Poland: principles for the NPP licensing process and radioactive waste management concepts

Piotr Korzecki, Jerzy Niewodniczański
Państwowa Agencja Atomistyki (National Atomic Energy Agency)
Warsaw, Poland

I. INTRODUCTION

Nuclear power plant (NPP) fundamentally differs from all other industrial facilities, above all by the fact that its construction is followed by environmental impacts measured not in tens or hundreds of years, but – because of long-lived radioactive waste generated during the NPP operation and its further disposal – in hundreds thousands of years. Moreover, despite a strictly determined site, the decision to build such a power plant has an essentially global character. Thus all enterprises involving nuclear power are subject to unprecedented legal restrictions, which are not encountered for any other technology. All investment process stages, such as the siting decisions or a selection of technical solutions, and then a detailed regime for the NPP operation and decommissioning and management of generated waste, shall require regulation in the form of formal licensing by an authorized competent regulatory body, in order to verify and check the compliance of adopted arrangements with univocal and strictly valid legal provisions. Because of the global importance of such decisions – all of them, including apparently insignificant changes in selected technology or operational regime – national laws establishing the procedures and technical standards should be fully compatible with the developed, comprehensive world legal system, based on international conventions and agreements of a virtually universal scope. Within this system the world community stipulates not only the unification of adopted standards, but also the possibility of the international control over their implementation.

The above means that prior to all initiatives involving nuclear power programs, the country involved must establish an appropriate legal framework together with a structure enabling the verification of its observance, with an indispensable prerequisite in the form of accessing to the international legal system for broadly defined nuclear and radiation safety. Poland meets this condition. Our country is a Contracting Party to the Nuclear Nonproliferation Treaty (NPT) and to the nuclear material safeguards and control system established on its base in its broadest form (including international agreements based on the Treaty), and also to the other conventions related to the nuclear and radiation safety:

- Convention on Early Notification of a Nuclear Accident
- Convention on Assistance in the Case of Nuclear Accident,
- Convention on Nuclear Safety,
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management,
- Convention on the Physical Protection of Nuclear Material,
- Convention on Civil Liability for Nuclear Damage.

Moreover, Poland is a member of the international control system for trade in nuclear material and technologies, and as a Member State of the European Union – also of the additional arrangements established within the EU for the supervision over nuclear facilities, trade in all radioactive substances, radiological monitoring of the environment and consumer products, etc. Basing herself on these regulations Poland has established its own legal framework for nuclear safety and protection against radiation, which is based on the principle of full consistence of these issues, i.e.

recognition that the protection of the workers and general public against radiation is primary in all standards regulating not only the licensing of the entities conducting activities involving ionizing radiation sources, ionizing radiation dose limits, principles of safe work with radioactive sources, responses in case of abnormal radiation threats, procedures for radioactive waste management, etc., but also establishing e.g. the principles of accountancy, control and physical protection of nuclear materials and facilities.

II. SEPARATION OF PROMOTIONAL AND REGULATORY FUNCTIONS

Binding international regulations prohibit the situation when the same authority executes both the promotional functions for the use of nuclear energy and the regulatory functions for the use of such energy. Pursuant to Article 8(2) of the Convention on Nuclear Safety, each Contracting Party to this Convention is obliged to take appropriate steps for ensuring effective separation of regulatory functions from the functions of any other authority or organization involving the nuclear energy promotion or application. The same principle is formulated in Article 20(2) of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, where each Contracting Party is obliged to take appropriate steps, in accordance with its legislative and regulatory framework, to ensure the effective independence of the regulatory functions from other functions where organizations are involved in both spent fuel or radioactive waste management and in their regulation.

To fulfil these international obligations, an explicit separation of the promotional and regulatory functions has been introduced in the Polish legislative and regulatory framework. Accordingly:

1) Competence for activities involving the atomic energy applications for national social and economic needs is assigned to the Minister of Economy,
2) Competence for nuclear safety and radiological protection issues is assigned to the President of the National Atomic Energy Agency (NAEA).

This separation has important consequences for nuclear power. The NAEA President is the sole authority competent for licensing nuclear power from the viewpoint of nuclear safety and radiological protection. The term “licensing” here means not only the process of issuing the licenses for various stages of performed activities, but also the supervision and control of these activities from the nuclear safety and radiological protection viewpoint. Nuclear power promotion is assigned to the Minister of Economy. This division of competence is important also for implementation of the provisions of the Treaty establishing the European Atomic Energy Community (Euratom Treaty). Responsibilities of the NAEA President include chiefly the execution of obligations resulting from Part II, Chapter III (health protection and safety) and Chapter VII (safety measures) of the Euratom Treaty.

III. CONTROL OF THE ACTIVITIES INVOLVING EXPOSURE TO IONIZING RADIATION AND INVOLVING NUCLEAR FACILITIES (LICENCES IN THE AREA OF NUCLEAR SAFETY AND RADIOLOGICAL PROTECTION)

1. Control: its object and legal basis

This paper deals with the control of construction and operation of a nuclear power plant only from the point of view of nuclear safety and radiological protection, and does not consider any requirements originating from regulations of general environmental protection and construction acts.

Any economic activity on the territory of the Republic of Poland is based on the principle of the economic freedom. Pursuant to Article 6(1) of the Act of

Parliament of 2 July 2004 on the freedom of economic activities – economic activity launch, conduct and termination is free for all on equal basis, within the conditions specified by the law. Article 75(2) of this Act allows an exception from this principle, where the activities involving exposure to ionizing radiation, as defined in the Atomic Law of 29 November 2000, require a license or notification. At the same time, according to Article 75(5), the provisions of particular acts, e.g. the Atomic Law, establish the authorities issuing the decisions involving such activities and establishing the conditions for their conduct, and the principles and procedures for issuing such decisions.

Article 4(1)(2) of the Atomic Law provides for the control of activities involving exposure to ionizing radiation by introducing the obligation to obtain the licenses in the area of nuclear safety and radiological protection for the activities consisting of the

1) construction,
2) commissioning,
3) test operation,
4) regular operation,
5) decommissioning,

- of nuclear facilities.

The notion of nuclear facility has been defined in Article 3(17) of the Atomic Law as a facility or an installation designed for manufacturing, use, processing, isotopic enrichment, storage and disposal of nuclear material in quantities allowing a self-sustained nuclear fission chain reaction, in particular: power plants, thermal-electric power plants and heating plants with nuclear power reactors, and also research, experimental and other nuclear reactors – from the start of construction until the end of decommissioning. This definition is broader than the definition of nuclear facility in Article 2(i) of the Convention on Nuclear Safety, which in principle is limited only to civil nuclear power plants and its scope does not cover the whole decommissioning process for such a plant. The Atomic Law in Article 3(9) defines the decommissioning of a nuclear facility as bringing a nuclear facility or device to the status, which allows the conduct of any activity with no limitations from the nuclear safety and radiological protection viewpoint.

The obligation of the State – Contracting Party to the Convention on Nuclear Safety - to demand the obtainment of license for nuclear facilities is anticipated in Article 7(2)(ii) of this Convention. The obligation to obtain a prior license for activities consisting in the operation and decommissioning of the nuclear fuel cycle facilities is established also in the Article 4(1)(a) of the Council Directive 96/29/Euratom. This obligation is expressed also in Article 3 of the Directive 90/641/Euratom.

2. Procedure for obtaining the license, documentation required

The President of the National Atomic Energy Agency constitutes the central organ of governmental administration, competent for nuclear safety and radiological protection matters which issues the licenses with regard to nuclear safety and radiological protection for activities including the nuclear facilities (Article 5(3) of the Atomic Law). At the same time the NAEA President constitutes the supreme nuclear regulatory authority (controlling nuclear facilities from the nuclear safety and radiological protection viewpoint). The head of organizational entity applying for license for activities involving nuclear facilities (future operator) is obliged to submit to the NAEA President the license application, which contains not only the data identifying the entity (including the number in the entrepreneur registry), but also the specification of the type, scope and place of the activity covered by the application. A

special provision is contained in Article 37 of the Atomic Law, according to which the application for the license for construction, commissioning and test operation of a nuclear facility is submitted by the investor. During the nuclear facility siting, design, construction, commissioning and test operation, the responsibility for compliance with the requirements of nuclear safety and radiological protection and physical protection of the nuclear facility, and also of related buildings and equipment, whose failure or malfunctioning could cause impacts significant from the viewpoint of nuclear safety and radiological protection rests upon the investor (Article 35(1) of the Atomic Law). During the stages of regular operation and decommissioning this obligation rests upon the operator, i.e. the head of organizational entity operating the facility, who also submits the application for the license for regular operation and decommissioning of the nuclear facility.

The license is issued after the statement that the conditions required by law for performing practices involving exposure to radiation and requiring a license or notification have been fulfilled (Article 5(5)). To prove that these conditions have been fulfilled, the license application is accompanied by relevant documents enumerated in the Regulation of the Council of Ministers which has been issued under Article 6(2) of the Atomic Law. The Regulation divides these documents into two groups:

1) basic document – required with the application for the license for any activity referred to in the Act and involving the exposure to ionizing radiation (containing the justification of the activity, time of its conduct and proposed dose constraints or dose limits), and
2) specified additional documents, required in the situation when the application deals with the activities involving nuclear facilities.

Documents in the group 2) depend on the type of activity.

1. For the activities consisting of the nuclear facility construction they include:
   1) safety report which contains a detailed characterization of the nuclear facility and the nuclear safety and radiological protection assessment in normal operating conditions and in the conditions of possible radiation events;
   2) nuclear safety and radiological protection programme for all construction stages, including the design, manufacture and delivery of all elements of construction and equipment relevant for nuclear safety and radiological protection of the nuclear facility;
   3) description of the principles for physical protection of the nuclear facility;
   4) description of the principles for quality assurance for the stage of commissioning and operation of the nuclear facility.

   The detailed characterization of the facility and the safety assessment, referred to in 1), should include:
   - basic parameters and technical and organizational arrangements,
   - description of the protection measures against the release of radioactive substances into the environment during normal operation and in emergency conditions, including the assessment of substance types and activities,
   - description of functional and technological interdependencies between the on-site equipments and between the facility and its surroundings,
   - data on the type and quantity of radioactive waste and the description of waste management,
   - description of the procedures for spent nuclear fuel management,
   - description of the control program for the workplace and the facility surroundings,

- description of the physical protection of the facility,
- description of detailed site,
- data on the population density in the area surrounding the facility as well as on the location (regarding the facility) of population centres, communication routs and industrial facilities,
- description of the environmental properties relevant for the safe operation of the facility and for the dispersion of radioactive substances into the environment,
- description of these elements of terrain development which may be relevant for the safety of the facility,
- assessment of the exposure of people and environment during the nuclear facility operation, including emergency situations,
- justification of adopted protection measures against the radioactive substance release into the environment during normal operation and in emergency situations as well as of adopted operational limits and conditions,
- characterization of external events which may occur in the vicinity of the nuclear facility site as the result of natural phenomena and human activity, including the assessment of the possible impact of these events on the nuclear facility as well as design basis assumptions related to these events,
- characterization of neighbouring industrial, communication and other facilities which presently or in the future may have a negative impact on the safety of the nuclear facility,
- present and projected demographic data and plans for the development of facility surroundings,
- information on the storage and transport of fresh and spent nuclear fuel and on the radioactive waste management,
- data on the possibility of interactions of nuclear and non-nuclear phenomena, e.g. radiobiological phenomena interacting with thermal and chemical phenomena.

2. For the activities consisting in the nuclear facility commissioning or test operation, the application is accompanied by the following documents:
   1) safety report which contains data and information mentioned above,
   2) commissioning programme which divides the commissioning into the following stages:
      a) pre-operational tests of equipment and technological systems,
      b) loading the fuel into the reactor core and physical start-up of the reactor,
      c) power commissioning and test operation of the facility;
   3) instruction of the operation for the facility which contains basic methods and procedures for the operation of equipment and systems relevant for nuclear safety and radiological protection,
   4) description of proposed operational limits and conditions,
   5) statement by the investor that the required acceptances, tests and examinations of technological equipment and systems relevant for nuclear safety and radiological protection have been performed and that the facility is ready for commissioning,
   6) statement by the investor on the accessibility of workers with qualifications required for commissioning and operation of this facility, including copies of documents which certify the obtainment of required authorizations,
   7) plans for on-site and off-site response in case of radiation emergency,
   8) description of the principles for maintenance work organization,

9) statement by the investor on the possession of the as-built documentation for equipment, systems and constructions,
10) description of the principles for radioactive waste management,
11) description of the principles for fresh and spent fuel management,
12) description of the principles and procedures for both controlling the workers' exposure to ionizing radiation and controls in the workplace and in the facility surroundings,
13) description of principles and procedures for the release of radioactive substances into the environment,
14) results of radiological measurements in the environment,
15) nuclear safety and radiological protection programme for the commissioning,
16) description of physical protection of the nuclear facility.

3. For the activities consisting in the nuclear facility regular operation, the application is accompanied by the following documents:
   1) documents required at the commissioning stage, updated according to the commissioning results of the facility,
   2) investor's report from the commissioning, including the protocol of performed tests,
   3) operation programme for the facility, including the maintenance, periodic tests, checks and operational inspections,
   4) programme for both controlling workers' exposure to ionizing radiation and controls of the workplace and of the environment in the facility surroundings,
   5) nuclear safety and radiological protection programme for operation.
4. For the activities consisting in the nuclear facility decommissioning, the application is accompanied by the following documents:
   1) justification of decommissioning,
   2) scope of decommissioning,
   3) programme for the establishment of the inventory of radioactive isotope activities in the nuclear facility,
   4) programme for decommissioning, including the timetable for works as well as decommissioning techniques, tools and procedures, and the management of radioactive waste removed from the facility,
   5) assessment of the workers' exposure to ionizing radiation,
   6) assessment of the facility impact on the environment during the decommissioning and after its termination,
   7) programme for measurements of ionizing radiation and radioactive contamination in the facility and in its surroundings after the decommissioning termination,
   8) emergency plans in case of an accident during the nuclear facility decommissioning,
   9) nuclear safety and radiological protection programme for decommissioning.

In each case the NAEA President, prior to the decision on issuing the licence, must perform an analysis whether the conditions required by law for a given activity have been fulfilled. These conditions may result not only from the Atomic Law and related implementing acts, but also from valid international agreements ratified by the Republic of Poland and published in the Polish Official Journal (e.g. NPT Treaty, the Safeguard Agreement resulted from this Treaty and Additional Protocol to this Agreement as well as Euratom Treaty and the sources of EU law which are binding and directly used in the Polish legal system, such as the Regulation 302/2005/Euratom).

Pursuant to Article 35(3) of the Atomic Law, during nuclear facility design, construction, commissioning and operation, all necessary technical and organizational measures should be applied that - in view of current scientific and technological developments - are necessary to ensure that at all stages of the facility lifetime the exposure of all persons on the site or of other people, and the contamination of the environment, will be as small as reasonably achievable when taking into account economic and social factors, and will not exceed the dose limits for ionizing radiation. Atomic Law and related implementing acts neither regulate the siting requirements for nuclear facilities, nor technical and organizational requirements which should be met by a nuclear facility and in particular – by a nuclear power plant. Such requirements are defined in detail in the International Atomic Energy Agency documents. During further discussions on the nuclear power plant construction in Poland it is worthwhile to consider the issue of including some of these requirements, in particular those relevant to nuclear safety and radiological protection, into the national legal system. It may be in so far important as both issuing of the license and that of the refusal is made in the form of an administrative decision, which may be appealed against by the party dissatisfied with the decision to the administrative court. In such a situation the adduction of the general provision of Article 35(3) of the Atomic Law may give rise to doubts from the viewpoint of the proper justification of the decision.

At present Polish law system does not include the regulations for granting the authorizations for the positions in a nuclear power plant which are important for nuclear safety and radiological protection (e.g. reactor operator, reactor unit operator). This issue has been left open purposefully, as it will depend closely on the chosen design for the NPP built in Poland.

Additional requirement results from Article 103(1) in connection with Article 100(1)(a) of the Atomic Law: NPP operating entity is obliged to conclude a contract for insurance against civil liability for nuclear damage.

The ascertainment of the compliance with conditions required by law does not have to be limited to the analysis of the license application and documents enclosed to the application. According to §5 of the Regulation of the Prime Minister, which established in detail the scope of activities for the Minister of Economy, when the content of documentation submitted by the applicant is insufficient to demonstrate the fulfilment of the conditions for nuclear safety and radiological protection, the NAEA President can:

1) conduct an inspection aimed at the verification of compliance with the conditions for nuclear safety and radiological protection in the applicant’s premises, or
2) demand the examinations or expert evidence, at applicant’s expense, to ensure the compliance with the conditions for nuclear safety and radiological protection.

For issuing the license a fiscal duty is collected in the amount specified in the Act of Parliament of 9 September 2000 on fiscal duties. The amount of fiscal duty for issuing the license for activity involving a nuclear facility is symbolic – it is at present 1000 PLN. The obligation to pay fiscal duty arises at the moment when the license is issued to the organizational entity.

Appropriate license issued by the NAEA President for activity involving a nuclear facility is prerequisite for obtaining the permit for nuclear facility construction, operation and dismantling, issued on the basis of the Act of Parliament of 7 July 1994 – Construction Law (Article 37 of the Atomic Law). It is also worthwhile to note that already at the stage of issuing the decision on the conditions for the development of the site designated for the nuclear facility construction, according to the Act of

Parliament of 27 March 2003 on land planning and development, the NAEA President has an important role: the authority issuing such a decision can do so only after obtaining a positive opinion of the NAEA President on the nuclear safety and radiological protection issues. Also when the nuclear facility has been included in the local plan of land development, the draft of the plan has to be cleared by the NAEA President.

As mentioned above, nuclear regulatory bodies which are authorized to issue the decisions aimed at ensuring that nuclear facility operates in compliance with the nuclear safety and radiological protection requirements (Articles 63-71 of the Atomic Law), including the decision to revoke the license (in the cases referred to in Article 5(11) of the Atomic Law), perform the supervisory and control functions during the whole investment, operation and decommissioning process for nuclear facility. Nuclear regulatory bodies consist of the NAEA President, Chief Regulatory Inspector and regulatory grade II inspectors authorized to make inspections in nuclear facilities, including nuclear power plants.

IV. RADIOACTIVE WASTE MANAGENENT: CONCEPTS

A responsible decision to build a nuclear power plant should include a concept of the of spent nuclear fuel and radioactive waste management, including the waste generated during the facility decommissioning. Such an outline is indispensable for gaining public acceptance for the constructed plant, not mentioning the impact of the costs of adopted arrangements on the cost-effectiveness of the investment decision, thus – on generated electricity prices. Long-term, effective and safe radioactive waste management in Poland requires:

- siting, design, construction and commissioning of a new repository for low- and medium level radioactive waste (and subsequently the closure and decommissioning of the presently operated National Radioactive Waste Repository),
- siting, design, construction and commissioning of a deep geological repository for spent nuclear fuel, alpha-radioactive waste and high-level waste,
- establishing a stable financial system for ensuring the construction, operation and finally – decommissioning of these repositories.

It should be stressed that the necessity of implementation of these project does not depend on the nuclear power programme reactivation in Poland (because of research reactors operation and of significant quantities of “institutional” waste generated by radioactive substances in various industrial, medical and research applications); only the scope of some of these projects is determined by this programme.

A thorough investigation oriented towards proper siting of surface and deep geological radioactive waste repositories performed in Poland in recent years have indicated that there are several geological formations which could be used for that purpose. That means that a problem of low-, medium- and high-level waste disposal should not be technically difficult. A serious problem is in gaining a public acceptance for any projects connected with the facilities for radioactive waste and spent nuclear fuel management, especially for siting and construction of final repositories. Nevertheless, in view of relatively long time before beginning of construction and exploitation of the new repositories it seems that a broad and multilevel public information activity on safety of radioactive waste and spent nuclear fuel management should significantly improve a current situation.

In 1997-1999, upon the decision of the Council of Ministers of 21 May 1996, a Strategic Governmental Programme “Radioactive Waste and Spent Nuclear Fuel Management in Poland” was implemented in Poland. This Programme was aimed at the implementation of the projects involving legislative issues (upgrading and updating of the laws and regulations), institutional and technical issues (development of new technologies for processing and disposal) relevant for radioactive waste and spent nuclear fuel management, both in the aspect of current needs and from the viewpoint of a future nuclear power programme in Poland (siting of a new radioactive waste repository, selection of the technology for managing the high-level long-lived radioactive waste, analysis of various options for management of spent nuclear fuel from nuclear power reactors). Informational issues (informing the public of the radioactive waste management) constituted an essential element of that Programme.

Within the Programme a feasibility study of future repositories of spent nuclear fuel and high-level waste as well as all un-mined deposits and rock formations in the already existing deep excavation works was performed. As a result of the study all deep mines presently being exploited were eliminated, due to water threats, static distortion of formations or fissures caused by mining activities, vicinity of current underground works and seismicity of the area. As a next step a geology of the whole country for the same purpose was analysed. For further investigations 44 rock formations were chosen:

- 17 in igneous and metamorphic rocks,
- 7 in clay shales, and
- 20 in salt deposits.

For the same reasons as it was in the case of deep mines the igneous and metamorphic rocks in Sudety Mountains and their foreground were eliminated. Also area with proper geological parameters but containing underground aquifers (e.g. in Lublin area) or economically useful raw materials as well as being unique for their natural or landscape vales, were excluded. Finally, as perspective regions the crystalline rocks in the basement of the East – European platform in the north-eastern Poland, shale in Foresudetic Monocline or Łeba uplift and selected salt domes of the Zechstein salt formation of Polish Lowland (the Łeba region was later eliminated from further consideration due to the vicinity of the Słowiński National Park and hydrogeology of the area, indicating abundance of numerous interconnected water layers).

The basic conclusion drawn from the studies on siting of the future deep geological rad-waste and nuclear spent fuel repository in the crystalline bedrocks of north-eastern Poland was that the knowledge of their geology (mainly due to low number of boreholes) is not detailed enough at present to gauge their suitability for radioactive waste disposal; in particular, hydrological conditions in crystalline rocks are not well known. Therefore, while not entirely rejected, that region was not considered further in the evaluation procedure. On the other hand, among clay shales concerned the most suited seems to be the upper Trias shale complex at the Foresudetic Monocline (Jarocin and Pogorzele regions). Salt deposits potentially useful for the location of the repository are those connected with the Zechstein (upper Permian) formation. Among the structures most advisable are Damasławek, Kłodawa (its southern part) and Łanięta salt domes.

A preliminary concept of the repository has been also selected. The considered designs do not differ very much from the commonly applied solutions, considering specific structures of the given formation. The chosen formations: salt

domes and clay shales differ from each other drastically in geological structure and their physical and chemical parameters, so the proposed spatial models of the repository should also be different. In a salt dome a horizontal spread of the repository is limited due to the size of the dome and its complicated internal structure. The shale formation enables the repository to be horizontally extended and it has to have only one level (single level spatial model), the occupied area limited only by discontinuities of geological structure (faults, systems of large fissures). It is obvious that in each case a final decision on both siting of the deep repository and on the structure of its model has to be preceded by laboratory and field *in situ* investigations of the proposed formation.

Initiated by the National Atomic Energy Agency works aimed at the development of the concept for the management of high-level long-lived radioactive waste and spent nuclear fuel need to be continued. It should be noted that the responsibility for radioactive waste management issues rests with the Minister of Economy – as the authority competent for the activities involving atomic energy use for national social and economic needs, and with the Minister of National Treasury – as the founding and supervisory authority for the state-owned utility "Radioactive Waste Management Plant".

The continuation should cover not only works on the development of the concept for radioactive waste and spent nuclear fuel management, but also those on the development of the concept for financing the management of radioactive waste and spent nuclear fuel originating from a nuclear power plant. One should consider the model adopted in other countries with operating nuclear power programs for financing the repository construction and operation from the resources collected in a special fund and coming from the sales of electricity generated in a nuclear power plant.

The issues of the management of radioactive waste and spent nuclear fuel are regulated in detail in the Atomic Law (chapter 7 and the provisions in the Regulation of the Council of Ministers of 3 December 2002), which establishes e.g. the criteria for radioactive waste categorization, the principles for the storage of radioactive waste and spent nuclear fuel, radioactive waste categories which may be held in various types of repositories, detailed requirements for surface and deep repositories addressing their siting, operation, construction and decommissioning.

V. CONCLUSIONS

From the viewpoint of the regulatory infrastructure, Poland is well prepared for the nuclear power programme initiation. Act of Parliament of 29 November 2000 – Atomic Law establishes a clear and consistent system for licensing the activities involving exposure to radiation, including the nuclear facilities, and also for the management of radioactive waste and spent nuclear fuel, including the requirements to be fulfilled by deep radioactive waste repositories during each stage of their lifetime. This system requires continuous improvement and detailed elaboration, especially in the context of decision taking on the development of nuclear power programme in Poland. Prior to such decision, public acceptance should be gained and the concept (technical, organizational and financial) for the management of radioactive waste and spent nuclear fuel originating from nuclear power plants should be developed.