

Nuclear Legislation in **OECD and NEA Countries**

Regulatory and Institutional
Framework for Nuclear Activities



Hungary

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I. General regulatory regime

1. Introduction

At present there is one nuclear power station in Hungary, located at Paks, which is operated by Hungarian Power Companies Ltd. (*Magyar Villamos Művek Részvénytársaság* – MVM Rt.). The station's four units have a capacity of 1 755 MWe, generating about 40% of the country's domestic electricity production. The first Atomic Energy Act was promulgated in 1980 at the time of construction of this power station to ensure regulation of the industry. The four units at Paks came into service between 1982 and 1987 and have been subjected to what amounts to a continuous process of upgrading.

The legal regime applicable to nuclear activities in Hungary was previously governed by the Atomic Energy Act of 1980, replaced by a new Atomic Energy Act adopted on 10 December 1996, amended in 2003, 2005 and 2006. The Atomic Energy Act of 1996, while preserving the basic principles of the 1980 Act, aims to conform to recent international rules and recommendations as promulgated by the International Atomic Energy Agency (IAEA) and the OECD Nuclear Energy Agency (OECD/NEA). It entered into force six months after its promulgation *i.e.* on 1 June 1997, with the exception of Sections 62-64 (concerning the Central Nuclear Financial Fund), which entered into force on 1 January 1998.

The aim of the 1996 Atomic Energy Act ((hereinafter referred to as "the Act") is not only to modernise Hungarian nuclear law, but also to harmonise Hungarian national law with international treaties to which Hungary is a party. The basic principles of the Act are to protect the population and the environment against the hazards generated by the peaceful uses of nuclear energy, and to improve the safety of all nuclear activities.

The Act provides that nuclear energy may only be used in the manner set out in legal regulations and under regular control by the authorities. The regulatory authorities are required, under the Act, to be independent from organisations having an interest in the promotion and development of the uses of nuclear energy [Section 5(2)].

Section 10(4) of the 1996 Atomic Energy Act was amended in 2005 and in 2006. The purpose of this amendment was to facilitate the task of the State Audit Office in auditing the management of the Central Nuclear Financial Fund, to ensure municipal development.

The powers to implement the government's responsibility under the Act for the control and supervision of the safe utilisation of nuclear energy are vested in the Atomic Energy Co-ordination Council and the Hungarian Atomic Energy Authority – HAEA (*Országos Atomenergia Hivatal*), as well as the ministers concerned [Section 6(2)]. Indeed, the amendment of the Act on Atomic Energy of 2003 dissolved the Hungarian Atomic Energy Commission, and the Hungarian Atomic Energy Authority (HAEA) became supervised by the Minister of Interior. The authority-related functions assigned to various ministries and institutions are co-ordinated by the newly-founded Atomic Energy Co-ordination Council. The Government Decree No. 114/ 2003 on the Scope of Duties, Authority and Competence to Impose Penalties of the Hungarian Atomic Energy Authority, and on the Activities of the Atomic Energy Co-ordination Council (2003) was adopted on 29 July 2003 and entered into force on 1 August 2003. It implements the provisions of the 1996 Atomic Energy Act, defining the statutes of the Hungarian Atomic Energy Authority (HAEA), and the Atomic Energy Co-ordination Council, and provides HAEA with regulatory independence. The principle function of the HAEA is to co-ordinate and to fulfil regulatory duties with respect to the safety of the peaceful application of atomic energy, in particular to the safety issues related to nuclear materials and facilities under normal operating conditions and in case of incidents, and with respect to regulatory aspects in emergency situations, as well as to co-ordinate and provide information related to such matters [Section 1 of the Decree No. 114/ 2003].

In Act No. CIX of 2006 on the reorganisation of the governmental structure, the HAEA is listed among the government offices so that the character of the regulatory body is substantially constant. The HAEA is directed by the Government, supervised by a minister appointed by the prime minister (the HAEA is now supervised by the Minister of Justice and Law Enforcement) and it has independent duties and regulatory authorisations.

Various ministers and other authorities are responsible for enforcing those aspects of any particular licence granted by the HAEA which fall within their jurisdiction [Sections 19(2), 21-28 and 68]. These ministers and authorities are described, *infra*, in Part II of this study "Institutional Framework", Section 1 "Regulatory and Supervisory Authorities".

2. Mining regime

No radioactive ores are mined in Hungary and, accordingly, there is no legislation dealing specifically with the prospecting for and mining of such ores. General mining legislation would, therefore, apply [Act No. XLVIII of 1993, as amended by Act No. XII of 1997 and Act No. CXXXVIII of 2004].

3. Radioactive substances, nuclear fuel and equipment

The Act states, as a general principle, that the user of nuclear energy is responsible for its safe application and compliance with safety standards [Section 10(1)]. Furthermore, the user is expressly obliged to provide the resources required for the safe use of nuclear energy [Section 10(2)].

To ensure that the user fulfils this obligation, a general regime of licensing is established under Chapter III of the Act.

As regards the general regime under the Act, the HAEA has a co-ordinating role in regulating nuclear activities [Section 17(1)]. It has general responsibility for activities such as accountancy and control of nuclear materials, licensing the transport of radioactive materials as well as approval and inspection of transport packaging, co-ordination of research and development related to the safe use of nuclear energy and co-ordination of international co-operation related to the use of nuclear energy [Section 17(2)].

As will be discussed below in more detail (see, *infra*, Section 4 "Nuclear Installations"), the HAEA has particular responsibility for licensing and supervision of nuclear facilities [Section 17(2)(a)] and nuclear equipment. It also monitors the existence of a quality assurance system as prescribed in Section 11(2) of the Act.

The Minister for Health has responsibility for the licensing and monitoring of a wide variety of other nuclear activities. These include the ownership, manufacture, possession, storage, use and distribution of radioactive materials, as well as, *inter alia*, the ownership and use of facilities and equipment generating ionising radiation [Section 20(1)(a) and (c)]. This Minister has particular responsibility for radiation hygiene and for radioactive waste disposal facilities [Section 20(1)(d)-(h)] (see, *infra*, Section 6 "Radiation Protection" and Section 7 "Radioactive Waste Management").

The Act does not apply to activities related to radioactive materials, nor to equipment which – due to the character and extent of ionising radiation that it can produce – does not qualify as hazardous to human life and health, or to the animate and inanimate environment [Governmental Decree No. 124/1997 on Radioactive Materials and Equipment Generating Ionising Radiation Exempted from the Scope of the Atomic Energy Act of 1996; Ordinance of the Minister for Health No. 23/1997 defining the Exemption Levels (Activity Concentrations and Activities) of Radionuclides].

In respect of both the licences issued by the HAEA and the licences issued by the Minister for Health, certain other ministers and authorities are empowered to enforce those aspects of the

licence which fall within their jurisdiction. Similarly, there are provisions in the Act which give nominated ministers and authorities, some of which are the same as those nominated in the licensing provisions, the specific power to conduct inspections of or otherwise regulate those aspects of nuclear activities which fall within their jurisdiction. These various other ministers and authorities, and their respective areas of responsibility, are described in Sections 22-29 and 68 of the Act.

In Hungary there is an itemised national accounting scheme, beginning with the production of radioactive materials, through to their disposal as radioactive waste. Under the executive orders of the Act, the Department of Nuclear and Radioactive Materials of the HAEA is responsible for the Central Registry of radioactive material as well as for the State System of Accountancy and Control of nuclear material through which the national accounting systems are maintained [Ordinance of the Minister of the Interior No. 33/2004 on the central and local registration of radioactive substances and Ordinance of the Minister of Justice and Law Enforcement No. 7/2007 on the system of registration and international control over nuclear substances].

4. Nuclear installations

a) Licensing and inspection, including nuclear safety

In the definition section of the Act, a nuclear facility is defined as including a nuclear power plant, a nuclear district heating plant and a nuclear reactor for research and training [Section 2(g)]. Parliament's preliminary approval is required to initiate activities for the construction of a new nuclear facility, or the addition of a further unit to an existing power plant [Section 7(2)].

Under the general regime of licensing, the HAEA is the regulatory body responsible for licensing the siting, construction, enlargement, commissioning, operation, modification, shutting down and decommissioning of a nuclear facility [Section 17(2)(a)]. The processing period for each of these licences should not exceed 120 days [Section 12(2)].

In addition, the HAEA is the regulatory authority for licensing of structures connected to nuclear facilities [Section 17(2)(c)]. The Act leaves many of the details of the regulatory scheme to be governed by separate regulations. Thus, a government decree was adopted to deal with nuclear safety and the procedures the HAEA should follow to ensure compliance with the legislation [Decree No. 89/2005]. Under this Decree, the Nuclear Safety Directorate (NSD) of the HAEA is nominated as the nuclear safety regulatory body, which makes decisions in the first instance in licensing, inspection and enforcement matters.

In respect of nuclear facilities, a permit from the NSD is required for: siting, construction (or enlargement), commissioning, operation, modification, permanent shutdown and decommissioning.

In respect of the equipment and nuclear fuel used in nuclear facilities, the NSD grants a general or specific permit for: manufacturing, importation, installation, commissioning (and operation), modification and decommissioning.

The NSD also grants permits for the construction, commissioning, maintenance, remodelling, rehabilitation, modification, expansion, use (other than for its original function) and demolition of nuclear buildings and structures.

In the interests of ensuring nuclear safety, the NSD is required, in all phases during the life cycle of nuclear facilities, to routinely inspect the following:

- The observance of provisions prescribed in applicable laws and regulations, including the quality assurance system of the nuclear facility;
- The fulfilment of conditions attached to licences; and
- The execution of instructions issued by the NSD.

The following nuclear safety regulations are set out in a seven-volume appendix to the Decree, describing the mandatory safety requirements for nuclear facilities:

- Regulatory Procedures of Nuclear Power Plants;
- Quality Management of Nuclear Power Plants;
- Design Requirements for Nuclear Power Plants;
- Safety Requirements for the Nuclear Power Plants;
- Nuclear Safety Code for Research Reactors;
- Nuclear Safety Code for Spent Fuel Interim Storage Facilities;
- Definitions.

Under the Act, a licence may be granted for a limited or an unlimited period of time and may be issued subject to conditions. A licence granted for a limited period may be extended upon request. A licence becomes void if it expires, if the conditions set out in the licence are not complied with, or if the nuclear equipment or facility is continuously out of operation beyond a period specified in the licence. The HAEA may withdraw a licence or limit its period of validity if the Authority determines that there has been a change in the safety conditions and level of risk which had served as the basis for issuing the licence in the first instance. Similarly, the HAEA may withdraw a licence, or limit its period of validity, if modifications to a nuclear facility or to nuclear equipment or systems are in breach of the licence to undertake the modifications [Section 14]. It should also be noted that the area surrounding a nuclear facility may be designated an exclusion zone, with restrictions on mining, land use and water usage [Sections 34-37]. Governmental Decree No. 213/1997. on the Exclusion Zone of a Nuclear Facility and a Radioactive Waste Disposal Facility contains detailed provisions on this matter.

In addition to the enforcement powers set out above, the HAEA is obliged to monitor compliance with licence conditions and safety regulations, keep records of inspections and, in the event of violations, may impose fines as prescribed by separate regulations [Section 15(1)-(4)]. The Act provides that no fine can be imposed beyond six months from the date the HAEA learns of the breach, or beyond two years from the date when the licensee should have complied with its obligations [Section 15(5)].

As part of the HAEA's licensing process, other relevant administrative bodies are authorised to participate within the scope of their responsibility as defined by separate regulations. Some of the more important ministers and bodies involved in this process are expressly provided for, with reference in the Act to their areas of competence (for details of their responsibilities see, *infra*, Part II of this Study "Institutional Framework", Section 1 "Regulatory and Supervisory Authorities").

The Act also provides that the HAEA is responsible for the nuclear safety inspection of nuclear facilities [Section 17(2)(b)]. As with the licensing function, this is intended to be supplemented by inspection and regulatory powers granted under the Act to other specified ministers and administrative bodies with particular areas of interest, most of whom are referred to in the previous paragraph [Sections 22-29]. The details of these inspection powers are as determined in separate legal regulations.

In addition, it is necessary under the Act to obtain the relevant licence from the Hungarian Energy Office (*Magyar Energia Hivatal*), pursuant to Act No. XLVIII of 1994 on the Production, Transport and Supply of Electric Energy, for the construction and lawful operation of a nuclear power plant [Section 33].

Personnel operating the Paks nuclear plant receive between two and three years of classroom and on-the-job training. They must also successfully complete five weeks of simulator training on the plant's full-scope simulator before taking the qualifying examination. Once qualified, the personnel receive a day of refresher training every five weeks and about 80 hours of simulator

training every year. The regulatory requirements for education, training and retraining of employees is set out by Joint Ordinance No. 49 of 2 June 1998 of the Minister for Industry, Trade and Tourism and the Minister for Culture and Public Education.

Hungary was the first Eastern European country to request an Operational Safety Review Mission of its nuclear plant organised by the International Atomic Energy Agency, which was followed by other international review missions *e.g.* on safety upgrading, independent peer review of probabilistic safety assessment etc. The general judgement was that the design of the Paks nuclear power plant is up to the safety level of other western nuclear power plants constructed at the same time and that it is operated in a safe manner.

At the international level, Hungary ratified the 1994 Convention on Nuclear Safety on 18 March 1996.

b) Emergency response

Chapter IV of the Act deals with measures for the prevention of abnormal events and the elimination of their consequences. The user of nuclear energy is obliged to take immediate appropriate measures if an abnormal event occurs in the course of its activities and the level of ionising radiation released is or may be higher than the level permitted by the authorities [Section 42].

The termination of an abnormal event, the investigation of its causes, and the execution of measures necessary to prevent its repeated occurrence are primarily the responsibility of the user of nuclear energy. In order to prevent the occurrence of a nuclear emergency, to respond to or limit the consequences of an event that has occurred, as well as to restore the situation, the user of nuclear energy is obliged to:

- prepare a plan for emergency preparedness which has to be approved by the relevant authorities;
- establish the required conditions and verify the suitability of those conditions from time to time for an efficient emergency response; and
- co-operate with the relevant authorities to ensure adequate external assistance if the need arises [Section 43].

To the extent that the capabilities of the user of nuclear energy are exceeded in the event of a nuclear emergency, the necessary response measures become the responsibility of the authorities identified in the emergency preparedness and response plan [Sections 44 and 46].

The emergency management plan has undergone an essential change following the entry into force of Act No. LXXIV of 1999 on the Control and Organisation of the Protection against Catastrophes on 1 January 2000. Pursuant to this Act, a single leading body, the Governmental Co-ordination Committee, has been set up to deal with all types of catastrophe, as opposed to the former system where the leading role was assigned to different bodies depending on the nature of the emergency (in the case of nuclear accidents, a specific governmental committee was in charge of nuclear emergency preparedness). The Minister of Local Government and Regional Development heads the Governmental Co-ordination Committee; his deputy in the event of nuclear emergencies is the Director General of the HAEA (for details, see, *infra*, Part II of this Study "Institutional Framework", Section 1 "Regulatory and Supervisory Authorities").

Under the Act, the user of nuclear energy is obliged to report all abnormal events, or any accident resulting in personal injury, to the mayor with jurisdiction over the area, or the county or Budapest office of the National Public Health and Medical Officer Service (*Állami Népegészségügyi és Tisztiorvosi Szolgálat* – NPHMOS) with jurisdiction over the area, the police and the HAEA [Section 45]. The HAEA may stipulate further reporting obligations applying to nuclear facilities [Section 45(3)]. If the environment is contaminated, additional authorities must be notified [Section 45(1) and (2)].

The Act lays down the obligations of the State Public Health and Medical Officer's Service in the event of an emergency, to prevent the proliferation of radioactive contamination and to avoid radiation injury [Section 47].

Hungary is a Party to the following conventions in the field of nuclear emergencies:

- 1986 Convention on Early Notification of a Nuclear Accident, ratified on 10 March 1987;
- 1986 Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency, ratified on 10 March 1987.

5. Trade in nuclear materials and equipment

Hungarian controls over the export and import of nuclear materials are in line with the provisions of the Treaty on the Non-proliferation of Nuclear Weapons. The governmental Decree on Nuclear Exports and Imports [Decree No. 121/1997] has been repealed with the entry into force of the Government Decree No. 263/2004 on the Regulation of International Trade of Nuclear and Nuclear Dual-use Items.

The Government Decree No. 263/2004 on the Regulation of International Trade of Nuclear and Nuclear Dual-use Items was amended in 2005. The amendment provides that the HAEA issues both its preliminary licence required for the export licence, and its preliminary professional opinion required for the international import certificate, specified in the Government Decree 50/2004 on the licensing of foreign trade in dual-use goods and technologies, upon the request of the Hungarian Trade Licensing Office.

The HAEA is responsible for the licensing of nuclear exports and imports [Section 17(2)(h)]. For details on licensing of transport and approval of packaging, see, *infra*, Section 9 "Transport".

6. Radiation protection

The HAEA has responsibility for licensing nuclear equipment with regard to technical radiation protection requirements, as well as for monitoring the quality assurance system prescribed under the Act [Section 17(2)(d) and (e) of the Act]. This function is performed by the Nuclear Safety Directorate of the HAEA, which is entitled to conduct inspections at licensees' and suppliers' premises [Decree No. 89/2005].

The Minister for Health is responsible for enforcing the health and radiation protection considerations arising from the activities in nuclear facilities licensed by the HAEA. In addition, through the National Public Health and Medical Officer Service, the Minister, as part of the radiation safety procedures, carries out:

- licensing and monitoring of all activities with radioactive materials; and
- licensing and inspection of non-nuclear facilities in which ionising radiation or radioactive material is utilised (including radioactive waste repositories) [Section 20(1)(a)-(d)].

The Minister also oversees radiation protection services established in facilities utilising nuclear energy, compliance with occupational safety requirements in the field of radiation protection and data collection and evaluation relating to the national radiation situation [Section 20(1)(e)-(h)].

The area surrounding a nuclear installation may be designated an exclusion zone, comprising restrictions on mining, and on land and water usage [Sections 34-37] (see also, *supra*, Section 4(a) "Licensing and inspection, including nuclear safety").

Ordinance No. 16/2000 of the Minister for Health on the implementation of certain provisions of the Act on Atomic Energy prescribes the health requirements and radiation protection standards

applicable to all activities involving the use of atomic energy, in order to protect workers and the general public against the harmful effects of ionising radiation. According to this Ordinance, practices involving the release of ionising radiation shall not be licensed and maintained, unless it can be justified that the benefit for society offsets the radiation harm that they may cause. During practices applying any radiation source, except for therapeutic medical exposures, protection and safety shall be optimised in order that the magnitude of individual doses, the number of people exposed and the likelihood of incurring exposure be kept as low as reasonably achievable. In the course of optimisation, economic and social factors shall be taken into account. The persons in charge of an establishment using atomic energy are required to draw up internal rules on radiation protection and to establish a radiation protection service [Section 10].

Maximum permissible doses of ionising radiation are set out for workers and certain members of the public [Section 3 and Annex 2]. Training of staff engaged in activities involving the use of atomic energy is also provided for [Section 8]. This Order No. 30/2001 on the Operational Radiation Protection of Outside Workers, adopted by the Minister of Health on 3 October 2001, aims to implement the principles established in Council Directive 90/641/Euratom of 4 December 1990 on the Operational Protection of Outside Workers Exposed to the Risk of Ionising Radiation during their Activities in Controlled. The Order implements in particular the principles of justification, optimisation and dose limitation and contains provisions governing dosimetric monitoring, inspection by the authority and the respective obligations of outside workers and of the licensee of controlled areas.

The Order No. 31/2001 on the Protection of the Health of Persons Exposed to Ionising Radiation for Medical Purposes, adopted by the Minister of Health on 3 October 2001, establishes conditions governing the application of medical radiological procedures, including the optimisation of medical exposure and reduction of potential exposure, duties of medical personnel in connection with the application of such procedures, the employment of medical physicists, control of radiological equipment, training of personnel and inspection by the competent authority. This Order aims to implement Council Directive 97/43/Euratom of 30 June 1997 on Health Protection of Individuals against the Dangers of Ionising Radiation in Relation to Medical Exposure.

7. Radioactive waste management

Under the Act, the Parliament's preliminary approval is required for the establishment of a new radioactive waste disposal facility [Section 7(2)].

The Minister for Health, through the National Public Health and Medical Officer Service, is responsible for licensing and monitoring the siting, construction, commissioning, operation, modification and closing of radioactive waste disposal facilities [Section 20(1)(d)].

A licence for the application of nuclear energy will only be granted if the safe interim storage or final disposal of the radioactive waste or spent fuel can be assured in accordance with the most recent scientific knowledge and experience [Section 38(1)]. Under the Act, the interim storage and final disposal of radioactive waste and spent fuel shall be considered safe if (a) the protection of human health and the environment is ensured during the whole period of these activities, and (b) the effect on human health and the environment is not higher beyond the country's borders than that accepted within the country [Section 38(2)]. The Decree No. 155/2004 on the Licensing of Shipments of Radioactive Waste Across the National Border, aims to implement Council Directive 92/3/Euratom of 3 February 1992 on the Supervision and Control of Shipments of Radioactive Waste between the Member States and Into and Out of the Community. It regulates the licensing of shipments of radioactive waste to, from or in transit through Hungary and entrusts the Hungarian Atomic Energy Authority with the task of applying these rules. Pursuant to the Decree, such shipments should be monitored from the point of departure to the point of destination. The transport operations necessary for the shipment shall comply with national provisions and with international agreements on the transport of radioactive material.

Facilities for the interim storage or final disposal of spent fuel are nuclear facilities and the Nuclear Safety Directorate of the HAEA may regulate their operation. The interim storage of

radioactive waste and spent fuel is licensed only for a limited period of time [Section 39]. In recognition of the importance of this issue on the national scale, the Act provides that the performance of tasks related to the final disposal of radioactive waste, as well as the interim storage and final disposal of spent fuel and decommissioning of a nuclear facility, will be restricted to an organisation designated by the government [Section 40].

The licensee is liable to cover the costs of the final disposal of radioactive waste, as well as the interim storage and final disposal of spent fuel (or, in the case of organisations funded by the national budget, the costs will be funded by the budget) [Sections 41 and 63(1)]. For this purpose the Central Nuclear Financial Fund (*Központi Nukleáris Pénzügyi Alap*) was established (as of 1 January 1998). The fund is managed by the HAEA and is a separate state fund pursuant to Act XXXVIII of 1992 on Public Finance, exclusively earmarked for financing the construction and operation of facilities for the final disposal of radioactive waste, as well as for the interim storage and final disposal of spent fuel, and the decommissioning of nuclear facilities [Section 62]. Payments into the fund by licensees of nuclear facilities will be determined in such a way that the fund fully covers all the costs arising from the waste management, interim storage and final disposal of spent fuel, both during the operation of the facility and at the time of its decommissioning [Section 63(2)]. In the case of a nuclear power plant, payments made by the licensees to the fund should be taken into account when pricing electricity [Section 63(4)]. Order No. 14/2005 of the Minister of Justice specifies the rules on the operation and administration of this Fund.

Governmental Resolution No. 2414/1997 authorised the Director-General of the HAEA to establish the Public Agency for Radioactive Waste Management (PURAM). In accordance with the relevant government decrees and resolutions [see Governmental Decree No. 240/1997 on Establishment of the Organisation Designated for Implementing Radioactive Waste Disposal and Spent Fuel, as well as Decommissioning of Nuclear Installations, and on the Financial Resources Necessary to Perform these Tasks], the PURAM attends to the planning, construction and management duties associated with the storage and disposal of radioactive waste and spent fuel. It is also responsible for activities related to the decommissioning of nuclear facilities, as well as for the operation of the Püspökszilág Radioactive Waste Treatment and Disposal Facility and the Interim Storage Facility for Spent Fuel located at the Paks Nuclear Power Plant. The PURAM's duties include preparation of the annual, intermediate and long-range plans for the Central Nuclear Financial Fund.

The Order No. 47/2003 on some Aspects of the Interim Storage and Final Disposal of Radioactive Waste and on the Radiological Aspects of Radioactive Materials Arising from Industrial Activities and Naturally Occurring Radioactive Materials (2003) was issued on 8 August 2003 by the Minister for Health. It sets out the procedure and conditions to obtain a license to establish an interim storage facility or final repository of radioactive waste. It also regulates the conditions of processing radioactive materials arising from industrial activities and naturally occurring radioactive materials.

Some special geological aspects are regulated by the Ordinance of the Minister for Industry, Trade and Tourism No. 62/1997 on the Geological and Mining Requirements for the Siting and Planning of Nuclear Facilities and Radioactive Waste Disposal Facilities.

In the past, spent fuel from the Paks plant was sent back to Russia for reprocessing. In 1992, however, Russia passed legislation prohibiting the import of foreign radioactive waste, and since that time the reshipment has required lengthy, case by case, negotiation. At the same time Ukraine became a transit state and a trilateral governmental agreement was concluded between the Russian Federation, Ukraine and Hungary to provide an appropriate legal framework for the shipments. With storage space in its spent fuel pools running low, and future acceptance of spent fuel by Russia uncertain, the Paks plant awarded a contract to GEC Alsthom Engineering Systems in 1992 for the construction of a modular vault dry storage system. The first fuel assemblies were received by the facility in September 1997, and eleven modules are currently in operation (each of which can store 450 assemblies) with a further five modules under construction.

In 1993, a national project was launched to select a site for the disposal of low and intermediate level waste from the nuclear power plant, and exploratory work is now under way to identify a site for detailed research. The investigations in the area of Bataapáti reached in 2005 such a degree of preparedness that requesting the approval of the Parliament became necessary. This was supported also by the local referendum. The approval in principle of the Parliament, of November 21, 2005, certified that construction of the facility for final disposal of radioactive waste serves the interest of the society in large. For licensing purposes, further geological investigations, preparatory activities as well as safety assessments are required. The Environment Impact Study was prepared and accepted by the relevant authority, though a non-governmental organisation appealed against it and the authority did not decide yet whether to approve or reject it. The application for the construction licence was prepared and is pending on the environmental licence to be issued.

A site for a high-level waste repository in the Mecsek Mountains is also under preliminary study.

On 2 June 1998, Hungary ratified the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. It has also been a Party to the 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter since 6 March 1976, following its ratification on 5 February 1976.

8. Nuclear security

Hungary ratified both the 1968 Treaty on the Non-proliferation of Nuclear Weapons, on 27 May 1969, and the 1996 Comprehensive Nuclear Test Ban Treaty, on 13 July 1999. It also ratified the 1979 Convention on the Physical Protection of Nuclear Material on 4 May 1984.

As a non-nuclear weapon state it has subjected all of its nuclear activities to the provisions of the safeguards agreement, which it signed with the IAEA on 30 March 1972, and obliged itself to keep strict accountancy and control of all nuclear materials. The Act and its executive orders make the Director-General of the HAEA responsible for these actions. The General Nuclear Directorate (more precisely, the Department of Nuclear and Radioactive Materials) of the HAEA runs the State System of Accountancy and Control. Hungary signed the Additional Protocol to the Safeguards Agreement with the IAEA [Act No. XC of 1999] and it entered into force on 4 April 2000.

Hungary also contributes to the international control of nuclear materials through its export and import controls, which include the requirements and the trigger list of the Nuclear Suppliers Group, as well as the Zangger Committee list. It also takes into account similar regulations and controls of the European Union.

Express provision is made in the Act for the guarding and protection of nuclear facilities. This is stated to be the responsibility of the licensee, as required in separate regulations, through the use of armed security guards [Section 30(1)]. In addition, the Act provides for the possibility of protection of nuclear facilities, pursuant to separate legislative provisions, by the national security services [Section 30(2)]. The Act empowers the police to monitor compliance with regulations relevant to public security and domestic order [Section 30(3)]. The police, under separate regulations, issue licences for transporting fresh and spent nuclear fuel within Hungary and across its borders [Section 30(5)]. Further details are governed by separate regulations, namely Ordinance No. 47/1997 of the Minister of the Interior on the Tasks of the Police in connection with the Use of Atomic Energy.

9. Transport

The HAEA is responsible under the Act for the licensing of nuclear exports and imports, and for the approval of transport, package and material designs of radioactive materials in accordance with the regulations for the transport of dangerous goods, and for the inspection of packages of radioactive materials [Section 17(2)(h)-(j)]. The approval of the transport and package and material designs

and the notifications are performed by the Department of Nuclear and Radioactive Materials of the HAEA, with the expert support of the Institute of Isotopes of the Hungarian Academy of Sciences.

There are a number of relevant international transport regulations in force, implemented by the following:

- Law Decree No. 19 of 1979 and Ordinance No. 20/1979 of the Minister for Transport, which implement the provisions of the European Agreement concerning the International Carriage of Dangerous Goods by Road;
- Ordinance No. 2/1982 of the Minister for Transport, Communication and Water Management, which implements the provisions of the draft European Agreement on the International Carriage of Dangerous Goods by Inland Waterway;
- Law Decree No. 2 of 1986 and Ordinance No. 4/1987 of the Minister for Transport, Communication and Water Management which implement the provisions of the International Regulations concerning the Carriage of Dangerous Goods by Rail.

Further Ordinances by the Minister for Transport, Communication and Water Management include:

- No. 13/1997 on Promulgation of the Regulation on the Safe Transport by Railway of Spent Nuclear Fuel;
- No. 14/1997 on Transport, Carriage and Packaging of Radioactive Material, as amended by Ordinance No. 11/2000.

10. Nuclear third party liability

Hungary was the first Eastern European State to become a Party to the 1963 Vienna Convention on Civil Liability for Nuclear Damage (accession on 28 July 1989) and to the 1988 Joint Protocol on the Application of the Vienna Convention and the Paris Convention (approved on 26 March 1990).

Chapter V of the Act implements these international obligations. Thus, there is strict liability, channelled to the licensee (operator) of the nuclear facility, for all nuclear damage, except as provided for by the Act [Sections 48(1) and 51]. In the case of international carriage, the location where the liability is transferred is required to be stated in the contract [Section 48(2)]. Exemptions from liability are limited to external causes (armed conflict, war, civil war, armed uprising or a grave natural disaster of an extraordinary character) or if the damage suffered by the injured party was caused by the injured party's gross negligence, or is the consequence of a wilful and unavoidable act or omission of the injured party which was expressly aimed at creating the danger [Section 49].

The liability of the licensee is limited to Special Drawing Rights (SDR) 100 million per nuclear accident arising in a nuclear facility, and SDR 5 million per accident arising during the transport or storage of nuclear fuel. Nuclear damage in excess of this amount will be compensated by the state, provided the total amount does not exceed SDR 300 million. Compensation will be paid in Hungarian currency, based on the official exchange rate with the SDR [Section 52].

Where damage is caused by another event jointly with the nuclear accident, and the two cannot be separated, the damage caused by the other event will be classed as nuclear damage. Two or more nuclear facilities operated at the same site by the licensee will be treated as one nuclear facility for the purposes of compensation [Section 53(4)].

If there is nuclear damage falling outside the scope of the Act, the person responsible for the release of ionising radiation is liable therefore under Section 345 of the Civil Code [Section 53(1)].

The licensee is obliged to provide for insurance or another form of financial security up to the amount of compensation specified in Section 52 of the Act [Section 54(1)]. The insurer or financial

guarantor is not permitted to suspend or cancel the insurance or financial security without giving at least two months notice in writing to the HAEA and the licensee [Section 54(2)], or in the case of carriage of nuclear materials, it may not be cancelled or suspended during the period of carriage [Section 54(3)].

The amount of liability under Section 52 of the Act does not include the interest and costs associated with the nuclear damage, as determined by the relevant court [Section 56(1)]. If the amount available for compensation is not enough to satisfy the entitlements of the injured parties, then the amount due to each of them will be reduced proportionately [Section 56(3)].

Injured parties may claim their right to compensation within a three year limitation period, commencing on the date when the injured party learned or could have learned of the occurrence of the damage and the identity of the licensee responsible; the licensee shall not be liable for damage after ten years from the date of the occurrence of the nuclear accident [Section 57(1) and (2)]. If the nuclear damage was caused by an abnormal event resulting from nuclear material which was stolen, lost, jettisoned or abandoned at the time of the abnormal event, the period of limitation shall commence from the date of the abnormal event, but shall not exceed twenty years from the date of the events listed [Section 57(3)].

No compensation is due to any party that has received full compensation for the same nuclear damage under any other cause of action [Section 59]. The Municipal Court of Budapest has exclusive jurisdiction to judge compensation claims under the Act [Section 65(1)] Governmental Decree No. 227/1997 on the Features, Conditions and Amounts of the Insurance or Other Financial Security related to Liability for Nuclear Damage provides for further details.

As regards insurance against nuclear liability claims, eleven Hungarian Insurers representing the vast majority of the Hungarian insurance market's non-life capacity, established the Hungarian Nuclear Insurance Pool at the end of 1996, the so-called "Hungarian Atomic Pool". The Pool is based on the fundamental principles common to all nuclear pools and is organised and managed by the Allianz Hungaria Insurance Co., the largest of such companies. The Hungarian Pool provides third party liability coverage for the Paks nuclear power plant in accordance with the Act. Property insurance is expected to be provided in the future as well. The Paks nuclear power plant is the first Russian designed plant to have third party liability insurance cover.

II. Institutional framework

1. Regulatory and supervisory authorities

a) Atomic Energy Co-ordination Council

Under the Act on Atomic Energy as amended, the Government provides for the execution of the governmental tasks described in this Act through the Hungarian Atomic Energy Authority (HAEA) and the Ministers concerned, whose work is co-ordinated by the Atomic Energy Co-ordination Council [Section 6(2)].

b) Hungarian Atomic Energy Authority (HAEA)

The Hungarian Atomic Energy Authority – HAEA (*Országos Atomenergia Hivatal*) plays a central role in the regulation of the use of nuclear energy in Hungary [Section 6]. Pursuant to the Act, it regulates certain activities (in particular, the licensing of nuclear facilities) and co-ordinates or accomplishes the regulatory tasks and the related information activity, in connection with the safe application of nuclear energy, safety of nuclear materials and facilities, as well as nuclear emergency preparedness [Sections 17 and 19].

The HAEA is also required to monitor international trends in the field of nuclear energy and make proposals to the government for corresponding domestic measures [Section 8(4)(a)]. Within its area of competence, the HAEA monitors the enforcement of regulations related to the use of nuclear energy and, based on its findings, it initiates actions and makes proposals for amendment of the applicable legislation or draws up new draft legislation [Section 8(4)(b)]. The HAEA is directed by the Government, supervised by a Minister appointed by the Prime Minister [Section 8(1)].

The Government Decree No. 114/2003 on the Scope of Duties, Authority and Competence to Impose Penalties of the Hungarian Atomic Energy Authority, and on the Activities of the Atomic Energy Co-ordination Council, adopted in 2003, implements the provisions of the Atomic Energy Act, defining the statutes of the HAEA and the Atomic Energy Co-ordination Council, and provides HAEA with regulatory independence. The main function of the HAEA is to co-ordinate and fulfil regulatory duties with respect to the safety of the peaceful use of atomic energy. The HAEA is entitled to conduct inspections at the installation of any user of atomic energy and is responsible for the management of the Central Nuclear Financial Fund. The HAEA is also empowered to fine any licensee for violation of legal regulations or safety rules, or for any failure to comply with the provisions laid down in the licence. The Director General of the HAEA shall prepare an annual report on the safe use of atomic energy to the Government and to Parliament in co-operation with the relevant ministries, and also other competent central state organisations.

The HAEA is assisted by the Scientific Council, composed of 12 experts with nation-wide reputation in the field of atomic energy. The Scientific Council shall convey its opinion in connection with nuclear safety, radiation protection, emergency response and preparedness related to nuclear accidents.

An Emergency Response Organisation shall also be set up and operated by the HAEA. This Organisation shall be designed to carry out the duties relating to emergency preparedness and response to nuclear accidents.

The Nuclear Safety Directorate (NSD) of the HAEA established in 1997 a multipurpose Centre for Emergency Response, Training and Analysis equipped with hardware and software tools for independent analysis of abnormal events and accidents, giving estimations on the duration of incidents, and the possible escalation of the consequences of accident scenarios (by calculating source term), and by predicting environmental effects and proposing appropriate interventions. The centre also serves for the training of regulatory staff members using simulators and provides them with Probabilistic Safety Assessment based tools to assist in their everyday decision-making work.

The Government Decree No. 89/2005 on the Procedures of the Hungarian Atomic Energy Authority in Nuclear Safety Regulatory Matters, which repeals and replaces Government Decree No. 108/1997 as of June 2005, redefines the responsibilities of the NSD. This decree was substantially revised after lengthy negotiations to incorporate the most recent IAEA Safety Standards and to incorporate the findings of the IAEA Safety Review Mission.

The principal modifications are as follows:

- this decree shall apply to nuclear facilities, their related buildings, systems and equipment, and to activities related to nuclear facilities and parties involved in such activities. This includes, among others, the transport of radioactive materials within a facility, equipment for temporary storage of radioactive waste and physical protection equipment;
- it is now possible to issue a new licence for licensees wishing to extend the designed operating lifetime of units, provided a proper request is made to the NSD at least 4 years before the original licence's expiry date. The applicant must submit a programme of operations, which will then be supervised and inspected by the NSD;
- the NSD must issue a new licence in the event of legal succession concerning a former licensee;
- every time a unit is refuelled after general overhaul, the HAEA is required to issue a new licence;
- the licensee will not be held liable for ensuring the safety of the nuclear facility if that responsibility was assigned to another licensee, after the termination of his/her licence or after decommissioning of the nuclear facility;
- enhancement of safety culture is emphasised;
- applicants for a construction licence are required to submit a Preliminary Safety Report and applicants for a commissioning licence shall submit a Final Safety Report (which has to be updated on a yearly basis) to the NSD;
- the provisions of the decree are updated to ensure harmonisation with international emergency recommendations.

The General Nuclear Directorate of the HAEA, through its Department of Nuclear and Radioactive Materials, runs the State System of Accountancy and Control of nuclear materials and the Central Registry of radioactive materials from their production to their disposal as radioactive waste.

c) Minister for Health

The Minister for Health has responsibility for the licensing and monitoring of a number of nuclear activities specified in the Act [Section 20]. These include the ownership, production, manufacturing, possession, storage, use, transformation and distribution of radioactive materials, as well as, *inter alia*, the ownership and use of equipment generating ionising radiation [Section 20(1)(a) and (c)]. Of particular importance is the Minister's power to licence and monitor radioactive waste disposal facilities [Section 20(1)(d)] and to supervise occupational radiation protection services and other matters related to radiation hygiene [Section 20(1)(e)-(h)].

d) Minister for Local Government and Regional Development and Minister for Justice and Law Enforcement

The Minister for Local Government and Regional Development and the Minister for Justice and Law Enforcement, through the offices of the National Police Force and the Directorate General for National Emergency Management (including the Fire Protection and Civil Defence Service), enforces those licensing aspects of nuclear facilities, nuclear equipment, radioactive materials and radioactive waste disposal facilities relating to public and domestic order, fire protection, physical protection, security, civil defence and nuclear emergency management [Section 22].

e) Minister for Agriculture and Rural Development

The Minister for Agriculture and Rural Development, through the offices of the Animal Health and Food Control Stations, enforces those licensing aspects of nuclear facilities, nuclear equipment, radioactive materials and radioactive waste disposal facilities associated with the use of nuclear energy relating to food, plant and animal hygiene, as well as soil protection [Section 23].

f) Minister for Economy and Transport

The Minister for Economy and Transport is responsible for the inspection of radioactivity of raw materials used or imported for the production of building materials [Section 24] and for regulations in accordance with the provisions laid down in international transport agreements.

g) Minister of Environment Protection and Water Management

The Minister of Environment Protection and Water Management and is generally responsible for the regulation and inspection of the radioactive contamination of the air, land and water environments [Section 25].

h) Minister for Defence

The Minister for Defence, as detailed in separate regulations, is responsible in defence matters for the control of handling of radioactive materials, as well as for the construction, operation and closing down of military facilities and equipment which fall within the scope of the Act. In respect of the Hungarian Army, the Medical Officer Service of the Army performs the same tasks handled by the Minister for Health in the civilian context under Section 20 of the Act, other than in respect of radioactive waste disposal facilities or the central collection and processing of data relating to a national radiation situation [Section 26].

i) Minister for Education

The Minister for Education is responsible for integrating into the National Master Curriculum the requirement to provide education on the scientific, technical and radiation protection aspects of the use of nuclear energy. The Minister also regulates higher and postgraduate education in the field of the application of nuclear energy in co-operation with the relevant professional institutions and ministers [Section 28].

j) President of the Hungarian Mining and Geological Authority

The President of the Hungarian Mining and Geological Authority is responsible for enforcing the technical, technological and safety considerations relating to mining, laid down in separate legal instruments.

k) Governmental Co-ordination Committee

The Governmental Co-ordination Committee, responsible for emergency management, is headed by the Minister for the Interior; his deputy in the event of nuclear emergencies is the Director General of the HAEA. The Committee consists of high-ranking representatives of the ministries and national organisations involved in the particular catastrophe. Two sub-committees of the Governmental Co-ordination Committee – the National Defence Committee and the Operational Staff – serve as vehicles to assist decision-making in the event of a nuclear emergency. These sub-committees include expert representatives of the ministries and national organisations involved in nuclear emergencies among their members.

The Directorate General for National Emergency Management manages a Nuclear Emergency Information Centre which is also responsible for decision-making, together with the National Environmental Radiation Monitoring System and the Centre of Emergency Response, Training and Analysis of the HAEA. The HAEA furthermore serves as the International Contact Point.

2. Advisory bodies

a) Scientific Board

The Scientific Board is the advisory body of the Hungarian Atomic Energy Authority on all matters of importance concerning the safe use of nuclear energy. It consists of prominent members of the Hungarian Academy of Sciences, research institutions and universities. It is convened two or three times a year and formulates directives on current issues.

3. Public and semi-public agencies

a) Institute for Electric Power Research (VEIKI)

VEIKI was established in 1964. It has been functioning as a company with share capital since 1 January 1993, with its shares being fully owned by the state.

VEIKI is responsible for solving the operational problems of power plants, safety analysis of nuclear power plants, lifetime extensions of nuclear power plants, technologies for refurbishment of power equipment focusing on efficiency increase and environmental protection, new and environment friendly combustion technologies, control engineering and IT projects, and strategic research. VEIKI acts as one of the technical support organisations of the HAEA.

About 10% of VEIKI's annual income comes from the state budget, with the major part of the remainder coming from contracts with domestic industry. Less than 10% of its budget is derived from international projects (EU, US DOE, IAEA, bilateral contracts).

b) Atomic Energy Research Institute (AEKI)

AEKI is one of the research institutes of the Hungarian Academy of Sciences. It is responsible for independent nuclear safety research in Hungary and for the operation of the Budapest Research Reactor. An additional responsibility of AEKI is to act as the technical support organisation of the HAEA.

c) Institute of Isotopes

The Institute of Isotopes provides expert advice through its laboratories to the HAEA and conducts related research and development in the following areas:

- illicit trafficking of nuclear and radioactive materials;
- safeguards-related measurement techniques;
- computerised accountancy of radioactive materials at national level;
- nuclear material accountancy at the level of a material balance area.

d) Department of Physical Chemistry of the University of Pannon

The Department of Physical Chemistry of the Pannon University (*Veszprém*) was established in 1950. The research activity of the Department in the field of nuclear corrosion processes started in 1980. During the initial period, special attention was paid to the water chemistry problems of VVER-type reactors, and a close relationship was built up between this Department and the Paks Nuclear Power Plant during the years. Since the early nineties, the Department has also developed co-operation activities with the Department for Energy of the Technical University of Budapest, resulting in the development of new secondary water chemistry of the Paks NPP.

In 1998, the Department became the technical support organisation for the HAEA. Its main research fields are primary and secondary water chemistry of VVER-type reactors, corrosion problems of stainless steel, concrete, and coatings.

e) Hungarian Power Companies Ltd. (MVM Zrt.)

The Hungary's national power group (MVM Group), which is constituted by Hungarian Power Companies Ltd. (MVM Zrt.) and by companies controlled by MVM Zrt., has the following main roles:

- Electricity Trading: MVM Group is Hungary's determining electricity wholesale trader (MVM Power Companies Ltd.), and has a major share of the retail trade market (MVM Partner Energy Trading Ltd., MVM Adwest GmbH.).
- Power Generating: MVM Group has a determining role – through Paks Nuclear Power Plant – in the Hungarian market. MVM Group is active in the regional district heating market, where it implements modern technologies to support the favourably priced and environmentally sound district heating supply of the given regions (specifically in the towns of Tatabánya, Miskolc and in North-Buda, Budapest).
- Transmission System Operator (TSO): The responsibilities of the TSO Company consist in operating and updating the high-voltage transmission system including any necessary expansion. In its activity the main principle is providing market players equal access to the transmission network. The business activity on transmission is made complete by the work of other members of MVM Group, which involves the implementation of network development projects (National Power Line Company), and the associated engineering services (ERBE Power Engineering & Consulting Ltd.).
- Ownership participation in the electricity market of the region: The MVM Group's strategic goal aims to appear as capital investor in the electricity markets of other countries of the Region – and not only in Hungary.
- As an integrated national power company present in every segment of the vertical electricity industry, MVM Group has substantial strength to support the State in assuming roles in the energy industry. Relying on its market position, MVM Group contributes actively – in accordance with the prevailing regulatory rules – to the fulfilment of long-term national energy policy objectives and to the security of supply.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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