- Hydroelectric Plants (3)	1.26	2.31	2.47	2.85	1.80	2.56	3.03	3.26
- Nuclear Plants (2)	12.13	13.59	14.75	18.74	25.87	26.33	24.73	26.05
- Internal Combustion/Gas Turbine Plants	-	0.01	0.01	0.01	0.01	0.01	0.01	0.02
- Nuclear Share (%)	20.00	18.50	19.80	24.50	31.10	31.20	29.90	30.90

(2) incl. combined cycle

(3) incl. wind power plants

Source: Czech Statistical Office

TABLE 6: Energy Related Ratios

	1991	2000	2001	2002	2003	2004	2005	2006
Energy Consumption Per Capita (GJ/Capita)	188.0	161.0	166.0	167.0	178.0	181.0	181.0	184.0
Electricity Consumption Per Capita (MWh/Capita)	5.9	7.2	7.3	7.5	8.2	8.3	8.1	8.3
Nuclear/Total Electricity (%)	20.0	18.5	19.8	24.5	31.1	31.2	29.9	30.9
Ratio of External Dependency (%)**	16.0	23.0	25.0	26.0	25.0	24.0	28.0	27.4

Load Factor of Electricity Plants (%)	1991	2000	2001	2002	2003	2004
TOTAL**	46.00	55.00	55.00	53.00	55.00	55.00
- Thermal	46.00	57.00	57.00	55.00	56.00	55.00
- Hydro	11.00	13.00	13.00	15.00	10.00	14.00
- Nuclear	79.00	88.00	96.00	78.00	79.00	80.00

(2) Net import / Total primary energy consumption

Source: Czech Statistical Office

2. NUCLEAR POWER SITUATION

2.1 Historical development and current organizational structure

2.1.1. Overview

The nuclear power era in the former Czechoslovakia has started in the 1950s during the first boom of nuclear power. The decision to build a NPP was founded on good grounds: well established R&D, machinery industry with a long good tradition and lack of fossil fuels (an absence of remarkable resources of oil and gas and shrinking coal reserves). A relatively technically complicated heavy water gas-cooled reactor was

built and operated in Jaslovské Bohunice (now Slovakia). It was commissioned in 1972 after more than 10 years of construction and permanently shut down in 1976 after two serious events. Even though a bigger reactor of the same type was in design stage it has been decided to switch to PWR type under influence of former Soviet Union in Eastern Europe.

In the 70s, four reactors of WWERs 440/213 were built at Dukovany site. The Soviet design has been adopted and the Czech industry was gradually involved in the production of almost the whole plant equipment except e.g. fuel and main circulation pumps. The Czech industry became the supplier of these parts also for other Eastern European countries (e.g. 20 reactor vessels were made by Škoda). In middle the 80s, construction of the WWERs 1000 at Temelín site started. In 1993, the government decided to change the reactor control system (I&C) and the fuel to meet the state-of-art criteria of safety and Westinghouse has been selected as a supplier. Also the project of four units has been reduced to two. Finally by beginning of next century the two units were completed and in 2003 put to commercial operation.

During restructuring the economy and due to lack of requests of nuclear equipment most of industrial capacities during 90th have been lost. In last years they have been partially renewed for sub-deliveries mainly for Areva company for Olkiluoto 3 (Finland) and Jules Horowitz (France) reactors.

The NPP operator ČEZ announced intention to build new NPP units. Preparation of EIA reports for units at Temelín site is underway and preliminary call for tender for maximum 5 units has been issued during the second half of 2009.

2.1.2. Current organizational chart(s)

Organization of the Czech government is on Fig.2. The Ministry of Industry and Trade is a political ministry which has the principal responsibility for overall energy policy and support of selected fields. State Office for Nuclear Safety belongs together with e.g. ERO or State Energy Inspection to a group of “non-political” offices of the government. Heads of these organizations are appointed by the cabinet on a professional basis and they have its own budged not connected to any “political” ministry.

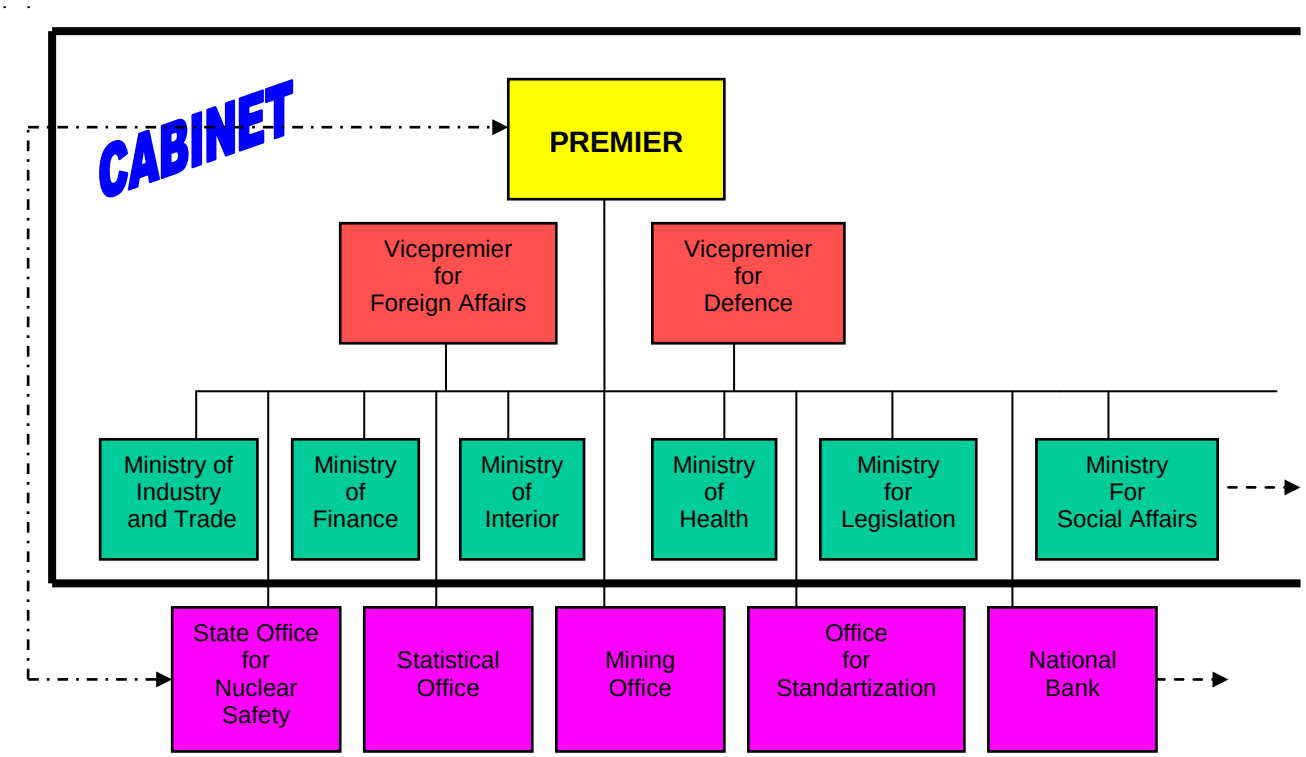

FIGURE 2: Ministry of Industry and Trade and SONS Position in the Czech Republic

2.2 Nuclear power plants: Overview

2.2.1. Status and performance of nuclear power plants

In the Czech Republic, there are

- four units operating at Dukovany (WWER 440/V213 type PWRs) with the total installed power of 1760 MWe and
- two units at Temelin (WWER 1000/V320 type PWRs) with the total installed power of 2000 MWe.

TABLE 7: STATUS AND PERFORMANCE OF NUCLEAR POWER PLANTS

Station	*Type*	*Net Capacity*	*Operator*	*Status*	*Reactor Supplier*	*Construction Date+*	*Criticality Date*	*Grid Date++*	*Commercial Date*	*Sh*
DUKOVANY-1	PWR	412	CEZ - EDU	Operational	SKODA	28856	31090	31102	31170	
DUKOVANY-2	PWR	412	CEZ - EDU	Operational	SKODA	28856	31435	31442	31492	
DUKOVANY-3	PWR	412	CEZ - EDU	Operational	SKODA	28915	31713	31730	31766	
DUKOVANY-4	PWR	412	CEZ - EDU	Operational	SKODA	28915	31929	31939	31977	
TEMELIN-1	PWR	950	CEZ - ETE	Operational	SKODA	31809	36810	36881	37417	
TEMELIN-2	PWR	950	CEZ - ETE	Operational	SKODA	31809	37407	37619	37729	

FIGURE 3. Map of the nuclear power plants in the Czech Republic

2.2.2. Plant upgrading, plant life management and license renewals

NPP Dukovany already completed twenty five years of operation. The NPP undergoes a constant modernization. Reconstruction of I&C system represents the largest investment project at the Dukovany NPP during last decade. This reconstruction is now continued by process of power upgrade by a complex modernization of fuel and both primary and secondary circuits (e.g.. replacement of low pressure part of turbine). This process is expected to end in 2015.

The original planned lifetime was 30 years and after that each 10 years the operating license has to be renewed based on new assessment of safety grounded on Periodic Safety Review (PSR).

NPP Temelin safety enhancement started during the construction period by replacement of an old analog I&C system and nuclear fuel both of Russian design and production by Westinghouse produced components. The combination of eastern and western technology was successfully completed and verified by the commissioning process.

The IAEA missions have confirmed that most of the safety issues identified for WWER 1000 reactors in 90th have been resolved and works on the few remaining issues are in an advanced stage and are not precluding safe operation of the Temelin NPP.

There is no plan for principal modernization of the plant. Problem of small leakages and bending of fuel rods have been solved. The next reassessment of safety will be done in frame of Periodic Safety Review which is expected in 10 years since the first fuel loading i.e. in 2010.

2.3 Future development of Nuclear Power

2.3.1 Nuclear power development strategy

The current State Energy Policy of the Czech Republic assumes nuclear power as feasible option.

In 2008 the NPP operator ČEZ requested start of EIA process for a unit(s) at Temelín site and the EIA report is under preparation. In 2009 ČEZ announced a tender for delivery of two units and optional delivery of another three.

2.3.2 Project management

It is assumed that delivery of a new unit(s) will be “turn-key” delivery.

2.3.3 Project funding

The size of the project requires participation of world largest banks but at moment no official plan has been announced.

2.3.4 Electric grid development

The backbone internal electric grid owned by ČEPS (see above) is adequate to internal transfers but in last years a lack of capacity for border and through transfers (mainly north-south direction) was noticed. New investments will be oriented to this direction and to strengthening of new units’ connection.

2.3.5 Site Selection

The primary selected site for two new units is existing site at Temelín which was originally planned for four units (only two were realized). For a further expansion the site of the other existing NPP at Dukovany is considered mainly due to existing infrastructure and acceptance of public.

2.4 Organizations involved in construction of NPPs

As far as most of the equipment and all construction parts of both NPPs were produced inside of the country or in Slovakia (second part of former Czechoslovakia) involvement of domestic companies is assumed. Some of them are listed below in Appendix 2.

There are no domestic specialized capacities in the area uranium enrichment, fuel fabrication, spent fuel processing and heavy water production. The only exception is research in fuel coating and spent fuel processing.

2.5 Organizations involved in operation of NPPs

It is assumed that ČEZ, operator of existing NPPs will operate any new NPP. It is the only organization licensed to operate a NPP.

2.6 Organizations involved in decommissioning of NPPs

The older NPP at Dukovany reached 25 years of operation and the process of periodical safety review is undergoing. The operator assumes further operation for at least 10 years. The other NPP at Temelín is relatively new one and therefore the operator has produced decommissioning plan (required by law) but there are no detailed plans which includes organization.

2.7 Fuel cycle including waste management

Nuclear fuel is supplied to the Dukovany NPP under a long-term contract with Russia-based TVEL OAO Company, which not only fabricates the fuel itself, but also provides conversion and enrichment services. In 2005, reactors were loaded with fuel of optimized construction containing a burn-up absorber and with a lower degree of enrichment. This next-generation fuel enables the Dukovany NPP power uprate and a gradual transition to a five-year fuel cycle, resulting in substantial cost savings.

Nuclear fuel for the Temelin NPP is fabricated and supplied by Westinghouse Electric Company LLC (USA) under an agreement that expires in 2010. For the period further on, a contract has been signed with TVEL OAO based on tender.

The uranium ore is still mined at Dolní Rožínka operated by Diamo, the state owned company. The ore is processed to “yellow cake” form and delivered to fuel producers to produce fuel for ČEZ. But the amount is not sufficient therefore additional uranium is being sourced in the world market under medium-term contracts. The increase price of uranium during last years made the mining feasible from financial aspects and the mining will continue until it is so.

The fuel for the Czech research reactors, including the uranium, comes from the Russian Federation. Fuel for training reactor at Technical University, Prague has been exchanged from 36% enrichment to value lower than 20% (under GTRI initiative). The research reactor at UJV Řež still uses 36% of enrichment because for the purpose given fuel with lower enrichment is not available.

The storage of spent fuel is ensured by its originators, i.e. CEZ, a.s. (from NPPs) and UJV-Rez, a.s. (from the research reactors). The spent fuel storage capacity in the reactor pools is sufficient for 6 years of operation of each nuclear power plant unit.

At the Dukovany NPP, an interim dry cask-type (CASTOR) spent fuel storage facility with capacity of 600 tonnes of uranium was put in operation, in 1995. The existing storage facility may contain almost 200 CASTOR casks to cover the entire period the Dukovany NPP. A similar spent fuel storage is being build at NPP Temelin.

All spent fuel from research reactor has been transferred to country of origin – Russian Federation under GTRI initiate in 2007.

The construction of a deep geological repository is proposed in the “Concept of Radioactive Waste and Spent Nuclear Fuel Management in the Czech Republic”, prepared by RAWRA (the Radioactive Waste Repository Authority) in co-operation with a number of other organizations. Based on a preliminary timetable, approval for the final disposal facility site is expected in 2015, construction starts approximately in 2030. The commissioning of the repository is scheduled for 2065.

The issue of reprocessing spent fuel remains open. The decision whether spent fuel is to be reprocessed is, in principle, left to the operator. A decision to reprocess or directly dispose spent fuel (after its conditioning) as a waste is suspended for the time of its storage in the interim storage facility, envisaged for the time of 40 to 50 years.

A shallow land repository of radioactive waste is operated by RAWRA (the Radioactive Waste Repository Authority) within the Dukovany NPP site. It is designed to accommodate all future low and intermediate radioactive waste from both the Dukovany and Temelin NPPs.

A repository for low and intermediate radioactive waste from medicine and industrial use is located in abandoned mine “Richard” near Litoměřice on the north of the Czech Republic. It was put in operation in 1964. Another repository “Bratrství” for the waste containing natural isotopes is located near Jáchymov on the north-west of the Czech Republic and is in operation from 1974. Repository “Hostim” near Beroun was closed in 1997 and now is monitored by RAWRA.

2.8 Research and development

2.8.1 R&D organizations

The responsibility for the research state policy in the area of nuclear energy is divided between the Ministry of Industry and Trade of the Czech Republic and the State Office for Nuclear Safety. While the first ministry supports generally any research in the area, SÚJB sponsors projects towards an increase of nuclear safety.

Most activities in the area of nuclear energy research and development are carried out by the Nuclear Research Institute at Řež, (ÚJV Řež a.s.) founded in 1955 and the Czech Technical University in Prague. The Nuclear Fuel Institute owned by Skoda a.s.

performs specialized research of fuel element cladding. Several institutes of the Czech Academy of Sciences and other universities such as West Bohemia University in Plzen are marginally included in the nuclear power research.

At present, three research nuclear reactors are operated in the Czech Republic. Two experimental reactors are located in vicinity of Prague at UJV Rez, a.s. – LVR-15 and LR-0 – and one training reactor VR-1 is operated by the Faculty of Nuclear Sciences and Physical Engineering in Prague.

2.8.2 Development of advanced nuclear technologies

The Czech Republic is an active member of International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) under IAEA and provided several studies as in kind contribution.

ÚJV Řež is engaged in several international research projects under EU 6th and 7th Framework program on nuclear safety, waste management and other topics in nuclear area.

Some Czech companies are involved in subcontracts of most advanced EU projects: a new NPP EPR type in Finland and research reactor Jules Horowitz in France.

2.8.3 International co-operation and initiatives

The Czech Republic has very active international co-operation with a number of foreign nuclear – oriented organizations and is a member of a number of international nuclear organizations and associations.

The Czech Republic is a member of the International Atomic Energy Agency (IAEA) and the Nuclear Energy Agency (NEA-OECD). A very intensive cooperation is carried out in the European Union. The Czech Republic is intensively involved in development of European legislation in European Council as well in planning and realization of EuropeAid projects under Tacis, INSC and IPA.

The SÚJB is a member of the following associations

- the Western European Nuclear Regulators Association (WENRA)
- the VVER Forum (established by the regulatory bodies of countries operating Soviet designed pressurized water reactors)
- the association of countries with small nuclear programs (NERS).

In area of Safeguards the Czech Republic is member of Nuclear Suppliers Group and Zangger Committee.

CEZ a.s. as NPP operator is a member of the World Association of Nuclear Operators (WANO).

Scientists takes part in international research activities organized by international organizations like NEA, ISOE, INEX, IRS and programs of CERN, Dubna, etc.

The Czech Republic has concluded agreements about information exchange with all neighboring states and general cooperation agreements with other countries having a substantial nuclear program like Russian Federation, Ukraine, Canada, Korea etc. Cooperation with further countries is based on agreements between ministries and regulatory bodies.

The Czech Republic is a member of international conventions and treaties listed in Appendix 1.

2.9 Human resources development

In the Czech Republic the Ministry of Education, Youth and Sports is the central authority in education responsible for overall strategy, educational policy and

distribution of the financial resources from the State budget and introduction of the general scientific research and development policy.

The Czech Republic, a country with developed nuclear energy, dedicates systematic care to educating and training human resources and specialists to ensure provision of reliable operation and manufacturing of various nuclear devices, and carrying out research and developmental activities.

Basic courses (on MS level) in nuclear physics and its application and engineering in full scale are provided at four main universities (Prague Charles and Technical Universities, Brno Masaryk University and Plzeň Technical University). These universities provide also post gradual courses and PhD studies. There are many partial courses on use of radioactive sources and radioprotection as part of education in chemistry, biology and other sciences.

In 2009, the "national" project “Safety, Self-reliance and Sustainability of National Nuclear Institutions” was opened within the IAEA Technical Cooperation Program, which is focused on education and improvement of the age structure of various institutions in the field of non-industrial utilization of nuclear energy in the Czech Republic (in particular hospitals, schools, research, state administration). A number of fellowships were carried out within the project, which involved primarily hospital and university personnel and which could not be carried out without this support.

The Czech Republic organizes regional training courses on a regular basis particularly focused on radiation protection and physical protection of nuclear facilities and materials. Each year more than 50 experts mainly coming from the countries of the former Soviet Union and other developing states participated in the training courses implemented in the Czech Republic under the IAEA auspices and funding. Expert fellowships (lasting month and more) were awarded to other 10-15 applicants and short scientific visits (lasting 1-2 weeks) are awarded to about 40 experts per year. The subjects related to nuclear medicine, radioactive waste management, radiation protection and emergency planning. On the other hand, about 60 experts from the Czech Republic actively participates in conferences, seminars and gave lectures at training courses organized by the IAEA. Almost 70 experts are yearly invited to the IAEA technical meetings for preparation of documentation, opinions or preparation of new IAEA standards.

2.10 Stakeholder Communication

Communication of governmental institutions with public is governed by openness and transparency and ruled by Act on provision of information (Act 106/1999 Coll.). Practically it is realized by internet services (http://www.statnisprava.cz , https://portal.gov.cz, www.sujb.cz , www.mpo.cz

Formal communication (content of communications and terms) between SUJB and its license holders and other stakeholders is ruled by Administration act (Act 501/2004 Coll.).

Probably the most important communication is between NPP Operator and SÚJB concerning events at the NPPs. The information duties are primarily given by Technical Specification of NPP operation (Limits and Conditions) and in additional by an agreement of ČEZ and SUJB on this matter.

International communication on emergency matter is ruled principally by Convention on Early Notification of a Nuclear Accident. In addition to that Czech Republic has concluded bilateral agreements with all neighbouring states. Usually these agreements cover also willingness to inform the other party not only about emergency information and to cooperate on a broad scope of subjects. Such cooperation and

mutual information have informal ways and also a formal way in periodical bilateral meetings.

Among the neighbouring states mutual information has a prominent role with Austria and Germany. The respective agreement is very carefully formulated in details and is followed by several arrangement setting-up technical details.

3. NATIONAL LAWS AND REGULATIONS

3.1 Regulatory framework

3.1.1 Regulatory authority(s)

The State Office for Nuclear Safety (SÚJB), as Czech Republic's national regulatory authority in nuclear safety and radiation protection field was established as of 1st January 1993 by the Act No. 21/1992 Coll. The competencies of the former Czechoslovak Atomic Energy Commission have been divided into regulatory (nuclear safety and safeguards) which were transferred to SÚJB and promotional transferred into Ministry of Industry and Trade. The SÚJB has in 1995 acquired from Ministry of Health regulatory responsibility in the overall area of radiation protection and in 2005 the regulatory responsibility in the area of material and technologies which can be used for chemical and biological weapons (in addition to nuclear) has been transferred from Ministry of Trade and Industry. To simplify inspection process in important mechanical parts in nuclear installation (like pressure tubes or vessels) also "technical" safety responsibility in the area has been transferred to SÚJB.

The legal framework of the SÚJB is given by Act on the Peaceful Utilization of Nuclear Energy and Ionizing Radiation (Atomic Act, No. 18/1997 Coll.,). The other legal documents specifying powers of the SÚJB are listed in the paragraph Main National Laws and Regulations in Nuclear Power.

The SÚJB is an independent central body of the state administration with its own budget. It is headed by a Chairman appointed by the Czech Government (as a body) and the Chairman can, on request, be present at the government meeting. Regulatory decisions of the SÚJB (except of fines) cannot be changed by any other governmental body. Deputy Chairmen, Directors of Departments and Heads of Divisions are appointed by the Chairman of the SÚJB.

The Chairman acts at the same time as the Nuclear Safety Inspector General. He appoints the SÚJB nuclear safety and radiation protection inspectors. The inspectors' authorities, to perform their function, are stipulated in the provisions of Atomic Act.

The SÚJB has about 200 employees and two institutes are subordinated financially and as a technical support – National Radiation Protection Institute (SÚRO) and National Institute for Nuclear, Chemical and Biological Protection (SÚJCHBO). The organizational chart of the SÚJB is presented in Figure 4.

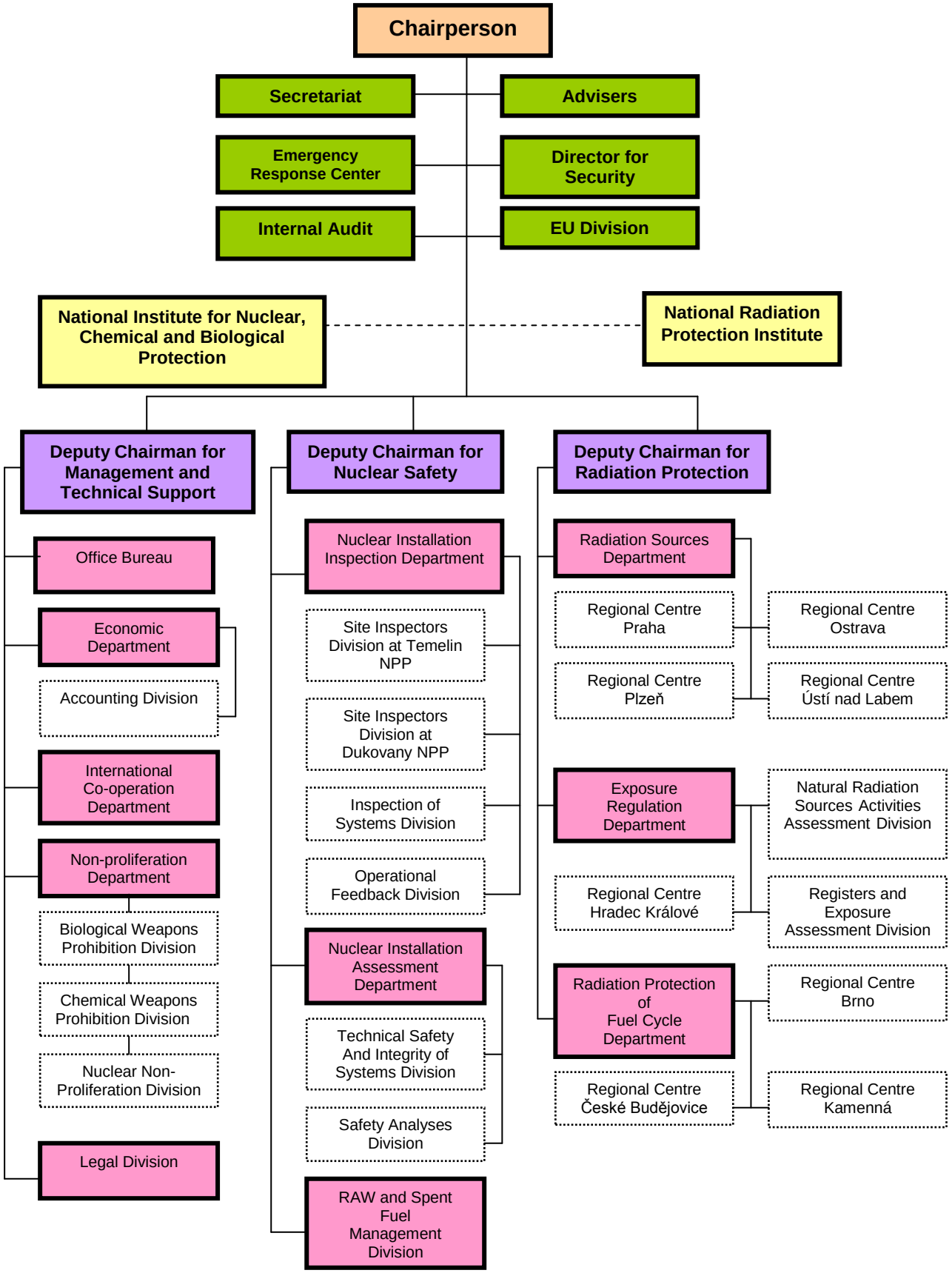

FIGURE 4: Organizational Chart of the State Office for Nuclear Safety

3.1.2 Licensing Process

The SÚJB conducts its licensing activities pursuant to Atomic Act, such as locating and operating nuclear facilities and premises using major sources of ionizing radiation, handling ionizing radiation sources and radioactive waste, shipping nuclear materials and radionuclide radiation sources.

3.2 Main national laws and regulations in nuclear power

The Czech Republic's legislative framework in nuclear safety and radiation protection is based particularly on the Atomic Act and appropriate decrees of the SÚJB and the Government Resolutions. The following list contains the complete legislation in responsibility of SÚJB and it contains also norms concerning chemical and biological weapons. Both Laws and Decrees are continuously updated; for actual situation consult http://www.sujb.cz/?r_id=29. It is necessary to note that since May 2004 the Czech Republic is the member of EU and therefore acquis communautaire is in full validity.

- Act No. 18/1997 Coll., on Peaceful Utilization of Nuclear Energy and Ionizing Radiation (the Atomic Act) and on Amendments and Additions to Related Acts, regarding especially the state supervision over the nuclear safety of nuclear installations and licensing activities amended with Act No. 13/2002 Coll. and Act No. 310/2002 Coll.
- Act No. 19/1997 Coll., on On Some Measures Concerning Chemical Weapons Prohibition and on Amendments and Additions to Related Acts.
- Act No. 281/2002 Coll., on Some Measures Related to Prohibition of Bacteriological (Biological) and Toxin Weapons and on Amendments to Trades Licensing Act
- Act No. 458/2000 Coll., (Energy Act) on Business Conditions and Public Administration in the Energy Industry Sectors and on Amendment to Other Laws. Now the Act is amended in the full wording of the Act No. 91/2005 Coll.
- Decree of the SÚJB No. 144/1997 Coll., on Physical Protection of Nuclear Materials and Nuclear Facilities and their Classification, amended in Decree of the SÚJB No. 500/2005 Coll.
- Decree of the SÚJB No. 145/1997 Coll., on Accounting for and Control of Nuclear Materials and their Detailed Specification, amended in Decree of the SÚJB No. 316/2002 Coll.
- Decree of the SÚJB No. 146/1997 Coll., Specifying Activities Directly Affecting Nuclear Safety and Activities Especially Important from Radiation Protection Viewpoint, Requirements on Qualification and Professional Training, on Method to be Used for Verification of Special Professional Competency and for Issue Authorizations to Selected Personnel, and the Form of Documentation to be Approved for Licensing of Expert Training of Selected Personnel, amended in Decree of the SÚJB No. 315/2002 Coll.
- Decree of the SÚJB No. 215/1997 Coll., on Criteria for Siting Nuclear Facilities and Very Significant Ionizing Radiation Sources.
- Decree of the SÚJB No. 106/1998 Coll., on Nuclear Safety and Radiation Protection Assurance during Commissioning and Operation of Nuclear Facilities.

- Decree of the SÚJB No. 195/1999 Coll., on Basic Design Criteria for Nuclear Installations with Respect to Nuclear Safety Radiation Protection and Emergency Preparedness.
- Decree of the SÚJB No. 324/1999 Coll., on Limits of Concentration and Amount of Nuclear Material for which Nuclear Liability Requirements does not apply.
- Decree of the SÚJB No. 307/2002 Coll., on Radiation Protection. The Decree repeals Decree of the SÚJB No. 184/1997 Coll. Now the Decree is amended in the wording of Decree of the SÚJB No. 499/2005 Coll.
- Decree of the SÚJB No. 317/2002 Coll., on Type Approval of Packaging Assemblies for Transport, Storage and Disposal of Nuclear Materials and Radioactive Substances, on Type Approval of Ionizing Radiation Sources and on Transport of Nuclear Materials and Specified Radioactive Substances ("on Type Approval and Transport"), amended in Decree SÚJB No. 77/2009 Coll. (the Decree repeals Decrees of the SÚJB Nos. 142/1997 Coll. and 143/1997 Coll.)
- Decree of the SÚJB No. 318/2002 Coll., on Details of Emergency Preparedness of Nuclear Facilities and Workplaces with Ionizing Radiation Sources and on Requirements on the Content of On-Site Emergency Plan and Emergency Rule, amended in Decree SÚJB No. 2/2004 Coll. (the Decree repeals Decree of the SÚJB No. 219/1997 Coll.)
- Decree of the SÚJB No. 319/2002 Coll., on Performance and Management of the National Radiation Monitoring Network, amended in Decree SÚJB No. 27/2006 Coll.
- Decree of the SÚJB No. 419/2002 Coll., on Personal Radiation Passports.
- Decree of the SÚJB No. 474/2002 Coll., on Some Measures Related to Prohibition of Bacteriological (Biological) and Toxin Weapons and on Amendments to Trades Licensing Act.
- Decree of the SÚJB No. 185/2003 Coll., on Decommissioning of Nuclear Installation or Category III. or IV. Workplace (the Decree repeals Decree of the SÚJB No. 196/1999 Coll.).
- Decree of the SÚJB No. 193/2005 Coll., on list of theoretical and practical areas forming content of education and of preparation required for performance of regulated activities within the scope of power of the State Office for Nuclear Safety.
- Decree of the SÚJB No. 309/2005 Coll., on provision of technical safety for classified equipment.
- Decree of the SÚJB No. 462/2005 Coll., on distribution and collection of detectors intended for identification of buildings with an increased level of exposure to natural radionuclide and on conditions for acquirement of state budget subsidy.
- Decree of the SÚJB No. 132/2008 Coll., on Quality Assurance System in carrying out activities connected with utilization of nuclear energy and radiation protection and on Quality assurance of selected equipment in regard their assignment to classes of nuclear safety (repeals Decree of the SÚJB No. 214/1997 Coll.).
- Decree of the SÚJB No. 208/2008 Coll., Implementation the Act on Some Measures Concerning Chemical Weapons Prohibition.

- Decree of the SÚJB No. 165/2009 Coll., Laying down a list of Nuclear-related items.
- Decree of the SÚJB No. 166/2009 Coll., Laying down a List of Nuclear - related Dual-use items.
- Government Resolution No. 416/2002 Coll., on Payments of Radioactive Waste Producers to the Nuclear Account and Annual Amount of Contribution to Municipalities and Rules for its Provision.
- Government Resolution No. 11/1999 Coll., on Emergency Planning Zone.
- Government Resolution No. 73/2009 Coll., on transferring information in connection with international transportation of Radioactive Waste Material and spent fuel.

4. APPENDIX 1: International, Multilateral and Bilateral Agreements

The list of international conventions and bilateral agreements signed/ratified by the government of the Czech Republic in the field of nuclear power is indicated below.

4.1 International Conventions

Convention on Nuclear Safety	Entry into force	24.10.1996
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	Entry into force	18.6.2001
Convention on Early Notification of a Nuclear Accident	Entry into force	1.1.1993
Convention on Assistance in the Case of a Nuclear Accident or a Radiation Emergency	Entry into force	1.1.1993
Vienna Convention on Civil Liability for Nuclear Damage	Entry into force	12.11.1997
Joint Protocol	Entry into force	24.6.1994
Protocol to amend the Vienna Convention on Civil Liability for Nuclear Damage	Signature	18.6.1998
Convention on Supplementary Compensation for Nuclear Damage	Signature	12.9.1997
Convention on Physical Protection of Nuclear Material	Entry into force	1.1.1993
Nuclear Proliferation Treaty for Prohibition of Nuclear and Other Mass-Destruction Weapons Located on Sea and Ocean Bottoms and Underground	Succeeded:	1.1.1993
The Agreement between the Non-nuclear-weapon States which are members of the European Community, the European Atomic Energy Community and the International Atomic Energy Agency in implementation of Article III (1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons.	Entry into force	1.10.2009
Protocol Additional to the Agreement between the Non-nuclear-weapon States which are members of the European Community, the European Atomic Energy Community and the International Atomic Energy Agency in implementation of Article III (1) and (4) of the Treaty on the Non-Proliferation of Nuclear Weapons	Entry into force	1.10.2009
Comprehensive Nuclear-Test-Ban Treaty(CTBT)	Signature	12.11.1997
	Ratification	11.9.1997
	Entry into force	not yet

4.2 Bilateral Agreements

4.2.1 Governmental Agreements

Agreement on the Privileges and Immunities of the International Energy Agency

Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the International Atomic Energy Agency to the Government of the Czech and Slovak Federal republic

The Agreement between the Government of the CSSR and the Government of Austria on the Issues of Common Interest Related to Nuclear Safety and Radiation Protection

The Protocol between the Government of the CR and the Government of Austria by which is changing the Agreement between the Government of the CSSR and the Government of Austria on the Issues of Common Interest Related to Nuclear Safety and Radiation Protection

The Agreement between the Government of the CSFR and the Government of Germany on the Issues of Common Interest Related to Nuclear Safety and Radiation Protection

The Agreement between the Government of the CSFR and the Government of Hungary on the Issues of Common Interest Related to Nuclear Safety and Radiation Protection

The Agreement between the Government of the CSFR and the Government of USA on Co-operation in Peaceful Uses of Nuclear Energy

The Agreement between the Government of the CR and the Government of the Russian Federation on Co-operation in the Nuclear Energy Field

The Amendment to the Agreement between the Government of the CR and the Government of the Russian Federation on Co-operation in the Nuclear Energy Field

The Agreement between the Government of the CR and the Government of Canada on Co-operation in the Peaceful Uses of Nuclear Energy

The Agreement between the Government of the CR and the Government of the Slovak Republic on Co-operation in the State Regulation of Nuclear Safety and Nuclear Materials

The Agreement between the Government of the CR and the Government of Ukraine on Co-operation in the Nuclear Energy and Nuclear Industry

The Agreement between the Government of the CR, SR, RF and the Government of Ukraine on Co-operation in the Transport of Nuclear Materials between CR and Russian Federation over the territory of SR and Ukraine

The Agreement between the Government of the Czech Republic and the Government of the Republic of Korea for Cooperation in the Peaceful Uses of Nuclear Energy

Agreement between the Government of the ČSSR and the Government of the Republic of India on Co-operation in Peaceful Uses of Nuclear Energy

Agreement between the Government of the ČSSR and the Government of the Republic of Bulgaria on Co-operation in Peaceful Uses of Nuclear Energy

Agreement between the Government of the ČSSR and the Government of the Socialistic Federal Republic of Yugoslavia on Co-operation in Peaceful Uses of Nuclear Energy

The Agreement between the Government of the Czech Republic and the Government of the Republic of Poland on Early Notification of a Nuclear Accident and on Exchange of Information on Peaceful Uses of Nuclear Energy, Nuclear Safety and Radiation Protection

The Agreement between the Government of the CR and the Government of the SR on early notification of a nuclear accident

The Agreement between the Government of the CR and the Government of Australia on Co-operation in Peaceful Uses of Nuclear Energy and Transfer of Nuclear Materials

4.2.2 Agreements/Arrangements of Ministries and Regulatory Bodies

The Agreement between the Nuclear Installations Safety Directorate (France) and the State Office for Nuclear Safety (Czech Republic) for the Exchange of Information and Co-operation in the Regulation of Nuclear Safety

The Arrangement between the State Office for Nuclear Safety of the Czech Republic (SÚJB) and the Nuclear Regulatory Commission of the United States of America (US NRC) for the Exchange of Technical Information and Cooperation in Nuclear Safety Matters

Implementing Agreement between the United States Nuclear Regulatory Commission (US NRS) and the Czech Republic State Office for Nuclear Safety (SUJB) Relating to Participation in the US NRC Program of Severe Accident Research (CSARP)

Implementing Agreement between the United States Nuclear Regulatory Commission (US NRS) and the Czech Republic State Office for Nuclear Safety (SUJB) on Application of Thermohydraulic Codes (CAMP)

Statement of Intent concluded between Minister of Science and Technology of the Republic of Korea on one side and Deputy Minister of Industry and Trade of the CR and the Chairman of the State Office for Nuclear Safety of the CR on the other side

The Agreement between the Health & Safety Executive of the United Kingdom of Great Britain and Northern Ireland and the Czech Republic State Office for Nuclear Safety on Exchange of Information

The Agreement on Co-operation in the Area of State Supervision of Nuclear Safety and Peaceful Utilisation of Atomic Energy between the Federal Regulatory Authority of the Russian Federation (Gosatomnadzor) and the Czech Republic State Office for Nuclear Safety

The Agreement between the Federal Ministry for Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany and the State Office for Nuclear Safety of the Czech Republic on Exchange of Information

The Agreement between the CIEMAT (Spain) and the Czech Republic State Office for Nuclear Safety on Evaluation of Computer Technology Used for Measuring and Control Systems in Nuclear Safety of Nuclear Power Plants for the Purpose of Licensing Process

The Arrangement between the State Office for Nuclear Safety of the Czech Republic and the State Commission for Nuclear Supervision of Ukraine on Co-operation in the Area of State Administration and Supervision of Nuclear and Radiation Safety in Uses of Nuclear Energy

Memorandum of Understanding for Co-operation and Exchange of Information on Nuclear Safety between the SÚJB CR and the Hungarian Atomic Energy Authority

The Arrangement between the State Office for Nuclear Safety of the Czech Republic and the Slovenian Nuclear Safety Administration for the Exchange of Information.

5. APPENDIX 2: Main Organizations, Institutions and Companies Involved in Nuclear Power Related Activities

5.1 State Authorities and Organizations

Ministry of Industry and Trade
Energy Division
Na Františku 32
110 15 Praha 1 – Staré Město
Tel: (+420) 224 851 111
Fax: (+420) 224 811 089
http://www.mpo.cz/

State Office for Nuclear Safety
(Státní úřad pro jadernou bezpečnost - SÚJB)
Senovážné náměstí 9
110 00 Praha 1
Tel: (+420) 221 624 111
Fax: (+420) 221 624 704
http://www.sujb.cz/

Ministry of Environment
Vršovická 1442/65
100 10 Praha 10
Tel.: (+420) 267 121 111
Fax: (+420) 267 310 308
http://www.env.cz/

Radioactive Waste Repository Authority (RAWRA)
(Správa úložišť radioaktivních odpadů – SÚRAO)
Dlážděná 6
110 00 Praha 1
Tel: (+420) 221 421 511
Fax: (+420) 221 421 544
http://www.surao.cz

Energy Regulatory Office (ERO)
Masarykovo nám. 5
586 01 Jihlava
Tel: (+420) 564 578 666
Fax: (+420) 564 578 640
http://www.eru.cz

ČEPS, a.s.
Elektrárenská 774/2
101 52 Praha 10
Tel. (+420) 211 044 111
Fax: (+420) 211 044 568
http://www.ceps.cz

5.2 Power Utilities

Power Company ČEZ, a.s.
Duhová 2/1444
140 53 Praha 4
Tel: (+420) 211 041 111
Fax: (+420) 211 042 001
http://www.cez.cz/

ČEZ, a.s.,
Dukovany Nuclear Power Station
Tel: (+420) 561 105 519
Fax: (+420) 561 104 970

675 50 Dukovany
http://www.cez.cz/

ČEZ, a.s.,
Temelín Nuclear Power Station
373 05 Temelín
Tel: (+420) 381 102 639
Fax: (+420) 381 104 900
http://www.cez.cz/

Electricity Market Operator, a.s
(Operátor trhu s elektřinou – OTE)
Sokolovská 192/79
186 00 Praha 8 – Karlín
Tel: (+420) 296 579 160
Fax: (+420) 296 579 180
http://www.ote-cr.cz

5.3 Research Institutes and Organizations

Nuclear Research Institute Řež plc
(Ústav jaderného výzkuýmu - ÚJV Řež)
Husinec - Řež 130

Tel: (+420) 266 172 000
Fax: (+420) 220 940 840
http://www.nri.cz/

250 68 Řež u Prahy
Energoprojekt Praha
Division of Nuclear Research Institute Řež plc
Vyskočilova 3/741
140 21 Praha 4

Tel: (+420) 241 006 780
Fax: (+420) 241 006 789
http://www.nri.cz

National Radiation Protection Institute
(Státní ústav radiační ochrany - SÚRO)
Bartoškova 1450/28

Tel: (+420) 241 410 214
Fax: (+420) 241 410 215
http://www.suro.cz/

140 00 Praha 4 - Nusle
National Institute for Nuclear, Chemical and Biological Protection (Státníústav jaderné, chemické a biologické ochrany, v.v.i. - SÚJCHBO)
(+420) 318 621 187
Kamenná 71 262 31 Milín
Tel: (+420) 318 600 200
Fax: (+420) 318 626 055
http://www.sujchbo.cz

VUPEK – ECONOMY
Sokolovská 40
186 00 Praha 8 – Karlín

Tel: (+420) 222 312 797
Fax: (+420) 224 814 805
http://www.vupek.cz

UJP Praha, a.s.
257 920 273
Nad Kamínkou 1345
156 10 Praha – Zbraslav

Tel: (+420) 227 180 111,
Fax: (+420)227 180 390,
http://www.ujp.cz

Academy of Sciences of the Czech Republic (ASCR)
Národní 3
117 20 Praha 1

Tel: (+420) 221 403 111
Fax: (+420) 224 240 512
http://www.cas.cz/

Nuclear Physics Institute
Academy of Sciences of the Czech Republic
250 68 Řež u Prahy
Institute of Plasma Physics

Tel: (+420) 220 941 147
Fax: (+420) 220 941 130
http://www.ujf.cas.cz/

Academy of Sciences of the Czech Republic
Za Slovankou 3
182 00 Praha 8

Tel: (+420) 266 052 052, 286 890 450
Fax: (+420) 286 586 389
http://www.ipp.cas.cz/

5.4 Manufacturers And Services

Škoda Praha, a.s.
Duhová 2/1444
140 74 Praha 4

Tel: (+420) 211 041 111
Fax: (+420) 211 045 040
http://www.skodapraha.cz/

Škoda JS, a.s.
Orlík 266
316 06 Plzeň
Tel: (+420) 378 041 111
Fax: (+420) 377 520 600
http://www.skoda-js.cz

Siemens Engineering
(2007 - Renamed from original VA TECH EZ, a.s.)
Polygon House
Doudlebská 1699/5
140 00 Praha 4
Tel: (+420) 233 026 111
Fax: (+420) 233 026 342
http://www.siemens.cz/

Královopolská, a.s.
(previously Královopolská strojírna, a.s.)
Křižíkova 68a
660 90 Brno
Tel: (+420) 532 041 111
http://www.kralovopolska.cz/

HOCHTIEF CZ a.s.
(originaly Vodní stavby Bohemia, a.s.)
Plzeňská 16/3217
150 00 Praha 5
Tel: (+420) 257 406 000
Fax: (+420) 257 406 008
http://www.hochtief.cz/

Modřanská potrubní, a.s.
Komořanská 326/63
143 14 Praha 12 - Modřany
Tel: (+420) 296 781 111
Fax: (+420) 244 403 118
http://www.modrany.cz/

Diamo s.p.
Máchova 201
471 27 Stráž pod Ralskem
Tel: (+420) 487 851 338
Fax: (+420) 487 851 456
http://www.diamo.cz

Vítkovice Heavy Machinery a.s.
NPP components e.g. steam generators
Ruská 288/101
706 02 Ostrava – Vítkovice
Tel: (+420) 595 956 878
Fax: (+420) 595 956 035
http://www.vitkovice.cz

ARMATURY Group a.s.
Hlučínská 41
747 22 Dolní Benešov
Tel: (+420) 553 680 111
Fax: (+420) 553 680 333
http://www.armaturygroup.cz

ČKD Praha DIZ a.s.
Diesel generators, coolers
Kolbenova 499
190 02 Praha 9

Tel: (+420) 266 031 111
Fax: (+420) 283 890 156
http://www.ckddiz.cz/en

ČKD NOVÉ ENERGO a.s.
Klečáková 1947
190 02 Praha 9

Tel: (+420) 226 543 102
Fax: (+420) 284 812 148
http://www.ckdnoveenergo.cz

ZVVZ a.s.
Ventilation systems
399 25 Milevsko

Tel: (+420) 382 551 111
Fax: (+420) 382 521 163
http://www.zvvz.cz

5.5 Other Organizations and Associations

Czech Nuclear Forum
Hoffmanova 3
147 00 Praha 4 – Podolí
Tel: (+420) 261 212 832
http://www.nuclear-forum.cz/

Czech Nuclear Society
(Česká Nukleární Společnost)
V Holešovičkách 2
180 00 Praha 8
Tel: (+420) 381 102 143
http://www.csvts.cz/cns/

Czech Society of Nuclear Medicine
(Česká společnost nukleární medicíny)
http://www.csnm.cz/

5.6 Universities

Czech Technical University in Prague
Headquarters
Zikova 1905/4
166 36 Praha 6 – Dejvice
Tel: (+420) 224 351 111,
234 351 111
http://www.cvut.cz/en/

Czech Technical University in Prague
Faculty of Nuclear Sciences and Physical Engineering
Břehová 7
115 19 Praha 1 – Staré Město
Tel: (+420) 224 351 111
Fax: (+420) 222 320 861
http://www.fjfi.cvut.cz/

Charles University
Faculty of Mathematics and Physics
Ke Karlovu 3
121 16 Praha 2
Tel: (+420) 221 911 111
Fax: (+420) 221 911 292
http://www.mff.cuni.cz

West Bohemia University
Univerzitní 8
306 14 Plzeň
http://www.zcu.cz/pracoviste/osv/
http://www.zcu.cz/pracoviste/olp/
Tel: (+420) 377 631 040
Fax: (+420) 377 631 042