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NUCLEAR ENERGY AGENCY
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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Facilitating the entry into force and implementation of the Amendment to the Convention on the Physical Protection of Nuclear Material: Observations, challenges and benefits

By Peri Lynne Johnson*

INTRODUCTION

While the responsibility for nuclear security at the national level rests entirely with each state, international co-operation can be crucial in helping states to fulfil their nuclear security responsibilities and obligations. The central role of the International Atomic Energy Agency (IAEA) in strengthening the nuclear security framework and leading the co-ordination of international activities in the field of nuclear security is now widely recognised.¹ Although much has been done to help states in improving nuclear security, by and under the auspices of the IAEA and other intergovernmental organisations, nuclear terrorism has gained a global recognition as one of the most challenging threats to global security in the 21st century.²

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1. For example, Ministers "[a]ffirm[ed] the central role of the IAEA in strengthening the nuclear security framework globally and in leading the coordination of international activities in the field of nuclear security, while avoiding duplication and overlap". Ministerial Declaration (2013), International Conference on Nuclear Security: Enhancing Global Efforts, IAEA Headquarters, Vienna, Austria, 1-5 July, para. 17. Further, participants "[...] reaffirm[ed] the essential responsibility and the central role of the IAEA in the international nuclear security architecture. [...]" Communiqué (2014), Nuclear Security Summit, The Hague, Netherlands, 24-25 March, para. 12.
2. Last year, IAEA Director General Yukiya Amano stated that "[t]he threat of nuclear terrorism is real, and the global nuclear security system needs to be strengthened in order to counter that threat". Amano, Y. (2013), "Director General's Statement", International Conference on Nuclear Security: Enhancing Global Efforts, IAEA Headquarters, Vienna,

Reports by IAEA member states to the IAEA's Incident and Trafficking Database (ITDB) indicate that nuclear material continues to go missing.³ Also, too many nuclear facilities are still inadequately protected and sabotage thereof is a threat. Border security remains lax in too many places and the possibility for nuclear smuggling may exist.⁴ Attempts by individuals and groups of persons are still made to acquire nuclear material for terrorist and other malicious purposes. The threat of nuclear terrorism remains real.⁵

Adopted under the auspices of the IAEA on 8 July 2005, the Amendment to the Convention on the Physical Protection of Nuclear Material ("Amendment")⁶ and the existing convention, the Convention on the Physical Protection of Nuclear Material (CPPNM or "Convention") of 1980,⁷ are one of a number of treaties comprising the international legal framework on nuclear security. As will be explained later in the article, the Amendment expands and deepens the effect of the CPPNM. However, more than nine years after its adoption and despite the perceived threat and recognised need to strengthen the CPPNM dating back some 15 years ago, the Amendment is still not in force. Although to some CPPNM states parties, the pressing need for the Amendment to enter into force is clear and its benefits are recognised, further consideration needs to be given to identifying why it has not yet entered into force. More particularly, what are the reasons why nearly half of the current CPPNM states parties, including those with and without nuclear material

Austria, 1-5 July. Also, in adopting the United Nations Global Counter-Terrorism Strategy on 8 September 2006, the UN General Assembly stated that terrorism "constitute[d] one of the most serious threats to international peace and security". Resolution A/RES/60/288, 20 September 2006.

3. From January 1993 to 30 June 2014, a total of 2 556 incidents were reported to the ITDB by states. From 1 July 2013 to 30 June 2014, 149 incidents were reported, 14 of which involved illegal possession of, and attempts to sell, nuclear material or radioactive sources, with four of these incidents involving nuclear material. The ITDB report for the period 2007-2012 highlighted, *inter alia*, several reported incidents that involved the seizure of gramme amounts of high-enriched uranium (HEU) and plutonium (from plutonium-beryllium sealed sources) in the possession of criminal groups. IAEA (2014), "Nuclear Security Report 2014", IAEA Doc. GOV/2014/36-GC(58)/14, 22 July 2014.
4. Amano, Y. (2014), "Statement at Nuclear Security Summit", Nuclear Security Summit, The Hague, Netherlands, 25 March. Also, for example note that in June 2013 the IAEA reported that several grammes of HEU were seized in 2011 by the authorities in Moldova who foiled the plot of traffickers intent on selling the material. See IAEA Press Release (2013), "HEU Seizure Highlights Moldova's Strong Work in Nuclear Security", www.iaea.org/newscenter/news/2013/moldova.html.
5. Further, the UN General Assembly has expressed deep concern about the connections that may exist in some cases, between some forms of transnational organised criminal and terrorist activities. "Strengthening the United Nations crime prevention and criminal justice programme, in particular its technical cooperation capacity", GA Res. 67/189, UN GAOR, 67th Sess., UN Doc. A/RES/67/189 (2013).
6. IAEA (2005), "Nuclear Security – Measures to Protect Against Nuclear Terrorism", IAEA Doc. GOV/INF/2005/10-GC(49)INF/6, 6 September 2005; Amendment to the Convention on Physical Protection of Nuclear Material (2005), GOV/INF/2005/10-GC(49)INF/6, Attachment pp. 3-11, available at: www.iaea.org/About/Policy/GC/GC49/Documents/gc49inf-6.pdf. Once the Amendment enters into force, the "Convention on the Physical Protection of Nuclear Material and Nuclear Facilities" will be established. For the purpose of this article, references are made to the "Amended Convention" on the basis that it has entered into force, as appropriate. This Amended Convention will coexist with the current CPPNM until such time as there are no longer any parties to the CPPNM. As concerns the relationship of the states parties to these treaties see Vienna Convention on the Law of Treaties (1969), 1155 UNTS 18323, entered into force 27 January 1980, at part IV, art. 40.
7. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125.

and nuclear facilities, have still not joined the Amendment? Also, what challenges do they face in joining and effectively implementing the instrument?

This article will seek to provide answers and also to identify some benefits of the Amendment. Part A of this article places the Amendment into context by identifying the relevant legal instruments comprising the international legal framework for nuclear security. Part B highlights some of the Amendment's new and extended provisions. The IAEA Secretariat's internal Plan of Action on Facilitating Adherence to and Implementation of the Amendment (the "Plan of Action") is highlighted in Part C, which also addresses relevant IAEA activities by identifying the broad range of services provided to IAEA member states. Part D identifies some observations and challenges associated with the entry into force and implementation of the Amendment, the main focus is on its provisions, which are likely to require changes to the national legislative framework. Finally, Part E of this article concludes with some identified potential benefits of joining the Amendment, in particular, those considered by the IAEA Advisory Group on Nuclear Security ("AdSec").

PART A. International legal framework for nuclear security

Nuclear security focuses on the prevention and detection of, and response to, criminal or intentional unauthorised acts involving or directed at nuclear material, other radioactive material, associated facilities or associated activities.⁸

The international legal framework for nuclear security⁹ is relevant for all states; those with active nuclear power programmes and those conducting only limited nuclear activities or none at all. This legal framework addresses the prevention, detection and response elements of nuclear security and covers nuclear material and nuclear facilities, as well as other radioactive material (such as radioactive sources) and associated facilities.

As compared to the international legal frameworks of other branches of nuclear law, namely, nuclear safety, safeguards and civil liability for nuclear damage, the international framework for nuclear security has witnessed the most developments in recent years. As with the international legal framework for nuclear safety, these developments have been driven in the wake of major events: in the safety context, the 1986 Chernobyl accident and in the context of nuclear security, terrorist incidents, most notably the terrorists attacks that occurred on 11 September 2001 in the United States. As in other areas of nuclear law such as nuclear safety and liability, there is no single international instrument addressing nuclear security in a comprehensive manner. Rather, there are a number of legally binding international instruments and internationally accepted non-binding instruments that constitute

8. According to the IAEA Nuclear Security Fundamentals, a "nuclear security regime" means: [a] regime comprising: [t]he legislative and regulatory framework and administrative systems and measures governing the nuclear security of nuclear material, other radioactive material, associated facilities and associated activities; [t]he institutions and organizations within the State responsible for ensuring the implementation of the legislative and regulatory framework and administrative systems of nuclear security; [n]uclear security systems and nuclear security measures for the prevention of, detection of and response to nuclear security events.

IAEA (2013), Nuclear Security Fundamentals: Objective and Essential Elements of a State's Nuclear Security Regime, Nuclear Security Series Publications, No. 20, IAEA, Vienna.

9. IAEA (2011), The International Legal Framework for Nuclear Security, IAEA International Law Series No. 4, IAEA, Vienna. The publication brings together the legally binding international instruments (except for ICAO's 2010 Beijing Convention) and the internationally accepted non-binding instruments that constitute the international legal framework for nuclear security. It also sets out the legislative bases for the mandate of the IAEA in the area of nuclear security.

the international legal framework for nuclear security. The framework is therefore comprised of hard and soft law instruments. However, unlike the instruments on nuclear safety,¹⁰ the instruments on nuclear security have not only been adopted by and under auspices of the IAEA but also under the auspices of the United Nations (UN) and its specialised agencies, in particular, the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). It follows that the international legal framework on nuclear security includes a number of treaties that are part of the so-called “universal legal framework against terrorism”¹¹ which is currently comprised of 19 legally binding instruments,¹² the

-
10. The framework includes the following treaties: (1) Convention on Early Notification of a Nuclear Accident (1986) (“Notification Convention”), IAEA Doc. INFCIRC/335, 1439 UNTS 275; (2) Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986) (“Assistance Convention”), IAEA Doc. INFCIRC/336, 1457 UNTS 133; (3) Convention on Nuclear Safety (1994) (“CNS”), IAEA Doc. INFCIRC/449, 1963 UNTS 293; and (4) Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997) (“Joint Convention”), IAEA Doc. INFCIRC/546, 2153 UNTS 357.
 11. There is no official definition of the term “terrorism” and only the UN International Convention for the Suppression of the Financing of Terrorism of 1999 is considered as having a general definition of terrorism. Further, there continues to be no general international agreement on terrorism. Rather, since 2000, a UN Ad Hoc Committee (established by UN General Assembly resolution “Measures to eliminate international terrorism”, GA Res. 51/210, UN GAOR, 88th Sess., UN Doc. A/RES/51/210 (1996)) had continued to negotiate a draft comprehensive convention on international terrorism that would provide such a generic international definition of “terrorism” and complement the existing framework of universal anti-terrorism instruments and would build on the key guiding principles in those instruments. However, no UN Ad Hoc Committee was envisaged in 2014, since the UN General Assembly decided to recommend that its Sixth Committee (Legal), at the 69th session of the General Assembly, establish a working group with a view to finalising the process on the draft comprehensive convention (as well as discussions on the item included in its agenda by Assembly resolution 54/110 concerning the question of convening a high-level conference under the auspices of the UN), “Measures to eliminate international terrorism”, GA Res. 68/119, UN GAOR, 68th Sess., UN Doc. A/RES/68/119 (2013).
 12. Namely:
 - IAEA: 1980 CPPNM and its 2005 Amendment (not yet in force);
 - UN: 1973 Convention on the Prevention and Punishment of Crimes Against Internationally Protected Persons; 1979 International Convention against the Taking of Hostages; 1997 International Convention for the Suppression of Terrorist Bombings; the 1999 International Convention for the Suppression of the Financing of Terrorism; and 2005 International Convention for the Suppression of Acts of Nuclear Terrorism;
 - IMO: 1988 Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; 1988 Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf; 2005 Protocol to the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation; and 2005 Protocol to the Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf;
 - ICAO: 1963 Convention on Offences and Certain Other Acts Committed on Board Aircraft; 1970 Convention for the Suppression of Unlawful Seizure of Aircraft; 1971 Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation; 1988 Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation, supplementary to the Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation (extends and supplements the Montreal Convention on Air Safety); 1991 Convention on the Making of Plastic Explosives for the Purpose of Detection; 2010 Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation; and 2010 Protocol Supplementary to the Convention for the Suppression of Unlawful Seizure of Aircraft (not yet in force). Also, on 4 April 2014, the ICAO Diplomatic Conference on Air Law, held in Montreal, adopted the Protocol to Amend the Convention on Offences and

following seven of which are particularly relevant to nuclear security:¹³

- under the IAEA’s auspices, the CPPNM and its Amendment;
- under the UN’s auspices, the International Convention for the Suppression of Terrorist Bombings of 1997 (“Terrorist Bombings Convention”)¹⁴ and the International Convention for the Suppression of Acts of Nuclear Terrorism of 2005 (“Nuclear Terrorism Convention” or “NTC”);¹⁵
- under the IMO’s auspices, the “2005 Protocol to the 1988 SUA Convention” (the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation)¹⁶ and the “2005 Protocol to the 1988 Fixed Platforms Protocol” (Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf);¹⁷ and
- finally, under the auspices of ICAO, the “2010 Beijing Convention” (Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation).¹⁸

Leaving aside the CPPNM and its Amendment, the other treaties have followed a so-called “sectoral” approach (focusing on the respective areas of competence of the UN and its specialised agencies (ICAO and the IMO)). The common features of these other treaties include the requirements on states parties to make certain specified acts criminal offences in national law thus requiring the criminalisation and penalisation thereof.¹⁹ The CPPNM and its Amendment can be distinguished from

Certain Other Acts Committed on Board Aircraft and thus, it becomes the most recent international legal instrument against terrorism, increasing the total number of counter-terrorism legal instruments from 18 to 19.

13. Also, the 1999 International Convention for the Suppression of the Financing of Terrorism can be particularly highlighted regarding nuclear security. While not specifically identified in the list of seven instruments relevant to nuclear security mentioned below, it does provide, *inter alia*, for an offence to have been committed by a person if that person by any means, directly or indirectly, unlawfully and wilfully, provides or collects funds with the intention that they should be used or in the knowledge that they are to be used, in full or in part, in order to carry out an act which constitutes an offence within the scope of and as defined in the CPPNM.
14. “International Convention for the Suppression of Terrorist Bombings”, GA Res. 52/164, UN GAOR, 52nd Sess. UN Doc. A/RES/52/164 (1998). The Terrorist Bombings Convention is not solely focused on precisely demarcated types of activity, i.e. involving maritime navigation or civil aviation, but focuses on the suppression of terrorist bombings, irrespective of location and medium used.
15. “International Convention for the Suppression of Acts of Nuclear Terrorism”, GA Res. 59/766, UN GAOR 59th Sess. UN Doc. A/59/766 (2005). Although adopted in April 2005 shortly before the CPPNM Amendment, the Nuclear Terrorism Convention only required, in accordance with its article 25(1), 22 parties for it to enter into force, which it did on 7 July 2007. At the time of writing, it has 95 parties (and 115 signatories).
16. IMO Doc. LEG/CONF.15/21, 1 November 2005.
17. IMO Doc. LEG/CONF.15/22, 1 November 2005.
18. ICAO Doc. 996, 2010. The 2010 Beijing Convention is not yet in force and requires 22 adherents to do so. It currently has eight parties. Upon entering into force, it will replace the Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation 1971, i.e. the Montreal Convention.
19. These universal instruments define and prohibit certain acts considered to be of a terrorist nature, as criminal offences. The instruments can be considered as establishing three specific categories of offence: (i) offences related to dangerous materials – UN instruments; (ii) offences related to ships and fixed platforms – IMO instruments; and (iii) offences related to civil aviation – ICAO instruments. These instruments also identify

these treaties, as being the only internationally legally binding undertakings in the area of physical protection of nuclear material and nuclear facilities used for peaceful purposes, and, with respect to all modes of land, sea and air transport, in one place.²⁰ None of the other aforementioned instruments expressly address this subject.²¹ In addition, the CPPNM and its Amendment also cover the common features of the other treaties such as criminalisation, jurisdiction and mutual legal assistance, etc.

Further, comprising the international nuclear security framework are the non-legally binding IAEA recommendations entitled “The Physical Protection of Nuclear Material and Nuclear Facilities”, otherwise referred to as INFCIRC/225, adopted nearly 40 years ago in 1975.²² The recommendations are now in the fifth revision published in 2010 as No. 13 of the IAEA Nuclear Security Series, the “Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities

bases for the establishment of jurisdiction over offences and in this regard create an obligation on the state in which a suspect is found to establish jurisdiction and to refer an alleged offender for prosecution where no other state has requested extradition. This obligation is based on the principle of *aut dedere aut judicare*. Further, they enable parties to engage in international co-operation and assistance, in particular, mutual legal assistance with respect to their respective objectives.

20. Article 3 of the CPPNM provides that “[e]ach State Party shall take appropriate steps within the framework of its national law and consistent with international law to ensure as far as practicable that, during international nuclear transport, nuclear material within its territory, or on board a ship or aircraft under its jurisdiction insofar as such ship or aircraft is engaged in the transport to or from that State, is protected at the levels described in Annex I”. Additionally, article 8.1(a) provides that “[e]ach State Party shall take such measures as may be necessary to establish its jurisdiction over the offences set forth in article 7 in the following cases: (a) when the offence is committed in the territory of that State or on board a ship or aircraft registered in that State”. Also, article 4.3 provides that “[a] State Party shall not allow the transit of its territory by land or internal waterways or through its airports or seaports of nuclear material between States that are not parties to this Convention unless the State Party has received assurances as far as practicable that this nuclear material will be protected during international nuclear transport at the levels described in Annex I”. Further, article 4.4 provides that “[e]ach State Party shall apply within the framework of its national law the levels of physical protection described in Annex I to nuclear material being transported from a part of that State to another part of the same State through international waters or airspace”. Additionally, article 4.5 provides that “[t]he State Party responsible for receiving assurances that the nuclear material will be protected at the levels described in Annex I according to paragraphs 1 to 3 [of article 4] shall identify and inform in advance States which the nuclear material is expected to transit by land or internal waterways, or whose airports or seaports it is expected to enter.”
21. But states parties to the Nuclear Terrorism Convention are required, for example, to make every effort to adopt appropriate measures to ensure the protection of radioactive material, taking into account relevant recommendations and functions of the IAEA (article 8). Also, with respect to radioactive material, devices or nuclear facilities brought under control or seized after an offence, a state party is to have regard to the physical protection recommendations and health and safety standards published by the IAEA (article 18.1). As concerns nuclear material and nuclear facilities, such IAEA recommendations are the latest edition of IAEA (2011), Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities, IAEA Nuclear Security Series No. 13, IAEA Doc. INFCIRC/225/Revision 5, IAEA, Vienna.
22. The recommendations were first prepared by a panel of experts convened by the IAEA Director General and published by the IAEA in 1972 as the “IAEA Recommendations for the Physical Protection of Nuclear Material”. They were subsequently revised before being published in 1975 in the INFCIRC series as INFCIRC/225. Revision 5 applies to the physical protection of nuclear material against unauthorised removal with the intent to construct a nuclear explosive device and the physical protection of nuclear facilities and nuclear material (whether peaceful or military), including, during transport, and against sabotage. *Ibid*, p. 3, para. 1.14.

(INFCIRC/225/Revision 5)”²³ Together with these recommendations, the CPPNM and its Amendment comprise a so-called international physical protection regime²⁴ which is just one part of the broader international legal framework for nuclear security.

Additionally, as part of the international nuclear security framework, there are two important resolutions of the UN Security Council (UNSC) adopted under Chapter VII of the UN Charter (i.e. action with respect to threats to the peace, breaches of the peace and acts of aggression). Namely, UN Security Council Resolutions (UNSCR) 1373 (2001) and 1540 (2004).²⁵ They are binding on all (currently 193) UN member states.²⁶ The international legal framework also includes the legally non-binding instruments dealing with the safety and security of radioactive sources (including, their import and export), namely the IAEA Code of Conduct on the Safety and Security of Radioactive Sources of 2003 and its supplementary Guidance on the Import and Export of Radioactive Sources.²⁷

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23. This document has been favourably received by states and has since become a standard reference. It is intended to assist member states in implementing a comprehensive physical protection regime, including, any obligations and commitments they might have with respect to international instruments related to the physical protection of nuclear material and nuclear facilities, especially the Amendment.
 24. Also comprising this regime are the “Physical Protection Objectives and Fundamental Principles”. IAEA (2001), “Measures to Improve the Security of Nuclear Materials and Other Radioactive Material”, IAEA General Conference, IAEA Doc. GC(45)/INF/14. In September 2001, the IAEA General Conference welcomed the IAEA Board of Governors’ endorsement of them as “an important step to strengthen the international physical protection framework, it being understood that their adoption would not lead to diminished interest on the part of [IAEA] Member States in becoming parties to the Convention [...] and that they were not a substitute for the Convention or for the recommendations in [the aforementioned IAEA] document INFCIRC/225/Rev.4 (Corrected)”. IAEA Doc. GOV/OR.1033, paras. 157-162.
 25. The primary focus of UNSCR 1373 (2001) is on preventing and suppressing the financing and preparation of any acts of terrorism. UNSCR 1540 (2004) affirms that the proliferation of nuclear (chemical and biological) weapons and their means of delivery constitutes a threat to international peace and security. Among others it provides that all states are to adopt and enforce appropriate effective laws which prohibit any non-state actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear weapons and their means of delivery (in particular for terrorist purposes, as well as ancillary crimes associated therewith).
 26. Pursuant to articles 24, 25 and 48 of the UN Charter, member states of the UN have agreed to accept and carry out the decisions of the UNSC (even where such provisions otherwise would be in conflict with national law). Article 25 of the UN Charter states that “[t]he Members of the United Nations agree to accept and carry out the decisions of the Security Council in accordance with the present Charter”. Further, article 48 states that “[t]he action required to carry out the decisions of the Security Council for the maintenance of international peace and security shall be taken by all the Members of the United Nations or by some of them, as the Security Council may determine,” and that “[such] decisions shall be carried out by the Members of the United Nations directly and through their action in the appropriate international agencies of which they are members”. Separately, under article 103 of the UN Charter, in the event of a conflict between the obligations of UN member states under the UN Charter and their obligations under any other international agreement, their obligations under the UN Charter prevail.
 27. IAEA (2004), “Code of Conduct on the Safety and Security of Radioactive Sources”, IAEA Doc. IAEA/CODEOC/2004, IAEA, Vienna. This revised Code of Conduct was adopted by the IAEA Board of Governors and endorsed by the IAEA General Conference in 2003. The Code was initially finalised in 2000 but was revised following the events of 11 September 2001, in order to strengthen a number of safety and security-related provisions and to address malicious and/or intentional misuse of radioactive sources. The original Code of Conduct had focused on incidents such as the theft of sources for scrap value, rather than the use

Similar to the international legal framework for nuclear safety, the international legal framework for nuclear security is underpinned by a suite of documents, which in this case are published in the IAEA Nuclear Security Series. This series comprises: the Nuclear Security Fundamentals publication, which includes the objectives and essential elements of a state's nuclear security regime; Recommendations; Implementing Guides; and Technical Guidance.²⁸ Finally, the international legal framework is supported by a range of initiatives and programmes related to nuclear security.²⁹

PART B. Key new and enhanced provisions of the Amendment

With 151 parties (150 states and EURATOM), the CPPNM is currently the most adhered to multilateral treaty adopted under the auspices of the IAEA.³⁰ In addition, after the Terrorist Bombings Convention (which has 168 parties), it is also currently the most adhered to instrument of the aforementioned universal counter-terrorism instruments particularly relevant to nuclear security.

The CPPNM can be considered as having a threefold scope of application: the physical protection of nuclear material used for peaceful purposes during international transport (and during storage incidental to such transport);³¹ the criminalisation of offences, for example, the theft or robbery of nuclear material; and international co-operation, for example, in the case of theft, robbery or any other unlawful taking of nuclear material or credible threat thereof. Although its

of sources for malicious purposes. The supplementary Guidance was first adopted by the Board of Governors and endorsed by the General Conference in 2004 (to support the import and export provisions of the Code of Conduct) but was revised in 2012. IAEA (2012), "Guidance on the Import and Export of Radioactive Sources", IAEA Doc. IAEA/CODEOC/IMO-EXP/2012, IAEA, Vienna.

28. The single top tier publication, the "Nuclear Security Fundamentals", contains objectives and essential elements of nuclear security and provides the basis for security recommendations. The second tier set of Recommendations elaborates on the essential elements of nuclear security and presents the recommended requirements that should be implemented by states for the application of the fundamental principles. In particular, INFCIRC/225/Revision 5, *supra* note 21 and IAEA (2011), Nuclear Security Recommendations on Nuclear and Other Radioactive Material out of Regulatory Control, IAEA Nuclear Security Series No. 15, IAEA Document STI/PUB/1488, IAEA, Vienna. The third and fourth tiers, implementing Guides and Technical Guidance, provide more detailed information on implementing the Recommendations using appropriate measures.
29. In particular: the Nuclear Threat Initiative (NTI), starting in 2001; the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, starting in 2002; the Proliferation Security Initiative (PSI), starting in 2003; the EU strategy against proliferation of Weapons of Mass Destruction starting in 2003; the Global Threat Reduction Initiative (GTRI), starting in 2004; the Global Initiative to Combat Nuclear Terrorism (GICNT) starting in 2006; the UN Global Counter-Terrorism Strategy, adopted in 2006 and reaffirmed in 2010; and finally, the Nuclear Security Summit process, starting in 2010. Simply put, these initiatives help to fill gaps and address matters in respect of which a formally legally binding multilateral treaty would be unnecessary.
30. Including the CPPNM and the Amendment, there are ten multilateral treaties in the areas of nuclear safety, security and civil liability for nuclear damage adopted under the auspices of the IAEA.
31. The CPPNM provides that the term "nuclear material" means plutonium except that with isotopic concentration exceeding 80% in plutonium-238, uranium-233, uranium enriched in the isotopes 235 or 233, uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue and any material containing one or more of the foregoing. The term "uranium enriched in the isotope 235 or 233" means uranium containing the isotopes 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature. These terms were unchanged by the Amendment.

focus is considered as being primarily on the physical protection of shipments of nuclear material across national borders (i.e. international nuclear transports), provisions concerning criminalisation and international co-operation also apply to nuclear material in domestic use, storage and transport.³²

In the 1990s, questions relating to the adequacy of the CPPNM began to arise, in particular, since it did not cover major aspects of physical protection. Notably, while there were legally binding obligations to protect nuclear material used for peaceful purposes during international transport, there were none to protect nuclear material used for peaceful purposes in domestic use, storage and transport and to protect nuclear material and nuclear facilities used for peaceful purposes, against sabotage. In recognising its limited scope, the state parties to the CPPNM agreed to amend the Convention by adopting the Amendment at the “Conference to consider proposed amendments to the [CPPNM]” held at IAEA Headquarters in Vienna, from 4 to 8 July 2005.³³

The Amendment requires no signature but is subject to ratification, acceptance or approval by two thirds of the CPPNM states parties. More particularly, it will enter into force in accordance with paragraph 2 of article 20 of the Convention, which reads:

[t]he amendment shall enter into force for each State Party that deposits its instrument of ratification, acceptance or approval of the amendment on the thirtieth day after the date on which two thirds of the States Parties have deposited their instruments of ratification, acceptance or approval with the depositary. Thereafter, the amendment shall enter into force for any other State Party on the day on which that State Party deposits its instrument of ratification, acceptance or approval of the amendment.

Pursuant to paragraph 2 of article 20, the total number of states parties required is a moving figure. Since there are currently 150 CPPNM states parties (the most recent joiner being Singapore on 22 October 2014, which also adhered to the Amendment on the same date), 100 of them are needed, 83 have done so and another 17 are required (these figures include Qatar, which most recently joined the Amendment on 11 November 2014).

Following the aforementioned threefold scope of application of the CPPNM, the following areas are considered:

1. The new physical protection requirements

Whereas the obligations for physical protection under the CPPNM cover nuclear material used for peaceful purposes during international transport, the Amendment extends this scope to also cover nuclear material in domestic use, storage and transport and nuclear facilities used for peaceful purposes. According to new paragraph (d) of article 1 of the Amendment, a nuclear facility is defined as “a facility (including, associated buildings and equipment) in which nuclear material is produced, processed, used, handled, stored or disposed of, if damage to or interference with such facility could lead to the release of significant amounts of radiation or radioactive material”.

32. More particularly, paragraph 2 of article 2 provides that “[w]ith the exception of articles 3 and 4 and paragraph 3 of article 5, th[e] Convention shall also apply to nuclear material used for peaceful purposes while in domestic use, storage and transport”.

33. For additional information on the negotiating history and the Final Act of the Conference see IAEA (2005), *supra* note 6. Also, see Vez Carmona, M. (2005), “The International Regime on the Physical Protection of Nuclear Material and the Amendment to the Convention on the Physical Protection of Nuclear Material”, *Nuclear Law Bulletin*, No. 76, NEA, Paris, pp. 31-48.

In reflecting the importance of national responsibility for physical protection of nuclear material and nuclear facilities, the Amendment introduces a legal commitment to have and implement a physical protection regime covering the physical protection objectives as reflected therein. More particularly, it now provides in article 2A for a new “core” undertaking by each state party to “establish, implement and maintain a physical protection regime applicable to nuclear material and facilities under its jurisdiction”.³⁴ Through this, the aim of the national regime is: protecting against theft and other unlawful taking of nuclear material; ensuring the implementation of measures to locate and, where appropriate, recovering missing or stolen nuclear material; protecting nuclear material and nuclear facilities against sabotage; and mitigating or minimising the radiological consequences of sabotage. Further, in implementing this undertaking, paragraphs (a)-(c) of new article 2A(2) provide that states parties shall: (a) establish and maintain an appropriate legislative and regulatory framework for physical protection; (b) establish or designate a competent authority responsible for its implementation; and (c) take other appropriate administrative measures necessary for the physical protection of such material and facilities.

Additionally, the Amendment introduces a legal commitment covering the physical protection fundamental principles.³⁵ More particularly, in implementing the above-mentioned provisions, each state party shall without prejudice to any other provisions of the Convention “apply insofar as is reasonable and practicable” 12 “Fundamental Principles of Physical Protection of Nuclear Material and Nuclear Facilities” contained in paragraph 3 of new article 2A.³⁶ This particular way of drafting the chapeau, “apply insofar as is reasonable and practicable”, was in recognition that a national physical protection regime could be different in each state.³⁷

With respect to the enhanced provisions on physical protection, the following points can be summarised:

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34. Article 2(2) also provides that “[t]he responsibility for the establishment, implementation and maintenance of a physical protection regime within a State Party rests entirely with that State”.
 35. As mentioned in Part A of this article, these Objectives and Principles were first endorsed by the IAEA in September 2001. The “Final Report of the Expert Meeting of 2001” recommended that one of subjects that should be covered in a “well-defined amendment” of the CPPNM, was the incorporation of the fundamental principles. In fact, during the meetings of the Open-ended Group of Experts a vast amount of efforts was spent in seeking consensus on the precise way to cover them. While the Open-ended Group of Experts agreed that the fundamental principles should be kept together as a whole and the language of them should not be modified, how they should be introduced into the text of the Convention was an issue on which the Open-ended Group of Experts was unable to reach agreement prior to the July 2005 Amendment Conference.
 36. Fundamental Principle A – Responsibility of the State; Fundamental Principle B – Responsibilities During International Transport; Fundamental Principle C – Legislative and Regulatory Framework; Fundamental Principle D – Competent Authority; Fundamental Principle E – Responsibility Of The License Holders; Fundamental Principle F – Security Culture; Fundamental Principle G – Threat; Fundamental Principle H – Graded Approach; Fundamental Principle I – Defence In Depth; Fundamental Principle J – Quality Assurance; Fundamental Principle K – Contingency Plans; and Fundamental Principle L – Confidentiality.
 37. It should also be noted that a state party, taking into account the nature of the material, its quantity and relative attractiveness and the potential radiological and other consequences associated with any unauthorised act directed against it and the current evaluation of the threat against it, may reasonably decide that nuclear material does not need to be subject to the established physical protection regime (new article 2A(4)(a) of the Amendment). However, the Amendment provides that “such nuclear material should be protected in accordance with prudent management practice” (new article 2A(4)(b) of the Amendment).

- There are no changes *per se* to the international nuclear transport provisions in the CPPNM. Both instruments in the same way continue to categorise nuclear material and the levels of physical protection for such transports (annexes I and II of the CPPNM). It should be noted however that these levels are not applicable to nuclear material used for peaceful purposes in domestic use, storage and transport.
- However, the Amendment now applies to the physical protection of nuclear material used for peaceful purposes in domestic use, storage and transport and nuclear facilities used for peaceful purposes.
- Finally, the Amendment also provides for a new “core” undertaking to establish, implement and maintain a physical protection regime applicable to such material and facilities.

2. New and extended criminalisation provisions

As concerns the criminalisation provisions, CPPNM states parties are required to bring under their jurisdiction and make punishable under their national law, specified acts as offences, including, theft and robbery of nuclear material (article 7), and to submit offenders for prosecution under domestic law or to extradite them in accordance with the *aut dedere aut judicare* principle (articles 11 and 12). The Amendment has the same requirements but introduces new and extended offences. In particular, the new provisions on what may be considered as being “illicit trafficking” or “smuggling” of nuclear material,³⁸ and “sabotage” of a nuclear facility or threat thereof,³⁹ are significant additions and are a reflection of the threats that existed at the time of adoption and continue to do so. The Amendment also introduces new ancillary offences of organising or directing the commission of an offence or contributing to its commission (new article 7.1(j) and (k)). These two new forms of criminal liability were first addressed in the Terrorist Bombings Convention. Also, whereas the ancillary crimes of threat, attempt and participation were already covered by the CPPNM, the Amendment further extends their application to the relevant main offences in the Convention (new article 7.1(g), (h) and (i)). Thus, the Amended Convention covers offences that have been committed, threatened, attempted, participated in, ordered, directed or contributed to. Further, the offences relating to an act constituting the unlawful taking of nuclear material (amendment to article 7.1(a)), “sabotage” (new article 7.1(e)) and a threat to use nuclear material (amendment to article 7.1(g)(i)) were expanded to include “substantial damage to the environment”.

38. New sub-paragraph (d) of paragraph 1 of article 7 provides that this is “an act which constitutes the carrying, sending, or moving of nuclear material into or out of a State without lawful authority”.

39. Pursuant to new sub-paragraph (e) of paragraph 1 of article 7 this is:
 an act directed against a nuclear facility, or an act interfering with the operation of a nuclear facility, where the offender intentionally causes, or where he knows that the act is likely to cause, death or serious injury to any person, or substantial damage to property or to the environment by exposure to radiation or release of radioactive substances, unless the act is undertaken in conformity with the national law of the State Party in the territory of which the nuclear facility is situated.

Note that the defined term “sabotage” was not used in the criminalisation provisions but was used however in the new article 5 dealing with international co-operation in the event of sabotage or threat thereof.

Although there are no changes *per se* to the CPPNM's provisions on jurisdiction (article 8),⁴⁰ detention (article 9), prosecution/extradition (articles 11 and 12), fair treatment (article 12) and mutual legal assistance i.e. assistance in connection with criminal proceedings (article 13), these provisions are now applicable with regard to the Amendment's new and extended offences. It is important therefore to ensure that they are fit for purpose. In this regard, obligations of the states parties to the Amended Convention with respect to the new and extended offences, include taking measures to establish jurisdiction, ensuring an alleged offender does not leave the country, treating them fairly, extraditing or prosecuting them and affording to other states parties the greatest measure of mutual legal assistance.

3. Enhanced international co-operation

The CPPNM establishes various forms of international co-operation, assistance, co-ordination and information exchange amongst states parties, intergovernmental organisations (which would include the IAEA although not expressly provided for) and in certain limited instances, with certain non-states parties, i.e. informing of any theft, robbery or other unlawful taking of nuclear material or credible threat thereof (see paragraph 2.a of article 5). These can be considered in three core areas of nuclear security, namely, prevention, detection and response.

It provides, for example, for co-operation and consultation between states parties and with international organisations on obtaining guidance on the design, maintenance and improvement of physical protection systems for nuclear material during international transport (article 5.3). In addition, it also provides for states parties to inform the depositary of their implementing laws and regulations and for the depositary to communicate such information periodically to all states parties (article 14.1). Further, those states parties that prosecute an alleged offender are obliged to communicate the final outcome of the proceedings to the states directly concerned and to the depositary who shall inform all states (article 14.2). Further, it provides a basis for co-operation, assistance and the provision of information between states parties and as mentioned with certain non-states parties and international organisations in recovery and protection in the case of theft, robbery or any other unlawful taking of nuclear material or of credible threat thereof, as well as the exchange of information, for example, to protect threatened nuclear material (article 5). Additionally, it also establishes assistance between states parties in connection with criminal proceedings, i.e. mutual legal assistance (article 13).

The Amendment enhances the scope of the CPPNM's existing provisions on international co-operation, assistance, co-ordination and information exchange. In particular, it now enables direct co-operation and consultation between states parties or as now expressly stated, through the IAEA (and other relevant international organisations) with a view to obtaining guidance on the design, maintenance and improvement of physical protection systems for nuclear material in domestic use, storage and transport (new article 5.5). Further, it now importantly provides a basis for co-operation in the case of a credible threat of sabotage of nuclear material or nuclear facilities or in the actual case thereof (new article 5.3).

40. The three mandatory rules for determining jurisdiction provided for in article 8 are: (i) the territorial principle, i.e. when the offence is committed in the territory of that state or on board a ship or aircraft registered in that state; (ii) the nationality principle (active nationality principle), i.e. when the alleged offender is a national of that state; (iii) and the jurisdiction applying the *aut dedere aut judicare* principle. In addition, a fourth rule enables the optional establishment of jurisdiction in relation to the nature of the offence. More particularly, article 8.4 enables a state party to establish its jurisdiction over an offence when it is involved in the international transport of nuclear material as the exporting or importing state.

Also, the convening by the depositary of a conference of states parties five years after the entry into force of the Amendment is now provided for (amended article 16.1).⁴¹ The purpose of this conference will be to review the implementation of the Amended Convention, as well as its adequacy as concerns the preamble, the operative provisions and the annexes in light of the then prevailing situation. The Amendment also extends the national points of contact foreseen in the CPPNM, to those dealing with matters within the extended scope of the Amended Convention (amended article 5.1).⁴²

On a final point, the Amendment specifically confers a number of functions on the IAEA in addition to those already foreseen under the Convention, which include the usual depositary functions such as periodically communicating information provided by states parties on laws and regulations that give effect to the CPPNM (article 14(1)).⁴³ The IAEA will carry out these additional functions on request.⁴⁴

4. Other new and enhanced provisions of the Amendment

Other new and enhanced provisions of the Amendment, include, a number of new preambular paragraphs and new definitions of nuclear facility and sabotage (new articles 1(d) and (e)), as well as new purposes and scope (new article 1A). There are also amendments to the provision regarding the obligation to provide information concerning criminal proceedings (article 14.3) and a new provision regarding the transfer of nuclear technology (article 13A).⁴⁵ In addition, the Amendment introduces a new provision that explicitly excludes from the scope of the Amended Convention “activities of armed forces during an armed conflict [...] the activities undertaken by military forces of a State in the exercise of their official duties, inasmuch as they are governed by other rules of international law” (new article 2.4(b)). This so-called “carve-out” was only possible after the inclusion of corresponding language that confirmed that “[n]othing in the Convention shall be construed as a lawful authorization to use or threaten to use force against nuclear material or nuclear facilities used for peaceful purposes” (new article 2.4(c)). It is recalled that the

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41. Note that the CPPNM includes a similar provision and a “Review Conference” was held at IAEA Headquarters from 29 September to 1 October 1992.
 42. Article 5.1 of the Amendment provides that “States Parties shall identify and make known to each other directly or through the International Atomic Energy Agency their point of contact in relation to matters within the scope of this Convention”. Note that the existing article 5.1 provides that “States Parties shall identify and make known to each other directly or through the International Atomic Energy Agency their central authority and point of contact having responsibility for physical protection of nuclear material and for co-ordinating recovery and response operations in the event of any unauthorized removal, use or alteration of nuclear material or in the event of credible threat thereof”. There is no longer, as in the CPPNM, a reference to the “central authority” since it is unlikely that there would be such an authority dealing with matters within the extended scope of the Amended Convention.
 43. See IAEA (2011), “The International Legal Framework for Nuclear Security: IAEA International Law Series No. 4”, IAEA Doc.GOV/INF/521, January 2011, which informed the IAEA Board of Governors of the IAEA’s functions upon entry into force of the CPPNM on 8 February 1987. For example, under article 5(1) of the CPPNM, the IAEA is obliged to make known any information it has received regarding states parties’ designated central authorities and points of contact having responsibility for physical protection of nuclear material and for co-ordinating recovery and response operations in the event of any unauthorised removal, use or alteration of nuclear material or in the event of a credible threat thereof.
 44. They are set out in IAEA document GOV/2005/51/Corr.1 of 17 August 2005. On 9 September 2005, the IAEA Board of Governors approved these additional functions and authorised the Director General to implement them within available resources.
 45. It states that “[n]othing in th[e] Convention shall affect the transfer of nuclear technology for peaceful purposes that is undertaken to strengthen the physical protection of nuclear material and nuclear facilities”.

aforementioned exclusion was one of the most debated and controversial during the processes leading to the Amendment and was the subject of considerable discussion during the negotiations of the UN Nuclear Terrorism Convention.

Finally, new article 11A of the Amendment eliminates the possibility to refuse to extradite an alleged offender for crimes considered to be political in nature in order to protect him/her against the possibility that extradition requests are for politically motivated prosecutions (i.e. the political offence exception in relation to the specified offences).⁴⁶ For the purposes of extradition and mutual legal assistance, therefore, the offences cannot be considered as political offences, or related to a political offence or inspired by political motives. As such, requests for extradition or mutual legal assistance cannot be rejected for these political factors. This approach is also enshrined in the Terrorist Bombings Convention, the Nuclear Terrorism Convention and the aforementioned relevant IMO and ICAO instruments. Immediately following this article, new article 11B is added, which expressly declares that there is no obligation to extradite or to afford mutual legal assistance, if the requested state party has substantial grounds for believing that the request for extradition or for mutual legal assistance has been made for the purpose of prosecuting or punishing a person on account of that person's race, religion, nationality, ethnic origin or political opinion or that compliance with the request would cause prejudice to that person's position for any of these reasons.⁴⁷ These articles should also be considered together with the aforementioned existing article 12 of the CPPNM on fair treatment.⁴⁸

PART C. IAEA's legislative and technical assistance: modalities for implementation of the CPPNM and Amendment

Since the adoption of the Amendment in 2005, the IAEA Secretariat has sought to facilitate its entry into force and implementation, in particular, through the on-going provision of legislative assistance by the OLA. Additionally, the Amendment's substantive technical aspects, in particular, the new physical protection requirements have been addressed through the provision of comprehensive assistance by the NSNS.

46. It states that:

[n]one of the offences set forth in article 7 shall be regarded for the purposes of extradition or mutual legal assistance, as a political offence or as an offence connected with a political offence or as an offence inspired by political motives. Accordingly, a request for extradition or for mutual legal assistance based on such an offence may not be refused on the sole ground that it concerns a political offence or an offence connected with a political offence or an offence inspired by political motives.

It is also noted that paragraph 3(g) of UNSCR 1373 (2001) states "that claims of political motivation are not recognized as grounds for refusing requests for the extradition of alleged terrorists".

47. It states that:

[n]othing in th[e] Convention shall be interpreted as imposing an obligation to extradite or to afford mutual legal assistance, if the requested State Party has substantial grounds for believing that the request for extradition for offences set forth in article 7 or for mutual legal assistance with respect to such offences has been made for the purpose of prosecuting or punishing a person on account of that person's race, religion, nationality, ethnic origin or political opinion or that compliance with the request would cause prejudice to that person's position for any of these reasons.

48. It states that "[a]ny person regarding whom proceedings are being carried out in connection with any of the offences set forth in article 7 shall be guaranteed fair treatment at all stages of the proceedings".

1. IAEA Nuclear Security Plan

In the aftermath of the events of 11 September 2001, the first concerted and comprehensive nuclear security plan of the IAEA was approved in principle by the Board of Governors for three years in March 2002.⁴⁹ At the same time, the Board also approved the creation of a voluntary funding mechanism, the Nuclear Security Fund (NSF), in order to help implement actions under the plan.⁵⁰

Pursuant to this and subsequent plans,⁵¹ the IAEA has assisted its member states, upon request, in their efforts to establish effective and sustainable national nuclear security regimes, including, the physical protection of nuclear material and nuclear facilities.⁵² The objective of the latest plan:⁵³

is to contribute to global efforts to achieve effective security wherever nuclear and other radioactive material is in use, storage and/or transport, and of associated facilities by supporting States, upon request, in their efforts to meet their national responsibilities and international obligations, to reduce risks and to respond appropriately to threats.

In the context of supporting the nuclear security legal framework, an objective is “[t]o assist in the development and promotion of a comprehensive and global nuclear security framework, and in particular adherence to and implementation of the 2005 Amendment [...], including, through the provision of corresponding legislative assistance”.⁵⁴ In this context, the Plan identifies that an outcome will be “[w]ider adherence to, and effective implementation by States of, the relevant legally

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49. In discussing the Nuclear Security Plan, it is recalled that the 46th IAEA General Conference in September 2002, *inter alia*, “consider[ed] the need to continue to devote attention to the potential implications of terrorist acts for the security of nuclear materials, nuclear facilities and other radioactive materials, and emphasiz[ed] the importance of physical protection, measures against illicit trafficking and national control systems for ensuring protection against nuclear terrorism and other malicious acts”. IAEA (2002), “Nuclear Security – Progress on Measures to Protect Against Nuclear Terrorism: Measures to Improve Nuclear Security and Protect Against Nuclear Terrorism”, IAEA Doc. GC(46)/RES/13, para. (d).
50. During the period of the first three Nuclear Security Plans, funding relied in large part on extra-budgetary contributions. Although recent increases in the IAEA Regular Budget have facilitated programme implementation, the IAEA continues to have a high reliance on extrabudgetary contributions to the NSF. Expenditure in the period 1 July 2013 to 30 June 2014 was EUR 20.9 million.
51. Further three-year Nuclear Security Plans were approved by the IAEA Board of Governors in 2005 (IAEA (2005), “Nuclear Security – Measures to Protect Against Nuclear Terrorism: Progress Report and Nuclear Security Plan for 2006-2009”, IAEA Doc. GC(49)/17, 23 September 2005) and in 2009 (IAEA (2009), “Nuclear Security Plan 2010-2013”, IAEA Doc. GOV/2009/54-GC(53)/18, 17 August 2009). These decisions of the Board were subsequently supported by the annual resolutions of the General Conference (GC(49)/RES/10 and GC(53)/RES/11, respectively).
52. It is also noted that in part III.9 of the United Nations Global Counter-Terrorism Strategy, the UN General Assembly encouraged the IAEA “to continue [its] efforts [...] in helping States to build capacity to prevent terrorists from accessing nuclear [...] or radiological materials, to ensure security at related facilities, and to respond effectively in the event of an attack using such materials”. “The United Nations Global Counter-Terrorism Strategy”, GA Res. 60/288, UN GAOR, 60th Sess., UN Doc. A/RES/60/288 (2006).
53. IAEA (2013), “Nuclear Security Plan 2014-2017”, IAEA Doc. GOV/2013/42-GC(57)/19 (“the Plan”). In September 2013, the 57th General Conference endorsed the Board’s decision to approve the Plan. See IAEA (2013), “Nuclear Security”, IAEA Doc. GC(57)/RES/10. The Plan covers seven programme elements, namely: Information Collation and Assessment; External Coordination; Supporting the Nuclear Security Framework Globally; Coordinated Research Projects; Assessment through Self-assessment and/or through Peer Review Missions; Human Resources Development; and Risk Reduction and Security Improvement.
54. See The Plan, p. 8, part E.3, “Supporting the Nuclear Security Framework Globally”.

binding and non-binding international legal instruments, focusing on the entry into force of the 2005 Amendment to the CPPNM". In this regard, the Nuclear Security Plan specifies that a performance indicator will be the "[n]umber of States adhering to international legal instruments on nuclear security".

2. IAEA legislative assistance programme

OLA has provided legislative assistance to IAEA member states since its inception in 1957. This assistance has been provided in a systematic and structured manner since 1997 when a dedicated legislative assistance programme was established.

i. "3S" approach to comprehensive nuclear law

Almost ten years ago, the work of OLA was intensified and strengthened through an enhanced legislative assistance programme, which follows a comprehensive approach to nuclear law (or the so-called "3S" approach). The term reflects the three technical areas that need to be addressed in establishing an adequate national legislative and regulatory framework to ensure the safe, secure and peaceful uses of nuclear energy and ionising radiation, namely: safety, security and safeguards, as well as civil liability for nuclear damage.

In this context, it is recalled that legal provisions taken to address one of these key areas can contribute to addressing the others as well. This approach not only recognises the complex interrelationships, as well as the areas of coexistence and diversity of the relevant international legal instruments but also provides for their practical implementation – so that they may be given effect in a national legislative framework. In the context of national nuclear law, this approach emphasises the interrelationships between safety and security and safeguards, as well as nuclear liability. In terms of national implementation the major contribution of the 3S approach is to help legislative drafters to avoid gaps, overlaps and inconsistencies in the law as well as unduly complex or poorly organised laws that can create problems of interpretation or application. However, there is no one size fits all approach. Historical factors and legislative practicalities are some of the bases for determining the overall structure of a state's nuclear law.

ii. Activities

The legislative assistance programme includes a combination of national and regional training courses and seminars, bilateral assistance in drafting national laws, training of individuals and the development of reference material, including, on the assessment and drafting of comprehensive national nuclear legislation. On average, the IAEA assists about 25 member states in reviewing their national laws and trains about 200 individuals in nuclear law each year.⁵⁵

55. The legislative assistance programme continues to be well received by IAEA member states. For example, the IAEA General Conference has for a number of years "[r]equest[ed] the Secretariat to continue to assist, upon request, Member States, particularly Member States considering and/or embarking on a nuclear power programme, in developing and improving their national infrastructure, including, legislative and regulatory frameworks, for nuclear, radiation, transport and waste safety". IAEA (2013), "Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety", IAEA Doc. GC(57)/RES/9. It is expected that the demand for assistance will continue to increase, not only because there is a growing number and complexity of international instruments adopted in the areas of safety and security, but also because this demand is driven by the interest of so-called "newcomer countries", i.e. countries that are embarking on new nuclear power programmes. Currently, these countries include, for example: Bangladesh, Belarus, Jordan, Nigeria, Poland, Turkey, Viet Nam and the United Arab Emirates (UAE). Moreover, these countries need to establish adequate legislative frameworks for their planned nuclear

A number of these activities are relevant to CPPNM states parties that are considering adhering to and implementing the Amendment. For example, such states parties have taken advantage of the IAEA's strengthened and consolidated group legal training activities. Since 2011, the annual Nuclear Law Institute (NLI), which is a dedicated and comprehensive two-week course on nuclear law, is held in Vienna. The NLI aims at helping professionals from IAEA member states in developing and maintaining national nuclear legislation, including that on nuclear security.⁵⁶ It is a good opportunity to gain a further understanding of the Amendment and the other instruments comprising the international legal framework on nuclear security.

Further, a number of CPPNM states parties have received OLA's dedicated awareness missions and seminars implemented to raise awareness about the importance of adhering to the international legal instruments, including, the Amendment, for high-level officials. In addition, CPPNM states parties, such as Lesotho in 2012; Cuba and Malta in 2013; and Dominican Republic, Ireland and Singapore (which also joined the CPPNM), on 22 September 2014, have availed themselves of the opportunity to deposit their instruments of ratification, acceptance or approval to the CPPNM Amendment at the IAEA Treaty Event, which is held annually since 2011 during the margins of the IAEA General Conference.⁵⁷

Finally, useful publications for CPPNM states parties considering adhering to and implementing the Amendment are the two volumes of the IAEA Handbooks on Nuclear Law: the first, the *Handbook on Nuclear Law*, published in 2003 endeavours to explain the overall character of nuclear law, including, the legislation on nuclear security, the above-mentioned processes by which such a law is developed and applied and the related issues. Chapters 1-3 of this *Handbook*, contain material relating to the legislative process for nuclear law and the institutional arrangements for implementing the law through a regulatory body (or regulatory bodies), including, its primary functions of licensing, inspection and enforcement. The second volume, the *Handbook on Nuclear Law: Implementing Legislation* (Volume II, *Handbook on Nuclear Law*), published in 2010, is developed as a practical aid to legislative drafting by focusing on the practical side of drafting national nuclear laws. More particularly, it includes model provisions covering the subject area under consideration, such as the physical protection of nuclear material and nuclear facilities and criminalisation.

3. Technical assistance

Turning to the technical assistance that may be made available to assist states, upon request, to implement the Amendment, under its Nuclear Security Plan 2014-2017, the NSNS has a number of modalities for assistance, including, the establishment of nuclear security guidance and the provision for their application through, *inter alia*, information exchange, co-ordinated research projects, education and training on an international, regional and national basis, peer review and advisory services.⁵⁸ One

power programmes, which, *inter alia*, implements their relevant international obligations (and commitments) such as those pursuant to the CPPNM and its Amendment.

56. The first session of the NLI was held in November 2011, the second session in October 2012, the third in October 2013, and the fourth session in October 2014. More information on the NLI can be found at IAEA (2013), "About NLI", <http://ola.iaea.org/ola/nli/about.html>.
57. OLA is also in the process of further enhancing outreach capabilities through, *inter alia*, the development of new online training material and a third volume of the *Handbook on Nuclear Law*, which will cover the various areas of the law that are relevant for nuclear power development (and are beyond the regulatory matters covered in the previous two volumes).
58. Further comprehensive information about the work of the NSNS is available at: www-ns.iaea.org/security/.

service in particular, the International Physical Protection Advisory Service (IPPAS) missions is designed to help states in assessing and strengthening the effectiveness of their physical protection regimes. IPPAS missions, *inter alia*, carry out detailed reviews of the legal and regulatory basis for the physical protection of nuclear activities in the requesting State and its compliance with the obligations of the CPPNM and Amendment. In addition, the International Nuclear Security Service (“INSServ”) mission serves as a unique mechanism to help identify a state’s broad nuclear security requirements and the measures needed to meet them.

4. Internal Plan of Action regarding the Amendment

While the provision of ongoing legislative and technical assistance has helped adherence to and implementation of the Amendment,⁵⁹ it was recognised that more targeted activities were needed. Firstly, in December 2010 a dedicated topical meeting on sharing national experiences on ratification and implementation of the Amendment, was held at IAEA Headquarters and attended by 55 CPPNM States Parties. In late 2011, the IAEA Secretariat through OLA and NSNS, decided to significantly enhance efforts to bring the CPPNM Amendment into force by formalising joint efforts in the form of an internal Secretariat Plan of Action on Facilitating Adherence to and Implementation of the Amendment. It defines a number of actions and presents a more systematic and targeted approach of the Secretariat towards CPPNM states parties. To date, key activities have included:

- Ad-hoc high-level dialogue: the focus is to encourage CPPNM states parties to join the Amendment and if needed to request IAEA assistance.
- National and regional workshops (high level): a number of workshops have been held with the aim of increasing awareness of the Amendment, including, its technical and legal requirements. These events have provided a forum to exchange views and information in order to facilitate the adherence to and implementation of the Amendment. They have also provided an increased awareness of the relevant IAEA legislative assistance and technical activities available to states. These events were attended by policy officials and lawmakers, regulatory representatives, law enforcement and other competent authorities that play a key role in the establishment and/or implementation of the legal and technical requirements.⁶⁰
- Training on legal requirements and technical measures: training on the legal requirements and technical measures that need to be addressed in connection with the Amendment and its effective implementation has been provided to states.
- Country specific plans of action: in parallel to the above activities, country specific plans of action have also been developed, upon request. These plans have identified a tailored set of actions for each requesting CPPNM

59. Out of the current 83 contracting states to the Amendment, nearly three quarters, 61, joined since 2009. In 2009, 11 CPPNM states parties joined; in 2010, 12 CPPNM states parties; in 2011, 7 CPPNM states parties; in 2012, 9 CPPNM states parties; in 2013, 10 CPPNM states parties; and finally, in 2014 at the time of writing, 12 CPPNM states parties joined the Amendment.

60. During 2011-2013, the Agency organised a total of four regional workshops in Africa, Asia, Latin America and Europe and one workshop focusing on the French-speaking CPPNM states parties in Africa to foster information exchange to facilitate states’ adherence to and implementation of the Amendment. Through these workshops, the Agency reached out to more than 50 CPPNM states parties. In 2014, a further sub-regional workshop was held in Mexico for CPPNM states parties in Latin America and the Caribbean. Further events are planned for later in 2014 and in 2015.

state party in order to assist in its adherence to and effective implementation of the Amendment. These plans are integrated into Integrated Nuclear Security Support Plans (INSSPs), which are bilateral integrated plans for nuclear security improvements and assistance covering all aspects of physical protection and nuclear security, between the IAEA and a member state.⁶¹

- Development of promotional guidance: guidance has addressed, in particular, relevant provisions of the Amendment and the need for countries to establish and maintain an appropriate national nuclear security infrastructure. These materials were made available during various outreach activities.⁶²

Further to the implementation of the Plan of Action, more than 30 states joined the Amendment. The Secretariat further strengthened its activities and identified additional actions in 2014. These new actions are focused on a number of priority countries.⁶³ The purpose of the enhanced action is to further accelerate the outreach to CPPNM states parties. As part of these activities, a Seminar on the Promotion of the Entry into Force of the 2005 Amendment to the CPPNM was held at the IAEA Headquarters, 12-13 June 2014. The Seminar focused on a range of topics central and related to assisting CPPNM states parties take the steps necessary to adhere to and implement the Amendment. During the opening session, significantly the representatives of altogether five CPPNM states parties stated that they were in the final stage of adhering to the Amendment and the necessary instruments were to be deposited in due course with the depositary.⁶⁴

On a final note, a new development being pursued is the convening in 2015, for the first time, of a meeting of the points of contact referred to in paragraph 1 of article 5 of the CPPNM. Meetings of representatives of states are foreseen in other international legal instruments such as the obligatory review meetings under the CNS and the Joint Convention, as well as the biennial meetings of the competent authorities identified under the Notification Convention and the Assistance Convention. There are also the meetings held pursuant to the legally non-binding Code of Conduct on the Safety and Security of Radioactive Sources (and the supplementary Guidance on the Import and Export of Radioactive Sources)⁶⁵ and the

61. For more information on INSSPs see IAEA (2013), "Integrated Nuclear Security Support Plan (INSSP)", www-ns.iaea.org/security/inssp.asp.

62. Other guidance is available at IAEA (2014), Nuclear Security, <http://www-ns.iaea.org/security>.

63. More particularly, those CPPNM states parties that had made positive statements regarding their intention to join the Amendment (for example, at the last IAEA General Conference or at the 2013 International Conference on Nuclear Security: Enhancing Global Efforts, held at IAEA Headquarters, 1-5 July 2013), whether they already had or were working on developing the needed implementing legislation, whether they were already Party to (and implemented) the Nuclear Terrorism Convention and whether they had requested IAEA assistance, such as in the form of a national workshop on the Amendment.

64. See IAEA Press Release (2014), "Securing Nuclear Materials – The Way Forward: IAEA Director General Encourages States to Improve Nuclear Security", www.iaea.org/newscenter/news/2014/cppnm.html. To date, four of these countries deposited the necessary instruments with the depositary.

65. IAEA Doc. INFCIRC/663, 29 December 2005. For the text of the revised 2012 edition of the guidance see IAEA (2012), "Guidance on the Import and Export of Radioactive Sources", IAEA Doc. IAEA/CODEOC/IMO-EXP/2012, IAEA, Vienna.

legally non-binding Code of Conduct on the Safety of Research Reactors.⁶⁶ These processes and mechanisms have been considered to be extremely successful as they, for example, provide opportunities for international co-operation and mechanisms for improving nuclear safety. It is hoped therefore that this new initiative will provide a further opportunity to enhance relevant co-operation between states and implementation of the CPPNM and in the future the Amendment.

PART D. Observations and challenges in facilitating the entry into force and implementation of the Amendment

A number of observations and challenges associated with adhering to and implementing the Amendment have been identified. In the context of the aforementioned outreach activities of the IAEA, some CPPNM states parties highlight delays in the legislative processes caused, for example, due to changes in government, as a reason for deferring adherence and implementation. Although many CPPNM states parties support the Amendment in principle, a need to deal with other more pressing priorities was highlighted. In addition, some cited a lack of co-ordination among key authorities and other persons and institutions having an interest in the nuclear field (i.e. stakeholders), during the national legislative process. A challenge in some CPPNM states parties is the need to sensitise key stakeholders such as relevant ministries, on the main provisions of the Amendment. In this respect, articulating the benefits of joining the Amendment appears to be essential.

Significantly, in some CPPNM states parties, particularly those without nuclear material and nuclear facilities, there needs to be a better understanding of the potential relevance of the CPPNM Amendment. Further, since they are already party to the existing CPPNM and the Terrorist Bombings Convention and/or the Nuclear Terrorism Convention, they consider it unnecessary to join the CPPNM Amendment as they consider that the relevant offences are already criminalised and mechanisms already exist for legal assistance pursuant to those instruments. The lack of participation of a number of nuclear power countries was also highlighted as a disincentive to joining the Amendment. Another challenge in some CPPNM states parties is the deficiency in the legal and technical expertise and financial resources needed, particularly, for the full and effective implementation of the Amendment, such as legislative drafting. Coupled to this issue is the perception regarding the number and complexity of the international legal instruments on nuclear security and how to bring them together at the national level.

Some of these observations and challenges need to be further explored. Clearly, some can only be tackled directly by the states themselves, such as the need to prioritise the treaty, to provide greater resources, to delineate responsibilities and to enhance co-ordination between key stakeholders, such as through co-operation in the national threat assessment and the design basis threat (DBT) definition. At the same time, it is also apparent that there is a continuing need for capacity building and assistance in many areas, such as through the provision of IAEA legislative and technical assistance.

66. See IAEA (2004), "Measures to Strengthen International Cooperation in Nuclear, Radiation and Waste Safety", IAEA Doc. GC(48)/RES/10/A, 8 September 2004, which welcomed the adoption of the Code of Conduct by the Board of Governors in March 2004. For the text of the Code of Conduct see IAEA (2006), "Code of Conduct on the Safety of Research Reactors", IAEA Doc. IAEA/CODEOC/RR/2006, IAEA, Vienna.

1. Importance of the Amendment

Before considering these matters further, however, it is important to highlight that the significance and importance of the Amendment continues to be highlighted in various forums. For example, at the 58th IAEA General Conference held in September 2014, all IAEA member states and CPPNM states parties that have not yet done so were once again respectively encouraged and called upon to join the Amendment as soon as possible. Further, these CPPNM states parties were also once again encouraged to act in accordance with the objectives and purposes of the Amendment until it enters into force.⁶⁷ In addition, the UN General Assembly has:

urged all States that have not yet done so to consider, as a matter of priority and in accordance with UNSCR 1373 (2001) [...], becoming parties to the [...], the Amendment to the Convention on the Physical Protection of Nuclear Material, and call[ed] upon all States to enact, as appropriate, the domestic legislation necessary to implement [its] provisions [...]⁶⁸

Further, it is recalled that in Paragraph 63 of the Final Document of the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), “[t]he Conference encourage[d] all States that ha[d] not yet done so to become party to the Convention on the Physical Protection of Nuclear Material and to ratify its amendment so that it may enter into force at an early date” (NPT/CONF.2010/50 (Vol. I)). In addition, the need for states to join the Amendment is also reflected in the Declaration adopted by Ministers at the important International Conference on Nuclear Security: Enhancing Global Efforts, held at IAEA Headquarters, last July.⁶⁹ In that Declaration, the Ministers “[i]nvite[d] States that have not yet done so to become party to and fully implement the Convention on the Physical Protection of Nuclear Material (CPPNM) and its 2005 Amendment [...]” (see paragraph 9 of the Declaration). Also, in the United Nations Global Counter-Terrorism Strategy (A/RES/60/288), adopted by the UN General Assembly on 8 September 2006, UN member states reaffirmed the importance of existing international counter-terrorism instruments, which would include the CPPNM Amendment, by pledging to consider becoming parties to them without delay and implementing them. In addition, positive statements can be found in the outcome documents of the three Nuclear Security Summits held since 2010.⁷⁰ Significantly, pursuant to UNSCR 1372 (2001), all states are urged to join the CPPNM Amendment and the other universal anti-terrorism instruments, such as the CPPNM and the UN Nuclear

67. See IAEA (2005), *supra* note 6. Note that article 18 of the Vienna Convention on the Law of Treaties states that:

[a] State is obliged to refrain from acts which would defeat the object and purpose of a treaty when: (a) it has signed the treaty or has exchanged instruments constituting the treaty subject to ratification, acceptance or approval, until it shall have made its intention clear not to become a party to the treaty; or (b) it has expressed its consent to be bound by the treaty, pending the entry into force of the treaty and provided that such entry into force is not unduly delayed.

Vienna Convention on the Law of Treaties, *supra* note 6, at art. 18.

68. “Measures to eliminate international terrorism”, GA Res. 67/99, UN GAOR, 67th Sess., UN Doc. A/RES/67/99 (2013).

69. IAEA (2013), “International Conference on Nuclear Security: Enhancing Global Efforts – Report by the Director General”, IAEA Doc. GOV/INF/2013/9-GC(57)/INF/6, IAEA, Vienna, Austria, 1-5 July 2013.

70. The 2014 Nuclear Security Summit, The Hague, Netherlands; the 2012 Nuclear Security Summit, Seoul, South Korea; and the 2010 Nuclear Security Summit, Washington, USA.

Terrorism Convention.⁷¹ In light of the above, a reason why the CPPNM Amendment has not yet entered into force is not that states consider it as unimportant.

2. High threshold requirement for entry into force and participation of states

Rather, the current high status of adherence by 150 states to the CPPNM, together with the aforementioned two-thirds majority requirement in paragraph 2 of article 20, results in a significant number needed for entry into force of its Amendment, which is currently 100 CPPNM states parties. This number can be compared with only 75 CPPNM states parties that were required for the Amendment's entry into force at the time of its adoption in July 2005, since there were then only 112 states parties to the CPPNM.

This high threshold alone may be considered as a reason for the long-time that the entry into force of the CPPNM Amendment is taking. Yet, an Amended Convention with relatively few states parties could be considered as ineffective or a weak link in the legal regime to fight against nuclear terrorism. Importantly, the Amended Convention is not just limited to criminalisation and mutual legal assistance but rather obliges CPPNM states parties to establish, implement and maintain an appropriate physical protection regime applicable to nuclear material and facilities under their jurisdiction, as appropriate. This key distinguishing feature from the other instruments should not be overlooked particularly since the Amended Convention is central to an effective and comprehensive physical protection regime.

As concerns the relative slow pace of adherence, 71 CPPNM states parties are still not yet Contracting States to the Amendment. Further, of the 88 CPPNM states parties that participated in the Amendment Conference, 30 are still not parties to the Amendment. Also, since its adoption, a number of countries have only become party to the CPPNM and not to the Amendment. Further, a number of countries with operating nuclear power plants (altogether 16) only joined the Amendment in the last five years and some in the past couple of years, whereas others have still not joined, although it is understood they intend to do so.

3. Implementing legislative, regulatory and administrative obligations

In considering why the Amendment has still not entered into force, consideration also needs to be given to its substantive aspects, more particularly, the legal, technical and administrative requirements that need to be addressed at the national level. This concerns not only the aforementioned lack of resources in some CPPNM states parties but also a lack of understanding of what needs to be done to transpose the CPPNM Amendment into the national legislative and regulatory framework, to ensure effective implementation of the obligations.

Generally speaking, the Amendment gives rise to the need to implement, at the national level, a number of legislative, regulatory and administrative obligations. In this context, in becoming a party to a treaty, most states need to proceed with its implementation, which primarily will entail a legislative response: usually through the adoption of new laws or the amendment of existing ones. All CPPNM states

71. In UNSCR 1373 (2001) of 28 September 2001, the UNSC decided that “acts, methods, and practices of terrorism are contrary to the purposes and principles of the United Nations”. In paragraph 2 of that resolution, the Security Council decided that in order to counter these practices states must co-operate in criminal matters. In paragraph 3(d), the Security Council calls upon all states to “become parties as soon as possible to the relevant international conventions and protocols relating to terrorism [...]”.

parties should already have legislation in place to implement the CPPNM.⁷² Further, those CPPNM states parties with nuclear material and nuclear facilities will most likely already have an existing legislative and regulatory framework, including, a regulatory body(ies) and system of authorisation, inspection and enforcement. Further, it is also recalled that all UN member states are obliged to take certain actions, with regard to physical protection measures (and border controls) pursuant to UNSCR 1540 (2004).⁷³ The implementation of these actions clearly facilitates the implementation of the Amendment.

a. Nuclear security legislation, the legislative process and stakeholders

As noted in Volume II, IAEA Handbook on Nuclear Law: Implementing Legislation, what should be clear is that as for the implementation of other international legal instruments, translating the key elements into specific statutory language can quite often be a complex and difficult task, particularly for legislative drafters who may lack a detailed background in either nuclear technology or nuclear law. This is further complicated by the fact that there are many facets of nuclear security that some experts may not be familiar with. For example, criminal law matters (albeit that the CPPNM's criminalisation provisions should have been implemented and that the Amendment just adds a few new offences and modifies some existing ones) or organisational responsibilities of various security agencies or other competent authorities such as customs and border protection agencies all of whom have a role in nuclear security broadly and in physical protection of nuclear material and nuclear facilities. Also, in developing the legislation, an important aspect is whether a country has nuclear material or nuclear facilities under its jurisdiction or whether it intends to develop such programmes in the future.

i. Nuclear security legislation in general

Further, as Volume II, IAEA Handbook on Nuclear Law: Implementing Legislation identifies, a state in considering the legislation it may need to develop related to nuclear security (and from a broader perspective than that of just physical protection), should address the following key basic elements:

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72. Such CPPNM legislation should provide, for example, for the establishment of a point of contact. It should also establish a system of control for receiving and giving physical protection assurances for international transports. Further, it should criminalise offences such as the theft of nuclear material, for example, in a comprehensive nuclear law, special anti-terrorism law or penal code. Finally, it should also include provisions on international co-operation, for example, in the case of theft, robbery or any other unlawful taking of nuclear material or a credible threat thereof.
 73. To *inter alia*, “adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear [...] weapons and their means of delivery, in particular for terrorist purposes, [...]” (paragraph 2). Pursuant to paragraphs 3(b) and (c), these states are also obliged to “take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear [...] weapons and their means of delivery, including, by establishing appropriate controls over related materials” and to this end shall “(b) [d]evelop and maintain appropriate effective physical protection measures; (c) [d]evelop and maintain appropriate effective border controls [...] to detect, deter, prevent and combat, including, through international cooperation when necessary, illicit trafficking and brokering such items [...]” (emphasis added). The specific details of the foreseen measures are not elaborated on in the resolution but it does address the risks related to the spread of nuclear material related to nuclear weapons. With regard to implementation, it is noted that UNSCR 1540 established the 1540 Committee to interpret and implement it. The total number of national implementation reports provided by states is 171 of the 193 UN member states. Joon, O. (2013), “Letter dated 24 December 2013 from the Chair of the Security Council Committee established pursuant to UNSCR 1540 (2004) addressed to the President of the Security Council”, UNSCR Doc. S/2013/769, 26 December 2013.

- provisions regarding authorisation, inspection, enforcement and penalties (i.e. administrative, civil and criminal (but not those pursuant to the offences in the relevant international legal instruments)) relevant to licensing of nuclear material and other radioactive material, associated facilities and associated activities, including, requirements in relation to physical protection systems and measures for nuclear material, including, during transport and nuclear facilities;⁷⁴
- provisions on the security of radioactive sources;⁷⁵
- provisions on nuclear security, physical protection and illicit trafficking, including, the regulation of physical protection, the responsibilities of the authorised person, international co-operation and assistance, protection of confidential information etc.;⁷⁶
- provisions on emergency preparedness and response relevant to a nuclear or other radiological emergency that may be initiated by a nuclear security event;⁷⁷
- provisions of the relevant criminal or penal code establishing criminal offences for violations of applicable laws and regulations, with stringent penalties, particularly for malicious acts;⁷⁸
- provisions of relevant laws establishing a framework of sanctions for violations of licensing provisions (i.e. not criminal offences) for unauthorised activities such as loss of material or other breaches of licensing laws related to physical protection of nuclear material or nuclear facilities;⁷⁹
- import and export provisions;⁸⁰
- provisions requiring the establishment of appropriate measures for the prevention and detection of, and response to, incidents of theft or other

74. In particular, see Stoiber, C., et al. (2010), *Handbook on Nuclear Law: Implementing Legislation*, IAEA, Vienna, chapters 2, 3 and 14.

75. In particular, see *ibid.* chapter 5, which takes into account, *inter alia*, the 2003 Code of Conduct on the Safety and Security of Radioactive Sources.

76. In particular, *ibid.* chapter 14, which takes into account, *inter alia*, the CPPNM and the Amendment thereto.

77. In particular, see *ibid.* chapter 7, which takes into account, *inter alia*, the practical arrangements and mechanism established under the Notification Convention and the Assistance.

78. In particular, see *ibid.* chapter 14, which covers the offences set forth in the CPPNM and the Amendment thereto, and in the Terrorist Bombings Convention and the Nuclear Terrorism Convention. The model provisions in chapter 14 were prepared jointly with the Terrorism Prevention Branch of the UN Office of Drugs and Crime (UNODC). Since the publication of Volume II of the Handbook, the IMO 2005 Protocol to the 1988 SUA Convention and the IMO 2005 Protocol to the 1988 Fixed Platforms Protocol entered into force. Also, the ICAO 2010 Beijing Convention was adopted. As identified, these instruments also contain provisions providing for the criminalisation of a number of relevant acts, such as using against or on a ship, fixed platform or aircraft or discharging from a ship, fixed platform or aircraft, a nuclear weapon.

79. For example, see *ibid.* chapter 3.

80. In particular, see *ibid.* chapters 5 and 13, which take into account, *inter alia*, the 2004 Guidance on the Import and Export of Radioactive Sources and UNSCR 1540 (2004).

unauthorised acquisition of or illicit trafficking in nuclear and other radioactive material or sabotage of associated facilities;⁸¹ and

- provisions establishing national arrangements necessary to implement international co-operation, such as in protecting nuclear and other radioactive material and associated facilities, recovering stolen or lost material, in dealing with sabotage or the threat thereof and providing for mutual legal assistance.⁸²

In addition, as the IAEA *Handbook on Nuclear Law: Implementing Legislation* points out, the threshold issue arising from any initiative to draft national nuclear legislation is the basic structure and level of detail to be adopted. A fundamental issue is whether a state decides to adopt its nuclear legislation as a single, unified or comprehensive law or to adopt separate laws for different subjects. This approach is really relevant as it pertains to licensing activities as there are many aspects of nuclear security that will not be found in a single comprehensive nuclear law, for example: laws related to national security and intelligence functions or those related to trustworthiness assessment; laws related to information security; border controls; customs and prohibited goods or substances; etc. There is no single formula, but based on the aforementioned “3S” concept, a comprehensive approach has distinct advantages for any state that has decided to utilise nuclear or other radioactive material and related technology. The major benefit of such a comprehensive approach is to help legislative drafters avoid gaps, overlaps and inconsistencies in the national legislation as well as unduly complex or poorly drafted and co-ordinated laws that can create problems of interpretation or application.

In the IAEA’s experience of providing legislative assistance to its member states, which is available to all of them upon request, many countries choose not to just enact a single law, say on nuclear security generally or even physical protection of nuclear material and nuclear facilities but have rather sought to prepare a comprehensive nuclear law addressing all areas, which in addition to nuclear security, includes, nuclear safety, safeguards and civil liability for nuclear damage. They have also amended and/or enacted relevant laws in the other areas mentioned above, i.e. related to information security, etc.

ii. The legislative process and stakeholders

As reflected in the aforementioned IAEA Handbooks on Nuclear Law, generally speaking, the legislative process for nuclear legislation includes the need for an initial assessment of the existing national nuclear programmes and plans (if any), as well as an assessment of existing relevant laws and the regulatory framework. There is a need to ascertain what changes to the existing framework may be required due to becoming party to an international legal instrument like the Amendment. Finally, there is a need for further legislative consideration following the first review of the initial draft law (which may include a legislative review by the IAEA if requested) and the ongoing need for legislative oversight following adoption.

81. In particular, see *ibid.* chapter 14, which takes into account, *inter alia*, the CPPNM and the Amendment thereto.

82. In particular, see *ibid.* chapters 5, 7 and 14, which take into account, *inter alia*, the CPPNM and the 2005 Amendment thereto. In addition, nuclear security legislation would also need to reflect other basic elements, such as: initial provisions of the law, i.e. title, preamble, objectives, scope, definitions used in the law (see in particular *ibid.* chapter 1); provisions on the establishment of the regulatory body (see in particular *ibid.* chapter 2); and miscellaneous and, final and transitional provisions of the law, i.e. entry into force, succession and repeal of the law (see in particular *ibid.* chapter 15).

An important step in the development of nuclear legislation is to obtain a clear perspective on how a new or revised regulatory law (and other aforementioned relevant legislation) could affect stakeholders. This stakeholder input can, for example, be sought in making the aforementioned assessments of programmes and laws. More than for the legislative process for nuclear safety legislation, the legislative process for legislation implementing the Amendment (and nuclear security legislation in general) can entail a wider range of stakeholders. This stems not only from the need to address core regulatory matters such as the establishment of the national nuclear regulatory body and the licensing process but also to implement the criminalisation obligations and the specific physical protection requirements pertaining to nuclear material and nuclear facilities such as threat assessment and development of a DBT. These stakeholders range from relevant national ministries such as the Ministry of Foreign Affairs, the Ministry of Justice, the Ministry of Defence, etc. and other bodies such as the customs authority, border protection authorities, emergency preparedness and response organisations, the police and law enforcement and intelligence agencies, etc. It also includes the regulated industry, the media and the public (individuals, community groups and interest groups). Bringing all these and other stakeholders together can be a challenge but early stakeholder engagement can be essential to the success of the legislation.

b. Relevance of the Amendment: countries with no nuclear material and nuclear facilities

A question asked during the aforementioned IAEA outreach activities is: “Why is the Amendment relevant to a country without nuclear material or nuclear facilities in its jurisdiction?” Since some countries are already party to the existing CPPNM and the Nuclear Terrorism Convention and have already criminalised acts, they do not see the need to join the Amendment.

Clearly central to answering the question is the list of identified benefits of adhering to the Amendment set out in Part E of this article. However, the question also needs to be carefully considered in respect of the Amendment’s new and extended obligations. Using the following hypothetical situation, it is possible to highlight the applicability of the Amendment to all countries. The situation concerns the sabotage of nuclear material by a group of individuals (non-state actors) that was being transported through the territory of a state party to the Amended Convention (the affected state).⁸³ The act has caused death, serious bodily injury and substantial damage to property and environment. The affected state now needs assistance in dealing with its consequences, in particular, due to radiation and release of radioactive substances. The affected state has apprehended a number of alleged offenders, including, a number of its own nationals and those of other states parties. A number of those that contributed to or participated in the commission of the offence, including, nationals of the affected state and the alleged “mastermind” of the act (i.e. the person who directed/organised the commission of the offence) have also been detained in another state party. In considering this situation, the following can be highlighted:

- In dealing with the event, the Amended Convention provides a basis for international co-operation, in particular, for informing other states of a

83. It is recalled that the Amendment does not change the existing CPPNM provisions regarding international nuclear transport. In this respect, article 4.3 may be applicable to the affected transit state party and provides that “[a] State Party shall not allow the transit of its territory by land or internal waterways or through its airports or seaports of nuclear material between States that are not parties to this Convention unless the State Party has received assurances as far as practicable that this nuclear material will be protected during international nuclear transport at the levels described in Annex I”.

credible threat of sabotage of nuclear material and for seeking assistance in dealing with the radiological consequences (new article 5.3(d)).⁸⁴

- Importantly, the Amended Convention provides a basis for the act to have already been criminalised in the national law of the affected state, with appropriate penalties. As concerns criminalisation, the Amendment does not introduce a specific new provision except in relation to nuclear facilities where the act specified in new paragraph 1(e) of article 7 an act directed against a nuclear facility, or an act interfering with its operation, etc., may be understood as an act of “sabotage”. Rather, in this scenario the alleged offence may be understood as already being covered by paragraph 1(a) of Article 7, as an act of dispersal of nuclear material and which caused death, serious bodily injury and substantial damage to property and the environment. Substantial damage to the environment is now also covered pursuant to the Amendment (article 7.1(a)).⁸⁵
- The affected state’s mandatory jurisdiction over the offence arises from its commission in its territory (article 8.1(a)).
- As concerns those that contributed to, participated in or organised or directed the commission of the offence, the Amendment includes new provisions regarding acts of persons that organise or direct the commission of an offence (new article 7.1(j)) and acts that contribute to the commission of the sabotage (new article 7.1(k)). These are in addition to the existing CPPNM offence regarding an act that constitutes participation in the offence (now article 7.1.i)).
- Jurisdiction therefore arises in respect of those that contributed to, participated in or organised or directed the commission of the offence which are nationals of the affected state located in the other state party (article 8.1(b)).
- Further, the affected state has a basis to seek the extradition of those alleged offenders mentioned above. This is because the offence is deemed

84. However, we should not forget that there exists an international emergency and response system established by the IAEA on the basis of the legal framework provided by the Notification Convention and the Assistance Convention. Moreover, the Conventions are supplemented by relevant IAEA safety standards (in particular, the safety requirements on IAEA (2002), Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-R-2, IAEA, Vienna, as well as a number of mechanisms and practical arrangements established by the IAEA Secretariat, the policy-making organs of the agency, and the meetings of the competent authorities identified under the Conventions. For example, there is the Operations Manual for Incident and Emergency Communication 2012 (EPR-IEComm 2012), which defines mechanisms and channels for communication among the Secretariat, states and relevant international organisations. There is also the Response and Assistance Network 2013 (EPR-RANET 2013), which provides mechanisms for international assistance, as well as the Joint Radiation Emergency Management Plan of the International Organizations (EPR-JPLAN 2013), which, *inter alia*, describes the practical arrangements of the organizations involved in a response. There is also the Response Plan for Incidents and Emergencies (EPR-REPLIE), which provides the high-level basis for the Secretariat’s own emergency preparedness and response to a radiation-related event. Finally, there are relevant bilateral and regional agreements on emergency preparedness and response between neighbouring states.

85. New paragraph (e) of article 1 provides that “‘sabotage’ means any deliberate act directed against a nuclear facility or nuclear material in use, storage or transport which could directly or indirectly endanger the health and safety of personnel, the public or the environment by exposure to radiation or release of radioactive substances”. This definition is used in relation to the international co-operation foreseen in article 5.

to be extraditable in any existing treaty between it and another state party. Also, to the extent that an extradition treaty is required, the Amended Convention can be relied upon between the states parties but if no extradition treaty is required, then the offence shall be treated as extraditable between the states parties (article 11).

- As far as the affected state is concerned, it knows that the state party detaining its nationals is obligated to either extradite or submit the case for prosecution without exception whatsoever and undue delay i.e. the *aut dedere aut judicare* principle (article 10). This is also applicable to the affected state with regard to the alleged offenders, which means that these states are not a safe haven for the alleged offenders.
- Further, it knows that the measures taken by the state party detaining the alleged offenders are required to be notified to it without delay (article 9). This also applies in respect of the accused detained by the affected state.
- The affected state also knows that where proceedings are being carried out against the alleged offenders mentioned above in another state party, they are guaranteed fair treatment at all stages of the proceedings (article 12). This also applies in respect of the accused detained by the affected state.
- In seeking to prosecute the detainees and thus giving effect to the *aut dedere aut judicare* principle, the law enforcement agency of the affected state may need the provision of information, evidence and testimony of persons obtained from the agencies of other State parties. It may also need these other states parties, for example, to execute searches and seizures. It can therefore rely on these other states parties being obligated to afford it the greatest measure of assistance in connection with criminal proceedings brought in respect of the alleged offences (article 13). This also applies in respect of the alleged offenders mentioned above detained by the affected state.

Further to this example, the Amended CPPNM strengthens the establishment of jurisdictional grounds, the obligation to extradite or to prosecute and international co-operation mechanisms as concerns mutual legal assistance, whether a state is a nuclear state or not. In the absence of criminalisation provisions, there is the possibility that if the alleged offenders are not brought to justice then the relevant states are considered safe havens.

c. New “core” undertaking regarding the physical protection regime

The Amendment does not establish specific physical protection requirements for nuclear material and nuclear facilities. Rather, specific requirements are left to the discretion of states, many of which currently use (or are seeking to do so) the latest revision, INFCIRC/225/Revision 5, as the baseline.⁸⁶ A CPPNM state party, when considering whether to join and implement the Amendment, should seek to have a clear understanding of the extent to which it needs to fulfil the new “core” undertaking to “establish, implement and maintain a physical protection regime applicable to nuclear material and facilities under its jurisdiction”.⁸⁷ In this regard, they need to consider the general requirements regarding physical protection and principles, i.e. the aforementioned 12 Fundamental Principles.

86. INFCIRC/225/Revision 5, *supra* note 21.

87. See Amendment articles 2(2), 2(3) and 2A(1).

Consistent with the CPPNM Amendment and INFCIRC/225, a state needs to have an understanding of, *inter alia*, the required legislative and regulatory framework, the authority responsible for its implementation and the other required administrative measures that need to be taken, as foreseen in new article 2A.2(a)-(c) of the CPPNM Amendment.⁸⁸ In this respect, all the provisions of the Amended Convention regarding the “core” undertaking are equally applicable to all states parties. A CPPNM state party with no nuclear material and no nuclear facilities (and not planning to have such a programme) that is considering whether to join and implement the CPPNM Amendment should have a clearer understanding of the extent to which it fulfils the new “core” undertaking. Such a state clearly also needs to consider the fulfilment of provisions in the Amendment providing for criminalisation and international co-operation such as mutual legal assistance. Additionally, albeit distinct from the Amendment and in light of the aforementioned UNSCR 1540 (2004), such a state may also wish to give due consideration to the need to establish appropriate effective border controls to detect, deter, prevent and combat illicit trafficking and brokering in nuclear material (and other items). It may also want to consider that becoming party to the Amendment is an opportunity to reassess and strengthen its current legislative and regulatory framework for nuclear security generally.

d. Criminalisation

The requirement for criminalisation in the Amendment should already be familiar to all CPPNM states parties which have already implemented the CPPNM’s criminalisation provisions. As mentioned, the Amendment just adds a few new offences and modifies some existing ones. Nonetheless, there are still some basic issues for legislative drafters such as the need to ensure a synergy between a state’s criminal and penal legislation and its nuclear laws. In implementing the new and extended offences of the Amendment, some CPPNM states parties have needed to draft completely new legislation, whereas for others, only some adjustments to existing legislation were needed. In these cases, although the specified acts in the Amendment are perhaps not as precisely spelt-out, they are already domestic offences and thus illegal in the jurisdictions. In this context, while uniformity in the domestic legislation with the terminology of the acts specified in the Amendment is sought, drafting precisely to the letter may not *per se* be required. Rather, for the purpose of international co-operation on criminal matters, what is important is that the scope of acts covered by the Amendment are criminalised, i.e. the constitutive elements of the offence are criminalised, even if the domestic offences are, for example, broader by imposing more onerous requirements. Yet, such consistency may well help to avoid any potential problems with the dual criminality requirement of international co-operation, thereby facilitating such co-operation and extradition requests.⁸⁹

88. In this regard, in ratifying the Amendment on 22 January 2013, it should be noted that Belgium declared “[...] that it interprets the fundamental principles [...] contained in paragraph 3 of Article 2A as guidelines which the State Party must apply in implementing the obligations of paragraphs 1 and 2 of Article 2A. Consequently, the Belgian government considers that the fundamental principles [...] do not, in themselves, constitute legal obligations”.

89. In addition to the legislative act of criminalising the specified acts, including, the penalisation thereof, criminalisation usually includes addressing all measures to ensure effective criminalisation, ensuring the application provisions of criminal procedure and legislative and administrative measures for improving international co-operation with regard to mutual legal assistance, extradition and other forms of co-operation. However, as mentioned, the Amendment does not change the CPPNM’s provisions on jurisdiction (article 8), detention (article 9), prosecution/extradition (articles 11 and 12), fair treatment (article 12) and mutual legal assistance (article 13). Nevertheless there may well be a need

4. Multiple nuclear security treaties: Package approach and some implementation issues

CPPNM states parties when considering joining the Amendment need to understand the effect of the other relevant instruments comprising the universal legal framework against terrorism, such as the Nuclear Terrorism Convention and the Terrorist Bombings Convention. Given the multiplicity of international legal instruments in the criminal area, one may therefore wonder what exactly the Amendment brings to the table. In fact, at first it may appear that there are a number of duplications and overlaps and inconsistencies between these instruments as concerns the criminalisation provisions. It is this criminalisation requirement that gives rise to an overlap of the respective scopes of application, since this requirement generally concerns related or identical offences. Yet this overlap does not prevent the instruments coexisting at the international level, nor does it hinder their implementation at the domestic level. Further, no such overlap exists as concerns the physical protection provisions.

Some CPPNM states parties have opted to implement the instruments in such a way as to meet the obligations of certain treaties simultaneously and in a co-ordinated fashion. They have therefore become parties to them, including, the Amendment, simultaneously, i.e. a so-called “package approach”.⁹⁰ Rather than considering these instruments as creating unnecessary duplicative offences, they consider them complementary. The package approach does, however, give rise to the need for care at the implementation stage,⁹¹ for example, as concerns

to ensure that these aspects apply with respect to the new and extended offences, for example, so that procedural issues like extradition with respect to the new offence of sabotage are covered by the code of penal procedure. As with respect to the form of legislation mentioned above, these are matters to be determined by national policy and legal practice. Nevertheless, harmonisation of national laws and related procedures in these areas can help prevent or resolve difficult issues such as double jeopardy and punishment and extradition of alleged offenders.

90. Examples of states (with nuclear power plants) that joined the Amendment and the Nuclear Terrorism Convention simultaneously on the same date are the Republic of Korea (on 29 May 2014) and Switzerland (on 15 October 2008). Other states (with nuclear power plants) that joined both instruments closely together are Canada (Amendment (3 December 2013) and NTC (21 November 2013)) and Romania (Amendment (6 February 2007) and NTC (24 January 2007)). Other non-nuclear power states that joined both instruments closely together are Antigua and Barbuda (Amendment (17 December 2009) and NTC (1 December 2009)); Austria (Amendment (18 September 2006) and NTC (14 September 2006)); Djibouti (Amendment (22 April 2014) and NTC (25 April 2014)); and Jamaica (Amendment (10 January 2014) and NTC (27 December 2013)).
91. Taking the CPPNM Amendment and the NTC together as examples, these instruments can from a somewhat narrow perspective both be considered as concerning the combating and criminalisation of offences relating to nuclear material and nuclear facilities. Yet there are, as one would expect, substantive and fundamental differences between them. For example, the Amendment, unlike the NTC, aims at maintaining worldwide effective physical protection and co-operation amongst states parties to these ends. However, as concerns the criminalisation provisions, the Amendment addresses “nuclear material” and “nuclear facilities” used for peaceful purposes only, whereas the NTC covers “radioactive material” in general which would include, for example, radioactive sources and nuclear material. It also addressed “devices”, meaning any nuclear explosive device and radioactive material dispersal or radiation-emitting device (this can include dirty bombs).

distinguishing between the type of penalties to be imposed for particular offences.⁹²

PART E. Potential benefits of the Amendment

In October 2012, the IAEA Secretariat through OLA and NSNS consulted AdSec during its 23rd meeting in order to obtain its advice in helping to identify the key benefits of adhering to the Amendment, with the aim of accelerating the ratification process.⁹³ After extensive discussions among AdSec members, a number of points were identified as the key elements along with their perceived benefits. AdSec considered that the identified benefits could be used when IAEA member states that have not yet adhered to the Amendment interact with OLA. These key messages were further expanded by OLA during the Regional Workshop on Facilitating Adherence to and Implementation of the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material, held from 1 to 3 April 2013, in Beijing, China.

1. The Amendment strengthens national, regional and global nuclear security

AdSec's key message here is that "[t]he Amendment to the CPPNM upgrades the nuclear security of you and your neighbours".

In this context, AdSec considers that "the 2005 Amendment sets out the fundamental principles for nuclear security and provides the basis for current nuclear security guidelines e.g. INFCIRC/225/Revision 5 and provides the globally accepted guidance for nuclear security".

Further, the Amendment enhances the national security of a state by providing a strengthened international framework for combating nuclear terrorism and securing nuclear material that greatly reduces the likelihood of malicious acts. It is a basis for international and regional co-operation and assistance such as in the case of sabotage of nuclear material and nuclear facilities and the theft, robbery or any other unlawful taking of nuclear material or credible threat thereof. Further, the Amendment stimulates international and regional co-operation among states parties, the IAEA and other relevant intergovernmental organisations, for example, by providing a basis for obtaining guidance on the design, maintenance and improvement of a national system of physical protection of nuclear material used for peaceful purposes in domestic use, storage and transport and of nuclear facilities used for peaceful purposes. From these perspectives, it is therefore a vitally important international legal instrument for nuclear security.

92. In this context, regard should be had to the requirement in the Nuclear Terrorism Convention for a "specific" intent, in addition to a general wrongful intent, to cause death, serious bodily injury, damage with respect to, for example, the unlawful possession or use of nuclear material. See article 2.1(a) and (b). No such "specific" intention is required in the CPPNM and the Amendment which instead requires that the act of unlawful possession or use must only either "causes or is likely to cause" such death, injury or damage etc. See article 7.1(a). States parties to both instruments will therefore need to adopt these provisions into national legislation for full consistency with their overall treaty obligations. As concerns the use of nuclear material, the Nuclear Terrorism Convention also provides a specific "intent to compel a natural or legal person, an international organization or a State to do or refrain from doing an act". Article 2.1(b)(iii). This type of intent may be considered as distinguishing "terrorist" type offences from others. A requirement for a specific intent can also be found in the Terrorist Bombings Convention. The relevant SUA instruments of IMO and ICAO do not require such a specific intent.

93. AdSec was established by the IAEA Director General in January 2002 to advise him "on the Agency's activities related to preventing, detecting and responding to terrorist or other malicious acts involving nuclear and other radioactive materials and nuclear facilities".

2. The Amendment provides a sufficient legal basis for establishing jurisdiction, granting extradition and facilitating mutual legal assistance with regard to the new and extended offences

The Amended Convention provides the basis by which to ensure that that persons involved in terrorist and other criminal acts are brought to justice and are denied safe haven. Also, the assistance of other countries is quite often needed in successfully investigating, prosecuting and punishing such persons.

Although not amending the CPPNM's provisions on mutual legal assistance, such assistance is applicable with respect to the Amended Convention's new and extended offences, in particular, smuggling or sabotage. The Amended Convention therefore provides a basis for states parties to afford one another the greatest measure of legal assistance, which may otherwise not exist. Finally, pursuant to UNSCR 1373 (2001) the need for all states to afford each other mutual legal assistance in connection with criminal proceedings as concerns, for example, the support of terrorist acts, is binding on states (regardless of their participation in a treaty).⁹⁴

3. The CPPNM Amendment facilitates greater confidence building

AdSec's key message in this context is that "[t]he Amendment complements the efforts of the international community". The Amendment is therefore an opportunity to contribute to further trust building since it is a legally binding commitment with respect to the physical protection of nuclear material and nuclear facilities and the combating of related offences.

Physical protection is essential for enjoying the many benefits of nuclear material in industrial; agricultural and medical applications; nuclear energy; and many other areas. As identified by AdSec:

with the growing emphasis on international peer review of states' nuclear security regimes, it is important to recognise the significance of INFCIRC/225/Revision 5 as the benchmark against which such missions will make their judgment. In this regard, the CPPNM Amendment can be considered as strengthening the commitment to the recommended requirements in INFCIRC/225/Revision 5.

4. Being a good citizen

AdSec's key message in this regard is that "[w]hether or not you have nuclear facilities, what you do affects the security of your neighbours and what your neighbour does affects your own nuclear security". In this context, AdSec considers that "security of one is the same as security for all because the sabotage of a nuclear facility or theft of nuclear material in one place, could lead to consequences in any place".

Further, it should not be forgotten that joining the Amendment is a recognised response to the calls of various fora such as the IAEA General Conference, for states to join. Adherence to the treaty also fulfils the obligation to do so pursuant to UNSCR 1373 (2001).⁹⁵

94. UNSCR 1373 (2001) provides that all states should afford one another the greatest "measure of assistance in connection with criminal investigations or criminal proceedings relating to the financing or support of terrorist acts, including, assistance in obtaining evidence in their possession necessary for the proceedings". Para. 2(f).

95. *Ibid.* para. 3(d), "[c]alls upon all States to: [b]ecome parties as soon as possible to the relevant international conventions and protocols relating to terrorism [...]".

AdSec's key message is also that "[t]he Amendment fosters consistency and transparency of internationally recognized security practices in the nuclear sector". In this context, AdSec considers that "the 2005 Amendment complements the [Nuclear Terrorism Convention], with specific principles important to defence in depth, including, criminalization, confidentiality, insider threat".

5. The Amendment enables states parties to receive information on implementing laws and regulations of other states parties

The provision of information on laws and regulations giving effect to the Amended Convention can help a State's Party gain an understanding of how other states parties have implemented the Amended Convention.⁹⁶ To facilitate this information exchange, NSNS created the online, password-protected IAEA Nuclear Security Information Portal (NUSEC). Further, although recent proposals for enhanced transparency on nuclear security were not developed with the sole intention of facilitating the entry into force of the Amendment, they are likely to have a positive impact with respect to enhancing the sharing of information on such implementation.⁹⁷

CONCLUSION

In conclusion, the Amendment constitutes an important milestone in international efforts to improve the physical protection of nuclear material and facilities.

According to IAEA Director General Yukiya Amano, the "entry into force of the [Amendment] is the most important step which the international community can take in strengthening nuclear security globally".⁹⁸ The Amended Convention will have a major impact in reducing the vulnerability of states parties to nuclear terrorism and other criminal acts. It helps to set global minimum requirements for the physical protection of nuclear material and facilities. It provides for the criminalisation of new and extended specified acts. It also provides for the sharing of information on potential and actual attacks on nuclear material and nuclear facilities, and the provision of assistance if such attacks should occur.

Although the pace of adherence has increased since 2009, the entry into force of the Amendment remains a major piece of unfinished business in international efforts to help ensure that nuclear material does not fall into the hands of terrorists or other criminals. The non-entry into force of the Amendment cannot be attributed to one single factor. Rather, there are a number of observations that can be made and challenges identified, all of which must be taken into account. Clearly, the high number of CPPNM states parties required to bring the Amendment into force and the lack of adherence of a number of significant states, have not helped. However, as

96. It should be noted that pursuant to paragraph 1 of article 14 of the CPPNM, each state party is already obliged to inform the depositary (i.e. the IAEA) of its laws and regulations that give effect to the Convention.

97. More particularly, the Ministerial Declaration "[e]ncourage[d] the IAEA, in consultation with Member States, to consider ways of further promoting the exchange, on a voluntary basis, of information on the implementation of the legal instruments relevant to nuclear security". Ministerial Declaration, *supra* note 1, p. 3, para. 11. In this regard, it is recalled that in advance of the 2014 Nuclear Security Summit in The Hague, the Netherlands submitted a seven-page written report (dated 19 June 2013) pursuant to article 14.1, on its domestic legislation, regulations and policies giving effect to the CPPNM, as amended. The aim of the Netherlands was to enhance and encourage transparency among states and provide certain international assurances.

98. IAEA Press Release (2014), "Securing Nuclear Materials – The Way Forward: IAEA Director General Encourages States to Improve Nuclear Security", www.iaea.org/newscenter/news/2014/cppnm.html.

identified there are other considerations such as the complexity of national legislative processes that can quite often be lengthy and give rise to the involvement of a wide range of stakeholders. Significantly, there is a lack of understanding among some CPPNM states parties, such as those that do not have nuclear material and nuclear facilities under their jurisdiction, of the relevance of the Amendment as compared to other treaties such as the Nuclear Terrorism Convention. Yet, for these and other states parties, there are a number of benefits associated with joining the Amendment, including, those deriving from the criminalisation and international co-operation provisions.

The Amended Convention makes a difference. Entry into force is an achievable near-term goal and one that the IAEA continues to pursue, in particular, through the ongoing provision of legal and technical assistance since its adoption. This assistance has also been provided in a more systematic and targeted manner from late 2011, through the implementation of an internal Plan of Action on Facilitating Adherence to and Implementation of the Amendment.

As we move closer to the entry into force of the Amendment, which is expected during 2015, it is essential that all contracting states to it ensure that the required legislation, regulations and administrative measures are in place. To assist them in this effort, the IAEA continues to stand ready to offer legal and technical assistance on request.

The legal status of nuclear power in Germany

Professor Dr Thomas Mann*

I. Scope of the paper

Over the past 15 years, political attitudes in Germany towards the nuclear industry have been characterised less by consistency than by some major policy shifts, and the same can be said for the legislation born of these attitudes. Although a number of these about-turns were predictable, others were less so because of their dependence on external factors.

What now looks likely to be the final¹ decision to phase out the civil use of nuclear power in Germany by 31 December 2022² raises a whole host of legal questions. In particular, the procedure followed to implement this phase-out provides ample material for debates on questions of constitutionality. Further matters of jurisprudential interest include the agreements concluded with the nuclear industry before the final phase-out decision was taken and the chronologically close political about-faces themselves. Finally, a degree of legal uncertainty still surrounds not only the as yet still unresolved issue of final repositories but also the resurgent debate over the source of funding for the dismantling of nuclear power plants. After providing an overview of the initial situation and the problems arising in connection with Germany's phasing out of the civil use of nuclear energy, this paper will place these issues in their proper legal context before evaluating them and highlighting the connection between these points of nuclear law and the current upheaval in German energy policy.

II. Legal developments up to the 2011 phase-out decision

Industrial policy considerations were a decisive factor driving the civil use of nuclear energy in Germany from the outset,³ even though the energy industry itself initially

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1. Given that the last Conservative/Liberal (CDU/CSU and FDP) coalition also reneged on its commitment on nuclear power, a further policy reversal in this area is extremely unlikely even in the event of another change of government and would not gain the support of the majority of the public unless other sources of energy were affected by unexpected shortfalls in supply.
2. The last nuclear power plants to be taken offline pursuant to section 7(1)(a)(6) *Atomgesetz* (AtG) (Atomic Energy Act) will be the reactors Isar 2, Emsland and Neckarwestheim 2.
3. Di Fabio, U. (1999), *Der Ausstieg aus dem wirtschaftlichen Nutzen der Kernenergie* (The decision to phase out the commercial use of nuclear power), Carl Heymanns Verlag, Cologne, p. 1; Hellfahrt, D. (2003), *Rechtsfragen des Atomausstiegs* (Legal issues relating to the nuclear phase-out), *Europäische Hochschulschriften*, Frankfurt am Main, p. 1 et seq.; Radkau, J. (1983), *Aufstieg und Krise der deutschen Atomwirtschaft* (The rise and crisis of the German nuclear industry), Rowohlt Verlag, Reinbek bei Hamburg, p. 18; Becker, P. (2011), "Das Ende der Atomverstromung – Zu den Empfehlungen der Ethik-Kommission, zur 13. Atomgesetznovelle" (The end of nuclear power – on the recommendations of the Ethics Committee concerning

opposed the use of nuclear power to generate electricity⁴ on grounds of cost. The country's nuclear generation programme only got off the ground with the help of huge state subsidies and the introduction of a liability cap for energy producers.⁵ These initial problems are indicative of the fact that nuclear power has always aroused a great deal more political interest than other sources of energy,⁶ and it should come as no surprise that the nuclear policy U-turns of the past 15 years have been primarily motivated by the differing energy agendas of the respective political camps in government.

A. The first phase-out decision (2000) and the lifespan extensions (2010)

In 2000, after decades of government funding for the nuclear industry,⁷ the SPD/Green coalition in power at the time and the relevant energy companies reached an agreement on a gradual phasing out of the use of nuclear power, known as the "Nuclear Consensus I".⁸ The Nuclear Phase-Out Act⁹ adopted in 2002 codified the implementation of this agreement. Key features of the amendments made at the time to the Atomic Energy Act included: first, a ban on new nuclear plants and, second, provisions limiting the residual electricity volumes of the 20 existing nuclear plants to a total of 2 623 TWh.¹⁰ The volumes were initially determined on an individual basis for each nuclear plant, but the option was given to transfer them in order to encourage early decommissioning of individual plants.¹¹ The last nuclear power plant was expected to go offline in 2021 on the basis of these provisions.¹²

the 13th Amendment to the AtG), *Zeitschrift für neues Energierecht* (ZNER), Vol. 15, Ponte Press Verlag, Bochum, p. 742.

4. See Radkau, J. (1983), *supra* note 3, p. 116 *et seq.*; Becker, P. (2011), *Aufstieg und Krise der deutschen Stromkonzerne* (The rise and crisis of the German electricity companies), Ponte Press, Bochum, p. 202 *et seq.*
5. Becker, P. (2011), *supra* note 3, p. 742; Radkau, J. (1983), *supra* note 3, p. 18 *et seq.*
6. It should, however, be noted that funding for the coal industry under the "Century Contract" and the switch to renewables under the Renewable Energies Act were also largely driven by state energy policy.
7. Funding for nuclear power was initially given first place among the stated aims of the Act, see AtG section 1 of 23 December 1959, *Bundesgesetzblatt* (BGBl) (Federal Law Gazette) 1959 I, p. 814, but this clause was removed in 2002; see also Becker, P. (2011), *supra* note 3, p. 742.
8. Agreement between the federal government and the energy suppliers dated 14 June 2000, available at: www.bmub.bund.de/service/publikationen/downloads/details/artikel/vereinbarung-zwischen-der-bundesregierung-und-den-energieversorgungsunternehmen-vom-14-juni-2000/.
9. Act on the Controlled Phasing Out of the Use of Nuclear Power for the Commercial Generation of Energy of 22 April 2002, BGBl 2002 I, p. 1351.
10. See Annex 1 to the Agreement between the federal government and the energy suppliers dated 14 June 2000, *supra* note 8; Schneehain, A.W. (2005), *Der Atomausstieg* (The nuclear phase-out), Cuviller Verlag, Göttingen, p. 27; Fillbrandt, M. and M. Paul in Danner, W. and C. Theobald (2012), *Energierecht* (Energy Law), C. H. Beck Verlag, Munich, Vol. 2, Preliminary observation B1 Nuclear Law V, recital 25.
11. See De Witt, S. (2012) "Ist der Atomausstieg 2011 mit Artikel 14 GG vereinbar?" (Is the 2011 nuclear phase-out compatible with GG Article 14?), *Umwelt und Planungsrecht* (UPR), *Verlagsgruppe Hüthig Jehle Rehm*, Munich, p. 281; for a detailed examination of whether residual electricity volumes from new power stations can be transferred to old power stations in order to extend their lifespans, see Mann, T. (2009), *Rechtsfragen der Elektrizitätsmengenübertragung nach § 7 Abp. 1b Satz 2 Atomgesetz* (Legal issues relating to the transfer of electrical volumes pursuant to section 7(1b) sentence 2 of the Atomic Energy Act), *Nomos-Verlag*, Baden-Baden, p. 17 *et seq.*
12. For more details, see Kloepfer, M. and D. Bruch (2011), "Die Laufzeitverlängerung im Atomrecht zwischen Gesetz und Vertrag" (Lifespan extensions under the Nuclear Act – between law and contract), *Juristenzeitung* (JZ), Vol. 66, *Mohr Siebeck Verlag*, Tübingen, p. 377.

The “Energy Concept 2050” presented in September 2010 by the Conservative/Liberal coalition, which subsequently came to power, referred to nuclear power as a “bridging technology” that could be used to reduce CO₂ emissions on a transitional basis until such time as renewables provided the bulk of the country’s energy.¹³ The 11th Amendment to the AtG accordingly increased the residual electricity volumes for the nuclear power plants, thus extending their lifespans by an average of 12 years.¹⁴ This amendment, known as the “Nuclear Consensus II”,¹⁵ was again preceded by negotiations with the energy industry. In a draft paper (the “Development Fund Agreement”), the nuclear industry and the Federal Government reached an arrangement that some of the additional revenues resulting from these lifespan extensions should go towards an “Energy and Climate Fund”.¹⁶ The Federal Government also introduced a nuclear fuel tax,¹⁷ even though the parties had failed to reach a final agreement on this issue.¹⁸ The 12th Amendment to the AtG¹⁹ tightened up safety procedures for nuclear power plants in view of the length of time they had been in operation.²⁰

B. The legal problems posed by “done deal” legislation

Negotiations therefore took place between the Federal Government and the energy industry in advance of both the “first” phase-out decision taken by the SPD/Green coalition in 2000 and the life extensions adopted by the Conservative/Liberal coalition in 2010. In each case, the Bundestag (the lower chamber of the German Parliament) was involved only after an agreement had been reached, and its role was limited to adopting parliamentary acts to lend legislative force to the substance of these agreements. From a legal point of view, this begs the question of why the concerned governments obtained prior consent from the energy industry, and whether “done deal” legislation of this kind can be reconciled in any way with rule-of-law principles.

The answer to the first question differs according to the case being discussed. Back in 2000, the big four energy suppliers still generated over 80% of Germany’s electricity, and so a sustainable energy policy could be developed only in co-operation with these companies rather than in opposition to them. The federal

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13. Federal Government (2010), Energy Concept for an Environmentally Friendly, Reliable and Affordable Energy Supply, www.bundesregierung.de/ContentArchiv/DE/Archiv17/_Anlagen/2012/02/energiekonzept-final.pdf, p. 18; see also Fillbrandt, M. and M. Paul (2012), *supra* note 10, recital 11.
 14. Eleventh Amending Act of 8 December 2010, BGBl 2010 I, p. 1814; *Bundestags-Drucksache* (BT-Drs.) (*Bundestag* document) 17/3051, p. 1; Energy Concept for an Environmentally Friendly, Reliable and Affordable Energy Supply (2010), *supra* note 13, p. 18.
 15. Development Funds Agreement between the Federal Republic of Germany and the nuclear power plant operators and their group parent companies in Germany, dated 6 September 2010.
 16. The Fund was set up by the Act on the Creation of a Special Energy and Climate Fund of 8 December 2010, BGBl 2010 I, p. 1807, later amended by Article 1 of the Act of 29 July 2011, BGBl 2011 I, p. 1702.
 17. Nuclear Fuel Tax Act of 8 December 2010, BGBl 2010 I, p. 1804.
 18. See the provisions of Section 2 of the Development Funds Agreement, which provide for a reduction in funding if a nuclear fuel tax or similar tax exceeding an annual sum of EUR 2.3 billion is levied.
 19. Twelfth Amending Act of 8 December 2010, BGBl 2010 I, p. 1818.
 20. For very informative points on the effectiveness of these directives in relation to the actual greater need for safety improvements and the risk associated in particular with older nuclear power plants, see Renneberg, W. (2011), “*Laufzeitverlängerung und nukleare Sicherheit – zum rechtlichen und technischen Zusammenhang von 11. und 12. AtG Novelle*” (Lifespan extensions and nuclear safety – on the legal and technical context of the 11th and 12th Amendments to the AtG), ZNER, Vol. 15, Ponte Press Verlag, Bochum, p. 106 et seq.

government was keen to avoid the avalanche of appeals which the energy providers would otherwise have lodged in response to the planned phase-out of nuclear power. A consensus was also intended to bridge the deep divisions within German society over the issue of nuclear power. By way of contrast, the life extensions for currently operational nuclear power plants granted under the second Nuclear Consensus in 2010 were, on the whole, good news for the energy providers thanks to the additional revenues they could expect to receive from power plants which, in most cases, had already been written off the balance sheet, regardless of the fact that some of these revenues would be siphoned off by the Federal Government to fund the development of renewables. The Nuclear Consensus II thus essentially consisted of little more than a *quid pro quo* for the lifespan extensions.

Doubts about the compatibility of this approach with the dictates that the rule of law stems from the principle of democracy (Article 20(1) and (2) of the Basic Law (*Grundgesetz*) (GG)) and the separation of power (GG Article 20(2) sentence 2). In order to ensure that public authority emanates from the people as a principle of democracy, the people must be able to endorse or reject particular policies in elections and referenda, and speeches held for and against the policies in parliament must make it clear who is responsible for specific political decisions so that this right can be exercised effectively. Every citizen must also be granted an equal opportunity to influence political decisions. Prior arrangements with parties likely to be affected by a future piece of legislation place these parties in a privileged position compared to average citizens who are unable to influence specific legal provisions.²¹ Holding these negotiations behind closed doors also results in a lack of transparency over political positions, and this is particularly true in cases where the federal government presents parliament with a delicately balanced set of regulations that has emerged from negotiations, in order for them to be made into law with as few amendments as possible. This significantly curtails Parliament's constitutionally guaranteed power of discretion,²² as well as infringes on the "theory of essentiality" and violates the principle of the separation of power.²³

Each government took steps to avoid these accusations of unconstitutionality by painstakingly ensuring that the agreements with the nuclear power plant operators could not be deemed legally binding contracts,²⁴ since an unamended contractual agreement made into law by the parliamentary majorities backing the government would have been problematic for the aforesaid constitutional reasons. Criticism on grounds of unconstitutionality is accordingly unfounded if it is assumed that the

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21. See Kloepfer, M. (2012), "Verfahrenre Atomausstiegsverfahren" (A deadlocked nuclear phase-out), UPR, Vol. 32, Verlagsguppe Hüthig Jehle Rehm, Munich, p. 43; Sauer, H. (2004), "Kooperierende Rechtssetzung – Reaktionen einer herausgeforderten Verfassung" (Co-operative law-making – the responses of a constitution under attack), *Der Staat*, Vol. 43, Duncker & Humblot, Berlin, p. 574.
 22. Schorkopf, F. (2000), "Die 'vereinbarte' Novellierung des Atomgesetzes" (The "pre-agreed" Amendment to the Atomic Energy Act), *Neue Zeitschrift für Verwaltungsrecht (NVwZ)*, Vol. 19, Verlag C. H. Beck, Munich, p. 1113.
 23. Morlok, M. (2003), "Informalisierung und Entparlamentarisierung politischer Entscheidungen als Gefährdung der Verfassung?" (The informalisation and deparliamentarisation of political decisions as a threat to the constitution?), *Veröffentlichung der Vereinigung der deutschen Staatsrechtslehrer (VVDStRL)*, Vol. 62, De Gruyter Recht, Berlin, p. 76; Sauer, H. (2004), *supra* note 21, p. 572.
 24. Schorkopf, F. (2000), *supra* note 22, 1112; Hellfahrt (2003), *supra* note 3, p. 102; Schoch, F., "Entformalisierung staatlichen Handelns" (The deformalisation of state action), Isensee, J. and P. Kirchhof, (2005), *Handbuch des Staatsrechts (Handbook of Constitutional Law) (HStR)*, Vol. 3, C. F. Müller Verlag, Heidelberg, section 37, recital 41; for a different view, see Frenz, W. (2002), "Atomkonsens und Landesvollzugskompetenz" (Nuclear consensus and the federal states' enforcement competencies), *NVwZ* Vol. 21, p. 562, which refers to a binding obligation on the grounds of the detail and accuracy of the agreement, the way it was presented to the public and the political confidence established on this basis.

outcome of the consensus falls under the heading of “informal state action”²⁵ and that parliament was theoretically able to amend the details of the agreement when making it law.

III. The 2011 “nuclear phase-out”

Only a few short months after Germany’s nuclear power plants were granted life extensions, the same Conservative/Liberal coalition led by Chancellor Angela Merkel made an about-face on nuclear policy. In the aftermath of Japan’s Fukushima Daiichi nuclear power plant accident on 11 March 2011, and in response to the public uncertainty fuelled by this disaster, the Federal Chancellor announced an initial “moratorium” on 14 March 2011. This moratorium involved a three-month suspension of operation of Germany’s seven oldest nuclear power plants²⁶ and the permanent decommissioning of the Krümmel plant, which had already been taken offline. The Reactor Safety Committee was also tasked by the Federal Government with carrying out a comprehensive safety assessment of all of the country’s 17 nuclear power plants.²⁷ At around the same time, the Ethics Committee led by the former federal environment minister, Prof. Dr. Klaus Töpfer, delivered an energy strategy for the Federal Republic of Germany (“A Safe Energy Supply”) that gave absolute priority to the issue of nuclear safety.²⁸ This strategy formed the basis for the 13th Amendment to the AtG²⁹ adopted on 6 June 2011, which rescinded the previous increases in residual electricity volumes, permanently decommissioned the nuclear power plants shut down under the moratorium and set a date for the final shutdown of each of the nine remaining power plants.³⁰

The plant operators E.ON and RWE, and later also Vattenfall, responded by lodging appeals with the Federal Constitutional Court.³¹ Vattenfall also sought recourse from the Washington-based International Centre for Settlement of Investment Disputes.³² The legality of the moratorium imposed in March 2011 has

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25. In this respect, see Langenfeld, C. (2000), “Die rechtlichen Rahmenbedingungen für einen Ausstieg aus der friedlichen Nutzung der Kernenergie” (The legal framework for a phase-out of the peaceful use of nuclear power), *Die öffentliche Verwaltung (DÖV)*, Vol. 53, p. 936; Schorkopf, F. (2000), *supra* note 22, p. 1112.
 26. The reactors in question were Neckarwestheim I, Phillipsburg I, Biblis A and B, Isar I, Unterweser and Brunsbüttel, all of which were commissioned before 1980.
 27. Motion for a resolution by the CDU/CSU and FDP coalition of 16 March 2011, BT-Drs. 17/5048, p. 2.
 28. See draft of the 13th Act Amending the Atomic Energy Act, BT-Drs. 17/6070, p. 5; Ziehm, C. (2012), “Atomausstieg und Energiewende” (The Nuclear Act and the Energy Revolution), ZNER, Vol. 16, Ponte Press Verlag, Bochum, p. 221.
 29. 13th Act Amending the Atomic Energy Act of 31 July 2011, BGBl 2011 I, p. 1704.
 30. Compare AtG section 7(1a) in conjunction with Annex 3 Column 2.
 31. By way of contrast, the power plant operator EnBW Energie Baden-Württemberg AG (EnBW) cannot cite the infringement of fundamental rights and is thus not entitled to lodge a constitutional appeal with the Federal Constitutional Court due to the fact that it is now a fully state-owned company.
 32. There is some controversy over the issue of whether Vattenfall is entitled to lodge an appeal with the Federal Constitutional Court as a foreign legal person, given that its parent company is fully owned by the Swedish State. In this respect, see Kloepfer, M. (2011), “13. Atomgesetznovelle und Grundrechte” (13th Amendment to the Atomic Energy Act and Fundamental Rights) in *Deutsches Verwaltungsblatt (DVBl.)*, Vol. 126, Heymanns Verlag, Cologne, p. 1439; Schneehain, A. W. (2005), *supra* note 10, p. 177; or, for an alternative view, see Bruch, D. and H. Greve (2011), “Atomausstieg 2011 als Verletzung der Grundrechte der Kraftwerksbetreiber?” (The 2011 nuclear phase-out as an infringement of the fundamental rights of the power plant operators?), *DÖV*, Vol. 64, W. Kohlhammer GmbH, Stuttgart, p. 794 (796); Wallrabenstein, A. (2011), “Die Verfassungsmäßigkeit des jüngsten Atomausstiegs” (The constitutionality of the latest nuclear phase-out) in *Humboldt*

been challenged, and doubts have been raised regarding the future applicability of the Energy and Climate Fund Act. These legal issues will be examined below.

A. Underlying factors

The Fukushima Daiichi disaster was undoubtedly the *de facto* trigger for the decision to rescind the life extensions, which had only been recently granted. According to the explanatory statement for the 13th Amendment to the Atomic Energy Act: “Despite the tragic events in Japan, considerations relating to security of supply, climate protection and the availability of reasonably priced energy mean that it is not yet possible to stop using nuclear power immediately and completely. At the same time, however, the events in Japan mean that the risks associated with nuclear power must be reassessed.”³³

This paper is unable to assess the extent to which the events in Japan did in fact alter the safety profile of German nuclear power plants, and whether it was in fact Fukushima that caused the Federal Government to reassess the situation and revise its opinion, or whether this decision was instead made with one eye on the forthcoming electoral campaign, as supposed by many.³⁴ What can be stated with a degree of certainty is that a substantial majority of Germans were opposed to the continued use of nuclear power in Germany in the immediate aftermath of the Fukushima disaster.³⁵ In the opinion of the Federal Government and the Ethics Committee, an immediate phase-out was incompatible with the three basic axioms of German energy supply, namely: security of supply, appropriate pricing and climate protection.³⁶ Detailed preparations were therefore made for an “energy revolution”, which would allow the use of nuclear power to be phased out in the medium term. As well as a gradual phase-out of nuclear power, the package of measures adopted to implement this “energy revolution” provided for an even more ambitious use of electricity generated from renewables.

B. The moratorium of March 2011

A first step towards the phasing out of nuclear power was taken with the moratorium announced by Federal Chancellor Merkel on 14 March 2011. A number of minister-presidents of the federal states were consulted before the announcement,³⁷ but the *Bundestag* was not. The moratorium therefore raises a number of legal concerns that have been debated not only in expert commentary but

Forum Recht [HFR], Vol. 11, available at: www.humboldt-forum-recht.de, p. 113. For similar conclusions, see also Ziehm, C. (2012), *supra* note 28, p. 222.

33. Draft law by the CDU/CSU and FDP groups, BT-Drs. 17/6070, p. 5.

34. This was at least the view held by the majority of Germans following the phase-out announcement. In a survey carried out by ARD-Deutschlandtrends on 9 June 2011, 57% of Germans stated that Federal Chancellor Merkel and her government had decided to phase out nuclear power as a pre-election strategy. This survey is available at www.tagesschau.de/inland/deutschlandtrend1342.html.

35. 54% of those questioned in the same survey believed that a phase-out by 2022 was a good idea, and 27% wanted the date to be even earlier. The survey is available at: www.tagesschau.de/inland/deutschlandtrend1342.html.

36. See the final report of the Ethics Committee, *A Safe Energy Supply*, p. 18 *et seq.*; BT-Drs. 17/6070, *supra* note 28, p. 5.

37. These were the minister-presidents for Bavaria, Schleswig-Holstein, Baden-Württemberg, Hessen and Lower Saxony; see the statements made at the federal government press conference on 15 March 2011, available at: www.bundesregierung.de/ContentArchiv/DE/Mitschrift/Pressekonferenzen/2011/03/2011-03-15-statement-nutzung-kernenergie.html.

also by the Higher Administrative Court in Kassel³⁸ and, at second instance, the Federal Constitutional Court.³⁹

1. Background information

The Federal Government's announcement indicated that the recently adopted statutory lifespan extensions would be suspended under the moratorium and that the oldest nuclear power plants would consequently have to be taken offline. A few days later, AtG Section 19(3), sentence 2, No. 3, was cited as the legal basis for this (at the time temporary) decommissioning order, and, on the orders of the Federal Ministry of the Environment pursuant to GG Article 85(3), the competent federal state ministries issued operating bans on this basis to the nuclear power plants concerned.⁴⁰ All of the plant operators complied with these decommissioning orders.

2. Legal considerations

Questions can, however, be raised about the very idea behind the moratorium. The announcement by the Federal Chancellor made it clear that the life extensions granted to German nuclear power plants under the law adopted on 8 December 2010 would be rescinded by the moratorium,⁴¹ and the Federal Government believed that this would result in the seven oldest nuclear power plants being forced to stop operating on the basis of the previously adopted provisions on lifespans, given that they would have used up all of their residual electricity volumes.⁴² In fact, however, all of the power plants except for Neckarwestheim I would have had sufficient residual electricity volumes to continue operating, meaning that the power plants could still have remained online under the regulations previously adopted by the Conservative/Green coalition.⁴³ On its own, therefore, the "disapplication" of the formerly adopted 11th Amendment to the AtG would not have delivered the desired consequences in law.

The moratorium as a first step towards the phasing out of nuclear power was furthermore manifestly unconstitutional. The mere "disapplication" of the 11th Amendment to the Nuclear Act by the executive violates the principle of the

38. See the rulings of the Higher Administrative Court (*Verwaltungsgerichtshof*) (VGH) of Kassel of 27 February 2013 – 6 C 824/11 and 6 C 825/11, *Zeitschrift für Umweltrecht* (ZUR) 2013, 367 *et seq.* in the actions brought by RWE AG (as operator of the switched-off nuclear power plants Biblis A and B) against the Federal State of Hessen. See also the interim judgment of the Higher Administrative Court of Kassel of 4 July 2012 – 6 C 824/11.T, ZUR 2012, 632 *et seq.*

39. Federal Administrative Court (BVerwG), ruling of 20 December 2013 – 7 B 18.13, ZUR 2014, p. 236 *et seq.*

40. See Rebentisch, M. (2011) "Kraftwerks-Moratorium versus Rechtsstaat" (Power plant moratorium versus the rule of law), NVwZ, Vol. 15, C. H. Beck Verlag, Munich, p. 533; according to Ewer, W. and A. Behnsen (2011), "Das 'Atom-Moratorium' der Bundesregierung und das geltende Atomrecht" (The "nuclear moratorium" of the federal government and the applicable nuclear law), *Neue Juristische Wochenschrift* (NJW), Vol. 64, C. H. Beck Verlag, Munich, p. 1183, instructions were not issued by the Federal Environment Ministry; instead, a consensus was negotiated between the Federal Chancellor and the minister-presidents. In its ruling, the Higher Administrative Court of Kassel assigned responsibility to the federal state authority on the basis of AtG section 24 and section 2 sentence 1 No. 6 of the Ordinance on Responsibilities in the Area of Nuclear and Radiation Protection, irrespective of any instructions that may have been issued.

41. "We will suspend the recently adopted lifespan extensions for German nuclear power plants. This is a moratorium, and it will last for three months." Angela Merkel, extract from the press conference held on 14 March 2011, available at: www.bundestkanzlerin.de/nn_683698/Content/DE/Mitschrift/Pressekonferenzen/2011/03/2011-03-14bkin-lagejapan-atomkraftwerke.html.

42. See Kloepfer, M. (2012), *supra* note 21, p. 45; Kloepfer, M. and D. Bruch (2011), *supra* note 12, p. 378.

43. See Kloepfer, M. (2012), *supra* note 21, p. 45; Rebentisch, M. (2011), *supra* note 40, p. 536.

primacy of law (GG Article 20(3)),⁴⁴ since a formally adopted parliamentary law cannot be annulled by means of a simple decree, let alone a mere declaration of political intent by the Federal Government, at the very least as a basic principle of the separation of powers.⁴⁵ One of the fundamental dictates of the democratic rule of law is the executive's compliance with the law,⁴⁶ and so it can be concluded without doubt that the Chancellor's announcement of a purportedly binding moratorium was unconstitutional.⁴⁷

Given that the legal basis for the temporary suspension was cited several days after the Federal Chancellor's announcement as AtG Section 19(3), sentence 2, No. 3, and reference was made to the regulatory grounds for the measure,⁴⁸ the decommissioning orders issued by the relevant state ministries on this legal basis could also be deemed unlawful in that they met neither the formal nor the *de facto* requirements of the aforesaid AtG Section 19(3).⁴⁹ The operator of the Biblis A and B plants was not consulted during the proceedings before the Kassel-based Higher Administrative Court on formal grounds, for example, even though such consultations were neither superfluous nor remediable.⁵⁰ The key substantive requirement imposed by AtG Section 19(3) is the presence of a risk to life, health or property due to the ionising radiation. As a basic principle, the term "risk" is used in nuclear law, as in other legal contexts, to refer to a situation in which there is an adequate likelihood of objective harm to legal interests in the foreseeable future if no counter-measures are taken.⁵¹ Factual indications that a suspected risk may exist are sufficient to meet the definition of a risk,⁵² but the risk must be concrete rather than abstract.⁵³ The abstract "residual" risk invariably associated with a nuclear power plant has already been deemed to provide inadequate grounds for a decommissioning order pursuant to AtG Section 19(3) in the Kalkar ruling by the

44. Kloepfer, M. (2012), *supra* note 21, p. 45.

45. Ewer, W. and A. Behnsen (2011), *supra* note 40, p. 1183; Kloepfer, M. (2012), *supra* note 21, p. 45.

46. See Huster, S. and J. Rux in Epping, V. and C. Hillgruber (2013), *Grundgesetz Kommentar* (Commentary on the Basic Law), 2nd Edition, C. H. Beck Verlag, Munich, GG Article 20, recital 164; Sachs, M. in Sachs (2011) *Grundgesetz Kommentar* (Commentary on the Basic Law), 6th Edition, C. H. Beck Verlag, Munich, GG Article 20, recital 103; Ewer, W. and A. Behnsen (2011), *supra* note 40, p. 1183.

47. In the same vein, see also Kloepfer, M. and D. Bruch (2011), *supra* note 12, p. 386; Papier, H. J., *Die Zeit* dated 17 March 2011.

48. "This is a regulatory measure. This is not a deal, this is not an agreement, this is nothing of the sort. This is the application of the Atomic Energy Act in a new context." Schmale, H. (17 March 2011), "Die Atomwendekanzlerin – Kein Mangel an Chutzpe" (The nuclear revolution Chancellor – no shortage of chutzpah), FR-Online, available at: www.fr-online.de/politik/die-atomwende-kanzlerin-kein-mangel-an-chutzpe,1472596,8238158.html.

49. VGH Kassel, *supra* note 38, p. 368, notes correctly that the real legal basis is AtG Section 19(3) sentence 1 and that sentence 2 No. 3 determines only the consequences in law. In formal terms, this means that the basis for the claim is no longer valid; in the same vein, see also Rebentisch, M. (2011), *supra* note 40, p. 534.

50. VGH Kassel, *supra* note 38, p. 369.

51. Schoch, F. in Schmidt-Aßmann, E. and F. Schoch (2008), *Besonderes Verwaltungsrecht* (Special administrative law), De Gruyter Recht, Berlin, chapter 2, recital 84; Mann, T. (2012) in Tetinger, P.J., W. Erbguth, and T. Mann, *Besonderes Verwaltungsrecht* (Special Administrative Law), C. F. Müller Verlag Heidelberg, recital 463.

52. Federal Administrative Court, judgment of 19 December 1985 – 7 C 65.82 – *Amtliche Entscheidungssammlung* (Reports of Judgments and Decisions) (BVerwGE), Vol. 72, p. 300; Schoch, F. (2008), *supra* note 51, chapter 2, recital 95; Mann, T. (2012), *supra* note 51, recital 478; Rebentisch, M. (2011), *supra* note 40, p. 534; in the same vein, see also the grounds put forward by the competent Federal Minister for the Environment and Reactor Safety on 18 March 2011, who regarded "the abstract prevention of risks and the mere suspicion of risk" as sufficient to establish that the requirements set out in AtG Section 19(3) have been met.

53. VGH Kassel, *supra* note 38, p. 371; Kloepfer, M. and D. Bruch, *supra* note 12, p. 386.

Federal Constitutional Court.⁵⁴ Instead, specific systemic safety concerns must exist in relation to the power plant in question.⁵⁵ The broad-based “reassessment of risk” announced by the Federal Government in response to the “events in Japan” did not meet these criteria,⁵⁶ since the fact that both earthquake and flood risks had already been accounted for in the permits granted to German power plants under the Atomic Energy Act⁵⁷ meant that the disaster in Japan provided no new grounds for a reassessment. The explanatory statement for the 11th Amendment to the AtG even made specific reference to the particularly high safety standards maintained by German nuclear power plants as justification for the life extensions granted thereby,⁵⁸ and the existence of a tangible suspected risk, let alone a risk within the meaning of AtG section 19(3), can accordingly be ruled out.

A final point worthy of criticism relates to the authorities’ failure to exercise discretion in relation to the decommissioning order, the deliberations behind which were not explained in any way by the very brief and formulaic statement of grounds.⁵⁹ Detailed explanations justifying the proportionality of the measure are particularly important in cases where plants are suspended on an *ultima ratio* basis,⁶⁰ and a simple reference to “the events in Japan” or the age of the plants neither demonstrates the need for the measure nor clarifies the considerations that led to it.⁶¹

3. Interim conclusion concerning the moratorium of March 2011

The manifest unconstitutionality of the moratorium announced by Federal Chancellor Merkel is compounded by the fact that the decommissioning orders issued by the federal ministries on the basis of AtG section 19(3) were unlawful in both procedural and substantive terms. The Kassel Higher Administrative Court consequently ruled in favour of RWE, the operator of Biblis A and B, in proceedings on this issue.

C. The 13th Amendment to the Atomic Energy Act

The 13th Amendment to the AtG adopted on 31 July 2011 had two main aims. One aim was to withdraw the additional residual electricity volumes that had been granted to the nuclear power plants only eight months earlier by means of the 11th Amendment to the AtG, and the other was to set the first ever binding dates for the closure of each individual power plant, in order to prevent operational life being extended by residual electricity volumes being transferred between the power plants with the result that some could operate beyond their “proper” remaining lifespan.⁶² This brought about only a small change in the final phase-out date, however, since

54. Federal Constitutional Court, ruling of 8 August 1978 – 2 BvL 8/77 – *Amtliche Entscheidungssammlung* (Reports of Judgments and Decisions) (BVerfGE), Vol. 49, p. 89 (142 f.).

55. BVerfGE, ruling of 5 April 1989 – 7 B 47/89, NVwZ 1989, p. 1170; VGH Kassel, *supra* note 38, p. 371.

56. VGH Kassel, *supra* note 38, p. 373.

57. VGH Kassel, *supra* note 38, p. 373; Battis, U. and M. Ruttloff (2013), “Vom Moratorium zur Energiewende – und wieder zurück” (From the moratorium to the energy revolution – and back again), NVwZ, Vol. 32 p. 819.

58. See VGH Kassel, *supra* note 38, p. 373.

59. Rebentisch, M. (2011), *supra* note 40, p. 535; Battis, U. and M. Ruttloff (2013), *supra* note 57, p. 819.

60. Battis, U. and M. Ruttloff (2013), *supra* note 57, p. 819; Rebentisch, M. (2011), *supra* note 40, p. 535.

61. See VGH Kassel, *supra* note 38, p. 374.

62. For a detailed examination of this possibility, see Mann, T. (2009), *supra* note 11, p. 17 *et seq.*

the last power blocks will now be shut down on 31 December 2022 at the latest (Isar 2, Emsland and Neckarwestheim 2) (see AtG section 7(1a) sentence 1 No. 6), whereas the assumed shut-down date for the last nuclear power plant had been 2021 under the first phase-out strategy.

The power plant operators were opposed to this flip-flop on nuclear policy and brought various legal actions⁶³ and, as was the case when the first nuclear phase-out was announced,⁶⁴ the constitutionality of the measure was debated in the jurisprudential literature. The legal arguments mainly focused on issues relating to the legislative process and compatibility with the power plant operators' fundamental rights, with particular reference to GG Articles 14, 12 and 3.

1. Compatibility with European Union (EU) law

Germany is phasing out nuclear power on a unilateral basis, but the decision may still have potential implications under EU law, particularly in respect of fundamental freedoms. The Treaty of Lisbon recognised the increasing significance of energy supply issues and thus energy policy by introducing rules on energy jurisdiction throughout the EU (Treaty on the Functioning of the EU (TFEU) Article 194), which granted the EU a power of general competence on matters of energy policy but gave the member states a substantial amount of latitude to choose between different energy sources and supply structures pursuant to TFEU Article 194(2)(2).⁶⁵ The only question which arises in connection with Germany's nuclear phase-out therefore relates to the restrictions imposed on member states' energy policies with a view to the safeguarding of European interests, and the agreements of the 1957 Euratom Treaty are relevant in this respect as well as primary Community law.⁶⁶ Since this paper focuses on domestic German law, however, a simple indication of the fact that the phase-out may have implications under EU law and a reference to further contributions on the topic, the prevailing opinion in which is that the measure is EU-law compliant,⁶⁷ will have to suffice.

2. Formal constitutionality

In view of the fact that the Federal Government holds exclusive legislative competence for the area of nuclear law pursuant to GG Article 73(1) No. 14, and given

63. More details on this issue are provided under D. II below.

64. In this respect, see also Schneehain, A.W. (2005), *supra* note 10; Di Fabio, U. (1999), *supra* note 3; Hellfahrt, D. (2003), *supra* note 3; Langenfeld, C. (2000), *supra* note 25; Koch, H. J. (2000), "Der Atomausstieg und der verfassungsrechtliche Schutz des Eigentums" (The nuclear phase-out and the constitutional protection of property), NJW, Vol. 53, Verlag C. H. Beck, Munich, p. 1529 *et seq.*; Kruis, K. (2000), "Der gesetzliche Ausstieg aus der Atomwirtschaft und das Gemeinwohl" (The legislative phasing out of the nuclear industry and the common good), DVBl., Vol. 115, Carl Heymanns Verlag, Cologne, p. 441 *et seq.*; Rebentisch, M. (2002), "Rechtliche Zweifelsfragen der gesetzlichen Beendigung der Kernenergienutzung durch Strommengenregelungen" (Legal questions regarding the statutory discontinuation of the use of nuclear power on the basis of residual electricity volume regulations), *Festschrift für Jürgen F. Baur*, Nomos Verlag, Baden-Baden, p. 623 *et seq.*; Wagner, H. (2001), "Atomkompromiss und Atomausstiegsgesetz" (Nuclear compromise and the Nuclear Phase-Out Act), NVwZ, Vol. 20, Verlag C. H. Beck, Munich, p. 1089 *et seq.*

65. Nettesheim, M. in Grabitz, E., M. Hilf and M. Nettesheim (2014), *Das Recht der Europäischen Union* (The Law of the European Union), Vol. 2, C.H. Beck Verlag, Munich, Article 194 TFEU, recital 9; Winkler, D. (2011), "Atomausstieg via Europa?" (Nuclear phase-out via Europe?), DÖV, Vol. 64, p. 805.

66. For a more detailed examination of this issue, see Winkler, D. (2011), *supra* note 65, p. 806.

67. See Winkler, D. (2011), *supra* note 65, p. 805 with further citations; Feldmann, U. (2000), "Vereinbarkeit eines Atomausstiegsgesetzes mit Europarecht" (Compatibility of a Nuclear Phase-out Act with EU law), *Internationale Zeitschrift für Kernenergie*, Inforum Verlag, Berlin, p. 292 *et seq.* with further documentary proof.

that the *Bundesrat* (upper chamber of the German Parliament) approved the 13th Amending Act, the questions raised in respect of its formal constitutionality have focused on the legislative procedure which was followed.

The first consideration that presents itself in this respect relates to the soundness of the legislative initiative. Although the Federal Government produced and adopted the draft of the 13th Amendment to the AtG, the draft was tabled before the *Bundestag* by the parliamentary representatives of the governing coalition rather than the Federal Government itself. Under German constitutional law, this “work-around” means that the draft law need not pass through the *Bundesrat* first (see GG Article 76(2)), which reduces the overall duration of the legislative process. Despite a certain amount of controversy in the literature on constitutional law, the circumvention of the *Bundesrat*’s rights of participation in this way at the “first pass” stage for legislative initiatives which have in fact been drafted by the Federal Government is generally deemed constitutional, not least because the *Bundesrat* is given another opportunity to participate at a later stage of the legislative process (see GG Article 77).⁶⁸ A further consideration relates to the brevity of the explanatory statement included in the draft of the 13th Amendment, but this can only be regarded as an immaterial breach of duty.⁶⁹ As a more general point, the legislation was rushed through the *Bundestag* at such a speed that no time was left for in-depth discussions either in plenary session or in the committees, despite the fact that there was no objective reason for such legislative urgency such as that which existed at the height of the financial markets crisis in 2009. The Federal Government was instead presumably motivated by a desire to shut down further political discussion as rapidly as possible in order to avoid any loss of parliamentary support for the initiative.⁷⁰ Deficiencies can therefore unquestionably be identified in the legislative process insofar as the *Bundestag*’s internally binding rules of procedure were not observed in full. Yet although infringements of these stand-alone rules reflect poorly on the value and quality of the formal provisions governing parliamentary work, they do not on their own make the act unconstitutional.⁷¹

3. Substantive constitutionality

The debate on the constitutionality of the 13th Amendment to the Atomic Energy Act has focused on the reworked AtG section 7(1a), which first rescinded the additional residual electricity volumes granted by the 11th Amendment to the AtG⁷² and second set the first ever specific shutdown dates for the individual nuclear power plants. The outcome of this was that the eight power plants already shut down under the moratorium would not be reconnected to the grid again pursuant to AtG section 7(1a) No. 1, and that the other nine power plants would lose their operating

68. See the differentiated solution provided by Mann, T. (2014) in Sachs, M., *Grundgesetz* (Basic Law), Verlag C. H. Beck, Munich, 7th Edition, Article 76, recital 24 *et seq.*; see also Bryde, B. O. (2012) in von Münch, I. and P. Kunig, *Grundgesetz-Kommentar* (Commentary on the Basic Law), Verlag C. H. Beck, Munich, 6th Edition, Article 76, recital 21, Ossenbühl, F. (2007), in Isensee, J. and P. Kirchhof, *Handbuch des Staatsrechts* (Handbook of Constitutional Law), Vol. V, C. F. Müller Verlag, Heidelberg, 3rd Edition 2007, Section 102, recital 24; Schürmann, M. (1990), “Die Umgehung des Bundesrates im sog. ‘Ersten Durchgang’ einer Gesetzesvorlage” (The circumvention of the *Bundesrat* during the “first pass” of a legislative proposal), *Archiv öffentlichen Rechts* (AÖR), Vol. 115, Mohr Siebeck Verlag, Tübingen, p. 55 *et seq.*

69. See Mann, T. (2014), *supra* note 68, Article 76, recital 7.

70. Kloepfer, M. (2012), *supra* note 21, p. 48.

71. Federal Constitutional Court (BVerfG), ruling of 14 October 1970 – 1 BvR 307/68, BVerfGE, Vol. 29, p. 234.

72. In legal terms, this was achieved by amending the specific residual electricity volumes allocated to the individual power plants, as set out in Column 2 of Annex 3 to the Atomic Energy Act.

authorisations and thus the right to use the plants would end by 31 December 2022 at the latest.

(a) *Infringement of the fundamental right ownership (Article 14 GG)?*

It is therefore reasonable to ask whether the deprivation of this right of use on the basis of AtG section 7(1a) constitutes an unjustified encroachment on the fundamental right of ownership enshrined in GG Article 14.

(i) Scope of protection

The protection of private property represents a key cornerstone safeguarding the freedom of society and of every individual,⁷³ and the ultimate purpose of the fundamental right of ownership is to protect the property rights held by private legal and natural persons against acts under public authority.⁷⁴ Under GG Article 14, the term “property” covers all rights to assets held by the party in question under the prevailing legal system in such a way that he can exercise the associated entitlements at his own discretion and for his own private use.⁷⁵ In concrete terms, GG Article 14 guarantees the right to own, use, manage and freely dispose of material and monetary property.⁷⁶ The decision of principle as to whether the use of nuclear power should be permitted in Germany is, however, the prerogative of the legislator in line with the theory of essentiality.⁷⁷ The legislator is furthermore entitled to revise this decision as a result of new findings or policy changes and to amend the legislation as necessary, even rights of ownership to nuclear power plants that may have been acquired on the basis of the initial decision.⁷⁸

The first point of controversy in this respect relates to the specific ownership positions acquired by the power plant operators and encroached on by the 13th Amendment to the Atomic Energy Act. There are four different options in this respect: namely, the additional residual electricity volumes granted by the 11th Amendment; the permit granted under the Atomic Energy Act; the right to an established and operating business; and the right to use the plant.

- It could initially be assumed that the residual electricity volumes granted in 2002 under the Nuclear Phase-Out Act represent ownership positions within the meaning of GG Article 14. However, the Federal Constitutional Court presumes the existence of a subjective public right to legal rights granted by the state under public law only in cases where equivalent contributions are provided in consideration by the party concerned.⁷⁹ This applies to social security entitlements such as unemployment benefits, for example, but not to care and welfare entitlements acquired without prior contributions. The

73. BVerfGE 58, p. 339; Depenheuer, O. (2013) in Merten; D. and H. J. Papier, *Handbuch der Grundrechte* (Handbook of Fundamental Rights), Vol. V, C. F. Müller Verlag, Heidelberg, Section 111, recital 8 *et seq.*; Di Fabio, U. (1999), *supra* note 3, p. 17.

74. See BVerfGE 1, p. 264 (278); Depenheuer, O. (2010) in von Mangoldt, H., F. Klein and C. Starck, *Kommentar zum Grundgesetz* (Commentary on the Basic Law), 6th Edition, Verlag Franz Vahlen, Munich, Article 14, recital 111; Wendt, R. (2014) in Sachs, M., *Grundgesetz* (Basic Law), Verlag C. H. Beck, Munich, 7th Edition, Article 14, recitals 9 and 16.

75. BVerfGE 20, p. 256; BVerfGE 83, p. 208; Depenheuer, O., *supra* note 73, Section 111, recital 43; Däuper, O., P. Michaels and O. Voß (2011), “Das Dreizehnte Gesetz zur Änderung des Atomgesetzes im Lichte des Grundgesetzes” (The 13th Act Amending the Atomic Energy Act in the light of the Basic Law), ZNER, Vol. 15, Ponte Press Verlag, Bochum, p. 377.

76. BVerfGE 52, p. 30; BVerfGE 106, p. 30; Di Fabio, U. (1999), *supra* note 3, p. 18.

77. BVerfGE 49, p. 127 *et seq.*

78. See Ziehm, C. (2012), *supra* note 28, p. 222.

79. BVerfGE 97, p. 283; Axer, P. (2013) in Hillgruber, C. and V. Epping, *Grundgesetz* (Basic Law), Verlag C. H. Beck, Munich, Article 14, recital 57; Epping, V. (2012), *Grundrechte* (Fundamental Rights), 5th Edition, Springer Verlag, Heidelberg, p. 201.

residual electricity volumes granted under the 11th Amendment were not acquired by the operators on the basis of their own contributions; instead, they merely represented the imposition of restrictions on the previously unlimited nuclear power plant operating authorisations.⁸⁰ In spite of the fact that they encroach on the operators' right to use their plants, they cannot therefore be deemed a basis for a legal right acquired and assigned on the basis of their own contributions, and do not accordingly qualify for protection as property within the meaning of GG Article 14.⁸¹

- The nature of the right to an established and operating business is also the subject of controversy,⁸² since this right serves to protect the economic value of a specific business, i.e. all of the material, personal and other resources that are held, jointly and severally, by the business owner.⁸³ The basis for the operation of a nuclear power plant is, however, the substance of the plant itself and the use of said plant rather than the protection of the rights associated with its operation,⁸⁴ which means that the potential applicability of the scope of protection under Article 14 GG can be dismissed, and issues relating to the nature of this right need not be considered any further.
- The third option is that the permit granted under the Atomic Energy Act, which accords its holder a subjective right under public law to use technical facilities for the fission of nuclear fuels,⁸⁵ represents an ownership position protected under GG Article 14.⁸⁶ As a basic principle, the prevailing view taken is that permits granted by the state are not protected under GG Article 14, since they represent rights awarded by the state rather than on the basis of the permit holder's contributions.⁸⁷ The nuclear power plant itself, rather than the plant permit under the Atomic Energy Act, is provided

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80. Ziehm, C. (2012), *supra* note 28, p. 223; for a different view, see Bruch, D. and H. Greve (2011), *supra* note 32, p. 795, who presume a certain marketability of residual electricity volumes on the grounds that they can be transferred. They assume that a contribution has been made without providing any explanation.
81. For a detailed examination of the status of the dispute, see Ossenbühl, F. (2012), "Eigentumsschutz von Reststrommengen beim Atomausstieg" (Protection of the ownership of residual electricity volumes in connection with the nuclear phase-out), DÖV, Kohlhammer Verlag, Stuttgart, Vol. 65, p. 697 *et seq.* with further documentary proof; see also De Witt, P. (2012), *supra* note 11, p. 284; Däuper, O., P. Michaels and O. Voß (2011), *supra* note 75, p. 377.
82. The Federal Court of Justice, BGHZ 111, p. 349 *et seq.*, and the Federal Administrative Court, BVerwGE 81, p. 51, assign a separate ownership position within the meaning of GG Article 14 to the right to an established and operating business, whereas the Federal Constitutional Court has not yet reached a definitive ruling on the subject. BVerfGE 51, pp. 193, 221 *et seq.*; BVerfGE 68, pp. 193, 222 *et seq.*; BVerfGE 105, pp. 252, 277 *et seq.*
83. Papier, H. J. (2010) in Maunz and Düring, *Grundgesetz Kommentar* (Commentary on the Basic Law), C. H. Beck Verlag, Munich, Article 14, recital 95; Epping, V. (2012), *supra* note 79, p. 199.
84. See, for example, Di Fabio, U. (1999), *supra* note 3, p. 25; Schneehain, A. W. (2005), *supra* note 10, p. 184 *et seq.*; for a different view, see Ossenbühl, F. (1999), "Verfassungsrechtliche Frage eines Ausstiegs aus der friedlichen Nutzung der Kernenergie" (Constitutional issues surrounding the phasing out of the peaceful use of nuclear power), *Archiv des öffentlichen Rechts (AöR)*, Mohr Siebeck Verlag, Vol. 124, p. 7.
85. Rebentisch, M. (2002), *supra* note 64, p. 625.
86. For more details, see Di Fabio, U. (1999), *supra* note 3, p. 22.
87. BVerfGE 48 p. 413; BVerfGE 102, p. 300; Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 377; Ziehm, C. (2012), *supra* note 28, p. 223; Jarass, H. D. (2014), in Jarass and Pieroth, *Grundgesetz* (Basic Law), 13th Edition, C. H. Beck Verlag, Munich, Preliminary comments on Article 1, recital 14; Ossenbühl, F. (1999), *supra* note 84, p. 8; Bruch, D. and H. Greve (2011), *supra* note 32, p. 795; Hellfahrt, D. (2003), *supra* note 3, p. 32.

as a contribution and must accordingly also be the object of protection under GG Article 14.⁸⁸ It could be argued to the contrary that operating permits are value drivers insofar as use of the property within the meaning of GG Article 14 is made possible only by the permit's legalising effect,⁸⁹ since they rescind the pre-emptive ban with an authorisation proviso imposed by the Atomic Energy Act, thereby allowing the property to be used as intended.⁹⁰ This argument, however, ignores the absence of the direct contribution which is a prerequisite for an ownership position under public law subject to the protection of GG Article 14.

- At the very least, therefore, reference may also be made to ownership of the plant and the opportunities to use said plant. When determining an ownership position under constitutional law, the operating permit should thus be considered together with the object of the permit and the subsequent investments rather than in isolation.⁹¹ For example, the Higher Administrative Court rejected the use of GG Article 14 as a basis for protection of a nuclear power plant because the latter had not been granted an operating permit.⁹² Similarly, the Federal Constitutional Court ruled that a pollution control permit in conjunction with a plant constructed and commissioned on the basis of this permit was entitled to protection under GG Article 14.⁹³ In the judge's opinion, the permit had formed the basis for the investments made by the plant operator; given the close link between contributions by private economic entities and the provisions made for its operation under administrative law. This meant that the protection of ownership under constitutional law should thus be extended to cover the legal rights granted by the permit.⁹⁴ The question as to whether a permit under the Atomic Energy Act is equivalent to a protected legal right can accordingly remain unanswered, since the permit is in any case granted protection under GG Article 14 in conjunction with ownership of the plant and the right to use the plant.⁹⁵

88. Ossenbühl, F. (1999), *supra* note 84, p. 8; Schneehain, A.W. [footnote 10], p. 183.

89. Di Fabio, U. (1999), *supra* note 3, p. 23; Ewer, W. (2011), "Der neuerliche Ausstieg aus der Kernenergie – verfassungskonform und entschädigungsfrei?" (The latest nuclear phase-out – constitutionally compliant and without compensation?), NVwZ, Verlag C. H. Beck, Munich, Vol. 30, p. 1035.

90. Di Fabio, U. (1999), *supra* note 3, p. 23.

91. See Jarass, H. D. (2014), *supra* note 87, Article 14, recital 12.

92. BVerwG, judgment of 26 March 2009 – 7 C 8.08, NVwZ 2009, 923, recital 25.

93. BVerfG, ruling of 14 January 2010 – 1 BvR 1627/09, NVwZ 2010, p. 772, recital 24.

94. *Ibid.* at recital 28; these investments are undoubtedly freely taken entrepreneurial decisions, but they are also aimed at obtaining a permit under public law in order to use the object of the investment.

95. See BVerfG, *supra* note 93, p. 772, recital 29; BVerwG, *supra* note 92, p. 923, recital 25; Kersten, J. and A. Ingold (2011), "Die Beschleunigung des Atomausstiegs" (The acceleration of the nuclear phase-out), *Zeitschrift für Gesetzgebung (ZG)*, C. F. Müller Verlag, Heidelberg, p. 355. The concept of the permit as an ownership position protected under constitutional law is also endorsed by Di Fabio, U. (1999), *supra* note 3, p. 23, who believes, however, that there is no longer any need for a debate on whether the permit must be viewed in conjunction with the plant; for a different view, see Wallrabenstein, A. (2011), *supra* note 32, p. 116.

(ii) Encroachment: expropriation or determination of limits?

Every limitation imposed on the right to dispose of property represents an encroachment.⁹⁶ Both the setting of fixed dates for the final phasing out of nuclear power and the withdrawal of the additional residual electricity volumes, as curtailments of the right to use a nuclear power plant, can be regarded as encroachments under GG Article 14.⁹⁷

It is, however, debatable whether these encroachments can be deemed equivalent to expropriation within the meaning of GG Article 14(3) or to a determination of substance and limits within the meaning of GG Article 14(1)(2). The latter is cited on the grounds that encroachments which determine the substance of ownership for the future effect simultaneously impose restrictions on ownership rights acquired in the past, thus determining the limits of this ownership.⁹⁸ This is particularly apparent in the case of the “reform legislation” under discussion, which re-regulated and thus limited legal rights existing under previous legislation.⁹⁹ Establishment of the substance and limits of property in this way can be distinguished from expropriation by using a latterly settled body of case law to decide whether the legislator has imposed abstract and general rights and obligations on the owner, thus establishing the general substance of ownership with future effect¹⁰⁰ (in which case, reference can be made to the substance and limits of ownership), or whether there has been a “complete or partial withdrawal of specific subjective ownership positions within the meaning of GG Article 14(1)(1) in order to discharge certain public duties”¹⁰¹ (in which case, reference can be made to expropriation). As far as the 13th Amendment to the AtG is concerned, the presumption of expropriation can be discounted purely because the residual electricity volumes specified in Annex 3 do not represent legal rights protected under constitutional law, as established above.¹⁰² In addition, expropriation cannot be deemed to have occurred if the ownership positions are withdrawn in order to prevent risks associated with said ownership.¹⁰³ The establishment of the substance and limits of ownership can always be presumed to exist in cases relating to the protection of public legal rights, and this is also the case for the 13th Amendment to the AtG, the aim of which, according to the explanatory statement, is to protect the common good.¹⁰⁴

A different conclusion could, however, be reached for the nuclear power plants taken immediately offline pursuant to AtG section 7(1a)(1), since the legislator intended from the outset to withdraw operating permits for these nuclear power plants on a permanent basis.¹⁰⁵ The purpose of the encroachment, however, again

96. Detterbeck, P. (2013), *Öffentliches Recht (Public law)*, 9th Edition, Vahlen Verlag, Munich, p. 223.

97. Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 377.

98. See Epping, V. (2012), *supra* note 79, recital 463; Detterbeck, P. (2013), *supra* note 96, recital 515.

99. See BVerfGE 83, p. 212; Di Fabio, U. (1999), *supra* note 3, p. 30; de Witt (2012), *supra* note 11, p. 485.

100. BVerfGE 58, p. 300 *et seq.*; BVerfGE 72, p. 76; Jarass, H. D. (2014), *supra* note 87, Article 14, recital 34; Epping, V. (2012), *supra* note 79, recital 462.

101. BVerfGE 70, p. 199 *et seq.*; BVerfGE 72, p. 76.

102. Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378; Koch, H. J. (2000), *supra* note 64, p. 1532.

103. BVerfGE 20, p. 359; Wendt, R. (2014), *supra* note 74, Article 14, recital 86; Jarass, H. D., (2014), *supra* note 87, Article 14, recital 81.

104. Explanatory statement for the draft law, BT-Drs. 17/6070, p. 5; Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378; Ewer, W. (2011), *supra* note 89, p. 1037.

105. Given that these eight nuclear power plants were closed for the duration of the moratorium and safety concerns were voiced in connection with their age, it can be concluded that a resumption of operation was never intended; see BT-Drs. 17/6361, p. 17.

plays a key role in its classification, and this lies within the prerogative of the legislator.¹⁰⁶ Rightly or otherwise, the shutdown was intended to prevent risks deemed to have become more pressing based on the reassessment of the residual risk associated with the oldest nuclear power plants and their technical facilities which was carried out in the aftermath of the Fukushima disaster, and deemed justifiable on this basis.¹⁰⁷ The legislator did not intend to rescind specific ownership positions, but to re-regulate the prevention of risk in abstract and general terms, thus establishing the substance and limits of ownership.

(iii) Constitutional justification

When establishing the substance and limits of ownership rights, the legislator is not free to act as he wishes but must instead reconcile the interests of the owner with those of the public (GG Article 14(1)(2)), while at the same time adhering to the principle of proportionality. The draft of the 13th Amendment to the Atomic Energy Act states that one of its main purposes is to discontinue the civil use of nuclear energy as quickly as possible.¹⁰⁸ This can be considered a legitimate aim given that one of the stated objectives of the Act is to protect people against any risk to life, health and property (AtG section 1(2)) and, in view of the priority accorded to these protected assets, at constitutional level (GG Article 2(2)).¹⁰⁹ Equally, the 13th Amendment to the AtG is an appropriate and also necessary way of achieving the desired nuclear phase-out given the lack of any equally effective alternatives. The proportionality of the encroachment must thus be determined on the basis of whether it was imposed appropriately, which requires an “overall weighing up of the severity of the encroachment and the significance and urgency of the grounds therefor”.¹¹⁰ The more serious the encroachment, the greater the need for strong justification.

One option for achieving an appropriate and constitutional solution in spite of the grave encroachment upon the rights granted under GG Article 14 is the mechanism for establishing substance and limits on the basis of mandatory compensation that has emerged from case law. Compensation may need to be paid out in order to adhere to the dictates of proportionality if use of the property is limited to such an extent that it is debatable whether the remaining legal position can still be regarded as usable property.¹¹¹ The Federal Constitutional Court has ruled that mandatory compensation of this kind is not obligatory in the case of legislative reforms provided that the legislator puts reasonable transitional provisions in place and reasons of public interest exist that take precedence over reliance on the continuing existence of an acquired legal position.¹¹² The mere fact that the parameters for earning revenue have become less advantageous cannot therefore be deemed to provide grounds for compensation.¹¹³ In particular, compensation is not obligatory if the investments made by the affected party have already been paid off

106. BVerfGE 49, p. 131 et seq.

107. Explanatory statement for the draft law, BT-Drs. 17/6070, p. 1; Schlömer, J. (2013), *Der beschleunigte Ausstieg aus der friedlichen Nutzung der Kernenergie* (The accelerated phasing out of the peaceful use of nuclear power), Nomos Verlag, Baden-Baden, p. 124.

108. Explanatory statement for the draft law, BT-Drs. 17/6070, p. 5.

109. Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378.

110. BVerfGE 83, p. 19; Epping, V. (2012), *supra* note 79, recital 57.

111. See BVerfGE 100, p. 243; Ewer, W. (2011), *supra* note 89, p. 1037.

112. See BVerfG, *Sächsische Verwaltungsblätter* (Sächp.VBl.) 2010, p. 143; BVerfG, NJW 1977, p. 1049; BVerfG, NJW 1982, p. 753; for a summary, see Ewer, W. (2011), *supra* note 89, p. 1037.

113. Fehling, M. (2013) in Schneider, J. P. and C. Theobald, *Recht der Energiewirtschaft* (Energy industry law), C.H. Beck Verlag, Munich, Section 8, recital 118 with further references; Bruch, D. and H. Greve (2011), *supra* note 32, p. 795.

and use of the property was subject to an *a priori* risk of subsequent restrictions or bans.¹¹⁴

The revisions made to the Atomic Energy Act are based on the assumption that each nuclear power plant has a standard lifespan of 32 years,¹¹⁵ over which period the investments made by the power plant operators will have been recouped and a high level of coverage also built up. According to an expert opinion commissioned by the Federal Environment Ministry, the initial investments in nuclear power plants are written off after only 19 years, and bear profits corresponding to the net yield of public bonds after 27 years at the latest.¹¹⁶ The investments in the older nuclear power plants have therefore already been more than paid off, and the operators adequately protected in their reliance in the continued existence of their legal positions.¹¹⁷ No justification can be found for reliance in the continued, i.e. indefinite use, of nuclear power, firstly because nuclear power is a “high-risk technology” and its residual risk has never been fully manageable beyond the limits set by common sense.¹¹⁸ Reliance on permits and investments in such high-risk plants is always protected on a time-limited basis, and such protection is scaled down throughout the operational lifetime of the plants as amortisation levels increase.¹¹⁹ Further, the nuclear industry had already come to an arrangement regarding a nuclear phase-out with the then Federal Government back in 2000. The residual electricity volumes and final shutdown dates that have now been adopted into law differ only very slightly from those previously adopted, and the operators cannot claim to have placed any reliance in these figures in the few months since the temporary granting of life extensions under the 11th Amendment to the AtG, not least because such reliance would need to have been acted upon, and no new investments were made by the power plant operators during this short period which could be interpreted in this way.¹²⁰ The reworking of nuclear law, which resulted in the 13th Amendment to the Atomic Energy Act, does not therefore constitute grounds for mandatory compensation insofar as it can be considered to maintain *stricto sensu* proportionality in the final assessment.

A final assessment must therefore include consideration not only of the property in question, the right to use this property, the protection of the investments made by the power plant operators and the reliance placed by these operators in the continued existence of the plants, but also the obligations incumbent on the state to protect the legal rights enshrined in GG Article 2(2) (life and physical inviolability) and the natural resources protected under GG Article 20a, as well as overriding public welfare concerns such as the fitness for habitation of densely populated areas and the functionality of the infrastructure.¹²¹ The general significance of the

114. BVerfG, *Sächp.VBl.* 2010, p. 144.

115. BT-Drs. 17/6070, *supra* note 104, p. 6.

116. Ziehm, C. (2012), *supra* note 28, p. 223; on the assumed figure of EUR 1 million per day for the revenues earned from written off nuclear power plants, see Das Gupta, O. (6 July 2009), “Die Gelddruckmaschinen” (The money-printing machines), *Süddeutsche-online*, available at: www.sueddeutsche.de/wirtschaft/alte-atomkraftwerke-die-gelddruckmaschinen-1.808263; and Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378.

117. Ziehm, C. (2012), *supra* note 28, p. 223.

118. On the subject of risk control at high-risk plants, see Schulze-Fielitz, H. (2011), “Risikosteuerung von Hochrisikoanlagen als Verfassungsproblem” (Risk control at high-risk plants as a constitutional problem), *DÖV*, Vol. 64, p. 785 *et seq.*

119. Bruch, D. and H. Greve (2011), *supra* note 32, *DÖV* 2011, p. 794 (798); Dolde, K. P. (1986), “Bestandsschutz von Altanlagen im Immissionsschutzrecht” (Protection of existing old power plants under pollution control law, *NVwZ*, Vol. 5, p. 873 (879).

120. In the same vein, also Bruch, D. and H. Greve (2011), *supra* note 32, p. 798.

121. Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378 *et seq.*

fundamental rights and the severity of the specific encroachment in question should be taken into account when weighing these competing interests.

As indicated above, the right of ownership is a key factor safeguarding the freedom of society and thus an elementary fundamental right. On the other hand, however, the German Constitution also ascribes paramount importance to the protection of natural resources and the protection of life and human health. Even though a ban on the use of property represents a significant encroachment upon the fundamental right granted under GG Article 14, it should not be forgotten when considering the operating bans in question that the power plants were never designed to remain operational on an indefinite basis. Any evaluation of the extent to which the right accorded by GG Article 14 has been encroached upon should take account of the fact that the lifespans of the nuclear power plants were decided in concert with the holder of the fundamental right. Potentially relevant factors in this respect include both the legislative situation before the 11th Amendment to the AtG and the circumstances after the life extensions were granted. If the legislative situation before the lifespan extensions is taken as a point of comparison, the latest amendments to the AtG represent only a minor encroachment upon the operators' right to use their plants in view of the above-noted fact that the lifespans differ only very slightly from those originally adopted. Even if comparisons are based on the lifespan extensions granted on a temporary basis for an average of 12 years, the provisions of the 13th Amendment to the AtG can still be deemed reasonable on the grounds that a nuclear incident would pose such a severe and unmanageable risk to life and health that it cannot be offset by considerations relating to the protection of property. The substantial residual risk associated with high-risk plants means that the legislator has a broad prerogative in this area and the option of reassessing the acceptable level of risk at any time¹²² insofar as any decision on such matters is of supreme significance and must be taken by the legislator in accordance with the "theory of essentiality".¹²³ The amendments in question were adopted by the German legislator on the grounds that the risk associated with the country's nuclear power plants was no longer acceptable, and allowances were made for the operators' loss of the right to use their plants insofar as the nuclear phase-out was planned on a gradual basis and an option was provided to transfer residual electricity volumes from plants which had already been decommissioned pursuant to AtG section 7(1a), sentence 1, No. 1, in order to minimise the severity of the encroachment yet further.¹²⁴ An encroachment thus mitigated can therefore be deemed to maintain *stricto sensu* proportionality in relation to the higher-ranking legal interests of public life and health, and does not infringe the fundamental right to property enshrined in GG Article 14.

(b) Infringement of the freedom of occupational choice (GG Article 12)?

The fundamental right to the freedom of occupational choice (GG Article 12) aims to protect every activity that serves or contributes in non-material or material terms to building and maintaining a livelihood.¹²⁵ In this sense, the commercial generation of nuclear energy is an activity carried out for profit-making purposes. Since E.ON and RWE hold fundamental rights as domestic legal persons under private law pursuant to GG Article 19(3), the scope of material and personal protection covering them also extends to the freedom of occupational choice.

122. BVerfGE 49, p. 131; Bruch, D. and H. Greve (2011), *supra* note 32, p. 798; Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378 *et seq.*

123. Schulze-Fielitz, H. (2011), *supra* note 118, p. 793.

124. Däuper, O., P. Michaels and J. O. Voß (2011), *supra* note 75, p. 378 *et seq.*

125. BVerfGE 105, p. 252 (265); Jarass, H. D. (2014), *supra* note 87, Article 12, recital 5.

An encroachment into this area of protection is permissible if occupationally relevant regulations exist concerning “whether” or “how” the activity is carried out.¹²⁶ The withdrawal of the residual electricity volumes that had previously been granted and the setting of precise shutdown dates for all nuclear power plants deprived the operators of the opportunity to continue practising their occupation, namely the generation of electricity from nuclear power. The fundamental right to the freedom of occupational choice was therefore encroached upon, and the only question remaining is whether this encroachment was constitutionally justified. The answer to this question depends in turn on whether the encroachment affected power plant operators’ choice of occupation or their capacity to practice their occupation.

A key consideration in this respect involves the nature of the occupation in question, or in other words whether the occupation practised by the parties concerned can be deemed a separate occupation or merely part of one.¹²⁷ This can be determined on the basis of historical developments and prevailing opinion.¹²⁸ If the occupation in question is deemed to be “nuclear power plant operator”, understood in the narrow sense as an occupation of its own, the legally prescribed nuclear phase-out represents an encroachment upon the freedom of occupational choice; if, however, the occupation is deemed to be “energy supplier” understood in a broader sense as covering several energy sectors,¹²⁹ the measure merely qualifies as a regulation governing the practising of an occupation, since it affects only one of many types of activity within the energy industry. Corporate law may provide relevant indications in this respect; the fact that the nuclear power plants are operated by separate subsidiaries¹³⁰ is an argument in favour of the latter option, given that the nuclear phase-out would prevent these companies from pursuing their economic activities. The splitting of firms under corporate law cannot, however, be taken as a decisive factor when determining the nature of an occupation under constitutional law, since otherwise firms would be free to found new businesses under corporate law in order to comply with constitutional requirements. Decisive significance should instead be ascribed to the fact that all four of Germany’s nuclear power plant operators are vertically integrated and horizontally diversified energy supply companies active at all levels of the value chain, from generation through transport to distribution and marketing.¹³¹ Even if our investigation is limited to the electricity generation stage of the value chain, the existence of lignite-, anthracite-, gas- and renewables-powered plants means that the various types of power plant in operation do not represent different “occupations” but instead a single occupation, namely energy supplier or power plant operator, and that the activities of a nuclear power plant operator are accordingly not a separate occupation but merely a variant of an occupation. The decommissioning of nuclear power plants under the 13th Amendment to the AtG can therefore be deemed equivalent to a simple regulation governing the practising of an

126. Mann, T. (2014), *supra* note 68, Article 12, recital 77 *et seq.*

127. See BVerfGE 77, p. 105 *et seq.*; Mann, T. (2014), *supra* note 68, Article 12, recitals 68 and 82.

128. BVerfGE 119, p. 78 *et seq.*; Manssen, G. (2010), in von Mangoldt, H., F. Klein and Chr. Starck, *Kommentar zum Grundgesetz* (Commentary on the Basic Law), Verlag C. H. Beck, Munich, 6th Edition, Article 12, recital 53.

129. In the same vein, see Manssen, G. (2010), *supra* note 128, GG Article 12, recital 54.

130. E.ON Kernkraft GmbH, RWE Power AG, EnBW Kernkraft GmbH, Vattenfall Europe Nuclear Energy GmbH.

131. For a comprehensive investigation of this issue, see Sander, C. (2011), *Kooperationen in der Energiewirtschaft* (Co-operation in the energy industry), Shaker Verlag Aachen 2011; Gussone, P. and C. Theobald in Schneider, J. P. and C. Theobald, *Recht der Energiewirtschaft* (Laws governing the energy industry), C. H. Beck Verlag, Munich, p. 300 *et seq.*

occupation rather than the banning of a separate occupation (regulation of occupational choice).¹³²

Constitutional justifications can thus be found for an encroachment upon the freedom to practice an occupation provided there are reasonable public welfare concerns that make it necessary and the fundamental right to this freedom is not disproportionately restricted.¹³³ Reasonable public welfare concerns include the protection of life, health and natural resources, which means that any justification can be based on the above deliberations in respect of GG Article 14. The encroachment upon the freedom of occupational choice is thus ultimately also justified, and the 13th Amendment to the AtG does not infringe the fundamental right to freedom of occupational choice.

(c) Infringement of the general principle of equality (GG Article 3)?

Finally, it can reasonably be asked whether the differing lengths of the remaining lifespans and the transitional withdrawal of operating permits under AtG section 7(1a), sentence 1 are compatible with the general principle of equality (GG Article 3(1)).

(i) Scope of protection

In its traditional interpretation, the general principle of equality enshrined in GG Article 3(1) prohibits the unequal treatment of what is essentially the same and the equal treatment of what is essentially dissimilar.¹³⁴ The bar is set relatively low when it comes to meeting the definition of “essentially the same”,¹³⁵ and the criterion of dissimilarity is generally invoked only where circumstances can be ascribed to completely different regulatory spheres and systematic contexts.¹³⁶ Both natural persons and domestic legal persons are entitled to this fundamental right pursuant to GG Article 19(3).¹³⁷

The reduction of remaining lifespans created what can undoubtedly be considered similar circumstances for all the operators, and the latter were treated unequally as a result of the different lifespans assigned to the various plants. The average standard lifespan for each plant was 32 years,¹³⁸ but the respective shutdown dates differ, in some cases significantly; according to the provisions of AtG section 7(1a), sentence 1, the lifespan granted to nuclear power plant Philipsburg from the commencement of commercial operations is just under 32 years, whereas

132. The same conclusion is reached by Ewer, W. (2011), *supra* note 89, p. 1036.

133. BVerfGE 7, p. 405; BVerfGE 30, p. 351; BVerfGE 97, p. 253; BVerfGE 101, p. 247; BVerfGE 104, p. 364; BVerfGE 106, p. 219; BVerfGE 114, p. 251 *et seq.*; Mann, T. (2014), *supra* note 68, Article 12, recital 126.

134. BVerfGE 1, p. 52; BVerfGE 13, p. 53; BVerfGE 42, p. 72.

135. BVerfGE 40, p. 139; Huster, S. (2014) in Friauf, K. H. and W. Höfling, *Berliner Kommentar zum Grundgesetz* (Berlin Commentary on the Basic Law), Erich Schmidt Verlag, Berlin, GG Article 3, recital 52.

136. BVerfGE 133, p. 1, recital 63 *et seq.*; Jarass, H. D., (2014), *supra* note 87, GG Article 3, recital 7.

137. The scope of GG Article 3 should not extend to foreign legal persons, BVerfGE 23, p. 236; Starck, Chr. (2010) in von Mangoldt, H., F. Klein and Chr. Starck, *Kommentar zum Grundgesetz* (Commentary on the Basic Law), Verlag C. H. Beck, Munich, 6th Edition, GG Article 3, recital 240, however, correctly points out that foreign legal persons are also entitled to the protection of a legal system based on fundamental rights and thus have a direct entitlement to the safeguarding of their fundamental rights. Legal persons from EU member states can also assert the right to the protection of fundamental rights if they can prove their link to the country on the grounds of the precedence of fundamental freedoms in the internal market (Article 26(2) TFEU) and the general ban on discrimination under Article 18 TFEU, compare BVerfGE, 129, p. 78 *et seq.*; Bruch, D. and H. Greve (2011), *supra* note 32, p. 796.

138. Explanatory statement for the draft act, BT-Drs. 17/6070, p. 6.

the same figure is over 33 years for Neckarwestheim 2, over 35 years for Brokdorf and over 36 years for Grohnde and Grundremmingen C.¹³⁹ It is particularly striking that Grundremmingen B is to be shut down by 31 December 2017 at the latest and Grundremmingen C by 31 December 2021, even though construction of the two blocks was completed at almost exactly the same time. RWE AG and Vattenfall AG can also be said to have received unequal treatment in that they are obliged to take their power plants offline at an earlier date than E.ON AG and EnBW AG.¹⁴⁰

Claims of unequal treatment have also been made on the grounds that the shutdown dates set for RWE and Vattenfall's power plants will mean they are unable to use up their residual electricity volumes and will therefore be forced to transfer part of these residual electricity volumes to E.ON and EnBW power plants, providing the latter with a competitive advantage.¹⁴¹ By way of contrast, E.ON AG will be able to transfer the residual electricity volumes of the power plants Isar I and Unterweser to Isar 2 and Emsland when the former are shut down, since the latter will be in operation until 2022.¹⁴²

(ii) Constitutional justification

An adequately convincing and objective reason must be found to justify this unequal treatment¹⁴³ or, in other words, a reason that is relevant and significant enough to offset the unequal treatment of the operators against the considerations pursued by the legislator.¹⁴⁴ Although the statement of grounds for the Act did not specify or explain the particular individual shutdown dates, it stated that the stopping of these shutdowns was motivated by the need to ensure security of supply, to comply with national and international climate protection goals and to safeguard reasonably priced and socially responsible electricity prices, and that the amortisation level of the plant operators' investments also needed to be taken into account in order to avoid placing a disproportionate burden on them.¹⁴⁵ The question of whether these aims justify the aforesaid unequal treatment will be investigated below.

- As regards the investments made by the plant operators, it follows from the above comments in respect of GG Article 14 that both the initial investments by the power plant operators and later expenditure have been more than paid off, given that the standard lifespan of these plants is 32 years. Only the Krümmel power plant represents an exception in that it was taken offline for

139. Ziehm, C. (2012), *supra* note 28, p. 224, makes reference to this fact.

140. Vattenfall was forced to take its two nuclear power plants (Krümmel and Brunsbüttel) offline immediately upon adoption of the 13th Amendment to the AtG pursuant to AtG Section 7(1a) sentence 1 No. 1.

141. Durner, W. (2013), "Die Vereinbarkeit der Abschaltzeiten für die deutschen Kernkraftwerke nach der 13. AtG-Novelle mit dem Gleichheitsgrundrecht des Art. 3 GG" (The compatibility of the switch-off dates for German nuclear power plants under the 13th Amendment to the AtG with the principle of equal treatment enshrined in GG Article 3), Durner, W., U. Di Fabio and G. Wagner, *Kernenergieausstieg 2011* (Nuclear phase-out 2011), Nomos-Verlag, Baden-Baden, p. 142; Bruch, D. and H. Greve (2011), *supra* note 32, p. 799.

142. See Schlömer, J. (2013), *supra* note 107, p. 173.

143. BVerfGE 55, p. 88; BVerfGE 88, p. 96; BVerfGE 100, p. 174; Jarass, H. D. (2014), *supra* note 87, Article 3, recital 14. There is a certain amount of controversy in the literature and case law over the criteria to be applied to decide whether Article 3 can justifiably be invoked. This dispute will be left open for the readers of this paper, since the unequal treatment resulting from the application of the 13th Amendment to the AtG is also justified under the other criteria, in particular the "new formula". See Kersten, J. and A. Ingold (2011), *supra* note 95, p. 368; Bruch, D. and H. Greve (2011), *supra* note 32, p. 799.

144. See Jarass, H. D. (2014), *supra* note 87, Article 3, recital 17 *et seq.*; Ziehm, C. (2012), *supra* note 28, p. 224.

145. BT-Drs. 17/6070, p. 1, 5 *et seq.*

several years due to an increased susceptibility to incidents and has therefore been generating electricity for only 28 years, but was shut down at the same time as other power plants of the same series. The legislator cannot therefore be held responsible for discrepancies in terms of operational lifetimes given that comparable power plants have received the same treatment in formal terms.

- As a public interest “of the highest priority”, security of supply is, in principle, an allowable criterion for differentiation in consideration of GG Article 3,¹⁴⁶ and the nuclear phase-out and the associated need to cover the base load without the contributions of the nuclear power plants will place Germany’s grid stability under a heavy strain.¹⁴⁷ As far as security of supply is concerned, not only the quantity but also the physical characteristics and the specific features of the electricity generated must be taken into consideration. Electricity can be fed into or drawn from the grid at any point, but an adequate transmission infrastructure is required to supply sufficient quantities of electricity to the locations where demand is highest. The current grid infrastructure is designed to handle electricity generated by large-scale power plants, and it is not (yet) able to compensate for the simultaneous loss of several nuclear power plants within one region. Power plant shut downs will therefore be possible only when the transmission infrastructure has been adapted to new forms of distributed or remote generation.¹⁴⁸ The unequal treatment of blocks Grundremmingen B and C is justifiable on these grounds, since the legislator believes that it will take longer to replace the generating capacities of the two plants rather than just one, even though they are almost identical in terms of safety standards. Shutting them both down at the same time would therefore jeopardise security of supply.¹⁴⁹

146. BVerfGE 25, p. 16; BVerfGE 91, p. 202; BVerfGE 66, p. 258; Pielow, J. C. (2014), Säcker, F. J. (editor), *Berliner Kommentar zum Energierecht* (Berlin Commentary on Energy Law), Deutscher Fachverlag GmbH, Frankfurt am Main, 3rd Edition, Introduction E to the Energy Management Act, recital 382.

147. See Federal Network Agency report (2011), *Auswirkungen des Kernkraftwerk-Moratoriums auf die Übertragungsnetze und die Versorgungssicherheit* (Implications of the nuclear power plant moratorium for transmission networks and security of supply), available at: www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Versorgungssicherheit/Berichte_Fallanalysen/Bericht_4.pdf?__blob=publicationFile&v=1, p. 52 et seq., 65 et seq.

148. Most nuclear power plants are located in the heavily industrialised south of Germany. The aim is for the electricity generated by these plants to be replaced by energy from renewables, the most significant of which is currently wind power. Commercially successful use of the latter has, however, predominantly been achieved in the north of the country, and so the transmission infrastructure between the north and the south needs to be expanded in order to supply electricity to the industrial hotspots of south Germany. Attempts by the south-German supplier EnBW to switch off unprofitable power plant blocks generating 888 MW were stymied by the Federal Network Agency on the grounds that all power plants south of the Main are currently vital for the supply structure. EnBW has lodged an appeal against this decision; see the article “EnBW will Kraftwerke abschalten dürfen” (EnBW seeks permission to switch off power plants) (20 January 2014), *süddeutsche-online*, available at: www.sueddeutsche.de/wirtschaft/klage-gegen-bundesnetzagentur-enbw-will-kraftwerke-abschalten-duerfen-1.1866863.

149. Ziehm, C. (2012), *supra* note 28, p. 225; for a different view, see Durner, W. (2013), *supra* note 141, p. 156 et seq.

- A further reason that provides some justification for the unequal treatment relates to safety considerations. Between March and May 2011 (while the moratorium was in force), the Reactor Safety Committee carried out a reassessment of the safety risks of German nuclear power plants, paying particular attention to the specific technical characteristics of the individual plants or series.¹⁵⁰ It emerged from this reassessment that the aircraft crash protection systems in place at the eight oldest power plants in particular were inadequate,¹⁵¹ which prompted the Bundestag to deem these design-based risks no longer compatible with the priority of absolute nuclear safety.¹⁵²

Whereas considerations relating to security of supply, investment protection and safety provide sufficient objective grounds to justify the unequal treatment in general terms, regional supply requirements and model-specific safety features can be used to explain the discrepancies in terms of the power plants' operating lifetimes. These plant-focused, rather than operator-focused, criteria can also be used to justify the unequal treatment received by the operating companies Vattenfall and RWE in relation to E.ON and EnBW. Once again, the legislator is granted a broad prerogative when choosing specific shutdown dates.

No justification can, however, be found for the fact that Vattenfall and RWE will be unable to transfer all of their residual electricity volumes within their power plant portfolios, and the legislator should have considered the possibility of some form of compensation in this respect. However, given that the option remains to transfer these residual electricity volumes at a charge to power plants owned by other operators, the unequal treatment can be deemed proportionate and hence constitutional.

4. Conclusion regarding the constitutionality of the 13th Amendment to the AtG

It can be concluded that the 13th Amendment to the AtG does not infringe GG Articles 14, 12 or 3 and, in the author's opinion, would stand up to examination by the Federal Constitutional Court.

IV. Legal developments after the 13th Amendment to the AtG

In response to the 13th Amendment to the Atomic Energy Act, the power plant operators pursued various remedies against the nuclear phase-out measures and legislation in order to establish the unconstitutionality of the 13th Amendment to the AtG or to claim compensation (see section I). At the same time, the German *Bundestag* took further legislative action to safeguard the "energy revolution" (see section II), the economic consequences of which can only be guessed at (see section III). Further legal issues arise in connection with future tasks such as the dismantling of nuclear power plants and the disposal of radioactive waste (see section IV).

150. Reactor Safety Committee (*Reaktorsicherheitskommission*) (RSK) 2011, opinion entitled "Plant-specific safety assessments of German nuclear power plants in response to the events at Fukushima-I (Japan)" of 14 May 2011, available at: www.rskonline.de/download/rsk_sn_sicherheitsueberpruefung_20110516_hp.pdf, p. 23 et seq.

151. *Ibid.* at p. 83 et seq.

152. See the explanatory statement for the 13th Amendment to the AtG, BT-Drs. 17/6070, pp. 5-7.

A. Procedural background

In procedural terms, a distinction should be made between the remedies pursued by the operators against the 13th Amendment on a primary basis and the compensation claims lodged on a secondary basis.

1. Constitutional appeals

No ruling has yet been handed down on the constitutional appeal lodged by E.ON, RWE and Vattenfall with the Federal Constitutional Court in Karlsruhe against the 13th Amendment to the AtG.¹⁵³ A ruling in favour of the applicants is unlikely on the basis of the considerations set out under C. above, but the “route to Karlsruhe” may, if nothing else, be financially beneficial for the companies. The decommissioning and dismantling reserves that the power plant operators are obliged to hold under commercial law¹⁵⁴ are not taxed and are freely available to the companies, which means that they resemble interest-free loans.¹⁵⁵ The reactors that have already been taken offline cannot be dismantled until the constitutional appeals have been settled, and so the companies will continue to dispose of these reserves until a ruling is handed down by the Federal Constitutional Court.

2. Settlement proceedings before the ICSID

The Swedish parent company Vattenfall AB also lodged an application for investment settlement proceedings against the Federal Republic of Germany on 20 December 2013¹⁵⁶ with the International Centre for Settlement of Investment Disputes (ICSID) in Washington. The legal basis cited was Article 26 of the Energy Charter Treaty, which provides for the possibility of settlement proceedings between an investor and a contracting party.¹⁵⁷ In its application for proceedings, Vattenfall submitted that the German nuclear phase-out and the resulting loss of its investments in the nuclear power plants it owns (Brunsbüttel and Krümmel) and in which it has shares (Brokdorf) represent an infringement of its investment rights.¹⁵⁸ No details have been made public regarding the exact provisions of the Energy Charter Treaty which Vattenfall claims have been infringed or the amount of compensation it has demanded.¹⁵⁹ The company’s application is, however, generally believed to have a higher chance of success than the appeals before the Federal Constitutional Court, since an infringement of investor trust could conceivably have been committed on the basis of the criteria used in the settlement proceedings.¹⁶⁰

3. Compensation claims

There are various aspects of the nuclear phase-out that can be used as a basis for the enforcement of compensation claims by the nuclear power plant operators.

153. Case numbers 1 BvR 2821/11 (E.ON), 1 BvR 321/12 (RWE) and 1 BvR1 456/12 (Vattenfall).

154. See Section 249 of the Commercial Code (*Handelsgesetzbuch*) (HGB), according to which companies must build up reserves for future liabilities.

155. See Ziehm, C. (2012), *supra* note 28, p. 225.

156. ICSID Case No. ARB/12/12.

157. Energy Charter Treaty (1994), 2080 UNTS 95. Buntenbroich, D. and M. Kaul (2014), “Transparenz in Investitionsschiedsverfahren – Der Fall Vattenfall und die UNCITRAL-Transparenzregeln” (Transparency in investment arbitration proceedings – the Vattenfall case and the UNCITRAL transparency rules), *Zeitschrift für Schiedsverfahren* (SchiedsVZ), Vol. 12, p. 2.

158. See Buntenbroich, D. and M. Kaul (2014), *supra* note 157, p. 2.

159. *Ibid.* at p. 3, also for a more detailed examination of the issues relating to the transparency of proceedings before the ICSID.

160. Winter, G. (2013), “The Rise and the Fall of Nuclear Energy Use in Germany: Processes, Explanations and the Role of Law” *Journal of Environmental Law*, Oxford University Press, Oxford, Vol. 25, p. 117 *et seq.*; Buntenbroich, D. and M. Kaul (2014), *supra* note 157, p. 2.

(a) Moratorium

In chronological terms, the first grounds for compensation arose in connection with the temporary operating bans imposed by the federal state environmental authorities under the three-month moratorium. After an appeal by the operator RWE was initially allowed in an interim ruling by the Higher Administrative Court of Kassel on the grounds that there was a genuine intention to pursue a subsequent compensation claim with a reasonable chance of success against the Federal State of Hessen through the civil courts,¹⁶¹ the unconstitutionality of the moratorium in formal and material terms was established in two judgments by the Higher Administrative Court concerning the power plants Biblis A and B.¹⁶² These judgments became legally binding after the Federal Administrative Court dismissed the appeals lodged by the Federal State of Hessen.¹⁶³ According to figures quoted in the press, RWE AG suffered losses of approximately EUR 187 million as a result of being forced to shut down Biblis A and B.¹⁶⁴ In 2014, E.ON also lodged a claim for compensation of some EUR 250 million in connection with the unlawful decommissioning of its power plants Isar 1 and Unterweser.¹⁶⁵

Public liability claims (BGB section 839 in conjunction with GG Article 34) and claims of encroachment equivalent to expropriation are potential grounds for these compensation demands,¹⁶⁶ but the key criterion for both, as already established by the legally binding judgment of the Higher Administrative Court of Kassel, is the performance of an unlawful action by the state. As demonstrated above (section C. II) that the authorities did directly encroach upon the owners' right of use within the meaning of GG Article 14. The encroachment furthermore constitutes a "special sacrifice" for the power plant operators, such that encroachment equivalent to expropriation should provide suitable grounds for a compensation claim. Public liability claims can be enforced alongside claims relating to an encroachment equivalent to expropriation and would have a good chance of success, although they also require the establishment of fault. In spite of the fact that the Federal Environment Ministry issued "*de facto* instructions" to the federal state authorities in connection with the moratorium, the Higher Administrative Court of Kassel found that the Hessen-based nuclear regulatory body was responsible for the operating bans.¹⁶⁷ Questions can therefore be raised regarding the extent to which the Federal State of Hessen would be indemnified by the Federal Government in the event that the Court ruled against it.¹⁶⁸

(b) 13th Amendment to the Atomic Energy Act

As indicated above, the 13th Amendment to the AtG contains no provisions concerning financial compensation for the curtailment of remaining lifespans. Since the reductions cannot be deemed expropriation within the meaning of GG Article 14(3), any compensation demands would again be based on claims relating to

161. VGH Kassel, *supra* note 38, p. 634.

162. *Ibid.* at p. 367 *et seq.*

163. *Ibid.* at p. 236 *et seq.*

164. See "Hessischer VGH zu Kernkraftwerk Biblis Abschalten war rechtswidrig" (27 February 2013), *Legal Tribune Online*, available at: www.lto.de/recht/nachrichten/n/hessischer-vgh-urteil-6-c-824-11-t-biblis-atomkraftwerk-abschaltung-rechtswidrig/.

165. See "Eon fordert Schadenersatz für Atom-Moratorium" (15 April 2014), *Frankfurter Allgemeine Zeitung (FAZ)*, available at: www.faz.net/aktuell/wirtschaft/wirtschaftspolitik/eon-fordert-schadenersatz-fuer-atom-moratorium-nach-fukushima-12897078.html.

166. VGH Kassel, *supra* note 38, p. 634 *et seq.*; Battis, U. and M. Rutloff (2013), *supra* note 57, p. 823.

167. VGH Kassel, *supra* note 38, p. 373 *et seq.*

168. The legal basis would be GG Article 104a(2) und (5) sentence 1.

an encroachment equivalent to expropriation or public liability claims.¹⁶⁹ As emerged from the analysis in section C. III above, however, the 13th Amendment to the AtG differs from the moratorium in that it can be deemed constitutional, and so any such claims would be dismissed due to the lack of any unlawful action by the authorities.

Irrespective of this fact, compensation claims are being pursued by E.ON, RWE and Vattenfall, whose management boards believe that legal action must be taken to avert the risk of the billion-euro losses which may result from the nuclear phase-out,¹⁷⁰ if only to discharge their duty of diligence under corporate law, namely the Stock Corporation Act, AktG (*Aktiengesetz*) section 93. E.ON and RWE have therefore lodged compensation claims of at least EUR 8 billion and EUR 2 billion respectively against the Federal Government,¹⁷¹ although these claims would be doomed to failure if the constitutional appeals against the 13th Amendment to the AtG are dismissed. In the event that the Federal Constitutional Court does find the 13th Amendment to the AtG unconstitutional, the legislator would have the option of adopting a compensation clause with retrospective effect in order to maintain the proportionality of the nuclear phase-out.¹⁷²

(c) Nuclear fuel tax

By way of contrast, the nuclear power plant operators have a very good chance of successfully claiming back the nuclear fuel tax first imposed in 2010 by the 11th Amendment to the AtG, and appeals to this effect were lodged by E.ON, RWE and EnBW with the fiscal courts. Following rulings by the Fiscal Courts of Hamburg and Munich, which questioned the constitutionality of the nuclear fuel tax,¹⁷³ the Fiscal Court of Hamburg finally deemed the tax unconstitutional and referred the case first to the Federal Constitutional Court and second to the ECJ on the grounds of possible infringements of EU law.¹⁷⁴ The Fiscal Court of Hamburg granted the power plant operators interim relief in a number of rulings handed down on 11 April 2014,¹⁷⁵ since serious doubts had emerged as to the constitutionality and EU-law compliance of the Nuclear Fuel Tax Act. In the court's opinion, the nuclear fuel tax was not a tax on the consumption of nuclear fuels or electricity, but a stand-alone tax that levied the profits of the power plant operators, which meant that the Federal Government was wrong to cite its legislative competence in the area of taxes on consumption. The Fiscal Court of Hamburg furthermore regarded the tax as incompatible with EU law on the grounds that the principle of "output taxation" enshrined in the EU

169. Wagner, G. (2011), "Entschädigung der Energieversorgungsunternehmen wegen des Kernenergieausstiegs 2011 – Verfassungsrechtliche Rahmenbedingungen und legislatorische Optionen" (Compensation for the energy supply companies in connection with the 2011 nuclear phase-out – constitutional framework and legislator options), Durner, W., U. Di Fabio and G. Wagner, *Kernenergieausstieg 2011* (Nuclear phase-out 2011), Nomos-Verlag, Baden-Baden, p. 176.

170. Bruch, D. and H. Greve (2011), *supra* note 32, p. 794.

171. See "Atomausstieg: Energieriesen fordern 15 Milliarden Schadensersatz" (13 June 2012), *Spiegel-online*, available at: www.spiegel.de/wirtschaft/unternehmen/atomausstieg-energieriesen-fordern-15-milliarden-euro-schadensersatz-a-838527.html.

172. See Battis, U. and M. Ruttloff (2013), *supra* note 57, p. 824.

173. Fiscal Court of Hamburg, ruling of 16 September 2011 – 4 V 133/11, ZUR 2012, Nomos-Verlag, Baden-Baden, Vol. 23, p. 54 *et seq.*; Fiscal Court of Munich, ruling of 5 October 2011, ref.: 14 V 2155/11, ZUR 2012, Vol. 23, p. 255 *et seq.*

174. Fiscal Court of Hamburg, ruling of 29 January 2013 – 4 K 270/11, *Zeitschrift für das gesamte Recht der Energiewirtschaft* (EnWZ) 2013, C. H. Beck Verlag, Munich, Vol. 2, p. 422. Proceedings are pending before the Federal Constitutional Court under case number 2 BvL 6/13 and before the ECJ under case number C-5/14.

175. Fiscal Court of Hamburg, ruling of 11 April 2014 – ref.: 4 V 154/13, *Entscheidungen der Finanzgerichte* (EFG) 2014 (Decisions by the Fiscal Courts 2014), Stollfuß Medien GmbH, Bonn, Vol. 53, p. 1172 *et seq.*

Energy Taxation Directive prohibits any extra taxation of energy products on top of the taxation of the electricity itself. This ruling issued in summary proceedings means that the power plant operators that lodged the appeal must be paid over EUR 2.2 billion in reimbursed nuclear fuel tax before the legal situation is finally resolved.

B. Accompanying measures to safeguard the “energy revolution”

Nuclear power had already been deemed a “bridging technology” facilitating the switch to renewables when the lifespan extensions were granted to nuclear power plants in 2010, and the nuclear phase-out made it even more urgent to push ahead with the transformation of primary energy production in Germany. In order to compensate for the future loss of nuclear-generated electricity,¹⁷⁶ a bundle of laws intended primarily to boost the status of renewables and promote grid expansion was adopted with a view to achieving the “energy revolution”.

1. Amendments to the Renewable Energies Act

The Renewable Energies Act (*Erneuerbare-Energien-Gesetz*) (EEG), recently amended in summer 2014, functions as the central mechanism for transformation of primary energy production in Germany.¹⁷⁷ The 13th Amendment to the AtG adopted in 2011 also changed the EEG’s stated target for the proportion of electricity generated from renewables by 2020 from at least 30% to at least 35%, and the targets for 2030, 2040 and 2050 to at least 50%, at least 65% and at least 80% respectively.¹⁷⁸ Producers of renewable energy were promised incentives in the form of remuneration for feeding their electricity into the distribution networks (“feed-in payments”). Various tax breaks were granted to offshore wind energy in preference to land-based distributed renewables,¹⁷⁹ and a number of different reward schemes and subsidies were introduced for geothermal energy in order to exploit the largely untapped potential of this form of energy production within Germany.¹⁸⁰ Funding for onshore wind turbines, photovoltaic plants and bio-gas plants was also reduced overall due to the increased profitability of these facilities. The *ad-hoc* provisions on feed-in payments were accompanied by an increase in direct marketing opportunities aimed at reducing time-to-market cycles for renewables.¹⁸¹ Besides the genuinely innovative introduction of an optional market premium to be paid by the grid operator as an incentive for plant operators to generate electricity on an as-needs basis,¹⁸² the further amendment included an increase in scope of the EEG levy exemptions granted to small and medium-sized enterprises, currently resulting in a sharp rise in EEG levies for other electricity customers. These exemptions were investigated by the European Commission as potentially unlawful aid, but the investigation was

176. Nuclear power accounted for approximately 23% of gross consumption in 2010; see Federal Statistical Office, press release No. 144 (11 April 2011).

177. Act on the Expansion of Renewable Energy Sources (Renewable Energies Act) (*Erneuerbare-Energien-Gesetz* (EEG 2014)), 21 July 2014, BGBl 2014 I, p. 1066.

178. Act Revising the Legal Framework for the Generation of Electricity from Renewable Energy Sources of 28 July 2011, BGBl 2011 I, p. 1634.

179. The federal government’s expansion target, formerly set at 25 000 MW of offshore energy by 2030, was reduced to 15 000 MW by the EEG 2014 on cost grounds.

180. For more details, see Sellner, D. and F. Fellenberg (2011), “*Atomausstieg und Energiewende 2011 – das Gesetzespaket im Überblick*” (Nuclear phase-out and the 2011 energy revolution – an overview of the legislative package), NVwZ, C. H. Beck Verlag, Munich, Vol. 15, p. 1029.

181. Altrock, M. and V. Oschmann (2013) in Altrock, M., V. Oschmann and C. Theobald, *EEG Kommentar* (Commentary on the Renewable Energies Act), 4th Edition, C. H. Beck Verlag, Munich, Section 33a, recital 1 et seq.

182. *Ibid.*, Section 33g, recital 7.

closed in July 2014 after an agreement was reached between the Federal Government and the European Commission.¹⁸³

2. Grid infrastructure expansion

A further consequence of the nuclear phase-out and the increased use of distributed renewables to generate electricity is the need to convert and expand the electrical grid.¹⁸⁴ The existing legislation on the expedited expansion of power lines¹⁸⁵ was amended back in 2011 by the Power Grid Expansion Expediting Act¹⁸⁶ to ensure that demand for new transmission lines, and in particular transmission grids, could be met as promptly as possible. In spite of these more or less substantial amendments to planning legislation and attempts to boost public approval through greater transparency,¹⁸⁷ however, very little progress has been made in terms of expansion of transmission grids within Germany. Legislative amendments have also introduced new rules governing the problematic connection of off-shore plants to the transmission grid (section 17(2a) sentence 2 of the *Energiewirtschaftsgesetz* (EnWG) (Energy Industry Act), providing municipalities with loss compensation for high-voltage overhead lines running within their boundaries and making underground cabling the standard choice for distribution systems (EnWG section 43h). Finally, transposition of the third Internal Energy Market Directive has meant that the transmission grid operators are now obliged to act as co-ordinators in order to safeguard security of supply and push ahead with expedited grid expansion.¹⁸⁸

C. Economic consequences for energy suppliers and consumers

Not only the energy sources but also the corporate structures within the German energy market are in a state of flux. After the territorial monopolies of the municipalities were phased out in 1998 as a result of the EU-imposed gradual liberalisation of the energy market, the substantial merger movement, which took place in the country around the turn of the century resulted in four large vertically and horizontally integrated energy supply companies.¹⁸⁹ This process of concentration has been apparent not only in terms of transmission, sales and

183. See “EEG-Reform: Planbar. Rezahlbar. Effizient.”, available at: www.bmwi.de/DE/Themen/Energie/Erneuerbare-Energien/eeg-reform.html.

184. See Federal Network Agency report (2011), *supra* note 147, p. 51 et seq.

185. See the Infrastructure Planning Expediting Act of 9 December 2006, BGBl 2006 I, p. 283, and the Power Grid Expansion Act of 21 August 2009, BGBl 2009 I, p. 2870.

186. Power Grid Expansion Expediting Act Transmission Network of 28 July 2011, BGBl 2011 I, p. 1690.

187. For more on this issue, see Straßburg, W. (2013) in de Witt, P. and F. J. Scheuten, *Netzausbaubeschleunigungsgesetz Kommentar (Commentary on the Power Grid Expansion Expediting Act)*, C. H. Beck, Munich, Introduction to the Power Grid Expansion Expediting Act (*Netzausbaubeschleunigungsgesetz*) (NABEG), recital 70 et seq.; Mann, T. (2013), “Großvorhaben als Herausforderung für den demokratischen Rechtsstaat” (Large-scale projects as a challenge for the democratic rule of law), *Veröffentlichungen der Vereinigung der Deutschen Staatsrechtslehrer (VVDStRL)*, Walter de Gruyter Verlag, Berlin, Vol. 72, p. 573 et seq.

188. For more details on the individual amendments, see Sellner, D. and F. Fellenberg (2011), *supra* note 180, p. 1033.

189. See Schlemmermeier, C. and C. Schorsch (2003), “Verflechtung zwischen den Marktstufen im deutschen Energierecht” (Interdependence of the levels of the supply chain under German energy law), Schwintowski, H. P., *Strategische Allianzen – Netznutzung – Vergaberecht auf den Energiemärkten* (Strategic Alliances – Network Use – Procurement Law in Energy Markets), Nomos Verlag, Baden-Baden, p. 59.

distribution, but also and particularly in terms of generation; in 2008, RWE, E.ON, Vattenfall and EnBW generated 80% of the country's electricity.¹⁹⁰

The generation market has seen significant changes over the past few years, not least due to the feed-in payment introduced by the EEG. The old-style centralised generation of electricity by large-scale power plants is increasingly being replaced by distributed generation plants under the EEG,¹⁹¹ particularly in the peak- and medium-load ranges. Because the share of renewable electricity generated by the big companies is still relatively low,¹⁹² private investors, public-run companies and particularly municipal utilities have made large gains in this area to date. Besides absorbing burgeoning losses in their share of the generation market, the four big energy suppliers have also been forced to separate their transmission grids under the weight of increasingly stringent unbundling rules¹⁹³ and to sell minority interests to municipal utilities.¹⁹⁴ On top of this drive towards liberalisation and a weakening market position, the nuclear phase-out represents a financial set-back that will hit these companies hard given their continuing primary reliance on traditional large-scale power plants. E.ON AG alone will lose an estimated EUR 2.2 billion in profits as a result of the phase-out.¹⁹⁵

The costs of the energy revolution will be enormous even discounting the nuclear phase-out,¹⁹⁶ but precise figures are impossible to come by, and the same can be said for the increased burden which the nuclear phase-out will place on consumers. The costs and prices obtained depend to a substantial extent on the factors included in the calculations and whether impacts such as the environmental advantages of renewables plants can be recognised as monetary benefits. Yet even if the many different causal relationships involved prevent an exact calculation of the

190. Federal Cartel Office (2013), *Sektoruntersuchung Stromerzeugung und -großhandel* (Sectoral investigation into electricity generation and wholesale supply), available at: www.bundeskartellamt.de/SharedDocs/Publikation/DE/Sektoruntersuchungen/Sektoruntersuchung%20Stromerzeugung%20Stromgrosshandel%20-%20Abschlussbericht.html?nn=4143254, p. 18.

191. The electricity generated by the “big four” in 2012 accounted for only 46.9% of the market, BDEW (*Bundesverband der Energie- und Wasserwirtschaft*) (German Association of Energy and Water Industries), *Wettbewerb 2012* (Competition 2012), p. 32; available at: www.bdew.de/internet.nsf/id/broschuere-wettbewerb-2012-de.

192. Taking the largest supplier (RWE) as an example, in 2011 it generated 74.1 TWh of electricity from lignite, 47.8 TWh from anthracite, 34.3 TWh from nuclear sources, 38.5 TWh from natural gas and 8.8 TWh from renewables. “*Strom- und Wärmeerzeugung*”, RWE Corporate Website, www.rwe.com/web/cms/de/1391638/rwe/ueber-rwe/geschaeftsaktivitaeten/strom-und-waermeerzeugung/.

193. E.ON sold its transmission network to TenneT TSO GmbH, RWE to Amprion GmbH and Vattenfall to 50 Hertz GmbH. EnBW outsourced its network to the spin-off company Transnet BW GmbH.

194. For example, E.ON has sold its former holding company “Thüga”, which bundled 120 municipal utility shareholdings, to a consortium comprising public utilities from Hanover, Frankfurt and Nürnberg and the public utility association KOM9 GmbH & Co. KG, *inter alia* in response to the ruling handed down in Eschwege by the Federal Court of Justice. BGHZ 178, p. 285 *et seq.*

195. As calculated by Becker, P. (2011), *supra* note 3, p. 476.

196. The federal government is expecting the implementation of its energy strategy to cost an extra EUR 550 billion between now and 2050. See “*Was bringt, was kostet die Energiewende*”, available at: www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/Energiekonzept/OBuehne/kostennutn-energiewende.html. The former Federal Minister for the Environment, Peter Altmaier, estimated the potential costs at EUR 1 billion in the absence of any changes to current funding schemes. “*Umweltminister Altmaier ‘Energiewende könnte bis zu einer Billion Euro kosten*” (19 February 2013), FAZ, available at: www.faz.net/aktuell/politik/energiepolitik/umweltminister-altmaier-energiewende-koennte-bis-zu-einer-billion-euro-kosten-12086525.html.

costs, there can be no question about the fact that the reorganisation of the energy supply system in Germany can be achieved only at substantial expense to all parties, including consumers (albeit mitigated to some extent by the renewables levy). The public was slow to realise this fact, and criticisms are only now starting to be heard, whereas the 2011 nuclear phase-out gained broad public support regardless of the potential cost implications.

D. The disposal of radioactive waste

In a similar vein, issues relating to the disposal of radioactive waste had little impact on the public mood in Germany at the time of the nuclear phase-out in 2011 but are currently being more widely debated.

1. Dismantling of nuclear plants

The final phasing out of nuclear energy by 2022 means that issues relating to the decommissioning and dismantling of power plants will become a matter of priority. In accordance with the “polluter pays” principle enforced under regulatory and environmental law, power plant operators are generally responsible for the costs involved in decommissioning, dismantling and disposing of nuclear waste.¹⁹⁷ The state’s role in this regard is limited to supervision and inspections on the basis of the decommissioning and dismantling permit procedure pursuant to AtG section 7(3) sentence 1.

The obligation incumbent upon the energy companies to bear these costs gives rise nonetheless to certain problems and questions. For example, no clear answer has been given to the question of whether the companies will have built up adequate reserves if the commercial operations of their plants are prematurely discontinued, or what the bankruptcy of a company might mean for dismantling and disposal measures which will last for several decades.¹⁹⁸ On top of a best-guess figure of EUR 1 billion in dismantling costs per plant, approximately EUR 15 billion will be incurred in disposal costs for the 19 German power plants which have not yet been closed.¹⁹⁹ Given the inherent risk involved in these estimates and the lack of any good models in the world for repository sites, there is a high risk that the overall project costs will be much higher. The decommissioning and dismantling of nuclear power plants is not a completely unknown phenomenon, but the experiences gained so far are not necessarily relevant to such large-scale nuclear power plants.²⁰⁰

197. The legal basis for funding of this kind is *Handelsgesetzbuch* (Commercial Code) (HGB) Section 249 due to the lack of any such basis in the Atomic Energy Act. Responsibility, however, derives from AtG Sections 7(3) and (9a) *et seq.* and Section 12 of the Ordinance on Compulsory Cover under the Nuclear Act (*Atomrechtliche Deckungsvorsorge-Verordnung*) (AtDeck). For example, see Fillbrandt, M. and M. Paul (2012), *supra* note 10, Section 7 Nuclear Law V, recitals 4 and 28.

198. Bordin, G. and M. Paul (2008), “Die langfristige Sicherheit der Finanzierung von Stilllegung und Entsorgung im Nuklearbereich zur Wahrung der Interessen der öffentlichen Hand” (The long-term security of funding sources for decommissioning and waste disposal in the nuclear industry with a view to safeguarding the interests of the public authorities), 13. *Atomrechtssymposium 2007* (13th Nuclear Law Symposium 2007), Nomos Verlag, Baden-Baden, p. 276; Meyer, B. (2012), “Rückstellungen für Rückbau und Entsorgung im Atombereich – Analyse und Reformkonzept” (Reserves for dismantling and waste disposal in the nuclear industry – analysis and reform strategy), ZNER, Ponte Press Verlag Bochum, Vol. 16, p. 238.

199. Meyer, B. (2012), *supra* note 198, p. 238 *et seq.*

200. The prototype plants Großwelzheim and Niederaichbach, which were decommissioned in the 1970s, have already been entirely dismantled. A further 22 research reactors have also been fully dismantled. Fillbrandt, M. and M. Paul (2012), *supra* note 10, Section 7 Nuclear Law V, recital 3.

A variety of alternative or cumulative funding instruments have been debated with a view to mitigating the risk of companies not being able to fund the decommissioning and dismantling of their power plants for various reasons, and proposals have included the setting up of an external fund, provision for different forms of investment following the model adopted under insurance law and the imposition of warranty and assumed liability obligations on the parent companies of the nuclear power plant operators, most of which are spin-offs.²⁰¹ The fund option was raised again by the power plant operators themselves in mid-2014, but was initially met with a categorical refusal by the federal government.²⁰² Critics claimed that the energy suppliers were seeking to divest their remedial obligations and avoid any risk of cost rises.²⁰³ The deliberate bias and exaggeration inherent in these accusations is manifest, since they take no account of the fact that the pooling of money by the groups in a dismantling fund would act as a buffer against potential bankruptcies. Questions can also be raised regarding the level of reserves built up to date in view of the dates that have now been set for plant closure and the extent to which the companies are capable of covering increased costs in view of the challenging financial situation on the energy market. A similar public-law fund has already been set up at least once before in Switzerland,²⁰⁴ and there are unlikely to be any valid constitutional grounds against something similar in Germany,²⁰⁵ which means that the decisions to be taken in respect of the funding model will be purely political in nature.

2. The search for a final repository

Germany resembles almost every other country in the world in that no answer has yet been found to the deeply controversial issues relating to the final storage of highly radioactive waste. An estimated total of approximately 300 000 m³ of low- and intermediate-level radioactive waste and 29 000 m³ of high-level radioactive waste will have been generated by the time that nuclear power is phased out for good.²⁰⁶ A licensed repository for radioactive waste with negligible heat generation is now available at Schacht Konrad (a former iron ore mine near Salzgitter),²⁰⁷ and for many years politicians were in favour of using the Gorleben site as a repository for highly radioactive waste. The former salt mine at Gorleben already functions as an interim

201. See Bordin, G. and M. Paul (2008), *supra* note 198, p. 284 *et seq.*; Meyer, B. (2012), *supra* note 198, p. 241 *et seq.*

202. See “Merkel – keine Verhandlungen über Atomfonds” (Merkel – no negotiations on Nuclear Fund) (12 May 2014), *Süddeutsche Zeitung*, available at: www.sueddeutsche.de/news/wirtschaft/energie-merkel-keine-verhandlungen-ueber-atom-fonds-dpa.urn-newsml-dpa-com-20090101-140512-99-03915.

203. See, for example, Interview with Tobias Riedl (Greenpeace), “Die Atomkonzerne wollen sich aus der Verantwortung stehlen” (12 May 2014), *Die Zeit*, available at: www.zeit.de/wirtschaft/2014-05/interview-tobias-riedl.

204. For a comprehensive investigation into this issue, see Hoppenbrock, V. (2009), *Finanzierung der nuklearen Entsorgung und der Stilllegung von Kernkraftwerken, ein Vergleich zwischen der Rechtslage in Deutschland und der Schweiz* (Funding sources for nuclear waste disposal and the decommissioning of nuclear power plants: a comparison between the legal situation in Germany and Switzerland), Nomos Verlag Baden-Baden.

205. For a detailed examination of this issue, see Hoppenbrock, V. (2009), *supra* note 204, p. 193 *et seq.*

206. Numerical values taken from the Waste Volume Forecasts published by the Federal Office for Radiation Protection, available at www.bfp.de/de/endlager/abfaelle/prognose.html.

207. The actions brought against the planning approval granted in May 2002 after a court case lasting almost 20 years were rejected at last instance in a ruling by the Higher Administrative Court of Lüneburg on 8 March 2006 – 7 KS 128/02, ZUR 2006, 489 *et seq.* The Federal Administrative Court did not allow the non-admission appeal, ruling of 26 March 2007 – 7 B 74/06, NVwZ 2007, 837 *et seq.*

repository and houses an exploratory mine that has been used to investigate the site's suitability as a final repository since a political decision was taken on the matter in 1977. Ever since the early 1980s, however, the regular transportation of nuclear waste from the French reprocessing plant in La Hague has met with fierce public resistance. Doubts were subsequently voiced regarding the geological suitability of the Gorleben salt mine as a possible repository, not least because the initial choice of the site was, to some extent, politically motivated.²⁰⁸ In order to determine the extent to which technical factors had been subsumed by political considerations when choosing the Gorleben site, the *Bundestag* appointed a Committee of Inquiry on 26 March 2010,²⁰⁹ which found in its report of 16 May 2013 that the Gorleben site had not been chosen through a scientifically verifiable selection process but on the basis of an arbitrary political decision. A further key criticism related to the lack of any public consultation during the decision-making process and the on-site investigations.²¹⁰

With a view to lending fresh impetus to the search for a final repository, the *Bundestag* adopted the Act on the Search for a Repository Site (*Standortauswahlgesetz*) (StandAG)²¹¹ on the basis of the work carried out by a Federal Government/federal state working group. The Act breaks down the site selection procedure into five stages, and assigns responsibility for key decisions to the legislator rather than the executive due to the high risk potential of a repository and the associated major encroachment upon fundamental rights. The StandAG lays down a framework for the site selection procedure and introduces a second stage during which parliamentary consent is sought for individual planning approvals and permits, a procedure differing from standard practice. As well as the Federal Office for Radiation Protection (*Bundesamt für Strahlenschutz*) in its role as lead agency (StandAG section 6) and the Federal Office for the Disposal of Nuclear Waste (*Bundesamt für Kerntechnische Entsorgung*) as the authority responsible for initiating procedures (StandAG section 7), a "Committee for the Storage of Highly Radioactive Waste" made up of 33 members in total – 17 from the *Bundestag* and *Bundesrat* and 8 from the *Bundestag* and the federal state governments respectively (StandAG Sections 3 *et seq.*) will monitor the preparatory work carried out in advance of the site selection procedure. The Committee will initially draft recommended exclusion criteria, minimum requirements, weighing-up criteria and other grounds for decisions to be taken into law by the *Bundestag* per StandAG section 4(5). Underground and surface investigations will subsequently be carried out at various sites during the second, third and fourth stages, and the permit procedure proper will then be carried out during the fifth stage of the site selection process, per StandAG sections 13-20.

It should be emphasised that at each stage of the procedure public consultations should be as broad as possible and decisions should be based on objective criteria (see StandAG Sections 8–11, 13(4), 16(3)). For example, a "negative delimitation" is carried out when making the initial choice of region, which involves excluding clearly unsuitable regions from the search in order to ensure that the best possible

208. See, for example, Wollenteit, U. (2013), "Standortplanung für ein atomares Endlager ohne Klagerechte? Zum aktuellen Entwurf für ein Standortsuchgesetz" (Location planning for a nuclear repository without rights of appeal? On the current draft Repository Site Act) in ZNER Vol. 17, p. 133; Möller, D. (2009), *Endlagerung radioaktiver Abfälle in der Bundesrepublik Deutschland* (Repository sites for radioactive waste in the Federal Republic of Germany, Verlag Peter Lang, Frankfurt am Main, p. 309 *et seq.*

209. BT-Drs. 17/1250.

210. Final report of the Committee of Inquiry, BT-Drs. 17/13700, p. 592 *et seq.*

211. Act on the Search for and Selection of a Repository Site for Heat-Generating Radioactive Waste (Repository Site Act) (*Standortauswahlgesetz*) (StandAG) of 23 July 2013, BGBl 2013 I, p. 2553.

alternatives are presented for a final choice (StandAG section 13(1)). After checks have been carried out by the Federal Office for the Disposal of Nuclear Waste, the legislator will adopt a federal law which both specifies the sites to be investigated and excludes unsuitable sites (StandAG section 14). Sites will then be compared on the basis of surface, underground and deep geological investigations, and a site proposal will be put forward by the Federal Office for the Disposal of Nuclear Waste (StandAG section 19(1)), which will firstly be reviewed by the Federal Environment Ministry and subsequently be used as a basis for a draft law by the Federal Government and a binding site decision by the *Bundestag* (StandAG section 20).²¹² This site decision will then have binding effect on the subsequent permit procedure under AtG section 9b(1a).

The search for a repository raises not only de facto problems but also constitutional questions in relation to GG Article 14 (freedom of property), GG Article 19(4) (legal protection) and GG Article 20(2) sentence 2 (division of powers), since owners may be expropriated of their sites for the purpose of investigations pursuant to AtG section 9d(2). Recourse to law before the administrative courts is also excluded, since most decisions will take the form of federal laws which cannot be examined by an administrative court.²¹³ The parties affected by this “planning by law” will therefore be able to appeal only to the Federal Constitutional Court, which greatly reduces the opportunities open to them for judicial remedies.²¹⁴ Finally, this shift of binding planning decisions from the executive to the legislature also represents an infringement of the division of powers, although the Federal Constitutional Court has already deemed this to be justified in its “*Südümgehung Stendal*” ruling.²¹⁵ There is every indication that these legal questions will be a lasting feature of the German court scene over the next few decades.

V. Summary

The legislative steps taken by Germany to implement its nuclear phase-out are, in many respects, a counter-example of good law-making, and the moratorium imposed by the Federal Government in 2011 represents a particularly blatant infringement of the Basic Law. By way of contrast, it can, in the author’s opinion, be concluded that the 13th Act Amending the Atomic Energy Act, which laid down the legal framework for the nuclear phase-out, is constitutional since it balances the interests of the energy industry and consumers against public welfare concerns. Although there are various controversial points of detail, the legislator must ultimately be granted a broad prerogative on key issues where legal matters must take second place to political considerations. Having recognised the socially controversial nature of the debate on final repository sites, the *Bundestag* has also adopted a legal framework in the form of the Repository Site Act that safeguards greater public involvement while, at the same time, deliberately accepting the curtailment of legal redress for citizens brought about by aspects of the “planning by law” process.

212. The Repository Site Act is not subject to approval by the *Bundestag*.

213. See, for example, Federal Constitutional Court ruling of 23 June 1987 – 2 BvR 826/83, BVerfGE, Vol. 76, p. 115; Unruh, P. (2013) in Fehling, M., B. Kastner, R. Störmer, *Verwaltungsrecht Handkommentar* (Administrative Law Commentary), 3rd Edition, Nomos Verlag, Baden-Baden, Section 40 VwGO (*Verwaltungsgerichtsordnung*) (Administrative Court Procedures Code), recital 170.

214. An accurate examination of this issue can be found in Wollenteit, U. (2013), *supra* note 208, p. 135.

215. Federal Constitutional Court ruling of 17 July 1996 – 2 BvF 2/93, BVerfGE 95, p. 15 *et seq.*

Challenges facing the insurance industry since the modernisation of the international nuclear third party liability regime

by Alain Quéré*

Introduction

The modernisation of international conventions governing third-party liability in the nuclear field is essentially an attempt to resolve certain shortcomings whilst setting out higher compensation sums and extending the cover for nuclear damage for which compensation is payable. The latest convention revisions occurred in 2004 and led to the adoption of protocols amending the Paris Convention on Third Party Liability in the Field of Nuclear Energy¹ and the Brussels Convention supplementing the Paris Convention.² However, the substance of the current regimes is largely the result of conventions drawn up in the 1960s and, in the eyes of the general public, the changes made in 2004 are mainly concerned with increasing the compensation sums.

Despite the proposed increases in the compensation amounts, there is certainly no doubt that the potential costs of a major nuclear accident will not be fully covered by the revised Conventions. In other words, the actual compensation amount in the event of nuclear damage is quite low if we refer back to known events. By way of example, the direct cost of the Fukushima Daiichi nuclear power plant accident is estimated to be above EUR 100 billion according to different sources.³ The accident virtually bankrupted the Tokyo Electric Power Company (TEPCO) immediately after this event.⁴ The economic costs of the Chernobyl accident, however, are difficult to assess even now. But, according to various sources,⁵ the costs also exceed USD 100 billion.

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1. Protocol to Amend the [Paris] Convention on Third Party Liability in the Field of Nuclear Energy (2004) ("2004 Protocol"), available at: www.oecd-nea.org/law/paris_convention.pdf.
2. Protocol to Amend the [Brussels] Convention of 31 January 1963 Supplementary to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy (2004), as amended, available at: www.oecd-nea.org/law/brussels_supplementary_convention.pdf.
3. See Legee, F., S. Bennouna, S. Dautremont, F. Thais (2012), "Impacts économiques de l'accident nucléaire de Fukushima" (Economic impact of the Fukushima nuclear accident), *La Lettre de l'I-tésé*, No. 16 – Summer 2012, p. 19, available at: http://i-tese.cea.fr/_files/LettreItese16/ImpactsEcoFukushima.pdf; "Fukushima nuclear crisis estimated to cost ¥11 trillion: study" (2014), *The Japan Times*, www.japantimes.co.jp/news/2014/08/27/national/fukushima-nuclear-crisis-estimated-to-cost-%C2%A511-trillion-study/.
4. TEPCO has currently paid around EUR 31 billion for indemnification of nuclear damage as mentioned in its "Records of Applications and Payouts for Indemnification of Nuclear Damage" (2014), available at: www.tepco.co.jp/en/comp/images/jisseki-e.pdf (accessed 10 November 2014).
5. Various articles are available with very varied figures. By way of example, see *La documentation Française: La librairie du citoyen, Tchernobyl, 20 ans après* (2007),

The Fukushima Daiichi and Chernobyl accidents share common characteristics. First, the amount of damage could have been even higher had the accident occurred close to major population centres or if the wind direction at the time of the accident had been different. Second, no compensation was provided by the insurance world. Further, these two accidents did not occur within the framework of the new amended conventions (the latest revision of the Paris Convention has still not taken effect).

These events illustrate some of the challenges facing the world of insurance following the modernisation of the international nuclear third party liability regime:

- Will the insurance industry be able to find funds corresponding to the new amounts that have been set?
- Do the additional damages covered by the revised conventions provide adequate cover for existing risks and will private insurance be able and willing to cover such risks?

Nevertheless, the insurance world has changed a great deal since 2004 and there are many additional issues that have arisen since that time. For example, the economic crisis and the introduction of the European Solvency II Directive⁶ require insurers to take a more stringent line with their commitments. Moreover, after the Fukushima Daiichi accident, a number of questions have resurfaced: are the new insurance amounts sufficient? The age of "nuclear renaissance" has long gone and some countries are distancing themselves from nuclear power in light of its questionable costs; are operators paying a fair price in light of the risks incurred? Finally, Europe is keen to play its part and impose its own rules; what will be the consequences of this development?

This article reconsiders these challenges in light of the 2004 Protocol (which has not entered into force), by focusing in particular on the situation in Europe. Section I looks back at the history behind the conventions and the key principles they set down. Section II highlights the changes made to the Paris Convention as amended by the 2004 Protocol and the problems facing the insurance industry. Section III provides an overview of the various actors involved in the insurance industry and redefines the necessary insurance foundations to cover the challenges described in Section IV. Finally, Section IV covers all the challenges facing the insurance industry since the modernisation of the international nuclear third party liability regime.

I. Conventions governing the international nuclear third party liability regime

A brief history

The problem of nuclear liability cover arose at the advent of the civil nuclear era.⁷ “[C]urrent national and international laws were developed in the mid-

www.ladocumentationfrancaise.fr/dossiers/heritage-sovietique/tchernobyl.shtml (accessed 22 October 2014).

6. Council Directive 2009/138/EC of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), *Official Journal of the European Union* (OJ) L 335/1.
7. Military activities are not covered by the Conventions, as specified respectively by the preamble of the Paris Convention (“DESIROUS of ensuring adequate and equitable compensation for persons who suffer damage caused by nuclear incidents whilst taking the necessary steps to ensure that the development of the production and uses of nuclear energy for *peaceful purposes* is not thereby hindered....”) and the preamble of the Vienna Convention (“HAVING RECOGNIZED the desirability of establishing some minimum standards to provide financial protection against damage resulting from *certain peaceful uses* of nuclear energy...”) (emphasis added).

1940s.”⁸ But, these were primarily national laws; for example, the United States, Canada and the United Kingdom developed their first atomic energy laws in 1946, preceded by only a short margin by France and New Zealand in 1945.

For a time, the only prior experience with nuclear technology occurred in the Second World War; therefore, as soon as the first commercial nuclear reactors made their appearance, there were concerns about the possible effects of a serious nuclear accident and who would be responsible for the consequences to third parties of such an accident. As Julia Schwarz, former Head of Legal Affairs of the Nuclear Energy Agency (NEA), has said, “[r]esistance to nuclear power is largely due to public fears of damage following an accident in a nuclear power plant or during nuclear transport operations”⁹ and this fear is ever-present even now.¹⁰ There was thus a need to find a solution, both to expand this new and very promising industry and to protect the general public.

“One major legal obstacle to th[e] development [of the nuclear power industry] was the application of the ordinary rules of tort law to nuclear incidents”.¹¹ This is why the Vienna and Paris Conventions were negotiated in the 1950s, culminating in the first Paris Convention in 1960.¹² The preamble to the Paris Convention reiterates the two primary objectives mentioned above: “DESIROUS of ensuring adequate and equitable compensation for persons who suffer damage caused by nuclear incidents whilst taking the necessary steps to ensure that the development of the production and uses of nuclear energy for peaceful purposes is not thereby hindered.” In other words, the Paris Convention was intended: (i) to create an economically favourable environment for the emergent nuclear industry; and (ii) to guarantee public protection by granting a minimum sum to be available in the event of an accident. The Vienna Convention reflects the same principles.¹³

The path had thus been laid, ruling out legal and financial uncertainties relating to third party liability actions that might potentially arise in the event of an accident. This means that potential victims have simplified and rapid access to adequate compensation and that liability is clearly defined. These conditions are essential for nuclear operations and shall be considered in more detail at a later stage.

These two conventions were drawn up under the auspices of the OECD and the International Atomic Energy Agency (IAEA) and have been amended since that time: in 1997 in the case of the Vienna Convention and in 1964, 1982 and 2004 in the case of the Paris Convention. The Paris Convention covers most countries in Western

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8. Pelzer, N. (2009), “Nuclear New Build – New Nuclear Law?”, Nuclear Law Bulletin, No. 84, NEA, Paris, p. 5.
 9. Schwarz, J. (2012), “Liability and compensation for nuclear damage”, presentation at the International School of Nuclear Law, NEA and University of Montpellier 1, Montpellier, France, 6 September.
 10. See the survey report requested by the European Commission (EC), reporting that: “Nuclear energy is perceived more to represent a danger than a neutral source of energy. Over half of Europeans think that the risks posed by nuclear energy are greater than the advantages it offers (53%).” European Commission (2007), *Europeans and Nuclear Safety*, Special Eurobarometer 271 / Wage 66.2 – TNS Opinion & Social, p.18, available at: http://ec.europa.eu/public_opinion/archives/ebs/ebs_271_en.pdf (accessed 22 October 2014).
 11. Schwarz, J. (2010) “Liability and Compensation for Third Party Damage Resulting from a Nuclear Incident”, *International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the International School of Nuclear Law*, NEA, Paris, p. 308.
 12. Paris Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982 (“Paris Convention”), 1519 UNTS 329.
 13. Vienna Convention on Civil Liability for Nuclear Damage (1963) (“Vienna Convention”), IAEA Doc. INFCIRC/500, 1063 UNTS 266.

Europe,¹⁴ whereas the Vienna Convention mainly covers countries in Eastern Europe and elsewhere in the world.¹⁵ The Paris Convention is supplemented by the Brussels Convention and both the Paris and Vienna Conventions are linked by the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention,¹⁶ which came into force on 27 April 1992. Finally, the Convention on Supplementary Compensation for Nuclear Damage has been open for signature to any country, including the members of the Vienna and Paris Conventions since 1997, but has still not entered into force.¹⁷

The Euratom Treaty¹⁸ is equally important as a result of the statements made by Günther Oettinger, European Commissioner for Energy, on the future involvement of the European Union (EU) in insurance.¹⁹ The Euratom Treaty was intended to foster the nuclear industry and Article 1, paragraph 2 seeks to bring together the nuclear industries of the member states: "It shall be the aim of the Community to contribute to the raising of the standard of living in Member States and to the development of commercial exchanges with other countries by the creation of conditions necessary for the speedy establishment and growth of nuclear industries."²⁰ The Treaty is not specific to insurance, with the exception of Article 98 according to which: "Member States shall take all necessary measures to facilitate the conclusion of insurance contracts covering atomic risks". This subject is discussed in further detail in Section IV.

Principles of nuclear third party liability

Although the convention system seems complex, the Vienna and Paris Conventions fortunately have major characteristics in common and are both based on the following key principles:

Strict liability or liability without fault of the nuclear operator

This is a classic insurance principle for those sectors in which the victim does not realistically have any ability to prove fault. This simplifies the legal process by removing obstacles, such as the burden of proof. Thus, under strict liability, the victim does not have to prove that the operator is at fault.

Sole liability of the operator of a nuclear installation

This is the well-known channelling principle: all claims are made solely against the operator of the nuclear installation. This means that the supplier or builder of a nuclear installation will be protected in the event of an accident. By channelling the risk to the operator, this simplifies the process and avoids the supplier having to take out insurance, which would be difficult, if not impossible, to obtain. Risk

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14. The latest status of ratifications or accessions can be viewed at the NEA webpage on the Paris Convention on Nuclear Third Party Liability, www.oecd-nea.org/law/paris-convention-ratification.html (accessed 22 October 2014).
 15. The latest status of ratifications or accessions can be viewed at the IAEA webpage on the Vienna Convention on Civil Liability for Nuclear Damage (2014), www.iaea.org/Publications/Documents/Conventions/liability_status.pdf (accessed 22 October 2014).
 16. Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (1988) ("Joint Protocol"), IAEA Doc. INFCIRC/402, 1672 UNTS 293.
 17. Convention on Supplementary Compensation for Nuclear Damage (1997) ("CSC"), IAEA Doc. INFCIRC/567, 36 ILM 1473.
 18. Treaty establishing the European Atomic Energy Community, OJ C 327/1 (26 October 2012) (consolidated version 2012).
 19. Communication from the Commission to the Council and the European Parliament (2012), on the comprehensive risk and safety assessments ("stress tests") of nuclear power plants in the European Union and related activities, COM(2012) 571 final.
 20. Treaty Establishing the European Atomic Energy Community (1958), 298 UNTS 172.

accumulation is one of the insurer's concerns and insuring the same risk twice would be excessive against a background in which the sums insured are inadequate to cover a major accident. In the event of gross negligence, a claim against the supplier should still be possible.²¹

Obligation to maintain financial cover and limit the amount of liability

The operator must obtain insurance or another type of financial security. The operator also has an obligation to maintain this security, which may prove problematic in the event of an accident, as this is usually provided by the private insurance sector. The minimum protection amounts are specified by the various conventions and by national legislation.

By way of example, nuclear third party liability is unlimited in Switzerland and the operator is currently obliged to find security of CHF 1.1 billion from private insurers. In another example, in Belgium, since 1 January 2012, the operator has been required to obtain security of EUR 1.2 billion; the same is true in the Netherlands since 1 January 2013.

Limiting liability with regard to the amounts involved is controversial today. It was understandable at the start of the nuclear era, because it was important to support the development of the nuclear industry, but particularly because there was barely any possibility of seeking higher amounts. Now, opponents of nuclear energy often regard this as a form of subsidy. It seems difficult to renege on this principle in the case of existing installations, but it is a question for new nuclear plants. This point shall be examined in the responses to the challenges facing the nuclear industry.

Limiting liability for nuclear operators in terms of duration

This notion, which is also the subject of much recent debate, entails restricting the operator's liability to a period of ten years (or even 30 years for death and personal injury in the case of the revised conventions). But how can "normal cancer" be differentiated from "cancer due to a nuclear accident" more than ten years after the accident?

Sole jurisdiction of the courts in the countries on whose territory the accident occurred

This means that only the courts in the country in which the accident took place have jurisdiction over compensation claims. There are several advantages to this approach: the legislation will be known to which the compensation claim will be subject (this is a fundamental aspect of any insurance contract) and, in principle, this should provide easier access to justice for victims. This is not always true as, unfortunately, contamination may not stop at national borders. In any event, any legal decision must be taken without any discrimination based on nationality, or the victim's place of domicile or residence.

21. In response to a question on the principle of channelling at an International Symposium in Budapest, Hungary, Dr Norbert Pelzer, consultant and retired academic, Institute of Public International Law, University of Göttingen, Germany, responded: "With regard to channelling, I said that I fully support this principle, as I feel it is necessary. Without legal channelling, nobody would be able to supply anything to nuclear installations as the risk is too great. I agree that there are certain limited cases where we should mitigate the negative effects of channelling: perhaps in the case of contributory negligence, there could be a claim limited to the value of the supply, including possible profits." See (2000), OECD (ed.), Reform of Civil Nuclear Liability: International Symposium, Budapest, Hungary, 31 May – 3 June 1999, NEA, Paris, p. 578.

II. The 2004 Protocol amending the Paris Convention

As mentioned in the introduction, the accident at Chernobyl highlighted the shortcomings of the Vienna and Paris Conventions. It was clear that the damage caused by the Chernobyl accident would never be covered by the amounts specified in these conventions. Furthermore, many countries were not party to any convention and if damage were to occur in those countries, they would not receive compensation except through any bilateral agreement to which they are a party. Thus, Chernobyl served as a kind of shock and the key protagonists in the nuclear world realised they would have to reconsider their approaches to liability.²² The accident, therefore, acted as a catalyst for modernisation of the nuclear third party liability regime with the establishment of the Joint Protocol, followed by the amendments to the Vienna and Paris Conventions.

The amended Paris Convention²³ may pose problems with regard to insurance cover, as the most significant change relates to the amount of compensation.²⁴ Victims will have access to a minimum total figure of EUR 1.5 billion according to the 2004 Protocol amending the Brussels Convention, corresponding to the sum of all three levels as indicated below:

Total ²⁵ (Paris and Brussels Conventions)	Nuclear operator	State where operator is located	Members of the conventions
EUR 1.5 billion	EUR 700 million	EUR 500 million	EUR 300 million

Figure 1: Compensation sums – Amended Paris and Brussels Conventions (2004)

The 2004 Protocol amending the Paris Convention recognises that countries may have unlimited liability, which has enabled Switzerland to sign the new convention and amend its law on third party liability in the field of nuclear energy. This amendment was approved by the Swiss Parliament on 13 June 2008.²⁶ It has already been agreed that private insurers will have to provide insurance of up to EUR 1.2 billion and at least CHF 1 billion if at all possible.

22. The Chernobyl accident also led to the adoption of a number of conventions outside the area of nuclear third party liability, for example: the Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 275, and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 133.
23. To simplify the analysis, it will be limited to examining the changes in the Paris Convention, as the compensation amounts were raised higher. The amended Vienna Convention brought about some changes, of course, but because the compensation amounts remained largely the same, it did not lead to the same discussions as the amendment of the Paris Convention. In any event, the differences between the amended Vienna and Paris Conventions are fairly minimal, which suggests that by merging these two conventions, while allowing for different potential liability limit levels, it would be possible to harmonise definitions and allow everyone to obtain a clearer picture. For the differences between the two amended Conventions, see Currie, D. (2006), "The Problems and Gaps in the Nuclear Liability Conventions and an Analysis of How an Actual Claim Would be Brought Under the Current Existing Treaty Regime in the Event of a Nuclear Accident", *Denver Journal of International Law & Policy*, Vol. 35, No. 1, University of Denver Sturm College of Law, Denver, Colorado, p. 85.
24. Other major changes, such as extended geographical coverage, do not pose a particular problem.
25. Lower limit for transport (EUR 80 million) or low risk installations (EUR 70 million).
26. *Arrêté fédéral concernant l'approbation et la mise en œuvre des conventions relatives à la responsabilité civile dans le domaine de l'énergie nucléaire* (13 June 2008), available at: www.admin.ch/ch/f/ff/2008/4843.pdf (accessed 22 October 2014).

Another important step forward relates to the fact that it is now possible for victims to claim compensation for an increased spectrum of nuclear damage:²⁷

- any economic loss arising from loss or damage if incurred by a person entitled to claim in respect of such loss or damage;
- the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant;
- any loss of income deriving from a direct economic interest in any use or enjoyment of the environment, incurred as a result of a significant impairment of that environment;
- the costs of preventive measures, and further loss or damage caused by such measures.²⁸

The third change is linked to the limitation period, which has been extended to 30 years for death and personal injury to allow victims more time to exercise their rights. In summary, the following improvements have been made: (i) a significant increase in compensation amounts; (ii) a broader definition of nuclear damage; and (iii) an increase in the compensation period.

Insurers were forewarned during the negotiations leading up to the 2004 Protocol amending the Paris Convention that these measures would be adopted. The impact of the changes was noted by Dr Pelzer in the following comment:

In the past, the insurance industry always reacted in a flexible way to meet new requirements. If additional capacity was requested, they provided it. Today for the first time, there seems to be a general reluctance to embark on covering the enlarged risk. Of course, this may be part of the bargaining game, but nevertheless we have to take the concern seriously. There probably is not much leeway for a major increase in the insurance coverage.²⁹

This opinion is also shared by Mark Tetley, an insurance expert, who examined the most important amendments to these conventions in an excellent article and explained the problems facing insurers. He concluded: “Making an industrial ‘polluter’ pay more money to more people is a fair objective for any government, but to impose such a regime on the nuclear industry without restricting the danger posed by these obligations threatens the delicate equilibrium that has allowed insurers to support the nuclear industry throughout its development.”

27. Section I.B of the 2004 Protocol adds a new definition for “nuclear damage” as new Section vii. to Article 1.a. of the Paris Convention. Protocol to Amend the [Paris] Convention on Third Party Liability in the Field of Nuclear Energy (2004), available at: www.oecd-nea.org/law/paris_convention.pdf.

28. *Ibid.*

29. Pelzer, N. (2007), “International Pooling of Operator’s Funds: An Option to Increase the Amount of Financial Security to Cover Nuclear Liability? Discussion Paper for the IAEA INLEX Group Meeting on 21-22 June 2007”, *Nuclear Law Bulletin*, No. 79, NEA, Paris, p. 37.

The financial uncertainties introduced by the new heads of cover under the revised conventions will cause a reduction in insurance cover unless a consistent approach is found to deal with the unquantifiable risks imposed upon the nuclear operators. An inconsistent approach will lead to a fragmentation of the existing legal and insurance arrangements, which in turn will compromise the original convention drafters' objectives of legal harmonisation and an equitable and certain route to compensation for nuclear accident victims.³⁰

So what is the situation today, almost ten years after these remarks were made? The final section of this article will attempt to answer this question, but first considers the key protagonists in the insurance world and examines a number of principles associated with the insurance business.

III. The insurance industry

Players in the insurance industry

The pooling of risks forms the very basis for insurance and is by no means specific to the nuclear sector. Risks can thus be maintained by the insured party (self-insurance, sometimes in the form of captive insurance) or transferred to an insurer or to a mutual insurance company (particular kind of insurance set up to insure the risks posed by its members subject to payment of a fixed or variable premium). In general terms, if the catastrophic risk is very high, these insurers (or mutual insurance companies) transfer part of this risk to reinsurers who sometimes reinsure in turn or transfer part of the risk to the financial markets (for example, by means of securitisation). However, where nuclear risks are concerned, this transfer of risk to reinsurers takes place directly within nuclear insurance pools, where each party (insurer or reinsurer) accepts and maintains its share of the risk.

The total premium volume is estimated to be around USD 750 million,³¹ this being shared mainly between the pools and the mutual.

There is another party that plays a key role: the state. This generally applies if the risk cannot be covered, for example in the event of unlimited cover or events that cannot be insured (such as war) or that can only be insured partially (such as terrorism, which is generally subject to sub-limits).

Insured parties via captive insurance companies

Insured parties have the option to reinsure themselves via pools, mutual insurance companies or international reinsurers through their captive insurance companies.³² The aim is to maintain part of the risk by accumulating reserves, which can thus be used in the event of an incident, but also allowing insurers to compete by increasing or decreasing the involvement of the captive company and thus managing the insurance budget. The majority of the major industrial conglomerates use this

30. Tetley, M. (2006), "Revised Paris and Vienna Nuclear Liability Conventions – Challenges for Nuclear Insurers", *Nuclear Law Bulletin*, No. 77, NEA, Paris, p. 39.

31. See Tetley, M. (2012), "Third Party Liability Insurance for Nuclear Risks", presented at the International School of Nuclear Law, NEA and University of Montpellier 1, Montpellier, France, 7 September.

32. A captive reinsurance company is an insurance or reinsurance company that belongs to an industrial or commercial company whose primary business is not insurance. Its aim is to cover the risks of the group to which it belongs. Essentially, the captive insurance company charges the industrial or commercial company and its subsidiaries' premiums and, in return, covers their losses. See "Captive de réassurance", www.lesechos.fr/finance-marches/vernimmen/definition_captive-de-reassurance.html (accessed 7 November 2014).

system to manage their insurance centrally and these captive companies are often based in Malta, Dublin or Luxembourg.

The operators thus keep part of the exposure on their balance sheets, which explains the preference for using captive insurance companies for damage risks (short-term) rather than third-party liability (long-term). This is because captive insurance companies, like insurers, are subject to capital and solvency constraints.

There are other possibilities, such as security granted by parent companies, bank lending or even "catastrophe bonds" (discussed later in this article).

Pools

Nuclear third-party insurance is for the most part provided by national nuclear insurance pools established as the civil nuclear industry developed, because insurance companies were unable to provide the required capacity themselves. Pool members offer their capacity on a net retention basis; this is an important feature that helps the members to manage their worldwide capacity. The main objective of a pool is to provide insurance to their local operators, and if the capacity of the local pool is not sufficient they usually can get reinsurance from foreign pools. The operating system is shown clearly in the following diagram.

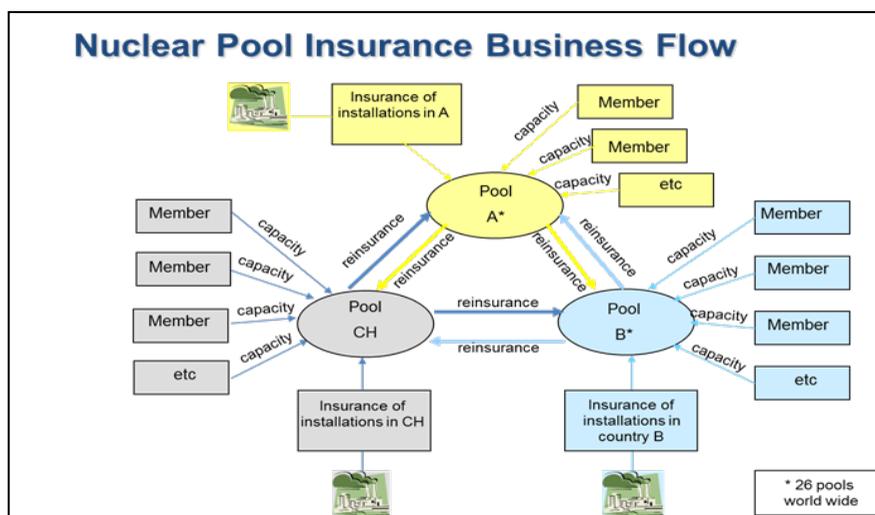


Figure 2³³

Pools have many advantages, such as: considerable cover capacity; a solid financial backing thanks to the wide range of participants; the ability of their members to manage major incidents; and their expertise and knowledge in the nuclear field. Their detractors, however, tend to point out their very dominant position, which could lead to a certain degree of inflexibility.

Mutual insurance companies

Within Europe there is basically one mutual insurance company that provides nuclear third-party liability cover in addition to the commercial cover offered by the

33. Reitsma, S. (2012) "Nuclear Third Party Liability and Insurance of Nuclear Risks", presented at the International School of Nuclear Law, NEA and University of Montpellier 1, France, 7 September 2012.

pools for operators of nuclear power plants: the European Liability Insurance for the Nuclear Industry (ELINI), established in 2002.³⁴

ELINI is a mutual association of approximately 40 nuclear operators (members) and, according to its website, the maximum insurance capacity per risk in 2013 was EUR 89 million, with its own retention of a maximum of EUR 50.5 million.³⁵ In June 2011, ELINI's members created "Blue Re", which, according to ELINI, will be able to provide additional capacity of up to EUR 700 million if necessary. However, in the light of ELINI's current holdings, it does not look likely that this will be possible in the short term.

ELINI's biggest strength is that it provides an insurance product that satisfies all the new financial security requirements of the amended conventions. There are a number of reasons for this specific position:

- The amounts used by ELINI to date are minimal.
- In the event of a loss, ELINI can ask its members to recapitalise for a sum equivalent to several times their annual premium.
- ELINI's member are nuclear operators and this is thus an indirect way of maintaining financial security and re-establishing the security amounts that they are in any event legally obliged to maintain and to re-establish.

The small amount of available capital, EUR 56 million, also has the advantage of involving a low capital cost. But, this is also one of ELINI's weaknesses, in that it could only deal with one major incident. Another point of concern is the experience and resources available in the field of claims management.

This explains why ELINI can only be regarded as one solution for the time being; it is a significant solution, admittedly, but only a partial solution as far as the members are concerned. In the event of more than one incident, members would thus be required to incur losses. This means that each member has to consider cautiously if the risk and quality profiles of other members are equivalent, as otherwise they would in effect be subsidising them.

The traditional insurer/reinsurer market

A large proportion of the players in the traditional insurer and reinsurer market already offer nuclear capacity via pools, allowing each pool to deploy the maximum insurance capacity on a market-wide basis. In this respect, the nuclear liability risk (based on the current conventions) is limited in its scope and the amounts covered. It is therefore of potential interest in terms of profitability, but also in terms of calculating solvency, and nuclear risk makes it possible to diversify their portfolio. However, based on the new conventions, the situation may have to be reassessed.³⁶

Traditionally, reinsurers such as Swiss Re, Munich Re or the American firm Berkshire Hathaway have been major suppliers of traditional reinsurance capacity. These firms have a strong financial grounding and use the most sophisticated underwriting procedures. There is no doubt that they will be the preferred contacts if a more global solution is ever developed.

A newcomer to this field, Northcourt, was established in Malta in 2012 with Amlin (one of the Lloyd's syndicates) as lead insurer, offering damage cover with a

34. There are other mutual insurance companies in the damage sector (EMANI and NEIL) and in the third party liability sector.

35. European Liability Insurance for the Nuclear Industry (2013), *Annual Report*, available at: www.elini.net/ELINI%20annual%202013%20LQ.pdf, p. 18 (accessed 22 October 2014).

36. See e.g. the constraints due to Solvency II discussed below.

declared capacity of USD 200 million. Northcourt intends to move into the sector of nuclear third party liability and, according to its CEO, Alan Rickett, “Northcourt is a timely response to the shortage of capacity in the traditional global nuclear insurance market, for too long dominated by nuclear pools and mutuals”.³⁷ There is no certainty that this will lead to a fundamental change in the situation. This is because the suppliers of Northcourt’s capital are the same as those supplying capacity to some of the pools, and it looks more like an opportunity to provide a more global package.

Financial markets

Another solution is something known as “catastrophe bonds” (or CAT bonds), which operators or insurers can take out on the financial markets. Swiss Re addressed this topic in March 2011 and confirmed that catastrophe bonds for nuclear risks merely offer very limited capacity at a high price.³⁸ According to Swiss Re, such a solution could only ever be one aspect of a global solution covering other traditional forms of reinsurance.

Today, the global catastrophe bond market is well in excess of USD 10 billion and individual transactions generally range between USD 200 and 500 million. The high cost of capital from the financial markets, combined with uncertainties regarding nuclear risk, would cause the price of a “nuclear” CAT bond to be higher than the prices usually seen in reinsurance. However, we should note that the price of CAT bonds have recently tended to decrease over time.

To place a CAT bond with investors (financial institutions, reinsurers, etc.), a transparent risk analysis would be required, which would entail finding a company, independent if at all possible, with expertise in the nuclear industry and in risk modelling. Catastrophe bonds must also satisfy important technical requirements such as an activation mechanism or an index published by an independent organisation. In the case of nuclear risks, one trigger might be a combination of radiation intensity, the irradiated surface area or the degree of severity of the accident, e.g. a rating of INES 5 or 6 on the International Nuclear and Radiological Event Scale.³⁹

The state

Depending on the country in question, operators and pools actively seek solutions with the state to close gaps in the traditional insurance market. The aim is to avoid any gaps in cover and to find operational solutions when laws enter into force on a national level. If none of the players from the world of insurance are able to offer complete cover, the solution is often state intervention. There are many examples of this; in Switzerland, for example, the law defines the risks that are excluded from the insurance obligation (for private insurers) and that are thus insured by the state in return for a premium.

37. “Lloyd’s Leads Innovative Global Nuclear Programme” (2012), www.lloyds.com/news-and-insight/news-and-features/lloyds-news/lloyds-news-2012/lloyds-leads-innovative-global-nuclear-programme?redirected=true (accessed 10 November 2014).

38. *Neuer Zürcher Zeitung* (2011), “AKW-Risiken kaum versicherbar: Swiss Re zweifelt sowohl an Versicherungs- wie auch an Kapitalmarktlösung”, available at: www.nzz.ch/aktuell/wirtschaft/uebersicht/begrenzte-kapazitaet-fuer-risiko-absicherung-am-markt-1.10012986 (accessed 22 October 2014).

39. IAEA (n.d.), “INES: International Nuclear and Radiological Event Scale”, www.iaea.org/Publications/Factsheets/English/ines.pdf (accessed 22 October 2014).

Insurance principles

The aim below is not to reiterate all the principles forming the basis for an insurance contract covering the rights and obligations of each party, the legislation applicable to the contract, etc, but rather to better understand the reluctance of insurers to offer coverage for objects or events that are not sufficiently defined in the conventions.

Random risk

The risk accepted by the insurer must be an uncertain event and must not entail a moral hazard. Insurance cover is usually limited to an identified, unforeseen and unexpected accident caused by either a *sudden event*, identified as happening at a specific time (e.g. fire, explosion), as recognised from the term "sudden and accidental" event; or a *gradual event* (e.g. gradual pollution). In the second case, there are many conditions that need to be defined (for example: right of recourse against the insured party, clear assignment of a specific loss to a precise moment in time, limited retrospective cover and clear definition of the activation mechanism among others).

Risk definition

As a general rule, the objects or events that are insured or not insured (exclusions) are defined in clear terms. Whilst the conventions define a framework and key principles, it is up to national legislation to define these individual elements.⁴⁰ Unfortunately, national legislation does not often define these elements and terms as vague as "adequate" or "exceptional" are used in national legislation to avoid being out-of-step with the above-mentioned conventions. The big question therefore is: who will fill the gaps between the law and the operator's insurance cover that may potentially arise. Thus, insurers owe it to themselves to more clearly define these elements.

Cancellation

Each party has the option to cancel the policy, especially after each incident occurs. This is an arrangement that allows each party to renegotiate conditions (financial or otherwise) or that enables the insured party to change its panel of insurers (e.g. to increase its retention).

Risk premium

The premium that the insured party undertakes to pay corresponds to an insured risk. The premium comprises various aspects that correspond to the risk of a loss (based on a statistical calculation incorporating the probability of the loss occurring), the costs incurred and the capital provided by the insurer.

In the case of nuclear risks, these are not simple calculations and the law of large numbers really does not apply, since the number of risks is restricted (437 reactors currently in service⁴¹) and the loss experience is very low. There is no fundamental reason why the risk could not be insured and it is possible to work out a risk premium using models. However, few insurers have the resources to carry out these calculations. The more established pools have developed a calculation method based on existing databases such as, for example, nuclear accidents and incidents that

40. See the Preamble to the Paris Convention: "CONVINCED of the need for unifying the basic rules applying in the various countries to the liability incurred for such damage, whilst leaving these countries free to take, on a national basis, any additional measures which they deem appropriate".

41. IAEA Power Reactor Information System (2014), "Database on Nuclear Power Reactors", www.iaea.org/pris/ (accessed 10 November 2014).

have occurred to date (Three Mile Island, Chernobyl and Fukushima Daiichi are the best known, but they are not the only instances) or losses associated with conventional power stations, which can be extrapolated to the nuclear industry.

In other words, it is possible to calculate a figure, but it is essential to define the risk properly and to avoid grey areas. In this connection, we should point out that the topic of the price of electricity from nuclear sources is subject to controversy because this price is alleged not to reflect all costs and risks associated with the nuclear industry; in other words, there is a hidden subsidy benefitting nuclear operators. Equally, the cost of insurance is shown as being very low. Without getting mired in this debate, it should simply be reiterated that the amounts insured are also low. Thus, it cannot be said that the price of insurance is too low; it is merely a consequence of the situation.

Financial and operational capacity

The insurer's services must be in keeping with its financial capacity (sum insured) and operational capacity (claims management). This is also one of the recommendations of Insurance Europe (formerly the *Comité Européen des Assurances*, or CEA) when insuring nuclear risks. In a letter addressed to the European Commission, the IAEA and the NEA, dated 24 June 2003, the CEA points out that its objective is to ensure that the regulatory authorities do not overlook the financial and technical capacities required to manage a large number of claims.⁴²

In the meantime, due to the financial crisis, the Solvency II Directive⁴³ redefines the solvency margins for insurance and reinsurance companies and thus equity capital requirements.

IV. Challenges facing the insurance industry

There are thus many challenges and Dr Pelzer briefly summarised the insurance industry's main points of concern:

- costs of measures of reinstatement of impaired environment [Articles I(1)(k)(iv) VC, 1(a)(vii)(4) PC, I(f)(iv) CSC];
- loss of income deriving from an economic interest in any use or enjoyment of the environment [Articles I(k)(v) VC, I(f)(v) CSC]; ...deriving from a direct economic interest... [Article 1(a)(vii)(5) PC];
- costs of preventive measures [Articles I(1)(k)(vi) VC, 1(a)(vii)(6) PC, I(f)(vi) CSC];
- coverage of nuclear damage caused by radioactive emissions within the permitted dose limits under normal operational conditions;
- coverage of nuclear damage caused by a nuclear incident directly due to a grave natural disaster of an exceptional character;
- coverage of nuclear damage which becomes evident more than ten years after the nuclear incident occurred; that applies to claims for compensation of personal injury the period of prescription or extinction of which extends to 30 years from the date of the nuclear incident [Articles VI(a)(i) VC, 8(a)(i) PC;

42. *Comité Européen des Assurances* (2003), Letter regarding nuclear liability insurance and the role of nuclear liability insurers in the compensation of nuclear accident victims, available at: www.insuranceurope.eu/uploads/Modules/Publications/position181.pdf.

43. Council Directive 2009/138/EC of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), OJ L 335/1.

the CSC does not extend the period of personal injury to 30 years, Article 9(1) Annex to CSC];

- in a number of States, there might be difficulties to cover the minimum amounts of liability of SDR 300 million under Articles V VC, II(1)(a) CSC and in particular of EUR 700 million under Article 7(a) PC;
- insurance industry finally expressed concern regarding the costs of claim handling in the case of a major nuclear accident where possibly many thousands of justified and unjustified claims have to be dealt with.

Actually, this list of “problematic risks” covers nearly all of the improvements of nuclear liability law and of victims’ protection gained by the revision exercises. That means the shortcomings in insurance coverage are dramatic.⁴⁴

As explained above, many issues have arisen as a direct result of modernising the conventions. Thus, the challenges associated with the following aspects against the current economic and competition background will be examined: the increase in compensation amounts; a wider definition of nuclear damage; and an increase in the compensation period. The challenges associated with the EU joining the debate, a move that could be game-changing as far as the insurers are concerned, will also be considered.

Sum insured

Availability

Earlier in this text, Dr Pelzer was quoted regarding the problems in covering the minimum liability sums of SDR 300 million (as specified in the 1997 Vienna Convention) or EUR 700 million (as in the amended Paris Convention). It now appears, by analysing the relevant players in the insurance field, that even the sum of EUR 1.2 billion is available without any problem.

Belgium has applied this limit since 1 January 2012 and the Netherlands since 1 January 2013 and the pools have made this sum available. In this respect, note that the Belgian and Dutch pools are not amongst the largest pools: they have their own relatively low local capacity and are thus dependent on the capacity provided by the other pools. In other words, larger pools may have access to even higher amounts. By way of example, some European operators obtain sums on the order of EUR 2.5 billion from private insurers to cover all their needs.⁴⁵ If the capacities claimed by other parties (ELINI and Blue Re, EMANI, Northcourt) are then added to the pool capacities, there is no doubt that the sums available could be higher.

Therefore, a sum insured for nuclear third party liability of up to EUR 1.2 billion is no longer a challenge in the strict sense of the word. This being so, why is there doubt about the available sums and the problems in finding cover? Several factors are involved:

- Price: private insurers are keen to make a return on their investment and the price must reflect the risk. The price obtained by the operators thus does not

44. Pelzer, N. (2007), “International Pooling of Operator’s Funds: An Option to Increase the Amount of Financial Security to Cover Nuclear Liability? Discussion Paper for the IAEA INLEX Group Meeting on 21-22 June 2007”, *Nuclear Law Bulletin*, No. 79, NEA, Paris, pp. 46-47. The acronyms “VC”, “PC” and “CSC” stand for the Vienna Convention, Paris Convention and Convention on Supplementary Compensation.

45. The amount quoted refers to the sum of third party liability and damage cover. As a general rule, the parties express their available capacity as the amount available for all insurance which may accumulate in the event of nuclear damage.

allow all pools to participate, or only with a limit that is lower than their capacity.

- The quality of the risk: this varies from one installation to the next and differs from one country to another. This may explain why a particular party does not wish to get involved.
- The risk of accumulation if an event hits different installations simultaneously: this again differs from one country to another and may reduce drastically the capacity available as the available capacity will have to be shared between several installations.
- The extent of the cover: some security aspects or cover extensions are not covered by the insurers and as such do not find any takers.

Also note that non-compulsory cover (insurance coverage for property loss) is sometimes much larger, in terms of the sums involved, than cover for nuclear third party liability.

Renewal of the sum insured

Article 10(a) of the amended Paris Convention not only specifies an insured amount, but also states that this amount must be maintained: “To cover the liability under this Convention, the operator shall be required to have and maintain insurance or other financial security of the amount established pursuant to Article 7(a) or 7(b) or Article 21(c) and of such type and terms as the competent public authority shall specify.”

The Paris Convention is generally retransposed into national legislation. Swiss law, for example, makes the following stipulations in this respect:

Art. 16 Re-establishing full cover

1. If a service provider providing private cover has supplied services or established reserves following a nuclear accident and these services or reserves represent one tenth of the amount of cover, the service provider must notify the person taking out the cover and [the Swiss Federal Office of Energy].
2. The operator of the nuclear installation must then obtain supplementary cover up to the sum of the initial cover in anticipation of a future loss.⁴⁶

In general terms, insurance policies are limited by accident, by site and for the duration of operations on site. In other words, there is no further insurance amount available after a major accident and this amount is reduced (by the amount of the loss) in the event of a minor accident. Although this is entirely feasible following a minor incident, the operator may come up against an insoluble problem if he needs to obtain full cover again after a major claim.

But, under what conditions would an insurer agree to cover an installation that had experienced an incident? This could not, under any circumstances, be an automatic renewal. Where would the line be drawn with such renewals: after one, two, three or more? This would be akin to unlimited cover, but insurers do not have unlimited capital and such a mechanism would contravene the right to cancel after a claim. After all, one does not insure a burning house.

46. *Loi fédérale sur la responsabilité civile en matière nucléaire du 13 juin 2008*, FF 2008 4845 – 4858, available at: www.admin.ch/ch/f/ff/2008/4843.pdf.

Operators often claim that it is essential to renew at a price fixed in advance, but this might as well be a blank cheque. So why is there this reluctance on the part of insurers? Let us consider a site with two reactors. The first reactor experiences a nuclear accident, the site is evacuated and then the second reactor also experiences a nuclear accident a few days later. Depending on whether the accidents are regarded as one single event or two separate events,⁴⁷ the insurer might be required to pay out twice if automatic renewal applies. Moreover, even if they were regarded as two events, it would be very difficult to distinguish between the damage associated with the respective incidents. Further, in the event of a claim, an in-depth appraisal of the sites would need to be carried out; only then can the insurers decide whether to renew the policy subject to a new premium to be calculated in order to continue the cover. There are other possibilities such as a parent company guarantee, but this may not always be feasible or adequate. The financial position of an entity such as TEPCO after the Fukushima accident justifiably suggests that this may not be the case. As a last resort, a state guarantee might be conceivable in return for a premium to be defined.

Inadequate amounts

If the amounts proposed by the conventions are available, the question remains whether these amounts will in fact be enough. One does not need to conduct a complete assessment of the potential cost of major accidents such as Three Mile Island, Chernobyl or Fukushima to realise the answer to this question. Depending on the reactor's proximity to a major population centre and the economic status of the country in question, it is quite clear that cover in terms of tens of billions would be nearer the mark. Moreover, a major accident is not only a human disaster, but also an environmental and economic catastrophe, three aspects that are reflected in the modernised conventions. The necessary amounts can thus not be insured under normal market conditions.

The insurance industry cannot resolve this problem in isolation. There must in the first instance be a political willingness not to seek to protect the nuclear industry as was the case in the 1950s, but to "safeguard" it or limit the consequences of a major event (so-called "stress tests"). Nor is this a case of supporting or subsidising the nuclear industry.

Against this background, the insurance industry, the world of finance and industrial companies could be asked to get involved. This is probably wishful thinking in the current climate, but it would certainly be the only way of obtaining such large sums. The insurance industry could play a leading role in this process (setting prices, managing claims), and this solution would offer the huge advantage of putting an end to any discussion of subsidies for the nuclear industry. The crux of the matter would doubtless boil down to whether operators would be prepared to pay for such extensive insurance.

The financial crisis and Solvency II: consequences

The recent past has been defined by the financial crisis, leading specifically to insurers being more cautious about cumulative risks. In order to manage this risk, it is important for large international insurers to get from the pools a full overview of their capacity used over the world.

The adoption by the EU of the Solvency II reform also represents a major change and the "sub-prime" crisis has backed up the need for such a reform (which is now

47. This question was debated in connection with events at the World Trade Center on 11 September 2001. See Tuckey, S. (2006), "Court Rules WTC Attack was Both One Event and Two Events", *Insurance Advocate*, Vol. 117, Issue 23, p. 11.

being postponed to 1 January 2016). It differs from Solvency I in that the capital required is no longer calculated based on premiums and losses, but as a function of exposure to risk (underwriting risk, operational risks, market risks, etc). Solvency II should thus make it possible to guard against systemic risks by requiring insurers to establish an adequate level of capital. An example of a reduction in the available capacity linked to the exposure and therefore to the capital needs is where, in the event of automatic renewal, some pools only make available part of their capacity to allow for a potential second event.

Solvency II applies to all parties in the world of insurance, and as such, organisations like mutual companies that are only present in nuclear insurance and do not have a particularly diversified risk portfolio, may find it difficult to comply with this directive. Insurers who are members of a pool, on the other hand, will have a certain advantage based on their profile, allowing them to diversify their conventional portfolio thanks to their involvement in the pool.

In summary, some aspects of cover (e.g. extended liability over time) will have a by no means negligible effect on the necessary capital. Unfortunately, this is one aspect that is often unknown or misunderstood and as a result is not taken into account properly when calculating prices at present. Further, capital availability is likely to become more restricted and therefore more expensive for some parties, and it is important that the regulatory authorities ensure that everyone is subject to the same rules.

A wider definition of nuclear damage

Environment

The protection of the environment is a noble cause, and rightly so. As such, it must be respected and this concept has become deeply entrenched in nuclear law.⁴⁸ In any event, the 2004 Protocol amending the Paris Convention is not found wanting in this respect, and has introduced coverage for the cost of measures to reinstate an impaired environment and any ensuing loss of income.⁴⁹ Insurers have on many occasions expressed their opinion⁵⁰ that nuclear risks should not be included in the European Environmental Liability Directive (ELD).⁵¹ Nevertheless, it should be noted that even if nuclear insurance does come under the ELD, nuclear power stations also create non-nuclear risks, such as changes in the quantity, quality or temperature of water, which are liable to lead to potential exposure to environmental damage.

Coming back to future cover, in the words of Roland Dussart-Desart:

The extent of the environmental damage that can be taken into consideration is governed by a number of factors:

- it is limited to the effective reinstatement of the impaired environment;
- insignificant impairment is excluded;
- the reinstatement measures must be reasonable;

48. See Emmerechts, S. (2008), “Environmental Law and Nuclear Law: A Growing Symbiosis”, *Nuclear Law Bulletin*, No. 82, NEA, Paris, pp. 91-110.

49. See definition according to Article 1(a)(vii) of the Paris Convention.

50. CEA Note (2003), “Position paper by nuclear risk insurers of the Comité Européen des Assurances on the draft directive relating to environmental liability for the prevention and restoration of environmental damage”, available at: www.insuranceeurope.eu/up/loads/Modules/Publications/position164.pdf (accessed 22 October 2014).

51. Council Directive 2004/35/EC of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, OJ L 143 (30 April 2004), p. 56.

- they have to be approved by the competent authorities;
- measures to reintroduce destroyed components must also be reasonable.⁵²

This may seem reassuring, but these are vague definitions (for example, the words “effective”, “insignificant” and “reasonable”) that do not make it easy to calculate risks. This goes right to the heart of the problem: how to quantify the risks and how can losses be assessed. The insurance currently available under the new ELD is very restrictive and complex. Furthermore, the Paris Convention does not distinguish between all other risks covered to date and the total limit that is also available for environmental damage and any ensuing loss of income. The fact that there is just one limit available for the lifetime of the installation may thus lead to the following cases that may appear incongruous to say the least:

- In the event of an average claim that only affects the environment, the remaining cover available for potential victims of a major accident would be restricted.
- In the event of a major claim, the cover would not be sufficient; thus how could one possibly say that victims should not take priority over the environment?

In summary, if we are to cover environmental damage, it would be useful to define this cover in more transparent terms. Unless this is done, there are likely to be too many gaps in the cover, or, even worse, some insurers may reduce or withdraw their capital from the nuclear sector. There is much debate on this subject at present, but there has been little change in definitions as a result. This lack of visibility will doubtless cause insurers to restrict their cover by using sub-limits. The question of who is going to cover the rest remains unanswered.

Discharges within authorised limits

This is a surprising aspect of financial security that covers claims associated with ionising radiation within authorised limits. In other words, the regulator would allow the operator of a nuclear power station to operate entirely lawfully with emissions within the authorised limits because these are not deemed to be dangerous, yet by the same token the operator could be condemned for having done so. It is hardly necessary to say that insurers are not very happy with this situation because the notion of an unforeseen event does not apply since authorised discharges are not unexpected events.

To date, this risk has generally been excluded or covered by a sub-limit or by a right of recourse against the operator. However, this cover may be subject to debate. Thus, according to section 8 of the *Exposé des Motifs* (Explanatory Statement) of the Paris Convention:

A nuclear incident is defined as any occurrence or succession of occurrences having the same origin which causes damage, provided that the occurrence or succession of occurrences, or any of the damage caused, are due to radioactivity... Thus, for example, an uncontrolled release of radiation extending over a certain period of time is considered to be a nuclear incident

52. Dussart Desart, R. (2005), “The Reform of the Paris Convention on Third Party Liability in the Field of Nuclear Energy and the Brussels Supplementary Convention: An Overview of the Main Features of the Modernisation of the two Conventions”, *Nuclear Law Bulletin*, No. 75, NEA, Paris, pp. 14-15.

if its origin lies in one single phenomenon even though there has been an interruption in the emission of radioactivity.⁵³

Although this exposure is not particularly large in today's terms, the revised Paris Convention makes two important changes to this cover: (i) the increased limit previously specified (EUR 1.2 billion), and particularly (ii) extension of cover, specifically to include environmental damage.

Uncertainties associated with the new extended cover in conjunction with the foreseeable aspect of discharges lead to an increase of risk. In addition, the ALARA (As Low as Reasonably Achievable) principle, which is reflected by an ever-reducing tolerance of radiation in the environment, could leave insurers exposed in the future for emissions that are considered normal nowadays. Finally, if the insurance limit is an annual limit, there is a risk that the policy amount could be claimed each financial year.

On the other end, the provability (i.e. the ability to demonstrate by evidence the actual existence of radiation effects) is an issue. According to Abel J. González from the Argentinian Nuclear Regulatory Authority (also United Nations Scientific Committee on the Effects of Atomic Radiation Representative, International Commission on Radiological Protection Vice-Chair and IAEA Delegate), it is impossible and therefore incorrect to attribute health effects to very low-dose radiation exposure situations.⁵⁴

It is therefore important to understand the risks and enter into a dialogue regarding possible solutions, such as: (i) putting forward a reasonable limit for this kind of emissions within authorised limits and (ii) maintaining a wording that would prevent the accumulation of annual limits over time.

Limitation periods

It seems obvious that implementation of the 30-year limitation period is one aspect that will not be insurable without a corresponding increase in premiums. The level of premiums is just one part of the problem, however, as explained so succinctly by Tetley.⁵⁵ One of the reasons why insurers will not be able to provide the necessary capacity is linked to the ability to demonstrate by evidence the actual existence of radiation effects after a long period. Another reason is yet again linked to the capital requirements imposed by Solvency II, which stipulates the ability to maintain solvency over a very long period; this is a problem that has already been encountered in life insurance. The solution is to limit insurance cover for limitation periods to ten years. Once again, dialogue with the legislators is essential.

Terrorism and the rules of international commerce

Everything changed in 2001 with the 9/11 attacks. Events at the World Trade Center are omnipresent in the minds of insurers, especially the major reinsurance companies. Every conceivable scenario must be considered a possibility and the fear of nuclear power (especially so-called "dirty" bombs⁵⁶) has led to extensive

53. NEA, Revised text of the *Exposé des Motifs* of the Paris Convention, approved by the OECD Council on November 16, 1982, sec. 8, available at: www.oecd-nea.org/law/nl/paris_motif.html.

54. González, A. (2014) "Key Note Address: Imputability of Health Effects to Low-Dose Radiation Exposure Situations", presentation at the Nuclear Inter Jura 2014 – Buenos Aires, International Nuclear Law Association, Buenos Aires, Argentina, 20 October.

55. Tetley, M. (2006), "Revised Paris and Vienna Nuclear Liability Conventions – Challenges for Nuclear Insurers", *Nuclear Law Bulletin*, No. 77, NEA, Paris, p. 27.

56. A so-called "dirty bomb" is a conventional bomb packed with radioactive material so that the surrounding area becomes contaminated with radioactive dust in an explosion.

discussions when setting up "terrorist" pools in the years following the attacks. But, some of the specialist pools such as Gareat (France), TRIA (United States), Extremus (Germany), NHT (Netherlands), TRIP (Belgium) and Pool Re (United Kingdom) do not include exposure associated with nuclear power stations.

Indeed, apart from several countries where the general insurance market does not cover terrorism, cover is always available from nuclear pools. This sometimes includes sub-limits, which are mainly due to an aversion to terrorist risks by a number of Anglo-Saxon insurers. In this case, the risk is usually covered by the state, sometimes in return for a premium. Nevertheless, the fear of terrorism is abating and many insurers offer capacity without specifying a sub-limit for terrorism risks. This could potentially change with the new ceilings imposed by the Paris Convention, but these changes will be linked primarily to those countries in which the risk is located. In this case, the challenge is to maintain a dialogue with the legislator because any changes (for example a resurgence of terrorism on a large scale) may drastically reduce the amount of capacity available at any given time.

However, there is another concern on the horizon, often linked to criminal or terrorist activities (by individuals, groups such as Al-Qaeda, or states): this centres on the fines⁵⁷ imposed on bodies, for the most part financial bodies, which do not respect the rules of international commerce and the sanctions imposed by the United Nations or the EU (for example those imposed against Libya⁵⁸ and Iran⁵⁹). Insurers are now introducing clauses such as the one below to cover such instances:

No insurer shall be deemed to provide cover and no insurer shall be liable to pay any claim or provide any benefit hereunder to the extent that the provision of such cover, payment of such claim or provision of such benefit would expose that insurer to any sanction, prohibition or restriction under United Nations resolutions or the trade or economic sanctions, laws or regulations of the European Union, United Kingdom or United States of America.⁶⁰

Natural disasters

Sophisticated models have been in use for some years now to estimate the amount of claims. Reinsurers have a considerable involvement in areas where natural disasters occur (for example, earthquakes in California or Japan or storms in Europe), and were very keen to implement such models. They define an amount they can assume by defining a solvency threshold that must not be exceeded and corresponds to their own capital.

The accident that occurred at the Fukushima Daiichi nuclear power plant confirmed that an event can affect a large number of sites at the same time and made the world of nuclear insurance as a whole aware of this aspect. What would have happened if the Japanese plants had been insured against the risk of natural

57. For example, in 2012, HSBC agreed to pay at least USD 1.9 billion in fines, Standard Chartered agreed to pay USD 327 million, and ING paid USD 619 million in fines. Farrell, G. (2012), "HSBC Said to Pay at Least \$1.9 Billion in U.S. Probe", *Bloomberg*, available at: www.bloomberg.com/news/2012-12-10/hsbc-said-to-pay-at-least-1-9-billion-in-u-s-probe.html (accessed 22 October 2014).

58. Council Implementing Regulation (EU) No. 360/2011 of 12 April 2011 on implementing Article 16(1) and (2) of Regulation (EU) No 204/2011 concerning restrictive measures in view of the situation in Libya, OJ L 100/12 (14 April 2011).

59. Council Regulation (EU) No. 359/2011 of 12 April 2011 concerning restrictive measures directed against certain persons, entities and bodies in view of the situation in Iran, OJ L 100/1 (14 April 2011).

60. Lloyd's Market Association (LMA) 3100 Sanction Limitation and Exclusion Clause. Clause quoted by way of example; there are many equivalent clauses.

disasters? Would all those involved in the insurance world have been able to honour their commitments knowing that not only liability insurance, but also damage insurance and operating losses would have been affected? The question does not arise because this risk was not insured by the insurance industry. However, Fukushima Daiichi is not the only site in the world that has such a concentration of reactors; as a result, insurers need to take this reality into account and avoid jeopardising a system by controlling the capacity made available. In the case of many of the parties involved, the problem lies in obtaining reliable information and having the knowledge to make use of such information. History has taught us that natural disasters repeat themselves, as we know, but often in a different and unexpected form.

The challenge is therefore to obtain a realistic vision of the possible scenarios so that each party can commit themselves knowingly, without any risk of becoming insolvent in the event of a disaster scenario.

A surfeit of conventions?

Since 1960, a number of liability conventions have developed. Moreover, within the Vienna regime, countries may be party to the Vienna Convention of 1963 or to the Vienna Convention of 1997. This abundance of conventions does not make it easy to harmonise the various systems and poses a barrier to greater transparency for the general public and potential victims, and also for the legislator or to operators who are subject to different regimes.

Moreover, many countries, whether or not they have nuclear power plants, are not party to any international conventions. Given that “radioactive clouds” do not stop at national boundaries, this may have serious consequences for victims, leaving them without any compensation rights (other than bilateral agreements between countries, which add yet another layer to the opacity of the situation).

At a time when the nuclear industry lacks uniform support, it would be good to agree to at least establish geographical blocs such as, for example, North America, Europe or Asia, and to create common regimes so that victims are covered in a fair and equitable fashion. If a worldwide single convention would be of course ideal, geographical blocs would have the advantage of covering an entire nuclear accident in most cases. From an insurance point of view, a harmonisation would also make sense allowing insurers to use the same definitions (e.g. nuclear installation, nuclear damage) for their worldwide activities.

However, nothing is likely to happen in the near future. There have certainly been harmonisation attempts between the custodians of the conventions (the NEA and IAEA), and progress have been made through the revised Paris and Vienna Conventions (e.g. with an increase of geographical scope) and the CSC, but they are not yet in force and the conventions themselves still contain differences that prevent them from being regarded as a single unit. This makes the nuclear industry vulnerable and has a negative effect on public acceptance. Would the EU be able to bring about unity? If a third party such as the EU were to intervene without all the necessary knowledge and hindsight, this may be regarded as a risk, but also as an opportunity to refocus the dialogue and harmonisation process.

The role of the European Commission

The European Commission joining the debate and the questions surrounding the effectiveness of all these conventions could lead to significant changes if the Commissioner for Energy is to be believed. On 4 October 2012, Oettinger stated that:

“The stress tests have revealed what we are good at and where we need to improve. The tests were serious, and they were a success. Generally, the

situation is satisfactory but there is no room for complacency. All authorities involved must work to ensure that the highest safety standards are in force in every single nuclear power plant in Europe. For the safety of our citizens.”⁶¹

and announced that: “National action plans with timetables for implementation will be prepared by national regulators and will be made available by the end of 2012. ...This will be followed by further proposals on nuclear insurance.”⁶²

The official communication from the European Commission regarding the stress tests states:

Paragraph 3.2.2 Nuclear Insurance and Liability

The analysis of provisions for the compensation of victims in case of nuclear incidents or accidents is not covered at all by the current EU legislative framework. As such, this was not part of the stress test process. However, Euratom Treaty article 98 provides for Council Directives establishing binding measures on this issue. Therefore, based on an impact assessment, the Commission will analyse to what extent the situation of potential victims of a nuclear accident in Europe should be improved, within the limits of EU competence. The Commission intends to propose binding legislation in the area of nuclear insurance and liability. In this context, compensation for damage to the natural environment should also be addressed.⁶³

Oettinger thus quotes Article 98⁶⁴ of the Euratom Treaty as the legal basis for his action.

The Euratom Treaty dates back to 1957, and, as we know, nuclear third party liability and financial compensation have since been the subject of two major international treaties, signed by many EU member states: the Paris Convention and the Vienna Convention. Despite these conventions, the EU is able to initiate policies in the field of nuclear third party liability and impose the requirement for greater transparency on member states. Admittedly, Article 98 of the Euratom Treaty does not state that an EU Directive should be issued making insurance compulsory; the EU may, however, use this clause to justify minimum harmonisation standards for the nuclear industry.

On this basis, it was Oettinger’s intention to assess the nuclear insurance sector before putting forward a proposal. The aim of the proposal was to potentially make it obligatory for nuclear operators to take out nuclear third party liability insurance to cover damage resulting from nuclear accidents, using the example of the

61. European Commission (2012), “Press Release: Nuclear stress tests: confirmation of high safety standards but need for further improvement”, available at: http://europa.eu/rapid/press-release_IP-12-1051_en.htm (accessed 22 October 2014).

62. *Ibid.*

63. Communication from the Commission to the Council and the European Parliament (2012), on the comprehensive risk and safety assessments (“stress tests”) of nuclear power plants in the European Union and related activities, COM(2012) 571 final.

64. “Member States shall take all measures necessary to facilitate the conclusion of insurance contracts covering nuclear risks. The Council, acting by a qualified majority on a proposal from the Commission, which shall first request the opinion of the Economic and Social Committee, shall, after consulting the European Parliament, issue directives for the application of this Article.” Treaty establishing the European Atomic Energy Community, OJ C 327/1 (26 October 2012) (consolidated version 2012).

requirement for car insurance in Europe, and even if this were to result in higher energy costs.⁶⁵

As a result, a public consultation has been launched by the European Commission (EC, DG Energy) on "Insurance and compensation of damages caused by accidents of nuclear power plants (nuclear liability)". The consultation took place in October 2013 and the objective was to assess to what extent the situation of potential victims of a nuclear accident in Europe could be improved, within the limits of EU competence.

The consultation was followed by a conference on 20-21 January 2014 in Brussels, also organised by the EC (DG Energy), under the title "Taking nuclear third party liability into the future: Fair compensation for citizens and level playing field for operators". The main issues covered during this conference were the ability to provide more capacity, the capability of the insurance industry to cope with a major accident in terms of claims management and of course the role of the EU in the nuclear liability.

If such an initiative were to be pursued, it would be important to make sure that a directive governing nuclear third party liability on a European scale was not imposed without dialogue between the various parties involved (states, operators and insurers) with a view to achieving a realistic and viable solution. However, this cannot happen until the 2004 Protocol is ratified so as to create a common foundation, after which other complementary solutions can be found.

A single European pool?

Others are calling for an end to the monopoly position held by the pools. Along these lines, Evelyne Ameye submitted an article,⁶⁶ co-written with Inigo Igartua Arregui, to the Congress of the International Nuclear Law Association, held in Manchester, United Kingdom, from 8 to 11 October 2012. The authors were particularly keen to see a regrouping of pools at EU level because, in their view, the pools' current operation might contravene Article 101 of the Treaty on the Functioning of the European Union (TFEU).⁶⁷ Ameye and Arregui offer three arguments to back up the notion of a single pool: greater capacity; improved efficiency; and better centralised claims management within the EU. Although the authors do not offer a clear conclusion⁶⁸ on the central issue underlying their article, it would be interesting to examine the presumed advantages of a single European pool.

A single pool would have greater capacity. Perhaps. The first effect of a single pool would tend to be to discourage all small insurers, who would probably leave the system. What is the attraction for local Finnish, French, Swiss or Spanish insurers in insuring a nuclear power plant in the Slovak Republic or England, or vice versa? There would be no moral obligation for them to get involved and social

65. Chaffin, J. (2012), "EU in favour of tougher nuclear insurance", *Financial Times*, available at: www.ft.com/intl/cms/s/0/eb74d6ec-0e3a-11e2-b87e-00144feabdc0.html#axzz35rTQh185 (accessed 27 June 2014).

66. Ameye, E. and I. I. Arregui (2012) "National nuclear third party insurance pools revisited from a European Union competition law perspective", available at: www.burges-salm.com/inla_2012/10140.pdf (accessed 22 October 2014).

67. Treaty on the Functioning of the European Union (TFEU), OJ C 326/47 (26 October 2012) (consolidated version 2012).

68. The conclusion reached is as follows: "If they fall within article 101(1) TFEU but are exempted under article 101(3) TFEU, the pools should only worry about periodically assessing that they remain eligible for an exemption under article 101(3) TFEU ... However, if they fall within article 101(1) TFEU but are not eligible for an exemption under article 101(3) TFEU, the pools should consider modifying their way of functioning to remedy competition concerns." Ameye, E. and I. I. Arregui (2012), *supra* note 66 at p. 9.

responsibility is often a key factor in deciding whether or not to participate in this kind of pool. On the other hand, as far as the major insurers are concerned, this would make it easier to accumulate risks in Europe and they will be more favourably inclined towards a single pool. However, they would lose the advantage of playing a part in local matters and thus enabling their local subsidiaries to come to the fore. It is thus very difficult to predict the positive effects of a single pool on capacity, and there probably are none.

A single pool would improve efficiency. Having all nuclear insurance professionals under one roof in Brussels, or elsewhere, would actually have the reverse effect, resulting in an increased administrative burden and fewer exchanges. While there would be a number of specialists in their own field in the long run, the knowledge of local specifics would be lost. This might seem paradoxical, but the fact that pools are managed on a local basis means that they have to have a better knowledge of their subject area, leading to an improved understanding of their clients. Furthermore, the cost of operating pools is extremely low compared to other branches of the insurance industry.

A single pool would better centralise claims management within the EU. Ameye and Arregui put forward the ELINI system as proof that this is a viable and possible solution. Of course, this is technically possible, but that is not the question. There are several computerised systems already in existence; the main concern is their ability to respond to the number of foreseeable claims in the event of a major incident. Who better than local insurers, with their hundreds of agents with considerable experience in large-scale claims (for example, storms, flooding and earthquakes), to rise to this challenge? Would a mutual company have access to similar resources?

To conclude, there are few benefits to the introduction of a single pool in the EU the way things stand at present; moreover, it is questionable whether creating a single pool is really the right solution from a competition viewpoint.

Centralised claims management

The first large-scale review following a major disaster took place in 1986, immediately after the Chernobyl accident and two conventions (the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency) came into being under the auspices of the IAEA.⁶⁹ These conventions are still valid today, and whilst these conventions allow information to be disseminated more effectively, which is essential to protect victims, managing nuclear third party liability claims following a major accident is still a very difficult task for any insurer and requires considerable resources, both technical and human.

As mentioned above, the existing infrastructure of insurance pool members is one way of providing these resources. The purpose of these pools is indeed to gather together all the available human and technical resources to cover national territories. Moreover, virtually all the pools have signed mutual assistance agreements. This combination of insurance staff, experts and inspectors will make it possible to respond quickly and in the victim's own language, which is especially important in countries with several official languages such as Belgium or Switzerland.

69. Jankowitsch-Prevor, O. (2012) "International Nuclear Norms Applicable in the Case of a Nuclear Accident or a Radiological Emergency", presentation given at the International School of Nuclear Law, NEA and University of Montpellier 1, Montpellier, France, 28 August.

The CEA Committee for the Insurance of Nuclear Risks also drew attention to these problems in a document,⁷⁰ insisting on “the need for the authorities ... to ensure that the insurance company concerned has an adequate structure and the operational and technical capacity to deal with a massive volume of claims resulting from a serious nuclear incident”.

It is thus extremely important, and a challenge for all pools, reinsurers or mutual, to respond unambiguously to these expectations and to do everything in their power to rectify the situation if this is not currently the case. In the event of a major accident, public opinion, which is already traumatised, will certainly not be forgiving. It is equally important for the EU, which also has its sights set on this area, not to undo what has already been achieved, but to reinforce the current situation.

Can the insurance industry go even further?

Whilst it is possible to respond to each of the points raised earlier, the question remains whether the insurance industry will go any further, take up the challenge and find a bold solution to the issues. This will only be possible by working with the nuclear industry and the public authorities and keeping the following objectives in mind: covering a number of guarantees, which are often deemed to be uninsurable, possibly with reduced amounts; and above all, obtaining cover for victims with corresponding large amounts to provide a realistic solution in the event of a major catastrophe.

In Europe, for example, in relation to the first points above, the relevant parties (ELINI, Blue Re) have said that they are ready to cover all damage defined by the revised conventions, as long as others (states) accept responsibility for other risks, such as war. Why, then, cannot each party be allowed to cover what they say they can cover so that all the relevant parties can offer all their available capacity? As to the second point, in connection with the amounts covered, the capacity of the pools and the presumed capacity of ELINI and Blue Re is already available to cover risks in Europe in line with the amended Paris Convention.

However, there is certainly more available additional capacity from insurance or reinsurance companies to cover this type of risk within Europe in order to cover catastrophic events.

This additional capacity should be addressed in more detailed terms. If it is accepted that the world’s large reinsurance companies can offer a capacity of approximately EUR 500 million, if not more in some cases, and that the major European insurance groups⁷¹ and other reinsurance companies are also able to provide EUR 100 to 200 million, this would lead to a figure of around EUR 5 billion, knowing that 5 000 other small or medium European companies⁷² might also contribute.

As a matter of interest, the turnover for insurers in the EU was EUR 1 093 billion in 2012, while this figure amounted to USD 4 613 billion for insurers throughout the

70. *Comité Européen des Assurances* (2003), Letter regarding nuclear liability insurance and the role of nuclear liability insurers in the compensation of nuclear accident victims, available at: www.insuranceeurope.eu/uploads/Modules/Publications/position181.pdf.

71. See Insurance Europe (2014), “European market operators – 2012”, available at: www.insuranceeurope.eu/uploads/Modules/StatisticalSeriesPublications/market-operators_2012_web-2.xlsx.

72. See CEA Insurers of Europe (2014), “European Insurance in Figures”, CEA Statistics N°48, available at: www.insuranceeurope.eu/uploads/Modules/Publications/european-insurance-in-figures-2.pdf (accessed 22 October 2014).

world.⁷³ The challenge will then be to continue to seek the involvement of (re)insurers for considerable sums, whilst also continuing to obtain their support for basic cover that complies with the conventions. This is a key point that needs to be resolved before a solution can be built on solid foundations.

By way of example, the pools could deal with the problem of local management by, if necessary, creating pools (reinsurer pools only) in countries that do not produce nuclear power. This would also make it possible to have an organisation structure in place in such countries to manage an emergency situation in the event of a nuclear accident. Then, if the mutual companies are confident in what they offer, the mutuals should be able to assemble EUR 1.2 billion to cover all the new risks that do not directly affect victims (the environment, for example).

Finally, the industry could also get involved in line with the “polluter pays” principle:

- Create solidarity between operators, for example, in the form of groups or “pooling”, as happens in the United States,⁷⁴ or, on a smaller scale, in Germany.⁷⁵ These two systems are often criticised as to the real scale of available funds but they have merit; ideally, cover should exist in the form of deposits or other financial security.
- The major electricity-consuming industries, i.e. involving those who benefit most from this energy source; however, precise ways and means remain to be confirmed. In other words, what are the appropriate levels of consumption (current or future) and what form should this involvement take (e.g. proactively in the form of taxation to create a fund or reactively in the event of an accident).

What sort of security sums would actually be available in total? EUR 5, 10, 20 billion or more? It is hard to say, but then again much depends on the willingness of those involved and on the way the cover is proposed. In-between and under the influence of the EU, some actors of the insurance industry raised this topic as well and conceived to offer coverage up to EUR 10 billion or more.⁷⁶

In order to attract capacity and as already described above for the CAT bonds, such a cover must be structured based on an independent trigger that is as clear and simple as possible.

A solution could look like this:

73. Insurance Europe (2014), “Europe Insurance in Figures”, Statistics N°48, Insurance Europe aisbl, Brussels, p. 8; Swiss Re (2013), “Swiss Re sigma study on world insurance in 2012 shows premium growth resumed, reaching 2.4% despite a very challenging economic environment”, www.swissre.com/media/news_releases/Swiss_Re_sigma_study_on_world_insurance_in_2012_shows_premium_growth_resumed.html (accessed 12 November 2014).

74. Price-Anderson Act of 1957, 42 USC 2210.

75. For more information, see Pelzer, N. (2007), “International Pooling of Operator’s Funds: An Option to Increase the Amount of Financial Security to Cover Nuclear Liability? Discussion Paper for the IAEA INLEX Group Meeting on 21-22 June 2007”, *Nuclear Law Bulletin*, No. 79, NEA, Paris, pp. 37-55.

76. See Kramer, H. (2014), “Nuclear Cat Cover”, presentation at the EC Taking nuclear third party liability into the future Conference, Brussels, 20-21 January; Tetley, M. (2014), “The insurance sector’s perspective on market capacity-NRI” presentation at the EC Taking nuclear third party liability into the future Conference, Brussels, 20-21 January; World Nuclear News (2014), “Insurers can help improve the image of nuclear”, available at: www.world-nuclear-news.org/RS-Insurers-can-help-improve-the-image-of-nuclear-1609201401.html (accessed 17 November 2014).

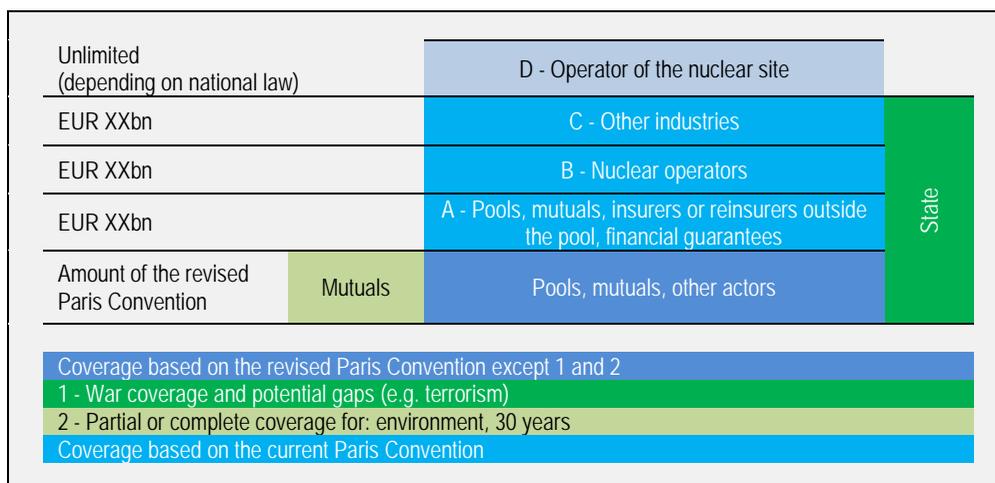


Figure 3

In this particular case, each party (except for layers, B & C, which are based on solidarity) would receive a premium corresponding to the cover offered and the pools would be responsible for claim and premium management to avoid creating an administrative mechanism at the European level. What premium would apply? The premium should not be prohibitive but neither can it be expected that such high sums would be covered free of charge. Would consumers be prepared to accept a resulting increase in the price of electricity?

This increase would probably be tolerable if a great many operators were involved. One of the challenges will be to divide up this resulting insurance cost. Initial calculations suggest that this could make sense, say by dividing the cost per megawatt or per reactor on a regional scale. Might it also be necessary to classify reactors objectively based on their safety standards? Once again, this is a highly political question.

Conclusion

The solution outlined above (Figure 3) is just one possible option and is certainly not the only alternative. To summarise, and based on the fact that the system that is in place today is complicated and that current compensation sums are not sufficient, an ideal solution should make it possible to:

- **Be realistic about the damage that can be insured: victims must take priority.** Initially, the main emphasis is on obtaining reasonable amounts for victims. Of course, it would be ideal if the damage defined in the amended conventions could be covered in the future. However, it is evident that a purely voluntary process could lead to a figure of several billion or even several tens of billions, but that it would be difficult to achieve figures that would have any real impact in the event of a major catastrophe and that would be immediately available given the scope of the cover required (in terms of new damage that is difficult to insure).
- **Increase compensation amounts for victims in a significant and sustainable manner.** Here again, states will have a crucial role to play. Secondly, insurers must take their social role into consideration and industrial companies must accept their responsibilities. It will doubtless be necessary to introduce incentive mechanisms to ensure that all parties get involved in and contribute to such a solution.

- **Harmonise the conventions.** States have a vital role to play in this respect; they will have to decide whether to harmonise the conventions, if this is possible, or to impose a new European convention.
- **Limit criticism of the nuclear industry.** Allow the nuclear industry to offer a more representative insurance cover for the risks incurred. This would have the benefit of putting an end to the debate on indirect subsidies from which the nuclear industry is currently deemed to benefit.
- **Extend the solution to other parts of the world.** If a solution of this type is possible in Europe, there is no doubt that it can also be extended to other parts of the world in future.

Is this a utopian vision? For the time being, it may be, but the solution in place today certainly cannot be regarded as the perfect answer to the problem. This article makes no claim to be exhaustive; it is simply a starting point, a trigger which may lead to a better solution being found for all those involved. The intention is to improve the current system.

Draft Federal Act of the Russian Federation “The Civil Liability for Nuclear Damage and its Financial Security”

*by Yulia Lebedeva**

The use of nuclear power by states in the modern world requires supplements to international law through the development of national legislation on civil liability for nuclear damage and compensation. The situation in the Russian Federation is no exception. Russian law on civil liability for nuclear damage has not fully evolved, and currently, there is no specific law covering liability for nuclear damage, nor is there a law regarding the financial and insurance mechanisms for compensation. Instead, the current laws establish a state system of benefits and compensation for damage to health and property of citizens.

Since 1996, Russia has been actively working to develop a draft federal act to cover liability for nuclear damage. A bill was first introduced in the State Duma of the Federal Assembly of the Russian Federation on 16 July 1996, and was originally called “The Compensation for Nuclear Damage and Nuclear Insurance”. In 1997, the official representative of the Government of the Russian Federation, Head of Russian Federal Inspectorate for Nuclear and Radiation Safety, Yuri Vishnevsky, was appointed to present this bill for discussion in the chambers of the Federal Assembly of the Russian Federation.¹ In September 1998, the State Duma rejected the draft federal act² and instead adopted in the first reading a different draft federal act: No. 96700118-2, “The Civil Liability for Nuclear Damage and its Financial Security” (“the bill”).³ In this case, the State Duma Committee on Ecology was charged with

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1. Russian Federation Government Decree, No. 1201-r, Draft Federal Act: The compensation for nuclear damage and nuclear insurance (25 August 1997). According to Russian legislation, bills are prepared by a minister or agency of the Russian Federation. Then, a Minister, Deputy Minister or Head of Agency, as the official representative of the government of the Russian Federation, presents the bill in the chambers of the Federal Assembly of the Russian Federation (first in the State Duma and then in the Federation Council). The deputies of the chambers of the Federal Assembly of the Russian Federation can ask the official representative of the government of the Russian Federation any questions about the bill. The official representative of the government of the Russian Federation must respond to all questions and explain and defend the bill in the chambers of the federal assembly of the Russian Federation.
2. Resolution of the State Duma of the Russian Federation, No. 2945-II GD, Draft Federal Law: The compensation for nuclear damage and nuclear insurance (9 September 1998).
3. No. 96700118-2, Draft Federal Act: The Civil Liability for Nuclear Damage and its Financial Security (9 September 1998) (introduced by deputies of the State Duma: Vladimir Tetelmin, Pavel Bunichem, Vladimir Kostyutkinym, Vladimir Leonchevym and Stepan Sulakshina).

incorporating the incoming amendments into a final bill and submitting it to the State Duma for a second reading.⁴

In 2005, Russia ratified the Vienna Convention on Civil Liability for Nuclear Damage.⁵ This ratification⁶ required significant amendments to “The Civil Liability for Nuclear Damage and its Financial Security” bill. But, even though the Russian Federation had not yet ratified the Vienna Convention, the drafters were still careful to take into account the norms of international nuclear law, in particular the relevant provisions of the Vienna Convention, the Brussels Convention on the Liability of Operators of Nuclear Ships of 1962 and the Brussels Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Materials of 1971. In addition, international experience has been analysed, both in the field of civil law and the special legislation on nuclear insurance and for compensation for nuclear damage, in particular: the US Price-Anderson Act (part of the US Atomic Energy Act of 1954), the Swiss Act on Nuclear Third Party Liability of 18 March 1983, the Japanese Law on Compensation for Nuclear Damage (No. 147, 17 June 1961, as amended) and the Canadian Nuclear Liability Act of 1970.

The bill establishes the basic principles of civil liability for the operator of a nuclear installation to third parties for nuclear damage, defines a mechanism for its financing and describes special court proceedings for claims for compensation for nuclear damage. It also aims to provide financial guarantees for the protection of the rights and legitimate interests of natural persons and legal entities, as well as the environmental effects of radiation exposure.

The elaboration and adoption of such an act in Russia was necessary for a number of reasons, namely: the inability to provide compensation for such damages from the federal budget, the limitation of an operator’s own funds to provide for the full recovery of possible harm and the condition of the domestic insurance market, wherein private insurers cannot provide funds in the absence of legislation in this sphere. Although the Civil Code of the Russian Federation provides general rules relating to insurance, it does not contain provisions regarding nuclear damage or nuclear security. Further, while the Federal Act “Use of Nuclear Energy”⁷ contains provisions about nuclear damage, it does not contain any special rules for compensation for nuclear damage or nuclear insurance. Thus, it was necessary to develop special rules for compensation for nuclear damage and nuclear insurance.

Chapter I of the bill, “General Provisions”, provides key definitions and clearly defines the scope of the legal framework for nuclear insurance and civil liability for nuclear damage:

- Nuclear incident is defined as “loss of control of the source of ionizing radiation due to equipment defect, staff misconduct, natural disasters or other causes that could lead to or have led to the exposure of people above the established norms or to radioactive environmental contamination”.⁸

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4. Resolution of the State Duma, No. 2946-II GD, Draft Federal Law: The civil liability for nuclear damage and its financial security.
 5. Vienna Convention on Civil Liability for Nuclear Damage (1963) (“Vienna Convention”), IAEA Doc. INFCIRC/500, 1063 UNTS 266.
 6. No. 23-FL, Federal Act (21 March 2005). The instrument of ratification was deposited to the Director General of the International Atomic Energy Agency on 13 May 2005 and the Convention entered into force for Russia on 13 August 2005.
 7. Federal Law No. 170 of the Russian Federation on the Use of Atomic Energy (21 November 1995), as last amended by Federal Law No. 159 (2 July 2013), Russian Gazette No. 6121 (5 July 2013).
 8. Draft Federal Act: The Civil Liability for Nuclear Damage and its Financial Security, *supra* note 3, art. 1.

- Nuclear damage is defined as “the damage to a person or property of individuals, property of legal entities or the objects of the environment, which has emerged as a result of a nuclear incident under the influence of radiation from the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties of nuclear material or radioactive products and waste”.⁹
- Force majeure is defined as “extraordinary and unavoidable under the given conditions, which include natural disasters, acts of war or military conflict”.¹⁰
- Transportation is defined as “transit of nuclear materials, radioactive substances and radioactive waste by land, air, river, sea and other transport, including loading, unloading, reloading and temporary storage during transportation”.¹¹
- An operator is an organisation that has a licence (or permission) to act in the field of nuclear energy usage.
- In accordance with article 3 of the Use of Atomic Energy Act, “nuclear installation” means structures and complexes with nuclear reactors, including nuclear power plants, ships and other floating crafts, space, aircraft and other vehicles and transportable facilities; buildings and complexes with industrial, experimental and research nuclear reactors, critical and subcritical nuclear stands; structures, complexes, landfills, installations and devices with nuclear warheads for peaceful purposes; other buildings, complexes and installations containing nuclear materials for the production, use, recycling and transportation of nuclear fuel and nuclear materials.¹²
- Nuclear materials are defined as materials containing or capable of creating dividable (fissionable) nuclear material.¹³ Radioactive waste means materials and products and equipment, including exhaust sources of ionising radiation so as to be unusable for any purpose.¹⁴
- Radiation sources mean systems, installation, apparatus, equipment and products that are not related to nuclear installations, contain radioactive products or generate ionising radiation.¹⁵
- Storage of nuclear materials and radioactive products, storage facilities and storage of radioactive waste (hereinafter “storage facilities”) means permanent sites and buildings that are not related to nuclear installations, radioactive products aimed at storing nuclear materials and radioactive products, storage or disposal of radioactive waste.¹⁶

The bill also defines the nature and extent of recoverable damage. In accordance with article 2, recovery can be made for nuclear damage caused to life, health and property of individuals, as well as the environment, and the amount of recoverable damages will consist of actual damages and lost profits. The amount of

9. *Ibid.*

10. *Ibid.*

11. *Ibid.*

12. Use of Atomic Energy, *supra* note 7, art. 3.

13. *Ibid.*

14. *Ibid.*

15. *Ibid.*

16. *Ibid.*

compensation to individuals will be determined by the applicable provisions of the Civil Code of the Russian Federation.¹⁷

Chapter II of the bill defines civil liability for nuclear damage. According to the bill, civil liability for nuclear damage, regardless of fault, shall rest with the operator. All other natural persons and legal entities, including those who are bound by contracts with the operator or under its jurisdiction, including suppliers, contractors and subcontractors, are not liable for nuclear damage. In this case, the operator shall be responsible for harm from a radiation accident, if it occurred on the operator's site, or accidents with nuclear materials, radioactive products or radioactive waste if the accident occurred during their transportation provided that the loading was carried out by the operator at one of its facilities and responsibility for the cargo has not yet shifted to a different operator.

It should be noted that the bill introduces joint and several liability if the accident was caused by more than one operator. In this regard, the bill states: "The total liability per one accident shall not exceed the total limit of liability of the operators".¹⁸

The bill provides for limitations on operator's liability to third parties in terms of the compensation amount and time for submission of claims. The maximum limit of liability specified is an amount equivalent to USD 150 million. But, given the type, structure, power and other technical parameters of nuclear installations, as well as the type and quantity of nuclear materials and radioactive waste held by the operator, the Government of the Russian Federation shall have the right to reduce the limit of liability of the operator, but not to less than USD 5 million.¹⁹

Further, the bill establishes a compensation time limitation period of three years from the date when the legal entities knew or should have known about the injury or damage, but not more than ten years from the date of a radiation accident. However, if nuclear damage was caused by a radiation accident with nuclear materials, radioactive products, radioactive waste that have been stolen, lost, discarded or left unattended, the right to sue for damages must be brought within 20 years from the date of the underlying event. These limitations, however, do not apply to claims by natural persons for compensation for nuclear damage.²⁰ Thus, natural persons can apply to the court for compensation for nuclear damage at any time no matter how many years have passed since suffering nuclear damage.

Generally, the operator or any other legal entity that is liable for nuclear damage has no right of recourse. An exception exists when a right of recourse is provided for in a contract between the operator and a legal entity culpable in the nuclear damage, in which case it is necessary to prove intent or gross negligence.²¹ If the operator proves that the nuclear damage resulted wholly or partly due to the intent or gross negligence of an individual who has suffered such damage, the court may release the operator wholly or partially from its obligation to pay compensation for nuclear damage to such person. Force majeure is also grounds for exemption from the liability of the operator.

Chapter III of the bill regulates the particulars, levels and forms of financial support for civil liability of the operator. Operators must provide financial security for an amount equal to the limit of its liability, which, according to the bill, is the

17. Civil Code of the Russian Federation, arts. 15 and 1085.

18. Draft Federal Act: The Civil Liability for Nuclear Damage and its Financial Security, *supra* note 3, art. 5.

19. *Ibid.*, art. 6.

20. *Ibid.*, art. 7.

21. *Ibid.*, art. 8.

maximum limit amount equivalent to USD 150 million. Documentary evidence of financial support for the civil liability maximums for nuclear damage is a prerequisite for licensing a nuclear power plant, radiation source, radioactive waste storage or activity related to nuclear materials, radioactive products and radioactive waste management. Licence holders are obliged under the financial security requirements to ensure financial continuity throughout the period of the licence. If the state or person providing financial security for the operator suspends or terminates such financial security, the state or the person providing the financial security must notify Rosatomnadzor in writing within three months. They must also notify the operator immediately in writing.²²

Russian civil nuclear liability has two levels: a minimum and a maximum. The minimum liability limit is equivalent to USD 5 million. Financial security within this level is provided through liability insurance. An operator can be freed from the liability insurance obligation if it can provide a state guarantee of financial security for nuclear damage. The maximum limit for civil nuclear liability cannot exceed an amount equivalent to USD 145 million. Financial security for the operator at this level is provided through a mutual insurance policy specifically for civil liability for nuclear damage.

Chapter IV of the bill specifically addresses nuclear insurance. Civil liability insurance for nuclear damage must be obtained by the operator (insured) with an insurance company (insurer). In this case, insurers must have a licence issued by an authority of the state insurance supervision (Rosatomnadzor) to conduct such activities. Rosatomnadzor, the state insurance authority has the right to establish special requirements that must be met by insurance companies who are licensed to provide nuclear insurance (including the value of paid up capital and insurance reserves) and to establish the procedure for licensing insurers' activities. The nuclear insurance contract should define the objects to be insured, the risks that need to be insured and the minimum amount of insurance coverage.

The bill further provides for reinsurance and coinsurance options. Insurers that have accepted the obligation to compensate nuclear damage in excess of their possible performance from its own funds and insurance reserves will be obliged to reinsure the risk of performance of such obligations. The regulatory authority for the safe use of nuclear energy (Rosatomnadzor) should be informed of any reinsurance undertaken. The operator also has the right to insure their civil liability with several insurers, so-called "coinsurance". In this case, the contract should contain clauses defining the rights and obligations of each insurer.

At the same time, the bill provides for the right of insurers to conclude a contract on the establishment of an insurance pool, whose members are jointly and severally liable for any insurance payments on contracts. After the adoption of the bill, an act for a nuclear insurance pool will be developed. The nuclear insurance pool bill shall endeavour to establish an adequate legal and regulatory framework to address mutual nuclear insurance. Such a bill will allow operators to create a nuclear insurance pool by combining necessary funds in it. The bill will further address creation and operation of such pools and will need to be approved through an act of the Russian Government.

Chapter V of the bill regulates the role of the state in compensation for nuclear damage. If the cost of nuclear damage exceeds the maximum liability limit, the state would provide additional compensation from the State Insurance Fund of Compensation for Nuclear Damage (or "Fund"). Article 18 of the bill establishes the creation of the Fund and the Government of the Russian Federation will determine

22. *Ibid.*

the organisational structure of the Fund, the procedure for the formation of financial resources and the expenditure of such resources. The Fund will indemnify harm caused by force majeure. According to article 35 of the Federal Act “Use of Nuclear Energy”, the operator or the person providing the financial security shall carry responsibility and measures for security of the nuclear installation, nuclear material, radioactive waste, radiation source and radioactive waste stored. The Fund’s goal is to protect the life and health of citizens, property interests of natural persons and legal entities, as well as to prevent and eliminate radiation accidents. The Fund is obliged to co-ordinate their activities with the Society of Mutual Nuclear Insurance and other insurance organisations in the field of nuclear insurance.

Chapter VI of the bill determines the specifics of cases for compensation of nuclear damage, namely the making of the claims and order of the payment of compensation for nuclear damage. According to article 19 of the bill, the list of persons who can be sued for compensation for nuclear damage is strictly limited, namely, the operator, the state represented by the Government of the Russian Federation and persons directly providing financial security for the operator, unless otherwise expressly provided by contract with that person. Further, public authorities, including the specially authorised state bodies in the field of environmental protection, as well as the relevant local authorities and citizens of the Russian Federation, may be the subject of claims for compensation for nuclear damage caused to the environment.²³

According to the provisions of the Russian Civil Law, the court will determine the procedure and specific amount of compensation for nuclear damage. Satisfaction of the claim will be done in the following order: first, citizens’ claims for damage caused to life and health; second, harm caused by the loss or damage to property; and last, the cost of rehabilitation and preventive measures, the cost of compensation for nuclear damage caused to the environment and lost profits.²⁴

Chapter VII focuses on international co-operation in the area of compensation for nuclear damage, namely, financial security for transboundary nuclear damage and participation in international nuclear insurance pools. Financial security of liability and compensation for transboundary nuclear damage will be implemented in the manner and on the terms stipulated in the international agreements on liability for nuclear damage to which the Russian Federation is a party.²⁵ Financial security of liability and compensation for transboundary nuclear damage caused by natural persons or legal entities of a state that is not party to such international agreements, will be implemented according to the bill, provided that the law of that state provides adequate type and amount of financial protection for natural persons and legal entities of the Russian Federation. Further, to increase the insurance coverage limits and increase the capacity of compensatory insurance, Russian companies have the right to enter into international nuclear insurance pools.

23. *Ibid.*, art. 20.

24. *Ibid.*, art. 21.

25. For example, the Vienna Convention (entered in force for Russia on 13 August 2005); the Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293 (entered into force for Russia in 24 October 1996); the Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 275 (entered into force for the USSR on 24 January 1987); the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 133 (entered into force for the USSR on 26 February 1987); the Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125 (entered into force for the USSR in 8 February 1987); and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997) (“Joint Convention”), IAEA Doc. INFCIRC/546, 2153 UNTS 357 (entered into force for Russia on 19 April 2006).

The bill was considered by the State Duma in the second reading in March 2012. Now, the Committee on Financial Markets of the State Duma is preparing the bill for the third reading at the end of 2014 or the beginning of 2015. The adoption of “The Civil Liability for Nuclear Damage and its Financial Security” bill would allow Russia to establish its legal regime for civil liability for nuclear damage and would create the necessary conditions for the full participation of the Russian Federation in the international nuclear insurance market. The new law will regulate relations between individuals, corporate entities and the state in the field of nuclear security; create a security buffer in the case of nuclear damage; guarantee compensation for nuclear damage to businesses and individuals; and finally, expand insurance opportunities in the insurance market.

Case law

Canada

Judgment of the Federal Court of Canada sending back to a joint review panel for reconsideration the environmental assessment of a proposed new nuclear power plant in Ontario¹

In June 2006, the Ontario Minister of Energy directed Ontario Power Generation (OPG), an electricity company wholly-owned by the Province of Ontario, to begin the process of seeking federal approval for new nuclear power generation units at an existing nuclear power generating site, units it concluded would be needed to meet future base-load energy requirements in Ontario. In 2006, OPG applied to the Canadian nuclear regulator, the Canadian Nuclear Safety Commission (CNSC), for a licence to prepare a site to construct up to four nuclear reactors at a site located on the north shore of Lake Ontario, where currently the four-unit Darlington nuclear power plant and a used fuel dry storage facility are located.

The application for the licence to prepare a site prompted the need for an environmental assessment under the Canadian Environmental Assessment Act (CEAA).² The project proposed by OPG – which includes the construction, operation, decommissioning and abandonment of the proposed reactors and the management of the associated conventional and radioactive waste – also required other federal approvals that would trigger a CEAA assessment, including authorisations under the Fisheries Act³ and the Navigable Waters Protection Act.⁴ The project was referred by the Minister of the Environment for review by a Joint Review Panel (“Panel”); the Panel was “joint” in the sense that it was to conduct an environmental assessment of the project under the CEAA and was also to function as a CNSC panel for the purpose of reviewing the licence application under the Nuclear Safety and Control Act (NSCA).⁵

At the time the environmental impact statement was prepared for the environmental assessment, which according to the legislation directed should be done as early as practicable in the planning process of a project, the Province had not yet selected a specific reactor technology for the new build. OPG therefore prepared its environmental impact statement using a “plant parameter envelope” or PPE approach; the environmental assessment therefore examined the potential environmental effects of several possible reactor technologies. Following an extensive assessment involving 17 days of public hearings in 2011, the Panel released its environmental assessment report and concluded that the project was not likely to cause significant adverse environmental effects, provided the mitigation measures proposed and commitments made by OPG during the review, and the Panel’s 67 recommendations, were implemented. The Panel, as a panel of

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1. This matter was also discussed in NEA (2013), *Nuclear Law Bulletin*, No. 91, NEA, Paris, p. 105.
 2. SC 1992, c. 37. This legislation has since been repealed and replaced by the Canadian Environmental Assessment Act, 2012, S.C. 2012, c. 19, s.52.
 3. RSC 1985, c F-14.
 4. RSC 1985, c N-22 (now titled the Navigation Protection Act).
 5. SC 1997, c 9.

the CNSC, then issued a 10-year licence to OPG to undertake a range of site preparation activities in relation to the project.

A number of environmental groups, including Greenpeace and the Canadian Environmental Law Association, challenged the conduct of the environmental assessment and the granting of the licence to prepare a site. The environmental groups argued before the Federal Court of Canada that the Panel failed to assess a “project” within the meaning of CEAA because no specific reactor technology had been selected and failed to assess the factors that it was required to assess (including cumulative effects and the need for and alternatives to the project). They argued that there were gaps in the information before the Panel on more than 25 issues.

In May of 2014, the Federal Court released its decision,⁶ allowing in part the challenge to the environmental assessment. The court determined that the assessment failed to comply with the CEAA as its analysis of hazardous substance emissions and on-site chemical inventories, spent nuclear fuel and severe common cause accidents was deficient. The court did not quash the environmental assessment report as a whole, but instead sent the report back to the Panel (or a duly constituted panel) for reconsideration of the three matters. Although the court sent the report back for further consideration, most of the applicants’ grounds for judicial review were rejected by the court. The court concluded that the PPE approach was acceptable for an environmental assessment, and that the real issue in this case was whether it was possible to conduct a meaningful assessment based on the information that was available. Justice Russell of the Federal Court concluded (at para 393-394):

I do not think it is possible to say that the Panel’s deployment of the PPE approach throughout its analysis, other than those instances I have cited above, was not in compliance with the CEAA, even though the nature and duration of this Project, and OPG’s failure to designate a specific reactor technology undoubtedly caused the Panel to rely heavily upon mitigation, follow-ups, commitments and future actions and measures that will need to be considered and implemented as the Project advances through its various stages. In the end, however, the Panel was of the view that it could all be done in a way that would not be likely to cause adverse environmental and health impacts. Notwithstanding the strong concerns of the Applicants, other than those instances I have already pointed out, the Court cannot say that this conclusion was unreasonable or that the references to future actions mean that a meaningful assessment of environmental impacts was not conducted in accordance with the Act.

My specific findings of inadequacies and unreasonableness in the EA Report do not vitiate the whole Report. ... I have attempted to craft a remedy that will allow this to happen without discarding what appears to me to be the highly competent work accomplished by the Panel.

Although the Court agreed with much of the work of the Panel, the Court ultimately found the environmental assessment to be incomplete. The Court in turn determined that the issuance of the licence to prepare a site for the new build was invalid, and that until such time as a valid environmental assessment has been completed, there is no jurisdiction for federal authorities to issue any licences or permits that would allow the project to proceed.

OPG, the CNSC, the Minister of the Environment, the Minister of Fisheries and Oceans, the Minister of Transport and the Attorney General of Canada have

6. Greenpeace Canada v. Canada (Attorney General), 2014 FC 463.

appealed the court's decisions on the environmental assessment and the licence to the Federal Court of Appeal. It is expected that that a hearing date will be set for early-mid 2015. In part, the appeals challenge the Federal Court's review of the Panel's environmental assessment on the basis that the court did not grant the appropriate deference to the Panel, wrongly substituting its own decision for that of the expert panel.

In 2013, the government of Ontario put on hold its plans for the new units at the Darlington site, citing high cost estimates. Therefore the decision of the Federal Court of Appeal whether or not the environmental assessment will have to undergo reconsideration is only part of the equation when considering whether and when the new units will be built.

France

Conseil d'État, 24 March 2014 (Request No. 358882)

On 26 April and 26 July 2012, the Republic and Canton of Geneva and the city of Geneva filed a request seeking the annulment of Decree No. 2010-402 of 23 April 2010 authorising *Electricité de France* (EDF) to build a basic nuclear installation (INB or *installation nucléaire de base* in French) known as an *installation de conditionnement et d'entreposage de déchets activés* (ICEDA) (conditioning and storage facility for activated waste) in the municipality of Saint-Vulbas. This facility would be used for the conditioning and storage of long-lived intermediate level radioactive waste, prior to its removal to a disposal facility, from the nine EDF reactors currently being decommissioned (including Bugey 1), metallic waste from power stations in operation (approximately 1 500 tonnes) and graphite waste from the decommissioning of the Bugey 1 reactor.

Under the terms of Article L. 596-23 of the *code de l'environnement* (French Environmental Code), decrees authorising the creation of INBs may be challenged by third parties, in particular due to the dangers that the operation of the INB may cause to the environment and to human health.

The *Conseil d'État* has ruled that the petitioners have not demonstrated a direct and certain interest qualifying them to seek the annulment of the decree, taking into account the ICEDA facility's activity, its characteristics and their distance from the site.

In its decision of 24 March 2014, the *Conseil d'État* therefore declared that the requests were inadmissible and should be rejected.

Conseil d'État, 24 March 2014 (Request No. 362001)

By order dated 22 February 2010, the Prefect of Ain issued EDF a licence for the construction of the ICEDA on land in the municipality of Saint-Vulbas, which is already home to the Bugey nuclear power plant.

The horticulture companies *Roozen France* and *Les Serres* filed a request seeking the annulment of this order.

First the Lyon Administrative Court, then the Administrative Court of Appeal granted their request on the grounds of article Ux1 of the municipality of Saint-Vulbas' regulation on local development planning (PLU or *plan local d'urbanisme* in French), which prohibits "land uses and occupations not connected with or necessary to the activity of the nuclear power station". Indeed, for both of these jurisdictions, ICEDA could not be regarded as necessary to the activity of the Bugey nuclear power plant as its purpose is the conditioning and storage of nuclear waste resulting from the decommissioning of the Bugey 1 power station and also from the operation of other facilities.

In its decision of 24 March 2014, the *Conseil d'État* interpreted this provision entirely differently. It considers that the ICEDA facility must be regarded as connected with and necessary to the activity of the Bugey power plant, although it will also be used, even if in a significant way, for the conditioning and storage of waste originating from other facilities. In other words, article Ux1 of the municipality of Saint-Vulbas' PLU should not be interpreted as establishing a condition of exclusivity between the Bugey power plant and the ICEDA facility.

By means of this decision, the *Conseil d'État* has overturned the appeal ruling confirming the annulment of the construction licence for the ICEDA facility and referred the case back to the Lyon Administrative Court of Appeal.

Slovak Republic

Further developments in cases related to the challenge by Greenpeace Slovakia to the Mochovce nuclear power plant

The last two issues of the *Nuclear Law Bulletin*⁷ provide the key background information on the litigation initiated by Greenpeace Slovakia with respect to the Mochovce nuclear power plant in the Slovak Republic. The case originated with the Nuclear Regulatory Authority's (NRA) administrative decision No. 246/2008 of 14 August 2008 on the approval of modifications to construction prior to the completion of the Mochovce nuclear power plant units 3 and 4, which were requested by *Slovenske elektrarne*, the builder of the two units. On 21 August 2013, the NRA issued a first, but not final, decision (No. 761/2013), which denied the suspensory effect of Greenpeace Slovakia's appeal of the NRA's 2008 decision.

On 24 October 2013, Greenpeace Slovakia filed a claim in court requesting review of the lawfulness of the NRA's decision No. 761/2013. The NRA responded with its statement to the claim.

Meanwhile, the administrative proceedings continued with public participation. As such, the public and Greenpeace Slovakia were asked to submit their comments, suggestions or ideas, if they wish, by the end of November 2013. For public participation purposes, the NRA provided the public access to the safety documentation from 15 October 2013 until 30 November 2013 in the vicinity of the Mochovce units 3 and 4. There the safety documentation was freely available except those parts that were redacted due to security reasons.

On 20 November 2013, Greenpeace Slovakia filed suggestions requesting to interrupt the administrative proceedings due to the need to undertake the environmental impact assessment (EIA) procedure that should be held and to be able to implement the EIA procedure findings. They requested also to interrupt the construction process. The comments in the appellate proceedings were posted by Greenpeace Slovakia, Global 2000 and the Fontis Foundation.

On 27 February 2014, NRA held the public hearing at the city of Kalná nad Hronom (a municipality that is very close to Mochovce units 3 and 4), where all objections and questions posed by the public were discussed and explained in detail in the presence of the NRA, the constructor, the public, non-governmental organisations, municipalities' representatives and the media.

On 19 March 2014, a session of the Appealing Committee (the advisory body to the chairperson) was held, and the Committee provided the chairperson with a reasoned, non-binding statement. On 23 May 2014, the NRA issued decision No. 291/2014, which dismissed Greenpeace Slovakia's appeal against decision

7. *Nuclear Law Bulletin*, No. 92, NEA, Paris, p. 89; *Nuclear Law Bulletin*, No. 93, NEA, Paris, p. 91.

No. 246/2008 and also confirmed its previous decision (No. 246/2008). NRA decision No. 291/2014 entered into force on 30 May 2014. This decision was not brought to the court for judicial review, but there was such a possibility.

Finally, a related matter (the constitutional claim filed by the licensee, *Slovenske elektrarne*, on 27 September 2013 objecting to the denial of its basic rights by the Supreme Court judgment in the court proceeding) remains open. The Constitutional Court has not yet accepted *Slovenske elektrarne*'s claim, but in the case of its acceptance, the case may influence the renewed administrative proceedings conducted by the NRA.

Developments in relation to the disclosure of information concerning the Mochovce nuclear power plant

As also discussed in the last two issues of the *Nuclear Law Bulletin*, litigation continues regarding Greenpeace Slovakia's demand that the NRA release the text of the preliminary safety report on Mochovce units 3 and 4 in accordance with the Freedom of Information Act, as amended, Act No. 2011/2000 Coll. As remarked upon in *Nuclear Law Bulletin* No. 93, the NRA appealed the judicial judgment to the Supreme Court on 2 July 2013, and a final decision is still pending.

United States

Initial Decision of the Atomic Safety and Licensing Board Ruling in Favour of Nuclear Innovation North America, LLC (NINA) Regarding Foreign Ownership, Control or Domination

On 10 April 2014, the Atomic Safety and Licensing Board ("Board") issued a partial initial decision concerning NINA's application for two combined licences for the construction and operation of two new nuclear reactor units on its existing South Texas site near Bay City, Texas ("South Texas Project").⁸ The Board presiding over that proceeding had previously admitted a contention from three public interest organisations ("Intervenors") alleging that NINA had not sufficiently demonstrated that it was "not owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government", contrary to the Atomic Energy Act (AEA) and Nuclear Regulatory Commission (NRC) regulations. AEA Section 103d. prohibits the NRC from issuing a commercial licence for a production or utilisation facility to "an alien or any corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government".⁹ The NRC has incorporated this statutory prohibition into its regulations governing the issuance of licences under both 10 CFR Part 50 and Part 52.¹⁰

NINA is pursuing the two combined licences for the South Texas Project as part of a joint venture with Toshiba American Nuclear Energy Corporation (TANE). TANE is a wholly-owned subsidiary of Toshiba America, Inc., which in turn is a wholly-owned subsidiary of Toshiba Corporation, a Japanese corporation. Both the NRC staff

8. Nuclear Innovation North America, LLC (South Texas Project, Units 3 and 4), LBP-14-03, 79 NRC __ (10 April 2014).

9. 42 USC 2132(a).

10. 10 CFR 50.38 states that "any person who is a citizen, national, or agent of a foreign country, or any corporation, or other entity which the Commission knows or has reason to believe is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, shall be ineligible to apply for and obtain a license" under Part 50. 10 CFR 52.75(a) states that a person excluded by 10 CFR 50.38 may not "file an application for a combined license" under Part 52.

and the Intervenors argued that Toshiba, a foreign corporation, exercises control over NINA because it currently provides all funding for NINA's NRC-regulated activities, which (in conjunction with other factors) runs afoul of the AEA foreign ownership, control or domination prohibition. NINA argued that an American company – NRG Energy – owns 90% of NINA and holds a supermajority of voting rights on NINA's Board of Managers. Additionally, NINA argued that it has taken adequate corporate governance measures to negate any control that could be exercised over NINA through financing.

After conducting an evidentiary hearing in January 2014, the Board ultimately concluded that NINA had sufficiently demonstrated by a preponderance of the evidence that it is not subject to impermissible foreign ownership, control or domination. Specifically, the Board agreed that NINA's corporate governance measures ensured that United States' citizens, not TANE, control all decisions regarding nuclear safety, security and reliability. Furthermore, the Board found that NINA had adopted a Negation Action Plan that sufficiently negated any future potential foreign ownership, control or domination concerns, particularly citing its establishment of a Security Committee and Nuclear Advisory Committee comprised entirely of United States citizens. The Security Committee has exclusive authority to make all of NINA's corporate decisions on nuclear safety, security and reliability matters, while the Nuclear Advisory Committee is responsible for advising and making recommendations to NINA's Board of Managers regarding compliance with the foreign ownership, control or domination prohibition.

On 5 May 2014, the Intervenors filed a petition for review of the Board's decision. The petition is currently pending before the Commission.

National legislative and regulatory activities

Algeria

Nuclear security

Presidential Decree No. 14-195 of 6 July 2014 setting out the nuclear security provisions applying to the physical protection of nuclear facilities, nuclear materials and the security of radioactive sources¹

This new regulation forms a part of Algeria's framework of international commitments working towards the implementation and strengthening of the nuclear security regime.

On this subject, Algeria has ratified, with reservations, the Convention on the Physical Protection of Nuclear Material together with its amendment, and the Convention on the Suppression of Acts of Nuclear Terrorism.

The nuclear security provisions aim in particular to prevent the sabotage of nuclear facilities, the unauthorised removal of nuclear and radioactive materials, acts of malice and aggression towards nuclear facilities or involving nuclear materials or other radioactive materials.

A nuclear security committee, charged with creating and updating the intersectoral nuclear security programme, was created within the Ministry of Energy. The committee is charged with defining and evaluating the design basis threat and the risk with regard to nuclear security and with keeping them up to date.

The decree also contains provisions relating to the training, qualification and reallocation of human resources responsible for nuclear security.²

This regulation will enable the strengthening of the legal framework relating to the security of nuclear facilities, radioactive sources and other radioactive materials.

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1. Décret présidentiel n° 14-195 du 8 Ramadhan 1435 (correspondant au 6 juillet 2014) fixant les dispositions de sécurité nucléaire applicables à la protection physique des installations nucléaires, des matières nucléaires et de la sécurité des sources radioactives, *Journal Officiel de la République Algérienne* (Official Journal of the Republic of Algeria), No. 42, p. 3.
 2. On the subject of training, see also Presidential Decree No. 12-87 of 2012 on the creation of the Centre de Formation et d'Appui à la Sécurité Nucléaire (Nuclear Security Training and Support Centre). NEA (2013), *Nuclear Law Bulletin*, No.92, NEA, Paris, p. 97.

France

Radioactive waste management

Decision of the board of directors of the National Radioactive Waste Management Agency of 5 May 2014 on the follow-up to be given to the public debate on the Cigéo project³

Following the public debate organised on the subject of the deep geological repository (Cigéo) project, which is intended to take in long-lived high and intermediate level radioactive waste, as well as the various opinions and recommendations given to the Agence nationale pour la gestion des déchets radioactifs (ANDRA) (National Radioactive Waste Management Agency) on this subject during 2013, the board of directors of ANDRA made a decision to continue with the Cigéo project.

Nevertheless, ANDRA made a certain number of decisions to take into consideration the comments contained in the minutes of the public debate and in the aforementioned recommendations and opinions. These decisions have led to the following main developments:

- the inclusion of a pilot industrial phase upon activation of the facility to test all aspects of disposal under real conditions;
- the implementation of a regularly revised master plan for disposal operations;
- the adjustment of the project schedule to include preparations for the building authorisation application (submission: end of 2017); and
- the submission of a file to the *Autorité de sûreté nucléaire* (ASN) (French Nuclear Safety Authority) presenting the main technical options ensuring the recovery of the waste packages deposited and thus meeting reversibility requirements.

Nuclear safety and radiological protection

Order of 11 April 2014 on the ratification of Nuclear Safety Authority decision No. 2014-DC-0420 of 13 February 2014 on material modifications to basic nuclear installations⁴

Order of 11 April 2014 on the ratification of Nuclear Safety Authority decision No. 2014-DC-0420 of 13 February 2014 on (correctional) material modifications to basic nuclear installations⁵

Nuclear Safety Authority decision No. 2014-DC-0420 of 15 May 2014 on material modifications to basic nuclear installations

The ASN's decision, ratified by the order of 11 April 2014, sets out the provisions that must be implemented by the operator of a basic nuclear installation (INB or

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3. *Délibération du conseil d'administration de l'Agence nationale pour la gestion des déchets radioactifs du 5 mai 2014 relative aux suites à donner au débat public sur le projet Cigéo, Journal Officiel de la République Française (Official Journal of the French Republic) (JORF) No. 0108 (10 May 2014), Text No. 8, p. 7851.*
 4. *Arrêté du 11 avril 2014 portant homologation de la décision n° 2014-DC-0420 de l'Autorité de sûreté nucléaire du 13 février 2014 relative aux modifications matérielles des installations nucléaires de base, JORF No. 0111 (14 May 2014), p. 7971, Text No. 5.*
 5. *Arrêté du 11 avril 2014 portant homologation de la décision n° 2014-DC-0420 de l'Autorité de sûreté nucléaire du 13 février 2014 relative aux modifications matérielles des installations nucléaires de base (rectificatif), JORF No. 0142 (21 June 2014), p. 10243, Text No. 14.*

installation nucléaire de base in French) in order to:

- Assess and reduce as far as possible any consequences of equipment modifications to the installation that might affect the interests mentioned in Article L. 593-1 of the *code de l'environnement* (French Environmental Code) – security, public health and hygiene, the protection of nature and the environment – and to justify their acceptability.
- Prepare and carry out these modifications.

In particular, this decision sets out the provisions for the management of simultaneous material modifications to a single INB and the methods for carrying out these modifications.

In addition, it defines a material modification as any addition, modification or removal of at least one important element for the protection (*élément important pour la protection* or EIP) of the aforementioned interests or of an element of which the presence, operation or failure may affect the operation or integrity of an EIP.

This decision will become effective on 1 January 2015 and will not apply to modification files submitted to the competent authorities before this date, even if they are still under investigation on that date.

*Order of 20 March 2014 on the ratification of Nuclear Safety Authority decision No. 2014-DC-0417 of 28 January 2014 on the regulations applicable to basic nuclear installations (INBs) for the control of risks associated with fire*⁶

Nuclear Safety Authority decision No. 2014-DC-0417 of 28 January 2014 on the regulations applicable to basic nuclear installations (INBs) for the control of risks associated with fire

The ASN's decision, ratified by the order of 20 March 2014, marks the completion, on the subject of control of risks associated with fire, of the terms of application of Chapter III, on the demonstration of nuclear safety, of the order of 7 February 2012 setting the general rules for basic nuclear installations.⁷

Its appendix sets out the rules applicable to INBs for the control of risks associated with fire.

In addition to the general provisions (definitions, objectives, identification of important protective parts and devices, periodic controls and tests), it contains provisions on:

- the prevention of outbreaks of fire (construction and furnishing materials, management of flammable materials, fire prevention plan and licence, prevention of electrical and electrostatic risks);
- the detection of and intervention in the event of a fire (fire detection and associated safety devices, means of intervention and firefighting, access and circulation routes); and

6. *Arrêté du 20 mars 2014 portant homologation de la décision n° 2014-DC-0417 de l'Autorité de sûreté nucléaire du 28 janvier 2014 relative aux règles applicables aux installations nucléaires de base (INB) pour la maîtrise des risques liés à l'incendie*, JORF No. 0078 (2 April 2014), Text No. 35, p. 6303.

7. *Arrêté du 7 février 2012 fixant les règles générales relatives aux installations nucléaires de base*, JORF No. 0033 (8 February 2012), Text No. 12, p. 2231. More information on this order may be found in NEA (2012), *Nuclear Law Bulletin*, No. 89, NEA, Paris, p. 119.

- measures to avoid the spread of fire and to limit its consequences (zoning, fire resistant structures, ventilation, smoke extraction, equipment).

This decision also provides an option for the operator to obtain an exemption from ASN accompanied by compensatory instructions in the event of difficulties in its application.

This decision is applicable:

- from delivery of the building authorisation for INBs not possessing a building authorisation and not operating under the rights acquired on 3 April 2014; and
- from 1 June 2014 for other INBs, except for certain articles, which are applicable from 1 January 2017.

General legislation

Update to report by the Court of Auditors (Cour des Comptes) on the cost of nuclear energy production, 2014 update (May 2014)

This report updates the statements made by the French Court of Auditors in its report of January 2012 on the cost of nuclear energy production in France.⁸ In addition, it answers the questions posed by the National Assembly's committee of inquiry on the following two subjects:

- the evolution of investments linked to the maintenance and renewal of the existing fleet; and
- the evaluation of the costs associated with the risk of a major nuclear accident and the consideration of the same by the various agents.

The Court observed firstly:

- an increase of 21% in the cost of nuclear energy production since 2010; and
- an increase of 14% since 2010 in funding linked to future costs for decommissioning, spent fuel management and long-term waste management, the emphasis being placed on the uncertainty existing with regard to future costs.

Secondly, the Court studied the evolution of the costs borne by the state between 2010 and 2013 and confirmed:

- an increase of 10% in public and private spending dedicated to research;
- a decrease of 6% in spending financed by public credit and associated with safety and security. However, these costs are expected to increase after 2014 due to the expertise required in future cases (implementation of probabilistic risk assessment, decommissioning of Fessenheim); and
- a widening of the gap between the amount collected in tax on basic nuclear installations and the total amount of spending financed by public credit, meaning that this tax will no longer be able to cover the entirety of this spending.

8. For more information on the January 2012 report, see NEA (2012), *Nuclear Law Bulletin*, No. 89, NEA, Paris, pp. 119-120.

International co-operation

Law No. 2014-308 of 7 March 2014 authorising the approval of the Joint Protocol on the application of the Vienna and Paris Conventions⁹

Official Journal of Laws and Decrees, 9 March 2014, p. 5024, text no. 4

Decree No. 2014-975 of 22 August 2014, publishing the Joint Protocol on the application of the Vienna and Paris Conventions, drawn up in Vienna on 21 September 1988, signed by France on 21 June 1989¹⁰

The principles of the international nuclear civil liability system were set down under the authority of:

- the Organisation for Economic Co-operation and Development (OECD) in the Paris Convention on Third Party Liability in the Field of Nuclear Energy adopted on 29 July 1960; and
- the International Atomic Energy Agency (IAEA) in the Vienna Convention on Civil Liability for Nuclear Accidents adopted on 21 May 1963;

In this context, the Joint Protocol on the application of the Vienna and Paris Conventions aims to create a “bridge” between the aforementioned two conventions, enabling the nuclear civil liability system to be extended to all countries having signed one of these conventions and the Joint Protocol. It also ensures that only one of the two conventions applies to a single nuclear account.

Law No. 2014-308 of 7 March 2014 authorised France’s approval of the Joint Protocol. On 30 April 2014, France then filed its instrument of ratification with the IAEA. Thus, since 30 July 2014, the date on which the Joint Protocol came into effect in France, France has had treaty relations with 31 states.

By means of Decree No. 2014-975 of 22 August 2014, the Joint Protocol was published in the *Journal officiel de la République française* (Official Journal of the French Republic) and may therefore be challenged by third parties.

Decree No. 2014-835 of 23 July 2014 publishing the agreement between the Government of the French Republic and the Government of the Kingdom of Belgium on the processing of Belgian spent fuel in La Hague, signed in Paris on 25 April 2013¹¹

This decree publishes the agreement signed in Paris on 25 April 2013 between the French and Belgian governments on the processing of Belgian spent fuel at the AREVA La Hague site.

The published agreement refers to operations to take place within the framework of the contract for the processing of spent fuel from the BR2 research reactor located on the Mol site in Belgium, concluded on 10 July 1997 between the *Compagnie Général des Matières Nucléaires* (COGEMA), now AREVA NC and *StudieCentrum voor Kernenergie/Centre d’Études de l’Énergie Nucléaire* (SCK-CEN).

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9. LOI n° 2014-308 du 7 mars 2014 autorisant l'approbation du protocole commun relatif à l'application de la convention de Vienne et de la convention de Paris, JORF No. 0058 (9 March 2014), Text No. 4, p. 5024.
 10. Décret n° 2014-975 du 22 août 2014 portant publication du protocole commun relatif à l'application de la convention de Vienne et de la convention de Paris, fait à Vienne le 21 septembre 1988, signé par la France le 21 juin 1989, JORF No. 0198 (28 August 2014), Text No. 1, p. 14441.
 11. Décret n° 2014-835 du 23 juillet 2014 portant publication de l'accord entre le Gouvernement de la République française et le Gouvernement du Royaume de Belgique relatif au traitement de combustibles usés belges à La Hague, signé à Paris le 25 avril 2013, JORF No. 0170 (25 July 2014), Text No. 4, p. 12274.

It states in particular that:

- spent fuel from the BR2 research reactor at the French reprocessing plant in La Hague will be accepted from the entry into force of the agreement until 31 December 2025;
- the processing of this fuel is planned for a period of six years following each delivery;
- radioactive waste from the processing of this fuel will be returned to Belgium which will accept this in the form of conditioned waste packages;
- the return of this waste will be optimised to use a minimal number of transports and will take place no later than 31 December 2030;
- the uranium and plutonium from the processing of spent fuel will be recycled as new nuclear fuel for a reactor for civil use.

Germany

International trade

New versions of the Foreign Trade Act and of the Foreign Trade Ordinance (2013/2014)

The 1961 Foreign Trade Act and its implementing 1961 Foreign Trade Ordinance have very often been amended and revised. This applies particularly since the European Union (EU) used its competence to establish an export control regime of its own.¹² As a consequence, the German foreign trade law, including nuclear trade, was confusingly complex and of a patchwork character.

With a view to improving this legal situation, the Act of 6 June 2013 on Modernising the Foreign Trade Law¹³ provides in its Article 1 a new version of the Foreign Trade Act (*Außenwirtschaftsgesetz*) and lists in its Article 2 consequential amendments to other laws. The Act is implemented by the Foreign Trade Ordinance of 2 August 2013.¹⁴ The Act and the Ordinance entered into force on 1 September 2013. At the same time, the 1961 Foreign Trade Act as amended, including the 1961 Foreign Trade Ordinance, ceased to be in force.¹⁵

The new Act contributed to downsizing and simplifying the regime of foreign trade. While the old Act contained 50 sections, the number of sections of the new Act was reduced to 28. The language was adapted to a more modern terminology; in particular a harmonisation with the EU terminology was aimed at. A new structure shall help provide better clarity of the foreign trade law: in the old version, provisions on import procedures were part of both the Act and the Ordinance, now they are exclusively covered by the Ordinance and thus regulated in the same way as the export procedures. Moreover, due to a lack of practical relevance, an Import

12. See e.g., National legislative and regulatory activities: Germany (2012), “International trade”, *Nuclear Law Bulletin*, No. 89, NEA, Paris, p. 122.

13. *Gesetz zur Modernisierung des Außenwirtschaftsrechts* of 6 June 2013 (*Bundesgesetzblatt* 2013 part I, p. 1482). An unofficial, English working translation is available at: www.bmwi.de/BMWi/Redaktion/PDF/A/awg-englisch,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf.

14. *Außenwirtschaftsverordnung* of 2 August 2013, as last amended by Ordinance of 25 March 2014 (*Bundesgesetzblatt* 2013 part I, p. 2865; *Bundesanzeiger* 2014 AT 31.03.2014 V1). An unofficial, English working translation is available at: www.bmwi.de/BMWi/Redaktion/PDF/A/awv-englisch,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf (accessed 23 October 2014).

15. Article 4 Act on Modernising the Foreign Trade Law; Section 83 Foreign Trade Ordinance.

List is no longer required, while the Export Control List continues to be published as Annex 1 “AL” to the Ordinance.¹⁶ The provisions on criminal and administrative offences take into account the criticism expressed by courts regarding the old provisions. Since the export of dual-use goods are comprehensively covered by legal acts of the EU, there is no longer a necessity for a special national legal framework.

Irrespective of those changes, the approved principal structures of the German foreign trade law remain untouched. This applies in particular to the general freedom of foreign trade, which only in defined cases may be limited by a permission requirement.

A more detailed commentary on the new Foreign Trade Act can be found in the official *Exposé des Motifs* to the Act,¹⁷ and, on the Foreign Trade Ordinance, from the Circular Decree on the Explanation of the Foreign Trade Ordinance.¹⁸

Indonesia

Nuclear security

Early in 2014, Indonesia ratified the Convention for the Suppression of Acts of Nuclear Terrorism by issuing Act No.10 of 2014. The ratification is considered to be part of Indonesia’s commitment to support efforts to handle terrorism, especially nuclear terrorism.

General legislation

Other regulatory decisions have been made in 2014, including the issuance of Government Regulation No. 2 of 2014 on Licensing of Nuclear Installations and Nuclear Material Uses. Regulation No. 2 gives a more comprehensive treatment than before on the licensing of nuclear installations and nuclear material uses. This Regulation replaced Government Regulation No. 43 of 2006 and revoked the Government Regulation No. 29 of 2008.

Toward the end of 2013, Government Regulation No. 61 of 2013 on The Management of Radioactive Wastes was issued, replacing Government Regulation No. 27 of 2002. The new Regulation appoints the National Nuclear Energy Agency (BATAN) as the main implementer of the management of radioactive wastes in Indonesia. As such, sealed sources waste would be submitted to BATAN or be returned to the country of origin.

Ireland

Nuclear safety and radiological protection

The recently enacted Radiological Protection (Miscellaneous Provisions) Act 2014 (No. 20 of 2014) provides for the dissolution of the Radiological Protection Institute of Ireland (RPII) and the transfer of all its functions, assets, liabilities and staff to the Environmental Protection Agency (EPA).

The Act gives effect to the Amendment to the Convention on the Physical Protection of Nuclear Material done at Vienna on 8 July 2005. The Act also amends

16. *Bundesgesetzblatt* 2013 part I, p. 2898.

17. *Begründung zum Entwurf eines Gesetzes zur Modernisierung des Außenwirtschaftsrechts*, Bundestags-Drucksache 17/11127, 22 October 2012.

18. Federal Ministry for Economy and Energy, Circular Decree: *Runderlaß Außenwirtschaft Nr. 5/2013 Verordnung zur Neufassung der Außenwirtschaftsverordnung* of 2 August 2013 (*Bundesanzeiger* AT 05.08.2013 B1).

the Radiological Protection Act 1991, the Environmental Protection Agency Act 1992 and certain other enactments and provides for matters connected therewith.

General legislation

European Union (Waste Electrical and Electronic Equipment) Regulations 2014

In July 2014, the Minister for Environment made the European Union (Waste Electrical and Electronic Equipment) Regulations 2014, thus providing the regulatory basis to enable Ireland to implement the European Union (EU) Directive on the same.¹⁹

The European Union's directive on waste electrical and electronic equipment (WEEE) was adopted as *Statutory Instrument No. 149 of 2014*, replacing Ireland's European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (SI No. 355 of 2011).

The purpose of Regulations 2014 is to contribute to sustainable production and consumption by the prevention of WEEE and, in addition, by the re-use, recycling and other forms of recovery of such wastes, so as to reduce the disposal of waste.

Regulations 2014 also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment. It will facilitate, in particular, the achievement of the targets for the collection, treatment, recovery and disposal of WEEE in an environmentally sound manner established by the EU Directive.

As a minimum, a number of substances have to be removed from any separately collected WEEE. This list includes components containing radioactive substances, with the exception of components that are below the exemption thresholds set in Council Directive 96/29/Euratom.²⁰

Lithuania

Nuclear security

Rules of procedure for nuclear material accounting and control

New nuclear safety requirements were approved by the Head of the State Nuclear Power Safety Inspectorate in Order No. 22.3-85 on 30 May 2014,²¹ establishing requirements for nuclear material accounting and control and also rules of procedure for the provision of information on nuclear fuel cycle related research and development activities to the European Commission and State Nuclear Power Safety Inspectorate. This document replaces two previous regulations,²² and compared to these, the new rules of procedure provide for more detailed and mandatory rules

19. Council Directive 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE), *Official Journal of the European Union (OJ)* L 197/38 (24 July 2012).

20. Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation, *OJ* L 159/1 (29 June 1996).

21. BSR-1.2.1-2014 (2014), "Rules of Procedure of Nuclear Material Accounting and Control and Provision of Information about Research and Development Activities", available at: www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=473783&p_tr2=2.

22. General Requirements of Nuclear Material Accounting and Control and Provision of Information about Activities in the Field of Nuclear Energy or Another Fields Related to the Use of Nuclear Energy (approved by the Head of the State Nuclear Power Safety Inspectorate, Order No. 22.3-11, 28 January 2008) and Recommendations for Implementation of the General Requirements (approved by the Head of the State Nuclear Power Safety Inspectorate, Order No. 22.3-12, 28 January 2008).

and as well as the introduction of a possibility of accounting for nuclear material in a nuclear material balance zone established by State Nuclear Power Safety Inspectorate for natural persons using nuclear material for purposes other than commercial activities and legal persons handling nuclear material for short periods or those not required to obtain a licence.

The new regulations will come into force on 1 November 2014.

Nuclear safety and radiological protection

Revised requirements for fire safety

New requirements for fire safety were approved by the Head of State Nuclear Power Safety Inspectorate in Order No. 22.3-57 on 10 April 2014,²³ establishing requirements for fire safety of structures, systems and components important to the safety of nuclear facilities. The new requirements replace a previous version from 2002²⁴ that had a similar scope. The main goals of the revised requirements are to:

- adjust it to the recent general changes in legal acts related to nuclear energy safety;
- establish the applicable criteria and requirements for the protection against fires of safety related structures, systems and components important to safety of nuclear facilities, including the commissioning and decommissioning stages, and aims to prevent or to limit the consequences of such fires;
- establish the requirements to apply the defence in depth principle for the design of fire safety assurance measures of safety related structures, systems and components important to safety of nuclear facilities; and
- establish the requirements for the subdivision of the nuclear facility buildings into fire compartments and fire cells.

The new requirements came into force on 1 November 2014.

Slovak Republic

International co-operation

Details about international agreements concluded by the Slovak Republic

Since the last edition of the *Nuclear Law Bulletin* No. 93, the Slovak Republic has not acceded, signed, ratified or terminated any treaty in the field of nuclear energy.

Liability and compensation

Government Resolution No. 152

Concerning the international liability regime under the 1963 Vienna Convention²⁵ and the EU Council Decision 2013/434/EU,²⁶ the Slovak Republic was considering the

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23. BSR-1.7.1-2014 (2014), "Fire Safety of Safety related Structures, Systems and Components important to Safety of Nuclear Facility", available at: www3.lrs.lt/pls/inter3/dokpaieska.show_doc_l?p_id=468916&p_tr2=2.
 24. Requirements on Fire Safety of Systems, Important to Safety, of Nuclear Facilities (approved by the Head of the State Nuclear Power Safety Inspectorate, Order No. 42, 11 October 2002).
 25. Vienna Convention on Civil Liability for Nuclear Damage (1963) ("Vienna Convention"), IAEA Doc. INFCIRC/500, 1063 UNTS 266.

pros and cons of its ratification. The Nuclear Regulatory Authority (NRA) had initiated and co-ordinated the cooperation of the relevant ministries in the Interdepartmental Working Group for the Civil Liability for Nuclear Damages that provided the NRA with support when elaborating the non-legislative material “Analysis of the advisability of accession of the Slovak Republic to the Protocol amending the 1963 Vienna Convention on the Civil Liability for Nuclear Damages caused by the Nuclear Incidents as fulfilment of the Council Decision 2013/434/EU” (“Analysis”). That Analysis was submitted to the government on March 2014 to provide the government with the wide-range information and expected influences of such ratification.

The government took the Analysis into their consideration and adopted Resolution No. 152 as of the 2 April 2014 based on which NRA is supposed to:

- submit to the government the separate draft law on civil liability for nuclear damage and its financial coverage based on the 1963 Vienna Convention for now (until the end of December 2014);
- report to the government on the status and developments of the European legislation as regards civil liability for nuclear damage (until the end of March 2017); and
- postpone the intended legislative works considering the accession to the 1997 Protocol amending the 1963 Vienna Convention until the submission of the abovementioned report in 2017.

Thus, the Slovak government postponed making a decision about the accession of the Slovak Republic to the 1997 Protocol. Based on government resolution No. 152, the NRA elaborated a draft law on civil liability for nuclear damage that was already sent for the interdepartmental notification procedure at the end of August 2014 and the clarifications and objections received were negotiated by NRA with the interested parties in October 2014. The NRA is within its time schedule to submit a separate draft law to the government by the end of December 2014.

Environmental protection

The Aarhus Convention Compliance Committee (ACCC)

To draw attention to another important forum, where the national legislation and implementation might be challenged, it is necessary to mention the 46th meeting, on 24 September 2014 in Geneva, of the Aarhus Convention Compliance Committee. The Slovak Republic, as a Party concerned, had to communicate its position concerning case ACCC/C/2013/89/Slovakia.²⁷

Prior to that case, the Slovak Republic already had to deal with the case 2009/41/Slovakia,²⁸ concerning the licensing for the construction of two new reactors in Mochovce and the possibility for proper public participation in the environmental impact assessment (EIA) procedure and the decision-making process as a whole. In the 2009 case, the ACCC report stated that the Slovak Republic, by adoption of the

26. Council Decision 2013/434/EU of 15 July 2013 authorising certain member states to ratify, or to accede to, the Protocol amending the Vienna Convention on Civil Liability for Nuclear Damage of 21 May 1963, in the interest of the European Union, and to make a declaration on the application of the relevant internal rules of Union law, *Official Journal of the European Union (OJ) L 220/1* (17 August 2013).

27. Docket is available at: www.unece.org/env/pp/compliance/compliancecommittee/89tableSlovakia.html (accessed 24 October 2014).

28. Docket is available at: www.unece.org/env/pp/compliance/Compliancecommittee/41TabSlovakia.html (accessed 24 October 2014).

legislative changes concerning the public participation, fully complied with the Aarhus Convention requirements.

Nevertheless, in the current case, there are objections posed concerning the improper implementation of the right of access to the court concerning the public participation in the decision-making process. This communication was initiated by the non-governmental organisations Greenpeace Slovakia, Via Iuris and GLOBAL 2000/Friends of the Earth Austria from 10 June 2013 (reporting on the Slovak legislation).

The various legislative amendments made by the Slovak Republic since the 2008 decisions convinced the Compliance Committee that the Slovak Republic was actively engaged in efforts to review its legal framework so as to ensure that early and effective public participation is provided for in the decision-making for the reconsideration or updating of old permits, or the activities were changed or extended compared with previous conditions. The Slovak Republic considered that the new case is related to the previous case. Therefore, based on the facts and information stated by the Slovak Republic in its written standpoint from 23 December 2013, the Slovak Republic proposed to the ACCC to consider termination of the current case as unjustified and conclude that the Slovak Republic is no longer in non-compliance with the Aarhus Convention.

Switzerland

Radioactive waste management

Revision of Decommissioning and Waste Disposal Funds Ordinance

The financing of the decommissioning of nuclear facilities and the disposal of nuclear waste is regulated in the Swiss Federal Nuclear Energy Act²⁹ as well as the Ordinance on the Decommissioning Fund and the Waste Disposal Fund for Nuclear Installations,³⁰ which regulates the specific details.

There are two independent funds: the Decommissioning Fund,³¹ which aims to secure the costs for the decommissioning and subsequent dismantling of nuclear installations as well as for the disposal of the resulting waste (established in 1984) and the Waste Disposal Fund³² with the purpose to secure the costs for the disposal of nuclear waste resulting from the operation of nuclear power plants as well as for spent fuel elements following the decommissioning of a nuclear power plant (established in 2000). The operators of nuclear facilities pay annual contributions into these funds. The contributions are calculated using a mathematical model on the basis of cost estimates, which take place every five years.

In June 2014, the Federal Council revised the Ordinance on the Decommissioning and Waste Disposal Funds for Nuclear Installations, and in doing so, has adapted the parameters for the calculation of contributions into the two funds. Upon coming into

29. Kernenergiegesetz vom 21 März 2003, SR 732.1; Loi du 21 mars 2003 sur l'énergie nucléaire, RS 732.1.

30. Verordnung vom 7 Dezember 2007 über den Stilllegungsfonds und den Entsorgungsfonds für Kernanlagen, SR 732.17; Ordonnance du 7 décembre 2007 sur le fonds de désaffectation et sur le fonds de gestion des déchets radioactifs pour les installations nucléaires, RS 732.17.

31. For more information on the Decommissioning Fund, see Swiss Federal Office of Energy SFOE, Decommissioning Fund (2013), www.bfe.admin.ch/entsorgungsfonds/01474/index.html?lang=en (accessed 27 October 2014).

32. For more information on the Waste Disposal Fund, see Swiss Federal Office of Energy SFOE, Disposal Fund (2013), www.bfe.admin.ch/entsorgungsfonds/01476/index.html?lang=en (accessed 27 October 2014).

effect in January 2015, a general inflation rate of 1.5% (previously 3.0%) and a return on investment of 3.5% (previously 5.0%) will apply. In order to take the uncertainties of cost estimates into account, a new safety margin of 30% will be added to the cost estimates.

United Arab Emirates

Liability and compensation

Convention on Supplementary Compensation for Nuclear Damage (CSC)

In July 2014, the United Arab Emirates (UAE) ratified the CSC.³³ The UAE's ratification instrument is the Federal Decree No (51) of 2014 Ratifying the Convention on Supplementary Compensation for Nuclear Damage,³⁴ which stipulates that the operator(s) of the nuclear installation(s) located in the UAE shall meet the UAE's obligation as a contracting party under the convention to make available public funds for compensation in respect of nuclear damage per nuclear incident in accordance with Article III.1 (b) of the CSC and such operator(s) shall submit and maintain the required insurances or other financial guarantees to meet this obligation. In accordance with Article XVI.3 of the CSC, the UAE has invoked its right to not be bound by either or both of the dispute settlement procedures as stipulated in Article XVI.2 the CSC.

United States

Radioactive waste management

Commission Approves Continued Storage of Spent Fuel Final Rule and Generic Environmental Impact Statement; Lifts Suspension on Final Licensing Decisions

On 26 August 2014, the Commission approved a final rule and associated generic environmental impact statement (GEIS), amending 10 CFR 51.23 to revise the generic determination on the environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor. Historically, 10 CFR 51.23 contained the "Waste Confidence" rule, which denoted the NRC's generic determination that spent nuclear fuel can be stored safely and without significant impacts for a period of time past a reactor's licensed life, but before permanent disposal. This generic determination previously satisfied the NRC's obligations under the National Environmental Policy Act (NEPA), which requires that federal agencies assess the environmental impacts of major federal actions, consider these impacts in making decisions and disclose them to the public. On 8 June 2012, the US Court of Appeals for the District of Columbia Circuit found that some aspects of the NRC's 2010 rulemaking to update the Waste Confidence rule did not satisfy NEPA and, therefore, vacated the rulemaking.³⁵ The court identified deficiencies related to the NRC's environmental analysis of spent fuel pool fires and leaks, and the environmental impacts concerning the impacts of indefinite storage of spent fuel should a permanent repository not become available in the future.

In response to the court's decision, the Commission directed the NRC staff to develop a generic environmental impact statement to analyse the environmental impacts of continued storage, address the issues raised in the court's decision and

33. Convention on Supplementary Compensation for Nuclear Damage (1997), IAEA Doc. INFCIRC/567, 36 ILM 1473.

34. An unofficial English translation of the ratification instrument can be found in the section "Documents and Legal Texts" of this edition of the *Nuclear Law Bulletin*.

35. *New York v. NRC*, 681 F.3d 471 (DC Cir. 2012).

support an updated waste confidence rule. The NRC issued a proposed rule and draft generic environmental impact statement for public comment in September 2013.³⁶ The NRC held 13 public meetings throughout the United States, and over 33 000 comments were received during the public comment period, including comments from Tribal and state governments, industry groups, advocacy groups, NRC licensees, individuals and the US Environmental Protection Agency.

The final rule, titled “Continued Storage of Spent Nuclear Fuel”, represents a change from the Commission’s previous approach to Waste Confidence. Under the previous rule, the Commission had generically determined that spent fuel could be stored safely and without significant environmental impacts for a period of time past the licensed life for a reactor, and would thus make a “finding of no significant impact” (FONSI) to satisfy NEPA. Under the new rule, 10 CFR 51.23(a) is amended to state that the Commission has generically determined that the environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor are those impacts identified within the GEIS. Thus, future licensing decisions that require an analysis of the environmental impacts of continued storage of spent fuel beyond the facility’s licensed life for operation will no longer rely on a FONSI but will instead rely on the generic determinations reached within the GEIS to satisfy compliance with NEPA.³⁷ Additionally, the final rule clarifies that the generic determination applies to licence renewals for independent spent fuel storage installations, reactor construction permits and early site permits.

The GEIS generically determines the environmental impacts of continued storage and provides a regulatory basis for the revision to 10 CFR 51.23. The GEIS analyses potential environmental impacts of such storage over three possible timeframes: a short-term timeframe, which includes 60 years of continued storage beyond the licensed life of a reactor; a long-term timeframe, which includes an additional 100-year timeframe (60 years plus 100 years) beyond the licensed life of a reactor to address the potential for delay in the availability of a geologic repository; and a third, indefinite timeframe to address the possibility that a repository for spent fuel never becomes available. The GEIS considers the environmental impacts of continued storage under each of these timeframes for a number of identified environmental resource areas (e.g. air quality, surface and groundwater resources, soil and geology, historic and cultural resources, etc.) and generally evaluates these impacts as Small, Moderate, or Large. The GEIS also addresses two technical issues specifically referenced in the 2012 court decision remanding the waste confidence rule: spent fuel pool leaks and spent fuel pool fires. Additionally, the GEIS addresses the technical feasibility of repository availability, and also contains hundreds of pages of NRC responses to public comments.

The final rule was published in the *Federal Register* on 19 September 2014 and will become effective on 20 October 2014.³⁸ On the same day the Commission approved the final Continued Storage Rule and associated GEIS, the Commission also lifted its previous suspension on all final licensing decisions as of the effective date of the final rule.³⁹ The Commission had previously suspended all reactor and ISFSI

36. 78 Federal Register 56,776 (13 September 2013).

37. The safety and environmental impacts of storage of spent fuel during the licensed life of the facility, as opposed to continued storage, are not covered by the final rule and associated GEIS and are still subject to review as part of the NRC’s current licensing process.

38. 79 Federal Register 56,238 (19 September 2014).

39. Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-14-08, 80 NRC _ (26 August 2014).

licensing activities that relied on the waste confidence rule until the 2012 DC Circuit's remand was appropriately addressed.⁴⁰

Licensing and regulatory infrastructure

Commission Approves Direct Final Rule Amending Definition of "Utilization Facility" Within 10 CFR 50.2

On 26 August 2014, the Commission approved a direct final rule amending the definition of a "utilization facility" within 10 CFR 50.2 to specifically add SHINE Medical Technologies, Inc.'s (SHINE) proposed accelerator-driven subcritical operating assemblies. In 2013, SHINE submitted a two-part construction permit application for a medical radioisotope production facility that SHINE proposes to build in Janesville, Wisconsin. The proposed accelerator-driven subcritical operating assemblies would irradiate special nuclear material (SNM) that would be used to produce molybdenum-99 (Mo-99) and other fission products.

The Direct Final Rule resolves any licensing uncertainty concerning the applicable regulations for licensing the construction and potential operation of the SHINE irradiation units. The Atomic Energy Act (AEA) provides authority for the NRC to license "production" facilities or "utilization" facilities for industrial or commercial purposes.⁴¹ The NRC staff had previously determined that SHINE's proposed irradiation units do not meet any of the existing definitions of a "production facility" in the AEA or NRC regulations,⁴² nor are the irradiation units integral to the operation of the radioisotope production facility that later extracts the radioisotopes from the irradiated SNM. Furthermore, the NRC staff determined SHINE's proposed irradiation units do not meet the current definition of a "utilization facility" because the units do not, singly or collectively, sustain nuclear fission in a self-supporting chain reaction. However, Section 11cc. of the AEA authorises the Commission to determine what constitutes a "utilization facility" by rule.⁴³ SHINE's proposed irradiation units closely resemble non-power reactors, which are licensed as utilization facilities under 10 CFR Part 50. Therefore, amending 10 CFR 50.2 to specifically include SHINE's irradiation units within the definition of a "utilization facility" allows the NRC staff to review and potentially license SHINE's irradiation units under the same standards as other technologies with similar radiological, health, and safety considerations.

The amendment to 10 CFR 50.2 applies only to the irradiation units proposed by SHINE in its docketed licence application. As standard procedure for direct final rule packages, a direct final rule and a companion proposed rule would be published in the Federal Register. The direct final rule would become effective 75 days after publication unless significant adverse comments are received within 30 days after publication. Should any significant adverse comments be received, the direct final rule would be withdrawn, and the comments would be addressed during preparation of a traditional final rule package. As part of this process, the NRC would not initiate a separate comment period for the proposed rule.

40. Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-12-16, 76 NRC 63 (7 August 2012).

41. 42 USC 2132.

42. 42 USC 2014(v); 10 CFR 50.2.

43. 42 USC 2014(cc) states, in relevant part, that a "utilization facility" is "any equipment or device...determined by rule of the Commission to be capable of making use of special nuclear material in such a quantity as to be of significance to the common defense and security, or in a manner that affects the health and safety of the public".

Intergovernmental organisation activities

European Atomic Energy Community

Adopted legally binding instruments

Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations¹

The nuclear safety framework of the European Union (EU) has been significantly reinforced with the adoption on 8 July 2014 of Council Directive 2014/87/Euratom, which amends the 2009 Nuclear Safety Directive.² The revised directive takes account of the lessons learned from the accident at the Fukushima Daiichi nuclear power plant in 2011, as well as of the outcomes of the subsequent stress tests of EU nuclear installations, carried out in 2011 and 2012.

Although it remains based on the principles enshrined in the 2009 directive, the revised directive includes several major achievements. It introduces a high-level EU-wide nuclear safety objective that aims to reduce the risks of a nuclear accident, and, should an accident occur, to limit its consequences by avoiding radioactive releases. This objective addresses the safety of the entire lifecycle of nuclear installations, i.e. siting, design, construction, commissioning, operation and decommissioning.

Licence holders are required to carry out regular safety reassessments of nuclear installations, under the supervision of the competent regulatory authority, with a view to identifying further safety improvements, taking into account, *inter alia*, ageing issues. National on-site emergency preparedness and response arrangements are also enhanced.

The directive promotes moreover an effective nuclear safety culture through management systems, education and training by the operator, thereby complementing its more technical provisions.

In addition, the provisions of the 2009 directive on the independence of the national regulatory authorities are strengthened. EU member states are required to ensure that the regulatory authorities have the appropriate means and competencies to properly carry out the responsibilities assigned to them. In particular, they should have sufficient legal powers, sufficient staffing and sufficient financial resources for the proper discharge of the assigned responsibilities.

Exchange of experiences and common application of high nuclear safety standards are well reinforced with the setting up of a European system of peer reviews on specific safety issues. The first topical peer reviews will start in 2017 and subsequent reviews will take place at least every six years thereafter. The requirement for EU member states to arrange for periodic self-assessments of their national framework and competent regulatory authorities at least every ten years is moreover maintained, as the one to invite, at least every ten years, an international

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1. *Official Journal of the European Union (OJ)*, L 219 (25 July 2014), p. 42-52.
 2. Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, OJ L 172 (2 July 2009), p. 18.

peer review of relevant segments of their national framework and competent regulatory authorities.

The directive also enhances further transparency on nuclear safety matters. The provisions on the information to be provided to the general public are more specific as regards the type of information to be given.

The directive entered into force on 14 August 2014. EU member states will have three years to incorporate it into national legislation.

*Commission Implementing Decision of 13 June 2014 on a Strategy for a Community Cooperation Programme on Nuclear Safety (2014-2020)*³

*Commission Implementing Decision of 13 June 2014 on the Instrument for Nuclear Safety Cooperation Multiannual Indicative Programme (2014-2017)*⁴

The Instrument for Nuclear Safety Cooperation sets the legal framework for the external co-operation of the Euratom Community in this field, with the objective of contributing to the global challenge of improving nuclear safety.

Article 5 of the Regulation establishing the new Instrument for Nuclear Safety Cooperation for the period 2014-2020,⁵ as adopted by the Council of the European Union on 13 December 2013, provides that co-operation under this instrument is to be implemented on the basis of a general multiannual strategy paper for a period of up to seven years.

Article 6 of the same regulation lays down that multiannual indicative programmes are to be drawn up on the basis of a strategy paper for a period of two to four years in order to define priority areas selected for financing, the specific objectives, the expected results, the performance indicators and the indicative financial allocations.

In accordance with these articles, the European Commission has adopted on 13 June 2014 the Strategy for a Community Cooperation Programme on Nuclear Safety (2014-2020) and the Instrument for Nuclear Safety Cooperation Multiannual Indicative Programme (2014-2017).

*Commission Implementing Decision of 30 June 2014 on the Annual Action Programme 2014 for Nuclear Safety Cooperation to be financed from the general budget of the European Union*⁶

The European Commission has adopted on 30 June 2014 the Annual Action Programme for the implementation of nuclear safety co-operation for 2014. The 2014 Programme covers seven actions identified in the decision and detailed in the annexes of the decision.

*Commission Implementing Decision of 7 August 2014 on the rules of application for the nuclear decommissioning assistance programme for Bulgaria, Lithuania and Slovakia for the period 2014-2020*⁷

The Council of the European Union adopted on 13 December 2013 two regulations extending Union support for the nuclear decommissioning assistance programmes

3. C(2014) 3763.

4. C(2014) 3764.

5. Council Regulation (Euratom) No 237/2014 of 13 December 2013 establishing an Instrument for Nuclear Safety Cooperation, OJ L 77 (15 March 2014), pp. 109-116.

6. C(2014) 4302.

7. C(2014) 5449.

respectively in Bulgaria and the Slovak Republic, as well as in Lithuania for the period 2014-2020.⁸

In accordance with Article 7 of each Council Regulations, the European Commission has adopted on 7 August 2014 an Implementing Decision to set the procedures and baseline for the implementation of the three programmes for 2014-2020.

*Commission Decision of 8 October 2014 on the compatibility of the Investment Contract (early Contract for Difference) for the Hinkley Point C New Nuclear Power Station with Article 107(3)(c) of the Treaty on the Functioning of the European Union (not yet published)*⁹

By a formal decision adopted on 18 December 2013, the European Commission had decided to open an in-depth investigation to examine whether the plans of the United Kingdom to subsidise the construction and operation of a new nuclear power plant at Hinkley Point in Somerset are in line with EU state aid rules.¹⁰ In the course of these investigations, the United Kingdom has agreed to significantly modify the terms of the financing project, in order to minimise the distortive effects of the support measures and to ensure more benefits to consumers. The authorities of the United Kingdom have also demonstrated that the proposed support would address a genuine market failure, dispelling the Commission's initial doubts. In particular, the promoters of the project would not be able to obtain the necessary financing due to its unprecedented nature and scale.

As a result, the Commission has recognised the compatibility of the measures proposed by the United Kingdom with the EU state aid rules as laid down in the Treaty on the Functioning of the European Union.

Non-legally binding instruments

*Communication from the Commission to the European Parliament and the Council on “A European Energy Security Strategy”*¹¹

In response to the political crisis in Ukraine and the overall importance of a stable and abundant supply of energy for the EU's citizens and economy, the European Commission has released a Communication on a European Energy Security Strategy

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8. Council Regulation (Euratom) No 1368/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programmes in Bulgaria and Slovakia, and repealing Regulations (Euratom) No 549/2007 and (Euratom) No 647/2010, OJ L 346 (20 December 2013), pp. 1-6; Corrigendum to Council Regulation (Euratom) No 1368/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programmes in Bulgaria and Slovakia, and repealing Regulations (Euratom) No 549/2007 and (Euratom) No 647/2010, OJ L 8 (11 January 2014, p. 31; Council Regulation (Euratom) No 1369/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programme in Lithuania, and repealing Regulation (EC) No 1990/2006, OJ L 346 (20 December 2013), pp. 7-11; and Corrigendum to Council Regulation (Euratom) No 1369/2013 of 13 December 2013 on Union support for the nuclear decommissioning assistance programme in Lithuania, and repealing Regulation (EC) No 1990/2006, OJ L 121 (24 April 2014), p. 59.
 9. European Commission (2014), Press Release, “State aid: Commission concludes modified UK measures for Hinkley Point nuclear power plant are compatible with EU rules”, IP/14/1093, available at: http://europa.eu/rapid/press-release_IP-14-1093_en.htm.
 10. Procedures Relating to the Implementation of Commission Policy – European Commission – State Aid – UK – State aid SA.34947 (2013/C) (ex 2013/N) – Investment Contract (early contract for difference) for the Hinkley Point C New Nuclear Power Station – Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union, OJ C 69 (7 March 2014), pp. 60-98/.
 11. COM(2014) 330 (28 May 2014).

on 28 May 2014, which is based on an in-depth study of member states' energy dependence.

The strategy provides for short-term measures, such as the launch of energy security stress tests to simulate a disruption in the EU gas supply for the coming winter, and also addresses medium to long-term challenges. Diversifying external energy supplies, upgrading energy infrastructure, completing the EU internal energy market and saving energy are among its main points. In the nuclear field, the strategy underlines the importance of ensuring an overall diversified portfolio of fuel supply for all plant operators and of systematically taking diversification of fuel supplies into consideration for new nuclear investments projects. It also highlights nuclear safety as an absolute priority for the EU, who should remain the pioneer and architect for nuclear safety at international level.

*Commission Staff Working Document on a Second Situation Report on Education and Training in the Nuclear Energy Field in the European Union*¹²

The first situation Report on Education and Training in the Nuclear Energy Field in the European Union was adopted by the Commission on 16 September 2011,¹³ with the aim of providing a comprehensive picture of the situation of human resources in the nuclear energy sector in the EU. It also identified the challenges and presented initiatives in this field, both ongoing and planned ones, mainly at global EU and international levels.

The second report, as released on 2 October 2014 by the Directorate-General for Energy of the Commission, provides an update of the EU and international situation in this area.

International relations

*Commission Decision of 8 August 2014 on the adoption of the Report of the European Atomic Energy Community for the 5th Review meeting of Contracting Parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management to be held in Vienna in May 2015*¹⁴

The Euratom Community is a Party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management ("Joint Convention") since 2 January 2006. The Euratom Report on the implementation of its obligations under this Convention was adopted by a decision of the European Commission on 8 August 2014 and subsequently submitted to the International Atomic Energy Agency, in accordance with the procedural rules under the Joint Convention. The report presents the major achievements and latest developments in the field of the Convention that have taken place at the level of the Euratom Community since the 4th review meeting of the contracting parties to the Joint Convention, held from 14 to 23 May 2012, such as the adoption of Council Directive 2013/59/Euratom laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising

12. SWD(2014) 299 (2 October 2014).

13. Communication from the Commission to the European Parliament and the Council, 1st Situation Report on Education and Training in the Nuclear Energy Field in the European Union, SEC(2011) 1046 (16 September 2011).

14. Euratom (2014), "Report of the European Atomic Energy Community: On the implementation of the obligations under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management", available at: http://ec.europa.eu/energy/nuclear/waste_management/doc/201505_fifth_review_meeting_of_contracting_parties.pdf.

radiation,¹⁵ or the adoption of Council Directive 2014/87/Euratom amending the 2009 Nuclear Safety Directive.¹⁶

International Atomic Energy Agency

Convention on Nuclear Safety (CNS)

Following the decision taken by the contracting parties to the CNS¹⁷ during their Sixth Review Meeting in March/April 2014, the IAEA Director General convened a diplomatic conference, starting on 9 February 2015, to consider a proposal by Switzerland to amend Article 18 of the CNS. Prior to the diplomatic conference, a consultation meeting open to all contracting parties was organised on 15 October 2014 to exchange views and prepare for the adoption of the rules of procedure.

58th regular session of the IAEA General Conference

The 58th regular session of the IAEA General Conference was held in Vienna, Austria from 22 to 26 September 2014. More than 3 000 delegates from 162 member states and representatives of various international organisations participated in the Conference.

Resolutions of the Conference

A number of resolutions were adopted by the General Conference.¹⁸ As in previous years, two resolutions, namely GC(58)/RES/10¹⁹ and GC(58)/RES/11,²⁰ include sections that are of legal relevance.

Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety [GC(58)/RES/10]. Conventions, regulatory frameworks and supporting non-legally-binding instruments for safety

In Part 2 of the resolution, which is specifically devoted to conventions, regulatory frameworks and non-legally binding instruments on safety, the Conference urged all member states that have not yet done so, especially those planning, constructing, commissioning or operating nuclear power plants or considering nuclear power programs, to become contracting parties to the CNS. It also urged all member states that have not yet done so, including those managing radioactive waste from the use of radioactive sources and nuclear energy, to become parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste

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15. Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom, OJ L 13 (17 January 2014), pp. 1-73.
 16. Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, OJ L 219 (25 July 2014), pp. 42-52.
 17. Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293.
 18. All resolutions adopted during the 58th regular session of the General Conference can be found at: IAEA (2014), “58th IAEA General Conference (2014) Resolutions and Other Decisions”, www.iaea.org/About/Policy/GC/GC58/Resolutions/ (accessed 27 October 2014).
 19. IAEA (2014), “Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety”, GC(58)/RES/10, available at: www.iaea.org/About/Policy/GC/GC58/GC58Resolutions/English/gc58res-10_en.pdf.
 20. IAEA (2014), “Nuclear Security”, GC(58)/RES/11, available at: www.iaea.org/About/Policy/GC/GC58/GC58Resolutions/English/gc58res-11_en.pdf.

Management.²¹ It further urged all member states that have not yet done so to become contracting parties to the Convention on Early Notification of a Nuclear Accident (the “Early Notification Convention”)²² and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the “Assistance Convention”),²³ thereby contributing to a broader and stronger international emergency response capability, to the benefit of all member states.

The Conference also called on all member states that have not yet done so to make a political commitment to implement the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance on the Import and Export of Radioactive Sources and to act in accordance with the Code and the Guidance, and requested the Secretariat to continue supporting member states in this regard.

As regards member states with research reactors under construction, in operation, being decommissioned or in extended shutdown, the Conference urged them to apply the guidance of the non-legally-binding Code of Conduct on the Safety of Research Reactors.

The Conference also urged member states to strengthen regulatory effectiveness in the field of nuclear, radiation, transport and waste safety and to continue promoting co-operation and co-ordination among regulatory bodies within a member state, as appropriate, and among member states.

Nuclear liability

In the preamble of the resolution, the Conference recalled the objective of the IAEA Action Plan on Nuclear Safety of “establishing a global nuclear liability regime that addresses the concerns of all States that might be affected by a nuclear accident with a view to providing appropriate compensation for nuclear damage”.²⁴ It also made specific reference to “the Paris Convention on Third Party Liability in the Field of Nuclear Energy, the Vienna Convention on Civil Liability for Nuclear Damage, the Brussels Convention Supplementary to the Paris Convention, the Joint Protocol Related to the Application of the Vienna Convention and the Paris Convention and the protocols amending these conventions and the Convention on Supplementary Compensation for Nuclear Damage”, noting that “these conventions can provide the basis for establishing a worldwide nuclear liability regime based on the principles of nuclear liability law”.²⁵

In Part 2 of the resolution relating to conventions, regulatory frameworks and non-legally binding instruments on safety, the Conference recognised the valuable work of the International Expert Group on Nuclear Liability (INLEX), took note of its recommendations and best practices on establishing a global nuclear liability regime; encouraged the continuation of INLEX, especially for its identification of actions to address gaps in and enhance the existing nuclear liability regimes and for its support for the IAEA’s outreach activities to facilitate the achievement of a global nuclear liability regime; and requested the Secretariat to report on the continuing work of INLEX.

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21. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997) (“Joint Convention”), IAEA Doc. INFCIRC/546, 2153 UNTS 357.
 22. Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 275.
 23. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 133.
 24. GC(58)/RES/10, *supra* note 3, at (dd).
 25. *Ibid.* at (ee).

In Part 7 of the resolution relating to transport safety, the Conference stressed the importance of having effective liability mechanisms in place to ensure prompt compensation for damage to people, property and the environment as well as actual economic loss due to a radiological accident or incident during the transport of radioactive material, including maritime transport, and noted the application of the principles of nuclear liability, including strict liability, in the event of a nuclear accident or incident during the transport of radioactive material.

National infrastructures

In Part 1 of the resolution, the Conference requested the Secretariat to continue to assist, upon request, member states, particularly member states considering and/or embarking on a nuclear power programme, in developing and improving their national infrastructure, including legislative and regulatory frameworks, and knowledge management practices and procedures for nuclear, radiation, transport and waste safety.

Nuclear installation safety

In Part 5 of the resolution, the Conference took note of the outcomes of the “Sixth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety”, including the actions taken to strengthen the effectiveness and transparency of the CNS, as well as the decision to convene a diplomatic conference of contracting parties to further consider the proposal submitted by the Swiss Confederation for the amendment of Article 18 of the CNS, and encouraged the contracting parties to actively participate in the diplomatic conference and its preparatory process.

Safe management of radioactive sources

In Part 12 of the resolution, the Conference encouraged member states to support the review meetings on the Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance on the Import and Export of Radioactive Sources so as to ensure their continuing relevance, and requested the Secretariat to continue to foster information exchange on the implementation of the Code of Conduct and its associated Guidance.

Nuclear and radiological incidents and emergency preparedness and response

In Part 13 of the resolution, the Conference recognised that implementation of the Assistance Convention and the Early Notification Convention, notably in the areas of technical and administrative procedures, may be further enhanced, and requested the Secretariat to provide support to the parties to the two conventions to strengthen technical and administrative procedures that enhance the implementation of both conventions effectively, and also requested the Secretariat to improve the effectiveness of the international arrangements for communication during a nuclear or radiological emergency.

Further, the Conference requested the Secretariat, in collaboration with member states, to address the conclusions of the Seventh Meeting of the Representatives of the Competent Authorities, and to further enhance the international nuclear and radiological emergency preparedness and response system.

Nuclear Security [GC(58)/RES/11]

In this resolution, the Conference again reaffirmed the importance of the Convention on the Physical Protection of Nuclear Material²⁶ (CPPNM) and of its 2005 Amendment, recognised the importance of acceptance, approval or ratification by

26. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125.

further states, as well as the importance of the entry into force of the Amendment at the earliest possible date.

The Conference encouraged member states that had not yet done so to become party to the CPPNM; called upon all parties to the CPPNM to ratify, accept or approve the 2005 Amendment as soon as possible, and encouraged all parties to the CPPNM to act in accordance with the objectives and purposes of the Amendment until such time as it enters into force; and further encouraged the Agency to continue efforts to promote the entry into force of the 2005 Amendment at the earliest possible date. It also encouraged all member states that had not yet done so to become parties to the International Convention on the Suppression of Acts of Nuclear Terrorism as soon as possible.

The Conference reaffirmed the importance and value of the non-legally-binding Code of Conduct on the Safety and Security of Radioactive Sources and underlined the important role of the revised supplementary Guidance on the Import and Export of Radioactive Sources. It also invited states that had not yet done so to make political commitments to implement the Code of Conduct and the revised supplementary Guidance, and encouraged all states “to further implement these instruments to maintain effective security of radioactive sources throughout their life cycle”.²⁷

The Conference also recognised the Agency’s central role “in developing comprehensive nuclear security guidance documents and, on request, providing assistance to Member States in order to facilitate their implementation”.²⁸

The Conference noted “the recommended requirements for measures to protect against sabotage of nuclear facilities and unauthorized removal of nuclear material in use, storage and transport included in IAEA Nuclear Security Series No. 13 (INFCIRC/225/Rev.5), using *inter alia*, a graded approach”, and looked forward “to the preparation by the Agency of further guidance on their implementation, including during the process of construction and maintenance of nuclear facilities”.²⁹

The Conference also encouraged the Secretariat, in consultation with member states, to consider ways of further promoting the exchange, on a voluntary basis, of information on the implementation of the international legal instruments relevant to nuclear security.

IAEA Treaty Event

The yearly IAEA Treaty Event took place during the 58th regular session of the IAEA General Conference in order to promote universal adherence to the most important treaties deposited with the IAEA Director General, notably those related to nuclear safety and security, as well as civil liability for nuclear damage. The special focus of this year’s Treaty Event was the 2005 Amendment to the CPPNM.

During the event, Singapore deposited an instrument of accession to the CPPNM as well as an instrument of acceptance of the 2005 Amendment thereto. The Dominican Republic and Ireland deposited, respectively, an instrument of acceptance and instrument of ratification of the 2005 Amendment to the Convention. Venezuela deposited an instrument of accession to the Early Notification Convention.

Following these treaty actions, representatives from several member states were briefed on the conventions adopted under IAEA auspices.

27. GC(58)/RES/11, *supra* note 4, at para. 21.

28. *Ibid.* at para. (m).

29. *Ibid.* at para. (q).

Side event on “The Convention on Supplementary Compensation for Nuclear Damage (CSC) – in the Context of the Global Nuclear Liability Regime”

A side event was organised by the IAEA Office of Legal Affairs, on 23 September 2014, in the margins of the 58th regular session of the General Conference, and featured keynote speakers from contracting parties to the CSC and other nuclear liability conventions talking about their national experience with regard to the establishment of a global nuclear liability regime.

Legislative assistance activities

The IAEA Secretariat continued to support member states, upon request, under its legislative assistance programme. During the period from June to September 2014, several draft national laws were reviewed and comments were provided to the countries concerned. The IAEA Office of Legal Affairs also trained scientific visitors and fellows from a number of member states in various aspects of nuclear law. Awareness missions were dispatched to member states in order to raise the awareness of national policymakers about the importance of adhering to relevant international legal instruments adopted under the Agency’s auspices, and preparations are under way to conduct similar missions in other interested member states over the coming months.

Nuclear Law Institute

The fourth session of the Nuclear Law Institute was organised by the IAEA Office of Legal Affairs in Baden, Austria, from 6 to 17 October 2014. This comprehensive two-week course is designed to help meet the increasing demand by IAEA member states for legislative assistance and to enable participants to acquire a solid understanding of all aspects of nuclear law, as well as to draft, amend or review their national nuclear legislation. Sixty representatives from IAEA member states participated. Using modern teaching methods based on interaction and practice, all areas of nuclear law were comprehensively addressed.

OECD Nuclear Energy Agency

Steering Committee approves decommissioning exclusion

The NEA Steering Committee for Nuclear Energy adopted the Decision and Recommendation Concerning the Application of the Paris Convention to Nuclear Installations in the Process of Being Decommissioned on 30 October 2014.³⁰ The purpose of this Decision and Recommendation is to provide updated technical exclusion criteria, replacing the 1990 criteria that were in force. These criteria are relatively conservative, and some nuclear installations in the process of decommissioning will not, at first, be eligible for exclusion. However, at some point during the decommissioning process, the nuclear installation would meet the criteria and could be excluded from the Paris Convention nuclear liability regime, relieving the operator from the obligation to have and maintain the specific, high-level nuclear liability insurance coverage.

European Nuclear Energy Tribunal (ENET) Judges approved

On 17 December 2014, the OECD Council approved seven nominated judges to the ENET. The ENET was created by the Convention of 20 December 1957 on the

30. The Decision and Recommendation's Appendix and Explanatory Note are reproduced in this edition of the *Nuclear Law Bulletin* in the section “Documents and Legal Texts” and are also available online.

Establishment of a Security Control in the Field of Nuclear Energy (the “Security Control Convention”) and consists of “seven independent judges appointed for five years by decision of the Council or, in default, by lot from a list comprising one judge proposed by each Government Party to the present Convention”. The seven countries that nominated judges for the ENET’s next term of office are: Austria, Denmark, France, Greece, Ireland, Sweden and Switzerland.

These seven judges were appointed pursuant to a new procedure where each contracting party to the Security Control Convention or to the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy may nominate a judge through a rotation system.

At present, the ENET has jurisdiction only over disputes between states parties to the Paris Convention or the 1963 Brussels Convention Supplementary to the Paris Convention concerning the application or interpretation of these Conventions. Claims by victims under one or other of those Conventions are not brought before the ENET.

High-level Group on the Security of Supply of Medical Radioisotopes (HLG-MR) Joint Declaration

Eleven of the seventeen participating countries of the HLG-MR³¹ adhered to a Joint Declaration on the Security of Supply of Medical Radioisotopes, which seeks to ensure the security of supply of the most widely used medical radioisotopes.³² The Joint Declaration sends a clear signal to the medical radioisotopes supply chain that these governments have the resolute intention to take co-ordinated action to ensure the long-term security of supply of these important medical radioisotopes. It also provides a platform for ongoing discussions among HLG-MR participating countries on their current or potential future involvement in the supply chain. The Joint Declaration remains open for adhesion by the remaining HLG-MR participating countries that have so far not adhered, as well as to any other country that wishes to do so.

The Characteristics of an Effective Nuclear Regulator

In July, the NEA published a first-of-a-kind report on *The Characteristics of an Effective Nuclear Regulator*. This regulatory guidance booklet describes the characteristics of an effective nuclear safety regulator in terms of roles and responsibilities, principles and attributes. Each of the characteristics discussed in this report was found to be a necessary feature of an effective nuclear safety regulator but none of the characteristics is sufficient on its own. It was further found that the combination of these characteristics leads to the effectiveness of a nuclear regulatory body. The report provides a unique resource to countries with existing, mature regulators and can be used for benchmarking as well as training and developing staff. It is also considered to be useful for new entrant countries in the process of developing and maintaining an effective nuclear safety regulator. The report can be accessed here: www.oecd-nea.org/nsd/pubs/2014/7185-regulator.pdf.

31. Those eleven countries are: Australia, Canada, Germany, Japan, the Republic of Korea, the Netherlands, Poland, the Russian Federation, Spain, the United Kingdom and the United States. The NEA established the HLG-MR to examine the underlying reasons for the 2009-2010 global supply shortage in the supply chain for technetium-99m (^{99m}Tc) and molybdenum-99 (⁹⁹Mo) and to develop a policy approach to ensure the long-term security of supply of these radioisotopes.

32. The Joint Declaration can be found in this edition of the *Nuclear Law Bulletin* in the section “Documents and Legal Texts”.

Multilateral agreements

In an effort to reach a wider audience and keep the information regarding the status of multilateral agreements more up-to-date, this content has been moved online and is available at: www.oecd-nea.org/law/multilateral-agreements.

Brazil

Resolution No. 169 of 30 April 2014

Ministry of Science, Technology and Innovation
National Nuclear Energy Commission Deliberative Committee
Diário Oficial da União (Brazilian Official Federal Gazette) of 16/05/2014
(No 92, Section 1, page 15)

THE NUCLEAR ENERGY COMMISSION (CNEN), established by Law No 4.118 of 27 August 1962, under the powers granted to it by Law No 6.189 of 16 December 1974, as amended by Law No 7.781 of 17 June 1989 and by Decree No 5.667 published in the Official Federal Gazette of January 2006, by decision of its Deliberative Committee adopted in the 616th session held on 30 April 2014,

Whereas:

a) the provisions of the Vienna Convention on Civil Liability for Nuclear Damage, adopted on 21 May 1963 and promulgated by Decree No 911/93;

b) the provisions of paragraph 5 of Article 13 of Law No 6.453 of 17/10/1977 on civil liability for nuclear damage:

"Art. 13 – The operator of the nuclear installation shall maintain insurance or other financial security covering his liability for compensation for nuclear damage.

Paragraph 5 – The National Nuclear Energy Commission may exempt the operator from the requirement set out in the heading of this Article, in view of the reduced risks arising from certain materials or nuclear installations.";

c) the provisions of Article 9 of the said Law limiting the liability of the operator in the event of an accident;

d) the provisions of Article 14 of the said Law "– The Federal Government shall guarantee, ... , the payment of compensation for nuclear damage for which the operator is liable, by providing the additional resources needed in cases where the resources provided by the insurance or other financial security prove insufficient"; and

e) the international practice of requiring insurance or the provision of other financial securities with regard to large-scale installations,

HEREBY RESOLVES AS FOLLOWS:

Art. 1 – Establish the following criteria for assessing whether the financial security is sufficient to cover the civil liability for nuclear damage:

I – for the purposes of taking out insurance or posting a financial security, the risk is considered to be reduced in installations which do not require external remedial measures to protect the public or the environment, based on safety analyses that include non-design basis accidents and in conformity with the means of protection and criteria established by the CNEN for emergency situations;

II – the financial security must cover civil liability for nuclear damage occurring at the outer boundaries of the installation; and

III – the CNEN shall assess the need to maintain the financial security by taking account of the risk of nuclear damage on the basis of the safety analysis set out in the Final Safety Analysis Report for the installation.

Art. 2 – The operating licences issued by the CNEN shall contain a specific reference to the requirement of the operating organisation to maintain insurance or other financial security covering its liability to pay compensation for nuclear damage or to its exemption from that requirement.

Stand-alone paragraph – The CNEN shall assess the need for insurance or other financial security each time the operating licence for the installation is renewed or amended.

Art. 3 – This Resolution shall enter into force on the date of its publication and shall revoke any provisions to the contrary.

ANGELO FERNANDO PADILHA – Chair of the Commission

REX NAZARÉ ALVES – Member

ISAAC JOSÉ OBADIA – Member

CRISTÓVÃO ARARIPE MARINHO – Member

IVAN PEDRO SALATI DE ALMEIDA – Member

Japan

Act Concerning Exceptions to Interruption of Prescription Pertaining to Use of Settlement Mediation Procedures by the Dispute Reconciliation Committee for Nuclear Damage Compensation in relation to Nuclear Damage Compensation Disputes pertaining to the Great East Japan Earthquake

Act No. 32 of 5 June 2013

Purpose

Article 1

This Act establishes exceptions in relation to the interruption of prescription pertaining to the use of settlement mediation procedures by the Dispute Reconciliation Committee for Nuclear Damage Compensation (hereinafter referred to simply as "mediated settlement") in relation to nuclear damage compensation disputes associated with the Great East Japan Earthquake (disputes concerning the compensation of nuclear damage ("nuclear damage" as defined in Article 2-2 of the Act on Compensation for Nuclear Damage (Act No. 147 of 1961)) caused by the nuclear plant accident following the Pacific Ocean earthquake off the coast of the Tohoku district that occurred on 11 March 2011).

Interruption of Prescription

Article 2

In a case in which the Dispute Reconciliation Committee for Nuclear Damage Compensation discontinues mediated settlement (limited to when such discontinuance is due to reasons specified by cabinet order), if the person who petitioned for the said mediated settlement files an action with regard to the claim that was the objective of the mediated settlement within one month of the date on which they received notification of discontinuance, with regard to the interruption of prescription it shall be deemed that an action was filed at the time of the petition for the said mediated settlement.

Supplementary Provisions

This Act shall be enforced from the date of its promulgation.

Act Concerning Measures to Achieve Prompt and Assured Compensation for Nuclear Damage Arising from the Nuclear Plant Accident following the Great East Japan Earthquake and Exceptions to the Extinctive Prescription, etc. of the Right to Claim Compensation for Nuclear Damage

Act No. 97 of 11 December 2013

Purpose

Article 1

The damage caused by the nuclear plant accident following the Pacific Ocean earthquake off the coast of the Tohoku district that occurred on 11 March 2011 was unprecedented in its scale and long-term duration, and in some cases there are difficulties accompanying the right to claim compensation for specified nuclear damage (damage arising from the said accident for which nuclear operators ("nuclear operator" as defined in Article 2-3 of the Act on Compensation for Nuclear Damage (Act No. 147 of 1961)) bear a compensation liability pursuant to the provisions of Article 3-1 of the said Act; likewise hereinafter), since among those persons who sustained specified nuclear damage (hereinafter referred to as "victims of specified nuclear damage"), many are still forced to live an inconvenient life of evacuation and have difficulties gathering the evidence to serve as the basis for calculating the damages they sustained, and those victims who sustained different types of specified nuclear damage need time to claim compensation due to the simultaneous occurrence of specified nuclear damages that differ in their nature and extent. In consideration of the foregoing, the government will establish the necessary measures to build a structure that allows the victims of specified nuclear damage to receive prompt and assured compensation, and will also establish exceptions to the extinctive prescription, etc. of the right to claim compensation for specified nuclear damage.

Measures to Achieve Prompt and Assured Compensation

Article 2

The government will establish a system for streamlining compensation for specified nuclear damage in the administrative organs of the government, so that the victims of specified nuclear damage can receive compensation promptly and assuredly, and will take measures including enhancing the personnel structure of the Dispute Reconciliation Committee for Nuclear Damage Compensation and courts in order to achieve the swift resolution of disputes, while strengthening the consultation and information provision systems of the Nuclear Damage Compensation Facilitation Corporation.

Exceptions to Extinctive Prescription, etc.

Article 3

Concerning the application of the provisions of Article 724 of the Civil Code (Act No. 29 of 1896) concerning the right to claim compensation for specified nuclear damage, the words "three years" in the first sentence of the said article shall be replaced with the words "ten years", and in the second sentence "time of the tortious act" shall be replaced with the words "time at which the damage occurred".

Supplementary Provisions

This Act shall be enforced from the date of its promulgation.

Fourth Supplement to Interim Guidelines on Determination of the Scope of Nuclear Damage Resulting from the Accident at the Tokyo Electric Power Company Fukushima Daiichi and Daini Nuclear Power Plants (Concerning Damages Associated with the Prolongation of Evacuation Orders, etc.)

26 December 2013

Dispute Reconciliation Committee for Nuclear Damage Compensation

Part 1. Introduction

1. Status

In the “Interim Guidelines on the Determination of the Scope of Nuclear Damage Resulting from the Accidents at the Tokyo Electric Power Company (TEPCO) Fukushima Daiichi and Daini Nuclear Power Plants” (hereinafter “Interim Guidelines”) finalised and published on 5 August 2011, the Dispute Reconciliation Committee for Nuclear Damage Compensation (hereinafter “the Committee”) presented a basic approach toward the scope of damages related to evacuation orders and other instructions issued by the Government. In addition, the Government (Nuclear Emergency Response Headquarters) lifted the evacuation-prepared areas in case of emergency on 30 September 2011, and established a new “Basic Approach concerning Re-definition of Restricted Area and Areas Subject to Evacuation Orders” following “Step 2 Completion, and Future Issues for Consideration” on 26 Dec. of the same year to redefine the previous areas subject to evacuation orders; thus, the “Second Supplement to the Interim Guidelines on Determination of the Scope of Nuclear Damage Resulting from the Accident at the Tokyo Electric Power Company Fukushima Daiichi and Daini Nuclear Power Plants (Concerning Damages associated with the Re-definition of Evacuation Areas by the Government, etc.) (“Second Supplement”) was finalised and published on 16 March 2012.

Subsequently, in August 2013, areas subject to evacuation orders were redefined in all municipalities designated as areas subject to evacuation orders. Among the three new areas subject to evacuation orders, free access was made possible to Area 2 (areas in which the residents are not permitted to live) and Area 1 (areas in which evacuation orders are ready to be lifted); in addition, decontamination and infrastructure recovery were promoted, based on decontamination plans and infrastructure recovery schedules, toward restoration, reconstruction and return, while business operations partly resumed. In addition, in some areas where decontamination and infrastructure recovery advanced, special accommodation was implemented in preparation for the return of residents, and consideration on the termination of evacuation orders has commenced.

On the other hand, as regards Area 3 (areas where it is expected that the residents will have difficulties in returning for a long time), restricted habitation in future was assumed in principle, while access was limited. As a result, full-fledged decontamination and infrastructure recovery have not been implemented; currently, there are no prospects of termination of the evacuation orders, and it is envisaged that evacuation orders will be prolonged. Aiming at the provision of homes for residents who have to be evacuated for a long period, disaster public housing for nuclear accident evacuees is being constructed, and out-of-town communities are being organised. According to surveys conducted by questionnaire among residents of Area 3, many wish to live in their own home in another area until returning.

In this situation, the residents who have to be evacuated make efforts toward rebuilding their lives; however, in the case of residents who lived in old houses, the amounts of property compensation specified in the Second Supplement are small, so that they cannot repair or rebuild their houses in case of returning, or acquire new houses in other areas in the case of prolonged evacuation, etc. In addition, when relocating to other areas in the case of prolonged evacuation etc., there are cases in

which a person has to live in an area where land prices are higher than in their original residence area, so that they are unable to purchase land at the new residence area.

In addition, in a situation in which full-fledged decontamination and infrastructure recovery have not been implemented, and there are no prospects of the evacuation orders being terminated, residents of Area 3 in which returning is difficult and prolonged evacuation is expected to far exceed a period of 6 years after the Accident, are required to indicate their approach to compensation for damages related to mental anguish in the event that termination of evacuation orders is not expected and evacuation is prolonged.

2. Basic approach

Based on the aforementioned situation in area subject to evacuation orders, in the present Fourth Supplement to the Interim Guidelines (“Guidelines”), regarding specific reasonable periods of compensation for expenses related to evacuation and damages related to mental anguish after the termination of evacuation orders in areas subject to evacuation orders, and the scope of compensation for expenses required to provide new houses and compensation in the case of prolonged evacuation, we indicate the current possible scope of compensation, in addition to previously formulated guidelines, so as to facilitate the relief of victims through timely, fair and appropriate compensation.

Being not specified as eligible for compensation in the Committee’s guidelines does not mean non-eligibility for immediate compensation; rather, damages that can be recognised as having a sufficient causal relationship according to the particular situation which are not mentioned in the guidelines shall be eligible for compensation. In addition, the method of calculating the amount of compensation indicated in the Guidelines does not exclude other reasonable calculation methods. TEPCO is required to accept victims’ compensation claims and respond reasonably, flexibly, and faithfully even when the claimed damages are not specified explicitly as being eligible for compensation in the Committee’s guidelines, by enabling eligibility for compensation, in whole or in part, based on particular cases or damage types in accordance with the spirit of the guidelines.

In addition, the Accident at the Tokyo Electric Power Company Fukushima Daiichi and Daini Nuclear Power Plants (“the Accident”) resulted in extremely wide and diverse damages. Even assuming that every individual victim has been compensated, it is difficult to expect the victims to rebuild their lives without restoration and reconstruction of the living environment, industry, employment etc. in the affected areas. Therefore, in addition to the implementation of prompt, fair and appropriate compensation through the faithful response of TEPCO, aiming at reconstruction of victims’ lives and businesses in areas in which they return or in new residence areas, the Government and other institutions are required to steadily implement recovery measures, etc. such as the enhancement of employment opportunities and employment support, support for reconstruction or relocation of businesses including agriculture, forestry and fisheries industries, medical and welfare services in affected areas, etc.

Part 2. Damages Associated with Evacuation Orders, etc. Issued by the Government

1. Expenses related to Evacuation and Damages related to Mental Anguish

The following is added to the Interim Guidelines and the Second Supplement concerning expenses related to evacuation and damages related to mental anguish (respectively, 2 and 6 of the “Damage Items” in Part 3 of the Interim Guidelines).

▪ Guidelines

1) As regards the specific amount of third-stage compensation for damages related to mental anguish, the following applies depending on the area in which the victim lived.

- (1) As regards Area 3 (areas where it is expected that the residents will have difficulties in returning for a long time), and Area 2 (areas in which the residents are not permitted to live) and Area 1 (areas in which evacuation orders are ready to be lifted) in Okuma and Futaba towns, JPY 10 million per person is added to 6

million yen per person assigned in the Second Supplement for Area 3, and the total future amount obtained as the said 6 million yen after conversion into monthly payments (from March 2014 onward) is deducted (except for the increase in living expenses within the usual range) to arrive at the benchmark amount. Specifically, in the event that the third stage starts in June 2012, the amount obtained by deducting the future amount from the additional amount is 7 million yen.

- (2) Regarding areas other than specified in (1), 100 thousand yen per person per month remains the benchmark.

II) The period of compensation for expenses related to evacuation (increased living expenses, accommodation expenses etc.) of those obtaining compensation for home provision as stipulated in 2-I and II below, unless the circumstances are exceptional, is set from the moment it became possible to obtain compensation for damage related to home provision until relocation to owned or rented housing in another location. However, a reasonable period is set for people who have not relocated to owned or rented housing in another location for a reasonable period of time.

III) In the Interim Guidelines, the “reasonable period” after “the elapse of a reasonable period of time from the termination of evacuation orders, etc.” not eligible for compensation, unless the circumstances are exceptional, is set as 1 year as a benchmark; the period is to be determined flexibly, according to the particular circumstances.

- Notes

As regards I), in Area 3 (areas where it is expected that the residents will have difficulties in returning for a long time), when re-defining the evacuation areas, restricted habitation in the future was assumed in principle, while access is still limited; in addition, full-fledged decontamination and infrastructure recovery are not even scheduled. As a result, even now there are no prospects of evacuation orders being terminated, and prolonged evacuation is expected to far exceed a period of 6 years after the Accident. In addition, the most part of Okuma and Futaba towns (96% of the population) is designated as Area 3. Thus, the population, main infrastructure and living-related services are concentrated in Area 3; even in the case of Area 2 (areas in which the residents are not permitted to live) or Area 1 (areas in which evacuation orders are ready to be lifted), the residents can hardly return unless the evacuation orders are cancelled in Area 3; therefore, we recognise that there are no prospects of the evacuation orders being terminated, just as in Area 3.

The nature of damages related to the mental anguish of residents who lived in such areas depends, in theory, on whether returning is eventually possible or not. However, we came to the following conclusions: (1) It is difficult to determine whether returning is possible or not following long-term evacuation, and if returning is possible, when it can be expected; (2) In the current situation when access is limited, while there are neither schedules for decontamination and infrastructure recovery nor prospects of returning, it is thought to be reasonable to recognise victims as those who had to relocate due to the impossibility of returning, even if returning were to be possible after the elapse of a long period; (3) Aiming at early rebuilding of such victims’ lives, and considering that compensation is necessary irrespective of the uncertain prospect of the termination of the evacuation orders, compensation shall be made for “mental anguish and the like when it is impossible for a person to return, for an unforeseeably long period, to their home and area where they have lived for many years, thus being forced to abandon their life there”, irrespective of whether returning is eventually possible or not.

2) As regards the areas specified in I) (1), after formulation of the Guidelines, decisions shall be made based on the current situation as of March 2014 when victims are able to claim damage compensation from TEPCO based on I) (1). However, changes in the situation shall be taken into account, for example, if evacuation areas are re-defined, so that decontamination and infrastructure recovery schedules are established for Area 3 and prospects of returning become clear. As regards Tomioka and Namie towns that are adjacent to Okuma and Futaba towns, where the boundaries of Area 3 fall in town areas with a relatively high population density, highly

contaminated areas (where the annual cumulative dose is supposed to exceed 50 mSv after area re-definition) adjacent to Area 3 should be handled flexibly, based on re-definition after the lifting of restrictions, dose reduction due to decontamination, and other particular circumstances.

3) The calculation of the additional amount in I) (1) is based on previous court cases, criteria for compensation payments on death, etc., thus sufficiently exceeding the total amount of compensation for damages related to mental anguish (not including increased living expenses) in the event that evacuation orders continue more than 10 years after the accident. In addition, in the Second Supplement, compensation in the event that returning is impossible for a long period is calculated uniformly as compensation of damages for a five-year period, and the portion thereof corresponding to the period since March 2014 is supposed to be included in “mental anguish and the like when it is impossible for a person to return, for an unforeseeably long period, to their home and area where they have lived for many years, thus being forced to abandon their life there”; therefore, that portion was deducted from the additional amount. Further, the said amount is based on compensation paid uniformly to everyone eligible under I) (1), irrespective of the number of years spent in affected areas and other conditions. Moreover, a larger amount may be claimed depending on the particular circumstances.

4) As regards persons eligible under I) (2), the total amount of compensation for damages related to mental anguish increases according to the period of compensation in the case of prolonged evacuation orders. However, the said total amount is basically limited by that payable to persons eligible under I) (1); even in the event of increased probability of the total amount reaching the limit benchmark, compensation may be obtained for home provision as stipulated in 2-I) below.

5) As regards II), the “reasonable period” can be set, for example, in the case of those eligible under I) (1), up to a period of 6 years after the Accident, when applicants are expected to be able to move into disaster public housing for nuclear accident evacuees.

6) As regards III, 1 year was set as the benchmark based on the current situation in areas where decontamination and infrastructure recovery is progressing, and where the termination of evacuation orders is being considered, taking into account that (1) life as evacuees has been prolonged, and proper preparations are necessary for returning; (2) it is reasonable to adjust the timing of return to a certain occasion, for example, a new school term; (3) according to the resolution of the Nuclear Emergency Response Headquarters of December 2011, the termination of evacuation orders is to be discussed with prefectures, municipalities and residents at the stage when the infrastructure necessary for everyday living and living-related services has been basically restored, with consideration for sufficient progress in decontamination works centered on children’s living environment; (4) through such discussions, the residents can estimate when the evacuation orders will be cancelled, thus being able to make preparations for returning to some extent in advance. However, this period of 1 year is determined as a provisional benchmark based on the situation in areas where the termination of evacuation orders is being considered. In future, flexible decisions should be made with regard to actual conditions, for example, the status of termination of the evacuation orders. In addition, regarding “the case of exceptional circumstances”, a flexible response is needed according to particular circumstances; in addition to the provisions of the Second Supplement, other issues should be considered for residents whose houses require repair prior to returning, such as selection of contractors, actual periods needed for repair and other construction works, supply and demand conditions in construction works and other services, etc. In so doing, expenses related to evacuation should be considered flexibly, according to the particular circumstances.

7) As regards III, as mentioned in the Second Supplement, in order to provide prompt and fair compensation to numerous evacuees, even if an evacuee returned home within a reasonable period after termination of the evacuation orders, a uniform deadline should be set in the calculation of the amount of compensation for damages related to mental anguish, in principle, regardless of when an evacuee actually returned home.

8) As regards III, as mentioned in the Interim Guidelines and the Second Supplement, the deadlines for business damage and damage resulting from incapacity to work should not be based on termination of the evacuation orders, elapse of reasonable period from such termination, or

returning to areas subject to evacuation orders, but rather, basically, on the date when a victim was able to resume their previous or equivalent business activity. In the event that damages continue or occur because of returning home after termination of the evacuation order, such damages should be also subject to compensation.

2. Damages Associated with Home Provision

▪ Guidelines

I) Those eligible to compensation under I) (1) above, who previously owned houses, can claim compensation for the following expenses incurred for relocation or prolonged evacuation (hereinafter “relocation etc.”).

- (1) The difference between the actual expenses for purchasing a house (only the living space of a building; except for expenses stipulated in (3); the same shall apply hereinafter) and the pre-accident value of the house owned and lived in at the time of the Accident (referred to as “property value” in Part 2-4 of the Second Supplement; the same shall apply hereinafter), not exceeding 75% of the difference between the pre-accident value and the original value (at the time of construction).
- (2) The difference between the actual expenses for purchasing housing land (only living space; except for the expenses stipulated in (3); the same shall apply hereinafter) and the pre-accident value of the housing land owned and lived in at the time of the Accident (referred to as “property value” in Part 2-4 of the Second Supplement; the same shall apply hereinafter). However, if the area of housing land owned at the time of the Accident exceeds 400 m², the pre-accident value of the housing land is reduced to a value equivalent to 400 m². If the area of newly-owned housing land exceeds the average area of housing land in urban regions of Fukushima prefecture, the said average area is used as the area of newly-owned housing land (however, if the area of housing land owned at the time of the Accident is smaller than the average area, the actual area of housing land is used in the calculation). In the event that newly-owned housing land is expensive, the average area of housing land in urban regions of Fukushima prefecture (or the actual area of housing land owned at the time of the Accident, if it is smaller than the average area) is multiplied by the average price of housing land in urban regions of Fukushima prefecture in the calculation.
- (3) Registration fees, consumption tax and other expenses related to (1) and (2).

II) Those not eligible to compensation under I) (1) above, who previously owned houses in areas subject to evacuation orders and whose relocation etc. is recognised as reasonable, can claim compensation for expenses under I) (1) and I) (3) as well as 75% of the amount under I) (2) as expenses for relocation etc.

III) Those who previously owned houses, other than stipulated in I) or II), can claim compensation for the following expenses incurred in order to return home after termination of the evacuation orders.

- (1) The difference between the actual expenses incurred for necessary and reasonable repair or reconstruction (hereinafter “repair etc.”) of a house lived in before the Accident (except for the expenses stipulated in (3)) and the pre-accident value of the house, not exceeding 75% of the difference between the pre-accident value and the original value (at the time of construction).
- (2) Expenses for demolition of the previous house required for necessary and reasonable reconstruction.
- (3) Registration fees, consumption tax and other expenses related to (1) and (2).

IV) Those who previously rented houses in areas subject to evacuation orders can claim compensation for the following expenses incurred for relocation etc. or returning.

- (1) A lump-sum payment (key money etc.) required for moving into a newly-rented house.
- (2) 8 years' worth of the difference in rent between the new house and previous house.

V) In the event that a high probability of occurrence of the expenses subject to compensation under I) through IV) is objectively recognised, these can be claimed in advance based on an estimate.

▪ Notes

1) As regards I), for those who lived in areas subject to compensation for damages related to mental anguish under I) (1) above at the time of the Accident, relocation etc. is recognised as necessary when there are no prospects for termination of the evacuation orders.

2) As regards II, cases in which “relocation etc. is recognised as reasonable” include, for example, cases in which the start of a new life is recognised as reasonable before termination of the evacuation orders because there are no prospects for business resumption or employment upon returning; cases in which returning would have an adverse impact on medical treatment and care obtained by a person or their family due to disruption of currently obtained medical treatment and care; and cases in which a change in living environment at the evacuation site would have an adverse impact on children’s physical and mental state, etc.

3) As regards I) (1), II) and III) (1), considering that the pre-accident value of old houses is inevitably evaluated low due to depreciation, compensation exceeding the amount in the case of public land acquisition (about 50% of the value at time of construction is compensated even for 48-year-old wooden buildings) is appropriate.

4) As regards I) (2) and II), areas in which evacuees actually live or wish to relocate are often urban regions of Fukushima prefecture where land prices are higher than in their previous residence areas; therefore, we have assumed that expenses for purchasing housing land in the new residence area would be often higher than the pre-accident value of previously owned housing land. Considering the average area of housing land in Fukushima prefecture, the benchmark for the area of previously owned housing land was set to 400 m². In addition, “the average area of housing land in urban regions of Fukushima prefecture” and “the average price of housing land in urban regions of Fukushima prefecture” was set provisionally at 250 m² and 38 000 yen/m², respectively, according to a survey carried out by a specialised agency in Fukushima, Aizu Wakamatsu, Koriyama, Iwaki, Nihonmatsu and Minamisoma cities.

5) As regards II, the subject areas are Area 2 (areas in which the residents are not permitted to live) and Area 1 (areas in which evacuation orders are ready to be lifted), and we have assumed that the land value might recover after termination of the evacuation orders.

6) As regards III, the objective evaluation of the necessity for reconstruction should be made flexibly, taking into consideration the particular conditions caused by the lack of management, such as rain leaks, animal intrusion, mould growth etc., as well as the evacuee’s the intentions for reconstruction. In so doing, objective criteria should be applied; for example, reconstruction of a wooden building should be recognised as necessary when over half of the floor area or rooms has been fouled due to rain leaks, animal intrusion, mould growth etc.

7) As regards IV, areas in which evacuees actually live or wish to relocate are often urban regions of Fukushima prefecture where land prices are higher than in their previous residence areas; therefore, we have assumed that the house rent etc. at the new residence area would often exceed the pre-accident house rent; thus, compensation exceeding the amount in case of public land acquisition is appropriate. For those eligible to compensation under 1-I) (1) above, and for those eligible for compensation under 1-I) (2) above for whom relocation etc. is recognised as reasonable, the “new house rent” used in calculating the difference subject to compensation is set at the average rent in urban regions of Fukushima prefecture in case that the new house rent exceeds the average rent adjusted to the area of the house rented at the time of the Accident; for those who cannot move to their previously rented house after returning, the new house rent is set at the

average rent around the affected areas in the event that the new house rent exceeds the average rent adjusted to the area of the house rented at the time of the Accident.

8) As regards V), damage associated with home provision is not subject to compensation in principle, unless actual expenses are incurred. However, aiming at the early rebuilding of the evacuees' lives, TEPCO should respond flexibly and reasonably; for example, for those eligible under I) or II), where the probability of relocation etc. is objectively recognised as high, or where a person moves into a rented house rather than buying a house, and for those eligible under III) where the probability of repair etc. of the previous house is objectively recognised as high, or where life as evacuees is prolonged, TEPCO should provide compensation in advance based on an estimate with reference to the average land price and estimated construction costs at the new residence area, even though house acquisition expenses or repair expenses have not actually occurred.

9) In the event that those eligible to compensation under I) and II) return to their previous areas after relocation, the expenses required for repair or reconstruction of houses where they lived before the Accident should be settled with respect to the value of houses and housing land at the new residence area, unless the circumstances are exceptional.

10) When a victim decides on a new residence area, business or employment conditions are important factors; victims are expected to do business or to be employed at their new residence area, or even in if relocation etc. is not necessary, to make efforts toward resumption of business or employment at the evacuation site. Even those without clear prospects for future living, who have not yet resumed business or employment, are expected to make efforts toward resumption of business or employment at their new residence area or evacuation site.

As regards agricultural and other business at the new residence area or evacuation site, the costs of disposing goods and operating assets, business relocation expenses, relocation and management expenses related to operating assets etc. should be recognised as damages subject to compensation, within a reasonable and necessary scope, as additional expenses arising from business interruption, or additional expenses that are incurred to avoid business interruption or due to a change of business, in addition to existing compensation for lost profits and property. Considering the diversity of businesses and other factors, it is difficult to establish uniform criteria; therefore, aiming at the resumption of agricultural and other businesses and rebuilding victims' lives at their new residence area or evacuation site, when farmlands or businesses are relocated, TEPCO is required to respond flexibly and reasonably, according to the nature of the damages, with respect to compensation related to additional expenses required for relocation etc.

Outline of “Fourth Supplement to Interim Guidelines (Concerning Damages Associated with the Prolongation of Evacuation Orders, etc.)”

26 December 2013

Dispute Reconciliation Committee for Nuclear Damage Compensation

With regard to evacuation areas, the Committee defines the following as damages that should be compensated, in addition to those specified in the Interim Guidelines and the Second Supplement to the Interim Guidelines.

1. Damages associated with mental anguish

Damages associated with mental anguish and the like shall be compensated when it is impossible for a person to return, for an unforeseeably long period, to their home and area where they have lived for many years, thus being forced to abandon their life there.

Target area:

Area 3 (areas in which residents will have difficulties in returning for a long time; for example, there are no plans for decontamination or infrastructure recovery). In the case of Okuma and Futaba towns where core functions are located in Area 3, the entire town area is considered as the target area.

Compensation:

10 million yen per person (lump-sum payment, increase in living expenses not included). Additional compensation of 7 million yen for persons not expected to return to their homes as of June 2012.

- For non-eligible persons (Area 2 (areas in which residents are not permitted to live) and Area 1 (areas in which evacuation orders are ready to be lifted)), monthly compensation of 100 thousand yen per person continues even after 6 years have elapsed since the accident.

2. Damages related to home provision

In order to acquire a new home in the case of relocation, or to extensively repair or rebuild a previous home in the case of returning, the necessary and reasonable expenses exceeding the pre-accident property price (being compensated by the Tokyo Electric Power Company) shall be compensated.

(1) Eligible persons for Section 1 above

Residential house:

Compensation for up to 75% of the difference between the original new-build price and the pre-accident price of the house. (Combined with the property compensation, up to 80-100% of the original new-build price of the house.)

Housing land:

Compensation for the difference between the price of newly-acquired land and the price of former land.¹

(2) Persons for whom relocation is recognised as reasonable (Area 2 (areas in which residents are not permitted to live) and Area 1 (areas in which evacuation orders are ready to be lifted))

Residential house:

Compensation for up to 75% of the difference between the original new-build price and the pre-accident price of the house. (Combined with the property compensation, up to 80-100% of the original new-build price of the house.)

Housing land:

Compensation for 75% of (1) (taking the original land price into consideration).

- Compensation for expenses related to evacuation is completed upon relocation to a new house after having been compensated according to (1), (2).

(3) Returning persons

Residential house:

Compensation for the actual repair or reconstruction expenses (in the case of reconstruction, expenses required for demolition of the original house are also compensated), limited to 75% of the difference between the original new-build price and the pre-accident price of the house (combined with the property compensation, up to 80-100% of the original new-build price of the house).

- If a person who previously rented a house has to relocate to another rented house, 8 years' worth of the difference in rent between the new house and the previous house" shall be compensated, in addition to a lump-sum payment (key money, etc.).

3. "Reasonable period" after termination of evacuation orders

One year is taken as the benchmark for the "reasonable period" established for compensation for damages related to mental anguish and expenses related to evacuation. (Except for special circumstances related, for example, to the need for certain medical treatment and care, or conditions at the school the children attend.)

1 Criteria: Average area of housing land in Fukushima prefecture – 400 m², average area of housing land in main evacuation sites within Fukushima prefecture (Fukushima, Aizu Wakamatsu, Koriyama, Iwaki, Nihonmatsu and Minamisoma cities) – 250 m², unit price – 38 000 yen/m².

** Compensation is limited to average rent corresponding to the area of the previous house.

OECD Nuclear Energy Agency

Decision and Recommendation of the Steering Committee Concerning the Application of the Paris Convention to Nuclear Installations in the Process of Being Decommissioned

THE STEERING COMMITTEE,

HAVING REGARD to the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as amended by the Additional Protocol of 28 January 1964, by the Protocol of 16 November 1982 and by the Protocol of 12 February 2004 (hereinafter referred to as the "Paris Convention"), and in particular Article 1(b) thereof;

CONSIDERING that, by virtue of that Article, the Steering Committee may, if in its view the small extent of the risks involved so warrants, exclude any nuclear installation, nuclear fuel or nuclear substances from the application of the Paris Convention;

HAVING REGARD to Article 8(b) and Article 10(b) of the Statute of the OECD Nuclear Energy Agency;

CONSIDERING that nuclear installations in the process of being decommissioned are covered by the provisions of the Paris Convention;

CONSIDERING that it should be made possible for Contracting Parties to cease the application of the Paris Convention when the decommissioning of a nuclear installation has reached a stage where the risks involved are so limited;

CONSIDERING that the technical exclusion criteria provided in its Decision and Recommendation of 20 April 1990 concerning the Application of the Paris Convention to Nuclear Installations in the Process of Decommissioning [NE/M(90)1], which is based on the superseded 1985 Edition together with the 1988 Supplement of the Regulations for the Safe Transport of Radioactive Material of the International Atomic Energy Agency, are no longer appropriate;

NOTING the attached Explanatory Note;

DECIDES that any Contracting Party may cease to apply the Paris Convention to a nuclear installation in the process of being decommissioned, provided that the provisions set out in the Annex to this Decision and Recommendation and any additional conditions which the Contracting Party may judge appropriate to establish are met;

DECIDES that the Decision and Recommendation of 20 April 1990 concerning the Application of the Paris Convention to Nuclear Installations in the Process of Decommissioning [NE/M(90)1] is hereby revoked;

RECOMMENDS that the Contracting Parties which make use of this option notify the other Contracting Parties, as well as the Secretariat of the OECD Nuclear Energy Agency; and

RECOMMENDS that the Secretariat of the OECD Nuclear Energy Agency, as appropriate, analyse periodically the experience gained by the Contracting Parties which use this option and report back to all the Contracting Parties.

APPENDIX

TO THE DECISION AND RECOMMENDATION OF THE STEERING COMMITTEE CONCERNING THE APPLICATION OF THE PARIS CONVENTION TO NUCLEAR INSTALLATIONS IN THE PROCESS OF BEING DECOMMISSIONED

Definitions

1. For the purpose of this decision and recommendation, “decommissioning” means all steps leading to the release of a nuclear installation from regulatory control. These steps include the processes of decontamination and dismantling.

General provisions

2. In order for a nuclear installation in the process of being decommissioned to be excluded from the application of the Paris Convention:

- a) The operations of the installation in the process of being decommissioned must have permanently ceased, and any nuclear fuel, radioactive material in process, radioactive waste (whether produced during operation or being stored), and radionuclide inventory must have been removed or decayed to the extent that the exclusion criteria and requirements specified in paragraph 3 hereunder are satisfied.
- b) The installation must remain under the control and subject to the regulations of the competent national authority.
- c) Provisions for containment and control of the remaining radioactivity must be in place, as considered appropriate for their purpose by the competent national authority.

Exclusion criteria

3. In order for a nuclear installation in the process of being decommissioned to be excluded from the application of the Paris Convention it must i) meet the installation radioactivity exclusion criteria in paragraph a) below, based on a generic accident assessment; and then, if criteria a) are met, ii) comply with the competent national authority's requests to submit, for review and appraisal, a comprehensive, installation-specific safety assessment to confirm that the dose criteria described in paragraph b) below are met.

a) Radioactivity criteria

The generic criteria for allowable activity remaining in an installation in the process of being decommissioned listed below shall be used to decide whether such an installation is eligible for exclusion from the application of the Paris Convention. The radionuclide-specific activity criteria are based on a conservatively biased, generic accident assessment such that off-site exposure to a representative person assumed to be a member of the public would be no greater than 10 mSv in a year. The generic installation activity limits for nuclear installations in the process of being decommissioned are set out in the following table:

Installation Activity Exclusion Criteria by Isotope

Isotope	Fixed activity (Bq)	All other forms of activity (Bq)
Pu ²³⁹	1 E+13	1 E+12
Pu ²⁴¹	1 E+15	1 E+14
U ²³⁸	1 E+14	1 E+13
Cs ¹³⁷	1 E+13	1 E+12
Ni ⁶³	1 E+16	1 E+15
Co ⁶⁰	1 E+14	1 E+13
Fe ⁵⁵	1 E+16	1 E+15
Eu ¹⁵²	1 E+14	1 E+13
Eu ¹⁵⁴	1 E+14	1 E+13
Cl ³⁶	1 E+12 ¹	
Sr ⁹⁰	1 E+14	1 E+13
Ag ^{108m}	1 E+13	1 E+12

Isotope mixtures:

In the case of a nuclear installation containing several (n) of the isotopes listed above, in the form of fixed activity (f) or any other form of activity (of), it will be necessary to ensure that the activities of the different isotopes present in the installation (A_i) collectively observe the following criterion:

$$\sum_{i=1 \text{ to } n} \left(\frac{A_{i \text{ of}}}{A_{i \text{ of lim}}} + \frac{A_{i \text{ f}}}{A_{i \text{ f lim}}} \right) \leq 1$$

where A_{i of lim} is the limit activity for isotope i present in any other form than fixed activity, and

where A_{i f lim} is the limit activity for isotope i present in the form of fixed activity.

1. In a nuclear installation being decommissioned, Cl³⁶ is assumed to exist in an easily releasable form. It is also assumed to be fully releasable during accident circumstances, for example fires.

b) Dose criteria

If an installation has met the generic activity criteria specified in a) above, then it can undergo a comprehensive, installation-specific assessment of potential accident scenarios.

Nuclear installations in the process of being decommissioned for which the comprehensive, installation-specific safety assessment suggests that radiological off-site exposures, in terms of the assessed annual effective dose to a representative person under all reasonably conceivable operational conditions, including accidental occurrences and security events, and assuming that protective actions have not been taken, do not result in an assessed annual effective dose to the representative person assumed to be a member of the public of greater than 1 mSv, may be excluded.

Other exclusion considerations

4. It is recognised that radiation dose may, on its own, be an insufficient basis on which to decide to exclude a nuclear installation; therefore, Contracting Parties should consider whether any additional aspect relating to the magnitude and severity of potential nuclear damage requires evaluation in the assessment and decision process by the competent national authority.

Other regulatory and safety assessment aspects

5. Contracting Parties to the Paris Convention (CPPCs) shall ensure that decisions regarding exclusion from the application of the Paris Convention are taken within their national regulatory framework.

6. CPPCs shall require an appropriate safety assessment, including a regulatory review/assessment and prior approval process by the competent national authority to give reasonable assurance that the exclusion provisions and requirements are met in practice. The safety assessment shall consider relevant principles, requirements and guidance as set out in international legal instruments (e.g. conventions), IAEA Safety Standards and related documents. The safety assessment framework requires the description and specification, among other things, of: the scenarios to be considered which could lead to the potential release of radionuclides under accidental conditions; the environmental conditions to be assumed; the transfer of potentially released radionuclides in the environment; the exposure pathways to be evaluated; the dosimetry to be applied in evaluating radiation doses; and the assumptions to be made regarding the location and habits of the representative person. The results of the analysis shall be compared for compliance with the proposed exclusion criteria.

EXPLANATORY NOTE

FOR THE DECISION AND RECOMMENDATION OF THE STEERING COMMITTEE CONCERNING THE APPLICATION OF THE PARIS CONVENTION TO NUCLEAR INSTALLATIONS IN THE PROCESS OF BEING DECOMMISSIONED

Discussion and development of criteria for exclusion

As a starting point for the development of these criteria, the Ad Hoc Expert Group on the Exclusion of Nuclear Installations Being Decommissioned from the Paris Convention (EGPC) used the proposal made to the Committee on Radiation Protection and Public Health (CRPPH) at its 17-19 May 2011 meeting, which was dose-based, and the criteria proposed by the French delegation at the same CRPPH meeting, which was installation-activity based [NEA/CRPPH(2011)4]. In addition to these radiological aspects, which will be elaborated below, the EGPC discussed several issues and came to the following basic agreements:

- **Regulatory control:** The expert group agreed that regardless of whether a nuclear installation in the process of being decommissioned is excluded from the application of the Paris Convention, it must remain under the relevant national regulations for radiological protection until competent national authorities release the installation from such regulatory requirements. As such, in judging whether to release a nuclear installation from the application of the Paris Convention, it should be assumed that the installation licensee (the “operator”) will remain obliged to meet the requirements of all relevant national regulations, particularly the requirement of prior approval of any such exclusion, in its country.
- **Workers:** Workers at the installation will be subject to national regulatory requirements for occupational exposure, health insurance and occupational disease compensation schemes. Given this assurance, the expert group felt that occupational exposure would not need to be taken into account in any criteria used for releasing nuclear installations from the application of the Paris Convention.
- **Responsibility for safety assessment:** The expert group agreed that any request to exclude a nuclear installation in the process of being decommissioned from the application of the Paris Convention must come from the operator of the installation as defined in the Convention. As such, the responsibility for performing a safety assessment of the candidate nuclear installation, and for presenting the results to the competent national authority for review and assessment against the given criteria, rests with the operator.
- **Radiological criteria:** The expert group felt that when developing exclusion criteria, one should ensure an acceptable level of protection of a representative person who could be exposed by any nuclear installation in the process of being decommissioned which is considered for exclusion from the application of the Paris Convention. For this purpose, the potential detriment that the nuclear installation could cause would be characterised in terms of, among other considerations, the radiological exposure to the most highly exposed hypothetical representative person under all reasonably foreseeable operational conditions including accidental occurrences and security events.

In the Steering Committee decision of 20 April 1990 [NE/M(90)1], the criteria for the exclusion of a nuclear installation in the process of being decommissioned agreed by the Steering Committee

were expressed in terms of the total activity remaining in the nuclear installation, noting that the activity under consideration in the criteria would be that remaining after any nuclear fuel and/or radioactive material in process, and radioactive waste produced during such operations, have been removed. For the 1990 assessment, one generic scenario was developed, and two credible source radionuclide inventories were used, supposing a commercial nuclear power plant and a large fuel reprocessing facility. Using these sources, and assuming a serious accident scenario, considered at the time as being conservative, calculations suggested that exposures to members of the critical group would not exceed about 50 mSv. In 1990, this level of exposure was judged to be acceptable in that the recommendations of the International Commission on Radiological Protection (ICRP) at the time (Publications 60 and 63) suggested that only doses on the order of 50 mSv and over would justify implementing post-accident countermeasures, such as evacuation or sheltering, because at less than 50 mSv the detriments of such protective actions would outweigh their benefits. Intervention levels, based on justification and optimisation, were then fixed at levels below which it would generally be judged unjustified to act, and many of these were on the order of 50 mSv. Based on these considerations, an expert group that was set up in 1990 by the CRPPH determined radionuclide-specific maximum activity threshold limits for fixed and other forms of activity for a nuclear installation graded according to the radiotoxicity of a radionuclide by using, for reasons of practicality, the A_2 -values from the IAEA *Regulations for the Safe Transport of Radioactive Material* (1985 version together with the 1988 supplement) as a suitable radiological hazard index.

The current recommendations of the ICRP (Publications 103, 109 and 111) have taken a markedly different approach for the management of exposure situations: the reliance on a generic, fixed dose criterion, below which the situation is acceptable and protective actions are not justified, no longer represents good radiological protection practice. Rather, protection is optimised for each situation, with the optimum level of protection taking into account the prevailing circumstances. Within this rather general framework, the ICRP has established two types of benchmarks: a) Dose Limits (1 mSv/y for public exposure and 100 mSv/5 years for occupational exposure) which the ICRP recommended for regulatory compliance purposes for planned exposure situations, and exceeding them would be a regulatory infraction; b) Dose Constraints and Reference Levels which the ICRP recommended for the different types of exposure situations, as values that would be planned not to exceed, and are intended to assist in the planning and selection of protection options for the prevailing circumstances. No fixed values are recommended for Dose Constraints and Reference Levels, but a series of bands (< 1 mSv/y; between 1 mSv/y and 20 mSv/y; and between 20 mSv/y and 100 mSv/y) are recommended depending on the type of exposure situation being considered.

In reaching an agreement on the radiological criteria to be used when considering whether a nuclear installation in the process of being decommissioned could be excluded from the application of the Paris Convention, the EGPC also considered that, in addition to the regulatory control and exposure assessment mentioned above, the guidance expressed by the current ICRP recommendations (Publications 103, 109 and 111) should be taken into account.

With these considerations in mind, the EGPC agreed that the radiological criteria for deciding whether a candidate nuclear installation could be excluded from the application of the Paris Convention should be based on a two-step process which will, firstly, ensure a certain degree of consistency and uniformity in the implementation of the proposed exclusion through the establishment of a set of activity threshold limits that all CPPCs would be obliged to use and, secondly, give reasonable assurance that the extent of risks involved in the decommissioning activities of a candidate installation is sufficiently low so that application of the third party liability regime of the Paris Convention is no longer necessary. The total installation activity criteria are based on a generic accident assessment yielding off-site¹ exposures, to a representative person assumed to be a member of the public, of no greater than 10 mSv in a year. If the nuclear

1. A “nuclear site” or a “site” is defined in this document as the industrial area housing one or more nuclear installations. As such, “off-site” is defined as being outside the nuclear site boundary.

installation met the first criteria, a detailed, installation-specific assessment would be performed and if this yields an off-site exposure of less than 1 mSv in a year, to a representative person assumed to be a member of the public, then the nuclear installation in the process of being decommissioned would be eligible for exclusion from the application of the Paris Convention. Further, it was recognised that exposure is not the only aspect that competent national authorities may consider when judging the advisability of exclusion from the application of the Paris Convention. As such, while the extent, magnitude and severity of the circumstances considered in the safety assessment may not be evaluated as quantitative radiological criteria for these judgements, they may be qualitatively included in the assessment and decision process when considering the type and magnitude of the attendant nuclear damage, as defined in the Paris Convention. For example, assessment and evaluation of the magnitude and severity of potential nuclear damage generally draws on various scientific, technical, economic and social disciplines and requires resolution of multi-faceted, complex issues which may involve value judgement, actuarial considerations, socio-political judgement and security considerations.

Generic accident assessment assumptions

In order to generate the limiting activity criteria listed by radionuclide in the Annex to the Decision and Recommendation of the Steering Committee Concerning the Application of the Paris Convention to Nuclear Installations in the Process of Being Decommissioned, several generic accident assessment assumptions were made:

- *The damage fraction*: the fraction of the installation that is assumed to be affected by any modelled accident scenario is assumed to be 50%.
- *Availability for release*: some of the radioactive contamination and activity present in the nuclear installation will be “Fixed activity”, i.e., pursuant to the definition provided in document NE(90)7, activity induced in solid, non-flammable components of the installation which are not subject to significant wear, leaching or corrosion during the static phases or dismantling operations of the decommissioning period; or “All other forms of activity”, such as a smearable powder-like form, a fairly easily removable pipe scale, or some other forms of contamination or activity that could be potentially available for dispersal and release. For these two forms of residual activity or contamination, it is assumed that 10% of the “Fixed activity” contamination is available for release in case of an accident, and 100% of the “All other forms of activity” is available for release in case of a postulated accident (for Cl^{36} see footnote to Table 1).
- *Release fraction*: some elements are more volatile than others, and as such the fraction of the activity of a particular isotope that will actually be released during an accident scenario, such as fire, will vary with the element. The assumed release fractions are listed in Table 1 for each radionuclide that is considered.
- *Installations considered*: note that PWR, BWR, GCR and HWR reactors were considered, as well as fuel fabrication, enrichment, fuel reprocessing installations and other installations.

Table 1: Generic Accident Assessment Assumptions

Isotope	Damage fraction	Availability fixed / other forms	Release fraction
Pu ²³⁹	50%	10% / 100%	0.5%
Pu ²⁴¹	50%	10% / 100%	0.5%
U ²³⁸	50%	10% / 100%	0.5%
Cs ¹³⁷	50%	10% / 100%	10%
Ni ⁶³	50%	10% / 100%	1%
Co ⁶⁰	50%	10% / 100%	1%
Fe ⁵⁵	50%	10% / 100%	1%
Eu ¹⁵²	50%	10% / 100%	1%
Eu ¹⁵⁴	50%	10% / 100%	1%
Cl ³⁶	50%	100% ²	100%
Sr ⁹⁰	50%	10% / 100%	1%
Ag ^{108m}	50%	10% / 100%	5%

The resultant activity-based exclusion criteria proposed by the EGPC are listed in the Annex to the Decision and Recommendation of the Steering Committee Concerning the Application of the Paris Convention to Nuclear Installations in the Process of Being Decommissioned. Such criteria are relatively conservative, and some nuclear installations in the process of decommissioning will not, at first, be eligible for exclusion from the application of the Paris Convention. However, at some point in the decommissioning and dismantling process, the total activity present in the nuclear installation will meet the activity-based exclusion criteria, and thus any nuclear installation in the process of being decommissioned will eventually become eligible for exclusion from the application of the Paris Convention.

- **Approval requirements:** The CPPCs are generally responsible for ensuring that nuclear installations under their jurisdiction meet an adequate level of safety and protection against nuclear and radiation risks. The extent of that obligation is stipulated in the respective national legal framework and in relevant international and Euratom instruments to which the CPPCs may be a party. An exclusion of a nuclear installation from the application of the international nuclear liability regime must not affect these basic requirements.

The regulatory arrangements concerned with the exclusion of an installation from the application of the international third party liability regime may be implemented either as a separate regulatory process or as part of the overall regulatory control process for nuclear installations depending on and consistent with the nationally established legal, cultural, political and constitutional practices and procedures. Exclusion approvals for candidate nuclear installations may additionally be subject to certain conditions (approval requirements) and responsibilities of compliance with specific technical, organisational or administrative safety and

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2. In a nuclear installation being decommissioned, Cl³⁶ is assumed to exist in an easily releasable form. It is also assumed to be fully releasable during accident circumstances, for example fires.

regulatory requirements depending on the prevailing circumstances and operational status of the candidate installation.

The relevant regulatory requirements and procedures shall be implemented in a graded fashion to appropriately address the actual level of risks of the candidate installation.

In establishing or amending the applicable national exclusion regulatory framework and procedures, due account shall be given to the internationally recognised regulatory principles, practices and requirements.

- **Review and assessment requirements:** Prior to obtaining approval for exclusion, the operator (applicant) of the candidate installation should be required to submit a detailed assessment of the installation radionuclide inventory which shall be reviewed and assessed by the competent national authority. If this meets the total installation activity criteria, then the operator (applicant) of the candidate installation should be required to submit a detailed safety assessment report which shall be reviewed and assessed by the competent national authority. In practice, these two assessments could be filed together. The basic objective of the review and assessment is to determine whether the operator's submissions demonstrate that the candidate nuclear installation seeking exclusion complies from the point of exclusion and thereafter throughout the duration of the decommissioning and dismantling with the relevant exclusion criteria and requirements in accordance with clearly defined procedures. The regulatory review and assessment should be undertaken in a structured, transparent, accountable and systematic manner.

The competent national authority should issue – as appropriate – guidance on the format and contents of the documentation to be submitted by the operator (applicant) in support of applications for approval and communicate with the operator in order to state its expectations and to promote confidence in the regulatory process.

To the extent practicable, the regulatory review and assessment should be coordinated with the overall regulatory control plan for a candidate nuclear installation to ensure consistency and be conducted in accordance with national legislation and international recommendations.

- **Safety assessment process:** In planning and conducting the safety assessment, due consideration shall be given to relevant guidance and recommendations,³ as specified by the competent national authority.

The responsibility for carrying out the safety assessment rests with the applicant for the exclusion of the candidate nuclear installation. Where available and applicable, safety assessment information may be taken from existing materials, for example, environmental impact statements and safety analysis reports.

The safety assessment to be undertaken for a candidate nuclear installation has the main objective of assessing and evaluating the safety performance of the installation for comparison with the exclusion criteria and requirements set out here, under all foreseeable operational conditions including accidental occurrences and security events. In doing so, a systematic and structured analysis approach should be employed which covers both high and low probability events. This includes all internal and external events and processes which may arise at the installation and which may have an impact on the physical barriers to confine the radioactive material or otherwise give rise to off-site radiation risks.

The degree of detail of the safety assessment depends on the type, nature and complexity of the installation and/or decommissioning activity being performed, that is, a graded approach should be employed in the safety assessment.

3. At the time of this decision, examples of relevant guidance and recommendations were given in IAEA 2009, Safety Guide No. WS-G-5.2 – Safety Assessment for the Decommissioning of Facilities using Radioactive Material.

Description of the candidate nuclear installation and site characterisation: The purpose of the description of the candidate nuclear installation and characterisation of the site is to provide sufficient information to enable dose calculations to be performed. The description of the candidate nuclear installation comprises, among other things, information regarding the design, the activity inventory, the relevant safety characteristics (e.g., their associated systems, structures and components) and the operational history. The site characterisation includes, *inter alia*, information on the geological, hydrological and meteorological characteristics of the site and the vicinity, in conjunction with present and/or projected population distribution, land use, site activities and planning control. For candidate nuclear installations, the documentation should include a description of the proposed activities, including their interdependencies and their schedule.

Hazard identification and screening: In the process of the hazard identification, external and internal initiating events should be identified that cover all anticipated abnormal occurrences or accidental conditions, including high and low probability events, with the potential of causing harmful radiological consequences to the public, property or the environment. Initiating events include occurrences such as equipment failure, human errors, natural or security events. A systematic and logical approach should be chosen to identify potential hazards and initiating events that are suitable for the respective conditions. Screening methods should take into account all possible release and exposure pathways.

Scenario development: Relevant event scenarios should be considered, including human interactions and the failure of safety-relevant systems. The selection of bounding scenarios may reduce the number of scenarios to be analysed using approved analysis methods. A scenario generation strategy aims at producing a complete set of the most relevant scenarios, this being important for the consideration of relevant issues. Care must be taken to ensure that the selected scenarios provide an appropriately comprehensive picture of the key aspects of the system, their possible evolutionary pathways, critical events and system robustness.

Radiological consequence assessment and comparison with criteria: An assessment of radiological consequences shall be performed by using, as appropriate, deterministic and/or probabilistic methods for comparison with the radiological exclusion criteria and requirements.

When bounding scenarios are used, it is important to ensure that they include the maximum impacts from all the individual scenarios. For example, the bounding scenario may be a fire releasing major amounts of radioactive material into the environment. However, if any other scenario results in higher doses to the public, these estimated doses also have to be evaluated.

Independent peer review and confidence building: An independent peer review initiated by the applicant prior to submission of the application documents to the competent national authorities is a vital part of confidence building and the quality assurance programme. The independent review should be performed by suitably qualified and experienced individuals who are different from those who carried out the safety assessment.

If the independent review (or the subsequent review by the regulatory bodies) indicates deficiencies in the safety assessment, e.g., additional scenarios to be considered or different assumptions in the consequence assessment, it may be necessary to revise and amend the assessment to take these factors into account.

Depending on the national regulatory system, the results of the safety assessment may be subject to a public stakeholder involvement process.

- **Regulatory review and approval aspects:** The decision to exclude a nuclear installation in the process of being decommissioned from the application of the Paris Convention is to be taken by the competent national authority.

The operator has to demonstrate through appropriate submissions that the candidate nuclear installation satisfies all relevant exclusion criteria and requirements set out here from the point of exclusion and thereafter throughout the duration of the decommissioning and dismantling activities.

Joint Declaration on the Security of Supply of Medical Radioisotopes

WE, the Ministers and representatives of Australia, Canada, Germany, Japan, the Republic of Korea, the Netherlands, Poland, the Russian Federation, Spain, the United Kingdom and the United States of America, **SHARE** a common interest in ensuring the security of supply of the most widely used medical radioisotope, molybdenum-99 (^{99}Mo) and its decay product, technetium-99m ($^{99\text{m}}\text{Tc}$), which is used in approximately 40 million medical diagnostic imaging procedures per year worldwide enabling precise and accurate, early detection and management of diseases such as heart conditions and cancer, in a non-invasive manner.

WE ACKNOWLEDGE, on the one part, that the production of $^{99\text{m}}\text{Tc}$ depends largely on a small number of reactors that are ageing and facing unplanned outages, planned refurbishment outages or planned permanent shutdowns, which increases the risk of disruption of the supply chain, unless new infrastructure is developed to replace these facilities before they shut down.

WE RECOGNISE, on the other part, that an unsustainable economic structure is threatening the reliability of the $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ supply chain, and that global action to move to full-cost recovery is necessary to ensure economic sustainability and long-term secure supply of medical isotopes.

WE AFFIRM that any action to ensure the reliability of supply of $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ must be consistent with the political commitments to non-proliferation and nuclear security.

WE CONFIRM our acceptance of the principles set forth in the policy approach released in June 2011 by the High-Level Group on the Security of Supply of Medical Radioisotopes (the HLG-MR principles) to ensure the long-term secure supply of medical radioisotopes, which were formally endorsed by the Organisation for Economic Co-operation and Development's (OECD) Steering Committee for Nuclear Energy on 28 April 2011.

WE COMMIT, with the aim of jointly promoting an internationally consistent approach to ensuring the long-term secure supply of medical radioisotopes, to implement the HLG-MR principles in a timely and effective manner, and to:

- Take co-ordinated steps, within our countries' powers, to ensure that ^{99}Mo or $^{99\text{m}}\text{Tc}$ producers and, where applicable, generator manufacturers in our countries implement a verifiable process for introducing full-cost recovery at all facilities that are part of the global supply chain for $^{99\text{m}}\text{Tc}$;
- Encourage the necessary actions undertaken by ^{99}Mo processing facilities or $^{99\text{m}}\text{Tc}$ producers in our countries to ensure availability of reserve capacity capable of replacing the largest supplier of irradiated targets in their respective supply chain;
- Take the necessary actions to facilitate the availability of $^{99\text{m}}\text{Tc}$, produced on an economically sustainable basis, as outlined in the HLG-MR principles;
- Encourage all countries involved in any aspect of the $^{99\text{m}}\text{Tc}$ supply chain, and that are not party to the present Joint Declaration, to take the same approach in a co-ordinated manner;
- Take the necessary actions described above by the end of December 2014 or as soon as technically and contractually feasible thereafter, aware of the need for early action to avoid potential shortages of medical radioisotopes that could arise from 2016;
- Report on an annual basis to the OECD Nuclear Energy Agency (NEA) on the progress made at the national level and support an annual review of the progress made at the international level, both in light of this Joint Declaration.

WE INVITE the OECD Nuclear Energy Agency (NEA) to further the objectives set out in this Joint Declaration by, among other actions, undertaking periodic reviews of the progress of the supply chain with implementing the HLG-MR principles.

United Arab Emirates

Federal Decree No. (51) of 2014

**Ratifying the Convention on Supplementary Compensation
for Nuclear Damage¹**

We, Khalifa bin Zayed Al Nahyan, the President of the United Arab Emirates

Having reviewed:

- The Constitution;
- Federal Law No. (1) of 1972, Concerning the Jurisdiction of the Ministries, the Competencies of Ministers and the amending laws thereof;
- Federal Law by Decree No. (4) of 2012, Concerning the Civil Liability for Nuclear Damage;
- Federal Decree No. (32) of 2012, Ratifying the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage of 1997;
- Federal Decree No. (33) of 2012, Ratifying the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention of 1988; and
- Based upon the proposal of the Minister of Foreign Affairs, the consent of the Cabinet and the ratification of the Federal Supreme Council,

We hereby enact the following:

Article (1)

The Convention on Supplementary Compensation for Nuclear Damage (provisions attached) has been ratified with the exception of the provisions of Paragraph 2 of Article 16 of this Convention in accordance with the provisions of Paragraph 3 of the same Article of the Convention concerning referral of dispute resolution to arbitration or to the International Court of Justice, where the State shall not be considered bound by it.

Article (2)

For the purposes of Articles 3 and 4 of this Decree, the phrase “Nuclear Installation” and the terms “Operator” and “Authority” shall have the meanings ascribed to them in Article 1 of the Federal Law by Decree No. (4) of 2012, referred to.

Article (3)

If the Nuclear Installation of the liable Operator is located within the United Arab Emirates territories, the United Arab Emirates and the other contracting parties to the Convention on Supplementary Compensation for Nuclear Damage shall benefit from the right of recourse granted to the Operator, in accordance with the provisions of Article 11 of the Federal Law

1. This document is an unofficial English translation of the original Arabic text. In the event of any discrepancy between this version and the original version, the latter will take precedence. The official Arabic text was published in the UAE Official Gazette (August 2014) No. 568, p. 201. An unofficial English translation of the Arabic text of Federal Law by Decree No. 4 of 2012 Concerning Civil Liability for Nuclear Damage can be found at OECD Nuclear Energy Agency (2013), “Federal Law by Decree No. 4 of 2012”, *Nuclear Law Bulletin*, No. 91, OECD, Paris, pp. 137-143.

by Decree No. (4) of 2012 (referred to), in the amount of the contributions they paid pursuant to Paragraph 1 (b) of Article 3 of the same Convention.

Article (4)

The Operator shall be responsible for meeting the obligation of the United Arab Emirates as a contracting state to make available public funds in accordance with Paragraph 1 (b) of Article 3 of the Convention on Supplementary Compensation for Nuclear Damage. Should there be more than one Operator, the responsibility for meeting this obligation shall be shared amongst them according to the decisions issued by the Authority in this regard.

The Operator or Operators shall submit and maintain the insurances or other financial guarantees required by the Authority with regard to meeting the obligation referred to in this Article.

Article (5)

The Minister of Foreign Affairs shall implement this Decree and it shall be promulgated in the Official Gazette.

Signed/
Khalifa bin Zayed Al Nahyan
President of the United Arab Emirates

Signed/
The Prime Minister

Signed/
Minister of Foreign Affairs

Issued by us at the Presidential Palace in Abu Dhabi:
Date: 15 Rajab 1435 A.H.
Corresponding to: 4 May 2014 A.D

**Ratification of the Federal Supreme Council of
Federal Decree No. (51) of 2014
Ratifying the Convention on Supplementary Compensation
for Nuclear Damage**

Signed/

Khalifa bin Zayed Al Nahyan

President of the United Arab Emirates

Ruler of Abu Dhabi

Signed/

Mohammed bin Rashid Al Maktoum

The Prime Minister

Ruler of Dubai

Signed/

Sultan bin Mohammed Al Qasimi

Supreme Council Member

Ruler of Sharjah

Signed/

Saud Bin Saqr Al Qasimi

Supreme Council Member

Ruler of Ras Al Khaimah

Signed/

Humaid bin Rashid Al Nuaimi

Supreme Council Member

Ruler of Ajman

Signed/

Saud bin Rashid Al Mualla

Supreme Council Member

Ruler of Umm Al Quwain

Signed/

Hamad bin Mohammed Al Sharqi

Supreme Council Member

Ruler of Fujairah

News briefs

27th plenary meeting of the European Nuclear Safety Regulators Group (ENSREG), 27 May 2014, Brussels

At the 27th plenary meeting of ENSREG, ENSREG members were informed of the progress made in the Council of the European Union (EU) on the discussions regarding the proposal for a revision of the 2009 Nuclear Safety Directive and on the likelihood of a quick agreement on the proposal. The leading role of ENSREG in developing a common approach on new requirements to be introduced by the directive, such as the European system of topical peer reviews, was acknowledged.

ENSREG also approved its work programme for the period 2014-2016 and took note of the activities of its working groups. It agreed in principle to the terms of reference of the Workshop, planned for April 2015, on the National Action Plans on the implementation of the recommendations identified in the course of the EU stress tests of nuclear power plants (“National Action Plan Peer Review Workshop”) and endorsed the guidelines for producing the first national reports under the Nuclear Waste and Spent Fuel Management Directive.¹

The preparations for the next ENSREG conference in 2015 were also addressed and ENSREG welcomed the offer from the United Kingdom to head the working committee.

The meeting was concluded by the selection of the new Chairperson of ENSREG: Mr Andy Hall of the Office for Nuclear Regulation, who will be supported by Mr Andreas Molin and Mr Petr Krs in the role of Vice-Chairs.

28th plenary meeting of ENSREG, 16 October 2014, Brussels

At its 28th plenary meeting, ENSREG approved the terms of reference for its 2015 National Action Plan Peer Review Workshop and held a preliminary exchange of views on the themes and topics of the 2015 ENSREG conference, leading to the establishment of an organising committee for the event. Other important points of discussion concerned the topical peer reviews required under the revised Nuclear Safety Directive, for which ENSREG agreed to formally invite the Western European Nuclear Regulators Association to develop proposals for the topics and processes, as well as the co-operation with the International Atomic Energy Agency (IAEA) regarding the peer reviews under the Nuclear Waste and Spent Fuel Management Directive, with the endorsement of the draft text of a revised memorandum of understanding.

Further information is available on the ENSREG website: www.ensreg.eu/news.

1. Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, OJ L 199 (2 August 2011), pp. 48-56.

Roundtable on “Achievements and Challenges in Decommissioning Nuclear Installations in the EU”, 10 September 2014, Brussels

The roundtable on the decommissioning of nuclear installations in the EU, organised by the European Commission on 10 September 2014, gathered many and various nuclear stakeholders to present and discuss the current situation and future prospects for nuclear decommissioning in the EU. The roundtable was organised around two sessions, the first one on technologies and assets in decommissioning nuclear facilities in the EU and the second one on further developments, and challenges for the industry and society.

Side event on European Commission and Joint IAEA-European Commission activities on Radioactive Waste Management, Decommissioning and Remediation, IAEA General Conference, 22 September 2014, Vienna

A highly attended side event was organised in Vienna on 22 September 2014, in the margin of the IAEA General Conference to present the main ongoing activities of the European Commission and the joint projects with the IAEA in the field of radioactive waste and spent fuel management, decommissioning and remediation.

2013 Annual Report of the Euratom Supply Agency (ESA)

The ESA, which has been set up on the basis of the Treaty establishing the European Atomic Energy Community, is in charge of implementing the common supply policy for nuclear fuels of the Euratom Community, with the aim of ensuring security of supply for European utilities operating nuclear power plants. The role of ESA for ensuring a fuel diversification policy in the interest of supply security has been underlined by the Communication from the Commission on a European Energy Security Strategy. In addition to this, ESA acts as an observatory of the global nuclear fuel market, trying to anticipate potential problems for the security of supply. This observatory role of ESA has been further enlarged in 2013 to cover the aspects of the supply of medical radioisotopes in the EU.

The 2013 Annual Report of ESA is available on the agency's website: <http://ec.europa.eu/euratom/ar.html>. Chapter 1 outlines the activities of the Nuclear Safety and Fuel Cycle Directorate of the European Commission's Directorate-General for Energy, as well as ESA's activities in 2013. Chapter 2 gives an overview of the world market for nuclear fuels, while Chapter 3 contains ESA's specific evaluations of the fuel market in the EU. Last, but not least, Chapter 4 sets out the Agency's work programme for 2014.

International Nuclear Law Association (INLA), 2014 Congress

The INLA, at the invitation of its President, Rafael Mariano Manóvil, held its XXI congress in Buenos Aires, from 20 to 23 October 2014. The objective of the bi-annual congress was to review the main developments in the field of nuclear law. Sessions focused on nuclear safety and licensing, radiation protection, radioactive sources, nuclear transport, radioactive waste management, security and safeguards, new build trends and nuclear liability and insurance. As usual, the congress attracted many of the leading specialists of this branch of law. Reports that had been submitted in time before the congress are reproduced in the proceedings: *Nuclear law in progress: derecho nuclear en evolución*, Legis Argentina, Buenos Aires, Argentina. Such papers and other relevant documents from the congress are also available on the website of the INLA: www.aidn-inla.be.

On the occasion of the congress, the INLA General Assembly elected a new President, Ms Els Reynaers Kini, for the term 2015-2016. The next congress is accordingly expected to take place in India, in the fall of 2016.

Recent publications

***Understanding Nuclear Regulations: Analysis and Reasoning (2014) by Michael Cash*¹**

The author of *Understanding Nuclear Regulations: Analysis and Reasoning* found that there are few studies analysing the proper method for interpreting nuclear regulations for nuclear power plants. Acknowledging that interpreting nuclear laws and regulations is a complex task, particularly for personnel working in nuclear installations, this book builds on the author's vast experience in this field and proposes a structured methodology to better understand nuclear regulations.

Part I deals with the origins of United States' legislation and regulatory agencies. Part II addresses the development of the US nuclear regulatory policy. Part III covers the current US Nuclear Regulatory Commission's (NRC) regulatory framework. Part IV contains a case study on regulatory analysis, based on an NRC example and Part V proposes concluding remarks.

The author is both an attorney and an engineer. He has worked in the nuclear power industry for more than 30 years in various engineering, regulatory and managerial positions, in particular within the US NRC. He is at present a senior regulator at the Federal Authority for Nuclear Regulation (FANR) of the United Arab Emirates.

1. Cash, M. (2014), *Understanding Nuclear Regulations: Analysis and Reason*, New Generation Publishing, London, 220 pages, ISBN 978-1-78507-092-1.

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