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NUCLEAR ENERGY AGENCY  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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## Table of contents

<b>Treaty implementation applied to conventions on nuclear safety</b> by Michel Montjoie.....	9
<b>Crisis, criticism, change: Regulatory reform in the wake of nuclear accidents</b> by Kimberly A. Sexton .....	35
<b>CASE LAW</b>	
<b>Canada</b> .....	63
Decision of the Canadian Federal Court of Appeal overturning a decision to send back for reconsideration an environmental assessment of a proposed new nuclear power plant in Ontario.....	63
<b>France</b> .....	67
Conseil d'État decision, 28 November 2014, Fédération Réseau sortir du nucléaire and others vs. Electricité de France (EDF) (Request No. 367013).....	67
<b>Germany</b> .....	68
Judgment of the European Court of Justice on the nuclear fuel tax.....	68
<b>India</b> .....	69
Judgment of the High Court of Kerala in a public interest litigation challenging the constitutional validity of the Civil Liability for Nuclear Damage Act, 2010 .....	69
<b>Japan</b> .....	71
District court decisions on lawsuits related to the restart of Sendai NPP and Takahama NPP .....	71
<b>Poland</b> .....	72
Decision of the Masovian Voivod concerning the legality of the resolution on holding a local referendum in the Commune of Rózan regarding a new radioactive waste repository .....	72
Certain provisions of the Regulation of the Minister of Health of 18 February 2011 on the conditions for safe use of ionising radiation for all types of medical exposure have been declared unconstitutional by a judgment pronounced by the Constitutional Tribunal .....	75
<b>Slovak Republic</b> .....	78
Developments in relation to the disclosure of information concerning the Mochovce nuclear power plant .....	78
<b>NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES</b>	
<b>Australia</b> .....	79
General legislation .....	79
<b>France</b> .....	80
General legislation .....	80
<b>Germany</b> .....	82
Radioactive waste management.....	82

<b>Greece</b> .....	83
Radioactive waste management.....	83
<b>Lithuania</b> .....	84
Nuclear safety and radiological protection.....	84
Radioactive waste management.....	85
Nuclear security.....	86
<b>Romania</b> .....	86
Licensing and regulatory infrastructure.....	86
International co-operation.....	86
Nuclear security.....	88
Nuclear safety and radiological protection.....	88
<b>Slovak Republic</b> .....	89
International co-operation.....	89
Liability and compensation.....	89
General legislation.....	90
<b>Slovenia</b> .....	90
General legislation.....	90
<b>Switzerland</b> .....	92
Radioactive waste management.....	92
Liability and compensation.....	93
<b>United States</b> .....	94
Licensing and regulatory infrastructure.....	94
Radioactive waste management.....	94

## INTERGOVERNMENTAL ORGANISATION ACTIVITIES

<b>European Atomic Energy Community</b> .....	97
Non-legally binding instruments.....	97
<b>International Atomic Energy Agency (IAEA)</b> .....	98
Convention on Nuclear Safety (CNS).....	98
59 <sup>th</sup> regular session of the IAEA General Conference.....	98
Nuclear Security (GC(59)/RES/10).....	101
IAEA Treaty Event.....	102
Legislative assistance activities.....	102
Nuclear Law Institute.....	102
<b>OECD Nuclear Energy Agency (NEA)</b> .....	103
European Nuclear Energy Tribunal (ENET) Inaugural Session for the 9 <sup>th</sup> mandate.....	103
New signatories to the extension of the Generation IV International Forum (GIF) Framework Agreement.....	103
Joint Declaration on the Security of Supply of Medical Radioisotopes.....	103
International Framework for Nuclear Energy Cooperation (IFNEC).....	103
15 <sup>th</sup> session of the International School of Nuclear Law (ISNL).....	103
2016 session of the International Nuclear Law Essentials (INLE).....	104

## MULTILATERAL AGREEMENTS..... 105

## NEWS BRIEFS

10 <sup>th</sup> European Nuclear Energy Forum Plenary Meeting, 26-27 May 2015, Prague.....	107
Nuclear Safety in Europe, 3 <sup>rd</sup> Regulatory Conference, 29-30 June 2015, Brussels.....	107
30 <sup>th</sup> Plenary meeting of the European Nuclear Safety Regulators Group (ENSREG), 30 June and 1 July 2015, Brussels.....	108



**RECENT PUBLICATIONS**

Burges Salmon Guide to Nuclear Law – Second Edition (2015)  
edited by Ian Salter ..... 111

**LIST OF CORRESPONDENTS TO THE NUCLEAR LAW BULLETIN** ..... 113



## Treaty implementation applied to conventions on nuclear safety

by Michel Montjoie\*

### I. Introduction

Given that safety is the number one priority for the nuclear industry, it would seem normal that procedures exist to ensure the effective implementation<sup>1</sup> of the provisions of the conventions on nuclear safety,<sup>2</sup> as already exist for numerous international treaties.<sup>3</sup> Unfortunately, these procedures are either weak or even non-existent. Therefore, consideration must be given to whether this weakness represents a genuine deficiency in ensuring the main objective of these conventions, which is to achieve a high level of nuclear safety worldwide.<sup>4</sup> But, before one can even address that issue, a prior question must be answered: does the specific nature of the international legal framework on nuclear safety automatically result in a lack of non-compliance procedures in international conventions on the subject? If so, the lack of procedures is justified, despite the drawbacks.

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- \* Mr Montjoie is a Doctor in Public Law and Researcher at the Nanterre Centre for International Law (CEDIN).
1. "L'effectivité d'un traité ne réside pas seulement dans sa mise en œuvre formelle par la prise des mesures internes nécessaires à son exécution, mais dans l'observation concrète des obligations contractées par les parties." (A treaty is effective when formally implemented through the adoption of internal measures but also when the parties comply with the obligations arising thereof), Impériali, C. (1998), "Le Contrôle de la Mise en Œuvre des Conventions Internationales" (Control of the Implementation of International Conventions) in C. Imperiali (ed.), *L'Effectivité du Droit International de l'Environnement – Contrôle de la Mise en Œuvre des Conventions Internationales* (The Effectiveness of International Environmental Law – Control of the Implementation of International Conventions), Economica, Paris, p. 7.
  2. The conventions on nuclear safety refers to the Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293 (CNS) and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997), IAEA Doc. INFCIRC/546, 2153 UNTS 357 (Joint Convention). Some authors also include in this category the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 133, and the Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 275, but they are of a different nature and will not be examined in this article.
  3. See Section II examples of international environmental law. In other areas: Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (1984), 1465 UNTS 113, entered into force 26 June 1987, Articles 18-20; Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (1992), 1974 UNTS 45, entered into force 29 April 1997, Article VIII; Marrakesh Agreement Establishing the World Trade Organization (1994), 1867 UNTS 4, entered into force 1 January 1995, Annex 2 (Understanding on Rules and Procedures Governing the Settlement of Disputes).
  4. See Article 1(i) of the CNS and of the Joint Convention.

### A. A problem caused by the conventions on nuclear safety?

The specific nature of the international legal framework on nuclear safety, as acknowledged by legal theorists,<sup>5</sup> is due to the fact that, on the one hand, it is recognised that nuclear safety falls under the exclusive responsibility of the state and, on the other hand, it is impossible to establish precise rules in a binding international legal text.

While nuclear safety is not the only area falling under the exclusive responsibility of the state, the fundamental principle of state responsibility for nuclear safety has prevented any international commitment for many years.<sup>6</sup> In 1986, several months after the Chernobyl accident, two French nuclear officials confirmed as much before the International Atomic Energy Agency (IAEA):<sup>7</sup> the Chairman of the French Alternative Energies and Atomic Energy Commission (CEA) at the IAEA General Conference on 29 September 1986<sup>8</sup> and the French Delegate at the same General Conference, who formally asserted that the regulatory authority in the field of nuclear safety cannot be shared or delegated and must be left to the state.<sup>9</sup>

The Chernobyl accident nevertheless changed the situation by paving the way for the creation of a binding international instrument for nuclear safety with the CNS,<sup>10</sup> though it should be noted that the Preamble to the CNS states that “responsibility for nuclear safety rests with the State having jurisdiction over a nuclear installation”.<sup>11</sup>

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5. See Strohl, P. (1997), “L’Originalité du Droit Nucléaire et son Avenir” (The Uniqueness of Nuclear Law and its Prospects for the Future), *Proceedings Nuclear Inter Jura 1997*, pp. 571-583; Washington, M. (1997), “The Practice of Peer Review in the International Nuclear Safety Regime”, *New York University Law Review*, pp. 430-467; Pelzer, N. (2006), “Learning the Hard Way: Did the Lessons Taught by the Chernobyl Nuclear Accident Contribute to Improving Nuclear Law?”, in NEA (ed.), *International Nuclear Law in the Post-Chernobyl Period*, NEA, Paris, pp. 81-131.
  6. This does not mean that there was no international co-operation, as reflected by the numerous documents published by the IAEA as of the 1960s in the form of non-binding recommendations.
  7. Other countries, notably the United States and the United Kingdom, made similar statements.
  8. “La coopération internationale, en l’occurrence le programme de sûreté de l’Agence, trouve sa véritable justification lorsqu’elle aide les États à assurer leurs responsabilités nationales.” (International co-operation, in this case the safety program developed by the [IAEA], finds its true justification when assisting states in fulfilling their national responsibilities.) de la Fayette, L. (1993), “International Environmental Law and the Problem of Nuclear Safety”, *Journal of Environmental Law*, Vol. 5, No. 1, pp. 32-33.
  9. “Le pouvoir de réglementer dans le domaine de la sûreté ne peut être partagé, ni délégué et qu’il doit être laissé aux États.” (The power to regulate in the safety field cannot be split nor delegated, and should remain with the States.) See “Après Tchernobyl, une nouvelle impulsion à la coopération internationale?” (After Chernobyl, a new impulse to international co-operation?) in Courteix, S and J. Hébert (eds.) (1987), “L’accident nucléaire : prévention, mesures d’urgence, réparation” (Nuclear accident: prevention, emergency measures and compensation), *Problèmes politiques et sociaux* (Political and social problems), Nos. 552-553, la Documentation française, p. 36 and following.
  10. “Until the adoption of the CNS, the licensing and supervision of nuclear power plants, including the establishment of safety criteria, were a carefully guarded domain of national sovereignty and discretion”. Pelzer, N. (2009), “Nuclear New Build – New Nuclear Law?”, *Nuclear Law Bulletin*, No. 84, NEA, Paris, p. 5.
  11. See paragraph (iii) of the Preamble to the CNS. The same principle is also stated in the Joint Convention but worded differently. See paragraph (vi) of the Preamble to the Joint Convention.

Accession by a state to an international treaty “places a restriction upon the exercise of the sovereign rights of the State” according to the treaty’s obligations.<sup>12</sup> International law is based on these “limitations” of sovereignty<sup>13</sup> and the procedures of international law for ensuring the implementation of a treaty take into account these retained sovereign rights. Accordingly, there is no reason that these rules cannot be applied to the conventions on nuclear safety. Even more so because, while these conventions contain limitations of sovereignty relative to the situation *ex-ante*, they do not cover the exclusive responsibility of the state in matters of nuclear safety.

The impossibility of setting detailed international norms does not explain, but rather reinforces the state sovereignty in nuclear safety. Sovereignty was asserted initially by many states and thus norms evolved slowly due in part to issues of competition between different nuclear power facilities; or because precise rules would go against the primary responsibility of the operator for safety, which is a recognised principle of nuclear safety;<sup>14</sup> or by the practical impossibility to harmonise the generally detailed national rules.<sup>15</sup> The fact nevertheless remains that the CNS<sup>16</sup> contains “classical” obligations<sup>17</sup> in addition to vague and non-binding obligations, which has led to it being referred to as an “incentive” convention.<sup>18</sup> While non-compliance is of little relevance for very vague obligations, it is more relevant for “classical” obligations. And according to Pierre Strohl, logic dictates that the lack of substance should be offset by stricter procedures designed to check and incite the fulfilment of undertaken obligations.<sup>19</sup>

## B. Outline of the article

The specific nature of the international law on nuclear safety, which in 1994 shaped the content of the CNS by notably not “allowing” (even today) the incorporation of precise international rules have been taken into account. The next step is to examine whether the absence of non-compliance procedures (which could have

12. S.S. “Wimbledon” case, PCIJ 1923, Series A, No. 1, p. 24.

13. “[The] right of entering into international engagements is an attribute of State sovereignty.” *Ibid.*

14. This is less of an issue at the national level. Some countries, such as the United States and Germany, have nuclear safety legislation based on precise rules.

15. “[Le traité] pourrait seulement établir un cadre aux règles communes de sûreté les moins contestables, de caractère nécessairement plus générales.” (The treaty could only establish a framework comprising the less questionable common rules for nuclear safety, presenting a more general character.) Strohl, P. (1993), “Bilan de recherches de la section de langue française du Centre d’Étude et de Recherche de l’Académie” (Research results of the French language section of the Centre for Studies and Research of the Academy), in *Centre d’étude et de recherche de droit international et de relations internationales* (Centre for Studies and Research in International Law and International Relations) (ed.), *Les risques résultant de l’utilisation pacifique de l’énergie nucléaire* (The hazards arising out of the peaceful use of nuclear energy), Hague Academy of International Law, Section de langue française, Martinus Nijhoff, Dordrecht, p. 79.

16. Given the similarity between the CNS and the Joint Convention, comments on the CNS are also valid for the Joint Convention, despite the fact that the wording of the two conventions is sometimes different.

17. “Chapter 2 of the convention [Obligations] may be qualified as the ‘classical’ or ‘conventional’ part of the instrument”. Pelzer, N., *supra* note 5, p. 98.

18. For more on the concept of an incentive convention, see *infra* Section IV, A, 1.

19. “[E]n bonne logique le déficit sur la substance devrait être compensé par un renforcement des procédures ayant pour objet de vérifier et encourager les obligations consenties.” (Logic dictates that the deficit on the substance should be compensated by a strengthening of the procedures in order to verify and encourage the agreed obligations.) Strohl, P., *supra* note 15, p. 85.

been integrated into the text) is a hindrance in ensuring the objectives of the conventions on nuclear safety, and to examine the procedures that could have been used, based on existing provisions in other areas of international law (environmental law, financial law, disarmament law, human rights, etc.). International environmental law will be the main source of this study, as it has certain similarities with the international law on nuclear safety<sup>20</sup> due to the sometimes vague nature of its obligations and irrespective of the fact that one of the purposes of nuclear safety is in particular to protect the environment from radiological hazards.<sup>21</sup> Indeed, the provisions of the law on nuclear safety are mainly technical<sup>22</sup> and designed to guarantee the normal operation of nuclear facilities, but there are also provisions designed to prevent or reduce the consequences of nuclear incidents or accidents on people and the environment. While the first set of provisions may, in certain respects, be considered as outside the scope of environmental law, the second set is more akin to this area of law, and it could even be considered that the provisions of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management<sup>23</sup> only cover the protection of the environment, as the most harmful consequence of a safety breach would be a contamination of flora and fauna, with no harmful effects for people if mitigating measures are taken as soon as the contamination is discovered.

After presenting the general issue of the implementation of treaties, the article will review the different “tools” (non-compliance procedures) available under international environmental law to enforce treaty obligations. The article will then examine how the conventions on nuclear safety deal with the problem of non-compliance by analysing the strengths and weaknesses of their provisions in this area and how they fare in comparison to the possibilities available under international environmental law by taking into account the specific nature of nuclear safety. Particular attention will be placed on the reasons behind the special importance of peer reviews in obtaining “the highest level of safety” when, while not completely non-existent, they do not have the same place in environmental conventions.

## II. Treaty implementation according to general international law

What is the point of taking an interest in provisions for verifying contracting parties’ compliance with the obligations of a treaty and for ensuring said compliance? While the answer may seem obvious, it appears that this is only a recent concern (as of the

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20. For the relationship between nuclear law and environmental law, see for example Reyners, P. (2007), “*Le droit nucléaire confronté au droit de l’environnement : Autonomie ou complémentarité ?*” (Nuclear Law Facing Environmental Law: Autonomy or Complementarity?), *Revue québécoise de droit international*, hors-série, pp. 149-186.
  21. “(Nuclear) safety: The achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards.” (emphasis added) IAEA (2007), *IAEA Safety Glossary – Terminology Used in Nuclear Safety and Radiation Protection*, IAEA, Vienna, p. 133.
  22. However the “licence” procedures (see the definition of “licence” in Article 2(iii) of the CNS) have to take into account the provisions imposed at present by international environmental law, especially relative to the impact on the environment in a transboundary context and public participation, bearing in mind that the traditional origins of some of these provisions can be traced back to the nuclear law of some states.
  23. See Article 17 (“Institutional Measures after Closure”) of the Joint Convention.

1990s),<sup>24</sup> especially in the area of environmental protection, where it can be difficult to specify the nature of obligations. Legal theorists are more focused on concluding conventions,<sup>25</sup> without seeming to care if the obligations in said conventions are respected,<sup>26</sup> which does not mean that the conventions lack provisions to guarantee this compliance.

There is a theory, developed in particular by Antonia Handler and Abram Chayes,<sup>27</sup> according to which the methods used to force a state to respect its convention obligations are counterproductive. States parties are “naturally” inclined to respect their obligations, and when they do not, it is not deliberate but rather because they cannot, owing to a lack of resources or the ambiguity of the obligations. Accordingly, other methods are required to promote compliance, using international co-operation through a management, rather than an enforcement approach under international organisations.

This theory, though somewhat idealistic and contested<sup>28</sup> (as it can also be shown that sanction regimes, such as those regularly used by the European Union and the World Trade Organisation, result in better implementation of treaties), is potentially applicable to some areas of international law. The next step is to examine whether it can have a beneficial impact on the conventions on nuclear safety.

When studying the implementation of conventions on international environmental law, it is necessary to bear in mind the main objective of the conventions of this branch of law, which is to protect (the environment) and not to prohibit (for example the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction of 13 January 1993). There is therefore an “obligation” to co-operate<sup>29</sup> (be it implicit or explicit), which does not rule out the need to impose sanctions if the obligations undertaken are not respected. Measures involving sanctions are therefore only to be considered as a last resort and based upon provable grounds. Nevertheless, this particular facet of international environmental law designed to encourage compliance<sup>30</sup> does not rule out the use of the traditional tools of international law in the event of breach of obligations or disputes between parties, as these tools are the only ones available in the absence of conventional non-compliance procedures.

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24. “In recent years the conviction ... has grown that the value of any norm depends on its full implementation”, Lang, W. (1998), “‘Peer Review’ of Environmental Performances in International Organizations”, in Hafner, G., et al. (eds.), *Liber Amicorum Professor Ignaz Seidl-Hohenedern in Honour of his 80<sup>th</sup> Birthday*, Kluwer Law International, The Hague, p. 381.
  25. “In the past international organizations have been praised for their role in processes of law-making and rule making; but this is not sufficient.” *Ibid.*, p. 383.
  26. “Until recently little attention has been given to the extent to which States and other actors comply with these agreements.” Brown Weiss, E. (1997), “Strengthening National Compliance with International Environmental Agreements”, *Environmental Policy and Law*, Vol. 2, p. 29.
  27. Chayes, A. and A. H. Chayes (1995), *The New Sovereignty: Compliance with International Regulatory Agreements*, Harvard University Press, Cambridge, p. 417.
  28. See for example Downs, G. W., et al. (1996), “Is the Good News About Compliance Good News About Cooperation?”, *International Organization*, Vol. 50, pp. 379-406.
  29. Naturally, international co-operation can also be useful, and sometimes necessary, in “prohibiting” conventions.
  30. A very large number of works and articles have been devoted to assessing compliance with treaties and the consequences of non-compliance in the field of international environmental law, though they will not be enumerated here.

## A. The characteristics of the traditional international law institutions

The traditional tools of international law include:

- the provisions of the 1969 Vienna Convention on the Law of Treaties (VCLT) concerning the termination or suspension of the operation of a treaty as a consequence of its breach,<sup>31</sup>
- the responsibility of states for internationally wrongful acts,<sup>32</sup>
- provisions governing the settlement of disputes where these exist in the texts of conventions, which is generally the case for conventions on international environmental law (even if their content may differ significantly depending on the convention).

Even though its material scope does not exclude nuclear activities, the “Draft articles on Prevention of Transboundary Harm from Hazardous Activities” (which nevertheless do not cover all fields of nuclear safety), adopted in 2001 by the United Nation’s International Law Commission, does not provide solutions to the problems caused by the weakness of the procedures for implementing conventions on nuclear safety. Indeed, its content is vague and this non-binding text does not have the status of custom in international law.<sup>33</sup>

### 1. Law of Treaties

Article 60 of the VCLT provides a potential measure that can be used in response to a substantial breach of a treaty by a party. But, it is a radical and negative solution (terminating the treaty or suspending its operation in whole or in part), and it is only applicable after “the violation of a provision essential to the accomplishment of the object or purpose of the treaty”,<sup>34</sup> regardless of the difficulty in invoking the breach and the need to obtain the unanimous agreement of the other parties so that the “injured” party can withdraw from the treaty.<sup>35</sup>

### 2. International responsibility of the state

By definition, the responsibility of states for internationally wrongful acts is only applicable, in the same way as the VCLT, once the breach of an international obligation has occurred. In addition, the act has to be attributed to a state. However, its implementation is not necessarily negative, as the international jurisdiction under which enforcement is sought will assess the gravity of the wrongful act and judge on the basis thereof.

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31. Vienna Convention on the Law of Treaties (1969), 1155 UNTS 331, entered into force 27 January 1980 (VCLT), Art. 60.

32. International Law Commission (2001), “Responsibility of States for Internationally Wrongful Acts”, *Yearbook of the International Law Commission*, vol. II, Part Two.

33. The “Draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities”, adopted in 2006 by the International Law Commission, supplementing the aforementioned 2001 draft in the context of work undertaken by said Commission as of 1977 on “International Liability for Injurious Consequences Arising out of Acts not Prohibited by International Law”, is outside the scope of the present article.

34. VCLT, Art. 60, § 3.(b).

35. See *ibid.*, Art. 60, § 2.(a).



### 3. Settlement of disputes

Strictly speaking, dispute settlement is not a tool of general international law but is sometimes equated thereto by legal theorists.<sup>36</sup> Indeed, dispute settlement clauses are present in most recent conventions on international environmental law, and are designed to help settle disputes over the interpretation and implementation of a convention, even if they are not always binding, depending on the conventions. The most comprehensive texts provide proportional measures ranging from consultation to legal sanctions. This progressive approach is a good reflection of the spirit of co-operation in these conventions and can come into play before breach of an obligation. It can also, in this case, result in dispute settlement clauses being considered as a means of persuasion<sup>37</sup> on par with facilitation procedures for non-compliance,<sup>38</sup> despite the fact that the development of non-compliance procedures has diminished the interest of dispute settlement procedures. On the other hand, dispute settlement procedures can only be launched by a party other than the defaulting state whereas non-compliance procedures can in some cases be launched by the injured party.

#### B. Use of these tools in the field of the environment

In the field of environmental protection, there are virtually no examples of the implementation of Article 60 of the VCLT or of the international responsibility of the state.<sup>39</sup> As for dispute settlement procedures, there are only rare examples and those that do exist were launched in the context of treaties that are not considered as international environmental law treaties (such as the Lake Lanoux<sup>40</sup> or the Gabčíkovo-Nagymaros Project<sup>41</sup> cases) or with reference to international custom (the

36. See Boisson de Chazournes, L. (1995), “*La mise en œuvre du droit International dans le domaine de la protection de l’environnement : Enjeux et défis*” (Implementation of International Law in the Environmental Protection Field: Issues and Challenges), *Revue générale de droit international public*, No. 1, p. 39.

37. “*Le règlement des différends apparaîtrait comme un moyen supplémentaire de persuasion pour l’amélioration de l’application des traités.*” (Settlement of disputes would appear as an additional argument to strengthen the application of treaties.) Imperiali, C., *supra* note 1, p. 19.

38. See *infra* in III, A, 2, b) for the notion of facilitation measures.

39. “*En ce qui concerne la pratique internationale, il importe de souligner qu’elle est pratiquement inexistante.*” (It should be noted that international practice is practically non-existent.) Urbinati, S. (2008), *Les Mécanismes de Contrôle et de Suivi des Conventions Internationales de Protection de l’Environnement* (Control and Monitoring Mechanisms for International Conventions on Environmental Protection), PhD thesis, Université Paris 1, p. 123. In the Gabčíkovo-Nagymaros Project case, reference was made to Article 60 of the VCLT, *Case Concerning Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Jurisdiction of the Court, Judgment, ICJ Reports 1997, p. 3 (25 September 1997). The following advisory opinion also referred to Article 60: *Conséquences juridiques pour les États de la présence continue de l’Afrique du sud en Namibie (Sud-Ouest africain) nonobstant la résolution 276 (1970) du Conseil de sécurité* (Legal Consequences for States of the Continued Presence of South Africa in Namibia (South-West Africa) Notwithstanding Security Council Resolution 276 (1970)), Advisory opinion, ICJ Reports 1971, p. 16.

40. The *Lake Lanoux* case centred on the interpretation of the Bayonne Treaty of 26 May 1866 and its Additional Act of the same date concerning use of the waters of Lake Lanoux. *Lake Lanoux case (Spain/France)*, Reports of International Arbitral Awards, Volume XII (16 November 1957), pp. 281-317.

41. The Gabčíkovo-Nagymaros Project Case, *supra* note 39, p. 7, centred on a dispute regarding the Treaty of 16 September 1977 concerning the construction and operation of the Gabčíkovo-Nagymaros System of Locks.

Trail Smelter case<sup>42</sup>). The only example (originally) attached to a convention on international environmental law is the MOX plant case brought by Ireland against the United Kingdom in 2001 in the scope of the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)<sup>43</sup> and the 1982 Convention on the Law of the Sea,<sup>44</sup> which resulted in the Court of Justice of the European Communities (CJEC) ruling in 2006 that Ireland had violated community law, where the CJEC was the only authority with jurisdiction in this case.<sup>45</sup>

### III. The “tools” for verifying the implementation of conventions on international environmental law

#### A. The use of non-compliance procedures

##### 1. The objective of these procedures – Overview

Given that the tools of general international law are not usually incorporated into international environmental law, and that sanctioning offending states does not necessarily resolve environmental protection issues, it was important to find more appropriate measures for promoting the implementation of conventions and thereby ensuring compliance in this field. The solution was non-compliance procedures. Regardless of whether they are being used in a spirit of assistance or punishment, procedures for non-compliance are useful, if not essential, in evaluating “failure” to comply with international conventions. A multitude of procedures exist, of varying intricacy and complexity. However, unlike the traditional tools of general international law, the only procedures applicable to a given situation are naturally those laid out in the treaty in question.

Even if non-compliance procedures can result in sanctions, it is clear that they are mainly intended to promote laws in a spirit of co-operation. Consequently, international organisations have an important role to play. The first conventions, up until the start of the 1980s, made little use of non-compliance mechanisms as a method of ensuring the implementation of obligations,<sup>46</sup> to which they mainly preferred dispute settlement clauses. For example, the 1985 Vienna Convention for the Protection of the Ozone Layer contained no non-compliance procedures.<sup>47</sup>

Non-compliance procedures only started appearing as of 1992, possibly as a result of Agenda 21 presented at the UN Conference on Environment and Development in Rio de Janeiro. Chapter 39, Section 10 of the document paved the way for these procedures while remaining firmly focused on the concept of dispute

42. *Trail Smelter Case (United States of America/Canada)*, Reports of International Arbitral Awards, Volume III (11 March 1941), pp. 1905-1982.

43. Convention for the Protection of the Marine Environment of the North-East Atlantic (1992), 2354 UNTS 67, entered into force 25 March 1998 (OSPAR Convention).

44. United Nations Convention on the Law of the Sea (1982), 1833 UNTS 3, entered into force 16 November 1994 (UNCLOS).

45. See Case C-459/03 *Commission v. Ireland* (2006), ECR I-04635. For an overview of the case, see Romano, C. P.R. (2007), “International Dispute Settlement”, in Bodansky D., J. Brunée and E. Hey (eds.), *Oxford Handbook of International Environmental Law*, Oxford University Press, Oxford, pp. 1047-1050.

46. See *supra* § II, “Treaty implementation according to general international law”.

47. Vienna Convention for the Protection of the Ozone Layer (1985), 1513 UNTS 293, entered into force 22 September 1988.

settlement.<sup>48</sup> Section 23.1 of the “Environment for Europe” Declaration was more explicit and pursued the need for co-operation.<sup>49</sup>

From that time on, non-compliance procedures began to appear, sometimes discreetly to start with, in conventions, in decisions taken in meetings of contracting parties and in amendments to earlier conventions.<sup>50</sup> Examples can be found:

- in a 1992 decision taken in the context of the Montreal Protocol on Substances that Deplete the Ozone Layer (1987), 1522 UNTS 3, entered into force 1 January 1989 (Montreal Protocol);
- in the 1996 Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972), 1046 UNTS 120, entered into force 30 August 1975 (London Convention);
- in a 1997 decision taken in the context of the Geneva Convention on Long-range Transboundary Air Pollution (1979), 1302 UNTS 217, entered into force 16 March 1983;
- in a 1998 decision taken in the context of the Convention on Environmental Impact Assessment in a Transboundary Context (1991), 1989 UNTS 309, entered into force 10 September 1997 (Espoo Convention);
- in a 2002 decision taken in the context of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989), 1673 UNTS 57, entered into force 5 May 1992 (Basel Convention).

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48. “In the area of avoidance and settlement of disputes, States should further study and consider methods to broaden and make more effective the range of techniques available at present, taking into account, among others, relevant experience under existing international agreements, instruments or institutions and, where appropriate, their implementing mechanisms such as modalities for dispute avoidance and settlement. This may include mechanisms and procedures for the exchange of data and information, notification and consultation regarding situations that might lead to disputes with other States in the field of sustainable development and for effective peaceful means of dispute settlement in accordance with the Charter of the United Nations including, where appropriate, recourse to the International Court of Justice, and their inclusion in treaties relating to sustainable development.” United Nations Conference on Environment and Development (UNCED) (1992), *Agenda 21: The Rio Declaration on Environment and Development*, UNCED Earth Summit, Rio de Janeiro, Brazil, 3 to 4 June, Para. 39.10.

49. “We urge Contracting Parties to environmental conventions in the UN/ECE region, where appropriate, to cooperate within the respective governing bodies of those Conventions to work towards *non-compliance regimes* which:

- aim to avoid complexity;
- are non-confrontational;
- are transparent;
- leave the competence for the taking of decisions to be determined by the Contracting Parties;
- leave the Contracting Parties to each convention to consider what technical and financial assistance may be required, within the context of the specific agreement;
- include a transparent and revealing reporting system and procedures, as agreed to by the Parties.” (emphasis added) Declaration by the Ministers of the Environment of the region of the United Nations Economic Commission for Europe (UN/ECE) and the Member of the Commission of the European Communities responsible for the Environment, Second Ministerial Conference “Environment for Europe”, Lucern, 30 April 1993, Para. 23.1.

50. In some cases, the principle of this kind of mechanism was indicated in the original convention.

Once the first treaties were completed, subsequent treaties became more comprehensive and contained stronger commitments, thus the substantive mechanisms differ among the different conventions, reflecting a reticence, or a desire, to go further. The conventions also differ in the types of structure created to meet the objectives of the procedures (generally *ad hoc* committees).

## 2. The progressive nature of measures

There is an extensive range of measures designed to encourage (and ensure) the implementation of environmental protection conventions. They are all based on the submission by states parties of “activity” reports, a process that was integrated into texts as of the end of the 1970s before the existence of genuine non-compliance procedures. The proportionality of measures provides for initial support measures, followed by incentive measures and lastly sanction measures, and the same tools can be used for all the different phases.

### a) Range of tools

#### i) National reports

The submission of reports by states parties has been almost universally adopted as a tool in environmental law. There is a wide range of methods regarding the frequency of reports and the varying degree of information required under the conventions. In some, less frequent cases, the states’ reports, which are used to assess compliance, may be supplemented by information from external institutions<sup>51</sup> or, even less often, non-governmental organisations. Because these reports are designed to assess compliance, they can reveal non-compliance as well. Lastly, they can be used to assess the clarity and effectiveness of the rules imposed, and possibly encourage amendments.

#### ii) Synthesis report

The conference of the parties uses the national reports to prepare a synthesis report, which is generally made public (whereas the national reports were confidential from the start and still are in some conventions).

#### iii) Verification and inspection

A first phase of verification may involve an assessment of the national reports by the bodies provided for in the conventions, for example the meetings of contracting parties or by independent experts.<sup>52</sup> There is, however, another verification tool, in the form of inspection. Inspections can be used systematically, where no previous suspicion of non-compliance exists, and may even incorporate assistance, or they can be a (possibly very intrusive) method of verifying potential (or real) non-compliance *in situ*. Generally, the latter inspections are only possible with the agreement of the state being inspected.<sup>53</sup> It is possible to assign the inspections to competent organisations, which are deemed more acceptable than inspections

51. For example, this is the case for the Convention on Long-range Transboundary Air Pollution (1979), 1302 UNTS 217, entered into force 16 March 1983, which uses reports provided by the Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (European Monitoring and Evaluation Programme or EMEP).

52. For example, this is the case for the United Nations Framework Convention on Climate Change (1992), 1771 UNTS 107, entered into force 21 March 1994 (UNFCCC), following a decision made at the first Meeting of the Contracting Parties.

53. Under certain conditions, mandatory inspections, which are even unannounced on some occasions, are carried out under disarmament law.

carried out by other states' representatives, despite the states' natural wariness of being dependent on international organisations.

#### b) Escalation of decision making

The tools described above are used in non-compliance procedures, which were created and then added to over time. They result in two types of decision:

- facilitation decisions, designed to encourage the implementation of obligations set out in the treaty through incentives and co-operation; and
- implementation or enforcement decisions, designed to force the defaulting state to take the necessary measures through recommendations, decisions where they are provided for in the convention, and even sanctions. Enforcement measures are only decided after the failure of facilitation measures.

#### i) Non-compliance procedures

Facilitation procedures involve provisions for technical assistance, incentives (mainly financial)<sup>54</sup> and then recommendations. Enforcement procedures involve sanctions provided for by the convention in question, generally comprising the withdrawal of assistance and financial benefits or the suspension of the rights and privileges of parties to the convention. Trade sanctions can also be used if they correspond to the content of the obligations of the convention.

#### ii) The decision-making framework

The decision to take these measures is made by *ad hoc* institutional bodies created by the conventions,<sup>55</sup> or at meetings (or conferences) of the contracting parties, or more rarely by calling on independent experts. The most significant examples include:

- in 1997, the Implementation Committee was created in the context of the Espoo Convention, which makes recommendation to the Executive Body of the Convention;<sup>56</sup>
- in 1998, at the 10<sup>th</sup> Meeting of the Parties of the Montreal Protocol, the role of the Implementation Committee was modified such that they shall “identify the facts and possible causes relating to individual cases of non-compliance referred to the Committee and make appropriate recommendations to the Meeting of the Parties”<sup>57</sup> to help the offending party and further the objectives of the Protocol;

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54. This form of incentive has nothing in common with the incentive nature of conventions on nuclear safety as stated in their preambles.

55. These bodies can be in the form of a committee, facilitation committee, implementation committee, commission or group. The terminology, however, does not reflect the specific role of these bodies, except in the distinction between the facilitation committee and the implementation committee.

56. See UNECE (1997), “Annex III: Decision 1997/2 Concerning the Implementation Committee, its structure and functions and procedures for review of compliance”, Doc. ECE/EB.AIR/53, 7 January 1998, p. 28-31, amended several times, most recently by Decision 2012/25.

57. See UNEP (1998), “Report of the Tenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer”, UNEP/OZL.Pro.10/9 (3 December 1998), Annex II, Non-Compliance Procedure, p. 48, §§ 7(d) and 9.

- in 2001, in the context of the Kyoto Protocol to the United Nations Framework on Climate Change,<sup>58</sup> the Compliance Committee was created, which functions through two branches, the facilitative branch and the enforcement branch. The facilitative branch is responsible for providing advice to parties for promoting compliance. The enforcement branch is responsible for applying the consequences of non-compliance by parties;<sup>59</sup>
- in 2002, the Committee to Promote Implementation and Compliance was created in the context of the Basel Convention.<sup>60</sup> Its objective is to “assist Parties to comply with their obligations under the Convention and to facilitate, promote, monitor and aim to secure the implementation of and compliance with the obligations under the Convention”;
- in 2007, the Compliance Group was created in the frame of the London Convention.<sup>61</sup> Its objective is “to assess and promote compliance with the 1996 Protocol to the London Convention 1972” and to this end it makes recommendations to the Meeting of Contracting Parties and ensures the implementation of the Meeting’s recommendations and decisions on compliance.

At present, there is a very comprehensive structural framework for checking and ensuring compliance. However, it is clear that the effectiveness of non-compliance procedures does not depend exclusively on their structure. It mainly depends on the states parties’ willingness to implement the conventions. For example, the non-binding non-compliance procedures of the Montreal Protocol have been more effective in enforcing the objectives of the Protocol than the potentially binding procedures in the Kyoto Protocol. It also naturally depends on the nature of the obligations imposed by the convention.

### 3. *The special place of peer review*

#### a) Context

The origins of peer review go back a long way and had nothing to do with legal considerations. In 1665, the Royal Society authorised the release of a publication provided that it was first reviewed by the members of the Society’s Council. As of the 18<sup>th</sup> century, a review by one’s peers of the texts of scientific articles prior to publication became systematic. This was soon followed by an assessment, based on specific criteria, of the findings of any medical or scientific research or practice, by experts working in the same field as the author. The idea was that a collective peer assessment would bring credence and impartiality to the opinions formulated. This practice was then embraced by international law, especially international

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58. Kyoto Protocol to the United Nations Framework on Climate Change (1997), 2303 UNTS 162, entered into force 16 February 2005 (Kyoto Protocol).

59. See UN (2002), “Report of the Conference of the Parties on its Seventh Session, Held at Marrakesh from 29 October to 10 November 2001”, Decision 24/CP.7 “Procedures and mechanisms relating to compliance under the Kyoto Protocol”, Doc. FCCC/CP/2001/13/Add.3, 21 January 2002, p. 65-77.

60. See UNEP (2003), “Report of the Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal”, Decision VI/12 “Establishment of a mechanism for promoting implementation and compliance”, Doc. UNEP/CHW.6/40, 10 February 2003, p. 45.

61. See “Compliance Procedures and Mechanisms Pursuant to Article 11 of the 1996 Protocol to the London Convention 1972” (2007), Decision LC 29/17, Annex 7. Note that the 1972 London Convention did not contain compliance mechanisms.

environmental law (without using peer review terminology), to assess the “activity” reports imposed on states parties by treaties.

The key point is that it is an exchange between “equals”. It is indisputable that, in science, the decision to ignore a negative opinion can have a disastrous impact for an individual within that community, so peer pressure ensures that all opinions are taken into account. The incentive nature of these reviews is evident. In public international law, the peers are sovereign states, with less spontaneous opinions, and there is a risk that the potential impact of the reviews may be undermined;<sup>62</sup> the incentive factor can also be lessened.

#### b) The specific role of peer reviews in international law

The key issue here is whether or not peer reviews<sup>63</sup> are non-compliance tools. The question was asked at the United Nations Conference on Sustainable Development (Rio + 20) from 20 to 22 June 2012, and the response was a resounding no.<sup>64</sup>

One “procedure” that can be linked to peer review is “name and shame”, whereby states put pressure on a peer that is not respecting its obligations but not necessarily using reports. Its effectiveness depends on the type of obligations and the influence of the state(s) applying the pressure. And it seems that, when it comes to conventions on environmental protection, reputation is not considered a very significant criterion.<sup>65</sup>

### **B. The relationship between non-compliance measures and traditional tools**

“The standard formula is that the non-compliance procedure is ‘without prejudice’ to existing mechanisms”.<sup>66</sup> This statement deserves closer analysis. The relationship between these “new” procedures and the traditional mechanisms is clear. The implementation of Article 60 of the VCLT requires the violation of a provision essential to the accomplishment of the object or purpose of the treaty and the international responsibility of the state requires that internationally wrongful acts be committed, whereas non-compliance procedures are generally implemented before the (formal) breach of an obligation. In this case, there is no conflict between the two sets of measures.

62. “Peer review’ means that governments only submit to governments; this implies that governments only accept their fellow governments as their ‘judges’; from this follows that real judgments or condemnations in case of compliance-failure remain rare events”, Lang, W., *supra* note 24, p. 382.

63. It should be noted that the term is not used explicitly in international environmental law or in the conventions on nuclear safety, even if legal theorists made use of the term when the two conventions were adopted. See, for example Reyners, P. (1995), “La Convention de 1994 sur la Sûreté Nucléaire” (The Convention on Nuclear Safety of 1994), *Revue générale de droit international public*, p. 616; Washington, M., *supra* note 5; Stoiber, C. (1999), “International Convention on Nuclear Safety: National Reporting as the Key to Effective Implementation”, in Horbach, N. L. (ed.), *Contemporary Developments in Nuclear Energy Law – Harmonising Legislation in CEE/NIS*, Kluwer Law International, The Hague, p. 9.

64. “Peer review is not a compliance mechanism. Neither is it a substitute for, or comparable to such compliance mechanisms ... Instead, Peer Review is a constructive, persuasive and non-adversarial process.” UNCSD Secretariat (2011), “Rio 2012 Issues Briefs: Lessons from the Peer Review Mechanisms”, p. 1.

65. See Downs, G. W. and M. A. Jones (2002), “Reputation, Compliance, and International Law”, *Journal of Legal Studies* Vol. XXXI, No. 1, University of Chicago, p. S112.

66. Klabbbers, J. (2007), “Compliance Procedures”, in Bodansky, D., J. Brunnée and E. Hey (eds), *The Oxford Handbook of International Environmental Law*, Oxford University Press, Oxford, p. 1005.

The situation is different for dispute settlement, which can also be launched prior to the breach of an obligation, in which case there can be conflicting implementations. Indeed, difficulties have arisen in the definition of the relationship between dispute settlement procedures and non-compliance procedures. For example, in the context of the Montreal Protocol, the *ad hoc* Group that met in 1998 to specify the relationship between the two procedures could not agree on the proposal presented.<sup>67</sup>

Similarly, there may be conflict in implementation between treaty law or international responsibility and non-compliance procedures in the event of breach of an obligation.

#### IV. The applicability of tools in international environmental law to the implementation of conventions on nuclear safety

International environmental law contains an impressive range of non-compliance mechanisms – some of the principal examples of which are described in the previous section – designed to encourage, help or force states parties to an international convention to respect the obligations therein. What use has been made of these mechanisms by those negotiating conventions on nuclear safety, who were well placed to understand their advantages and limitations<sup>68</sup> given that, despite the increasing sophistication of these mechanisms, several international environmental law conventions (and conventions relating to other branches of international law) had viable mechanisms at the time the CNS was adopted?

This section will examine non-compliance mechanisms, bearing in mind the fact that the standard tools of international law apply here just as to international environmental law conventions, notwithstanding the settlement of disputes as presented in Article 29 of the 1994 Convention on Nuclear Safety, “Resolution of Disagreements” (emphasis added), which underlines the flexible nature of this

67. Fitzmaurice, M. A. and C. Redgwell (2000), “Environmental non-compliance procedures and international law”, *Netherlands Yearbook of International Law*, Vol. XXXI, p. 51.

68. “Une fois déterminé le contenu de la convention, s’est posée la question fondamentale des modalités qui permettraient de contrôler le respect de ce contenu. S’agissant d’une convention internationale, le groupe d’experts [de négociation] aurait pu envisager de créer un mode de contrôle fortement « intégré » (visites de sites, inspections, contrôle sur place ...) dont la mise en œuvre aurait pu être confiée à une institution internationale existante. Le groupe a préféré adopter une vision pragmatique de la sûreté nucléaire respectueuse du principe ... de la compétence des autorités nationales des États ... Les experts ont alors imaginé un mécanisme de contrôle qui devrait plus aux pressions informelles [des États entre eux] ... qu’à un hypothétique contrôle juridictionnel.” (After determining the content of the convention, the fundamental issue of how to monitor compliance with that content was raised. With regard to an international convention, the [negotiation] experts group could have considered creating a highly “integrated” control method (on-site visits, inspections, on-the-spot checks...) which could have been implemented by an existing international institution. The group preferred to adopt a pragmatic vision of nuclear safety complying with the principle of the competence of the member states’ national authorities ... The experts imagined a control mechanism that would be based on informal pressure (of states among themselves) ... rather than relying on a hypothetical jurisdictional control.) Léger, M. and C. Pinel (1995), “La Convention de Vienne sur la Sûreté Nucléaire du 17 juin 1994 : une Convention Incitative ?” (The Vienna Convention on Nuclear Safety of 17 June 1994: an Incentive Convention?), *Cahiers Juridiques de l’Électricité et du Gaz* (Legal Papers of Electricity and Gas), No. 514, pp. 349-353.



convention.<sup>69</sup> Article 38 of the 1997 Joint Convention carries the same title, but has been drawn towards a more orthodox wording by a second paragraph<sup>70</sup> that removes the restriction of disagreement resolution to the consultations provided for by the CNS.

### A. Nature of the conventions

#### 1. Consequences of the incentive nature of the conventions

What is the point of formally characterising the two conventions on nuclear safety as incentive,<sup>71</sup> especially in terms of implementation? First, it is important not to overstate the relevance of this term, which makes only a discreet appearance in a paragraph of the Preamble to the CNS and in two of that to the Joint Convention, and is neither defined nor repeated in the texts of the Conventions themselves. As Patrick Reyners points out, this idea expresses “a focus on encouraging broad adherence to the convention instead of concrete, restrictive commitments”.<sup>72</sup> But the declaration in the preambles that the conventions are incentive was not enough *per se* to generate widespread adherence; the conventions needed substantive content that countries would subscribe to, while at the same time not unduly constraining their actions. This resulted in vague content that would incentivise the improvement of safety, which created a certain efficiency in the conventions though without the ability to guarantee its effectiveness with all parties.<sup>73</sup> And attempting, like Günther Handl,<sup>74</sup> to show that the IAEA’s nuclear safety principles and standards to which the conventions refer (albeit not explicitly) have acquired a *de facto* enforceability by virtue of being generally applied by states cannot be reconciled with the clear absence of sanctions in the conventions, because if they are enforceable, failure to apply them must incur sanctions, even without a clear non-compliance mechanism.

But it is important not to lose sight of the conventions’ goal to “achieve and maintain a high level of nuclear safety worldwide”<sup>75</sup> and that the concept of “incentive” does not mean failing to adhere to the conventions’ existing obligations.<sup>76</sup> It is dangerous, therefore, to think that “it may be irrelevant to speak of

69. “In the event of a disagreement between two or more Contracting Parties concerning the interpretation or application of this Convention, the Contracting Parties shall consult within the framework of a meeting of the Contracting Parties with a view to resolving the disagreement.” CNS, Art. 29, “Resolution of Disagreements”.

70. “In the event that the consultations prove unproductive, recourse can be made to the mediation, conciliation and arbitration mechanisms provided for in international law, including the rules and practices prevailing within the IAEA.” Joint Convention, Art. 38, “Resolution of Disagreements”.

71. See paragraph (vii) of the Preamble to the CNS and paragraphs (ix) and (x) of the Preamble to the Joint Convention.

72. Reyners, P. (1993), “Problématique d’une Approche Normative de la Sûreté Nucléaire au Niveau International” (The Issues of a Normative Approach to Nuclear Safety at the International Level), Proceedings of the International Nuclear Law Association 1993 Congress, Rio de Janeiro, Brazil, p. 148.

73. “Trop [de traités] dotés d’une efficacité certaine et pourvus d’adhésions nominales nombreuses restent démunis d’effectivité.” (Too many treaties, while certainly efficient and ratified by numerous parties, remain deprived of effectiveness.) de Visscher, C. (1967), *Les effectivités du droit international public* (Effectiveness of International Public Law), Pedone, Paris, p. 18.

74. Handl, G. (2003), “The IAEA Nuclear Safety Conventions: An Example of Successful ‘Treaty Management’?”, *Nuclear Law Bulletin*, No. 72, NEA, Paris, pp. 15-16.

75. Article 1(i) of the CNS and the Joint Convention.

76. Except that the Conventions do not have the non-compliance tools without which they cannot ensure respect for their commitments; even the dispute resolution procedure is inoperative, except at a stretch for the Joint Convention.

verification and enforcement”<sup>77</sup> for conventions on nuclear safety because they are incentive, as this may be interpreted as saying that these texts are not treaties, since they do not have all the characteristics of treaties.<sup>78</sup>

Convention review meetings do not in and of themselves define the incentive nature of the convention in question, because they can be a tool in a sanction procedure, but in the absence of sanctions, as here, they become a purely incentive mechanism, the positive results of which are far from proven. The incentive concept seems to be limited to an encouragement to join these conventions and should therefore not be confused with its usage in other conventions, where it means concrete technical or financial incentives to comply with the obligations described in the texts.<sup>79</sup>

Last, it should be noted that this encouragement to join has had mixed results. For the CNS the position can be considered satisfactory from one angle: with the exception of Iran, all states with at least one nuclear reactor within the meaning of the CNS have signed up to the Convention, i.e. 31 signatories. But the number of contracting parties is 78, so only 47 states are “indirectly interested” in the CNS,<sup>80</sup> including the United Arab Emirates, a new comer country currently building a nuclear power plant. The position is less acceptable, on the other hand, for the Joint Convention, which counts just 70 contracting parties, but concerns almost all states given the almost universal use of radioactive sources in industry, medicine and research and the specific problems associated with sources that are no longer used.

## 2. Framework conventions?

Again, in light of international environmental law, it is also important to consider whether conventions on nuclear safety are framework conventions, as is typical practice in this branch of international law, and accepted in the literature.<sup>81</sup> They do indeed have some features of such conventions, particularly the general nature of their provisions, but the principle of a framework convention is that it is supported by more precise protocols. This was considered during the preparation of the Convention on Nuclear Safety but ultimately rejected.<sup>82</sup>

77. Stoiber, C. (2009), “The Review Conference Mechanism in Nuclear Law: Issues and Opportunities”, *Nuclear Law Bulletin*, No. 83, NEA, Paris, p. 28.

78. See Daillier, P., et al. (2009), *Droit international public* (International Public Law), 8<sup>th</sup> edition, LGDJ, Paris, p. 132.

79. There are indeed no financial incentives. Technical incentives amount to no more than wishful thinking of international co-operation in the preambles, although in practice the IAEA provides a lot of technical support to countries that ask for it.

80. The CNS does not only concern states with nuclear installations (as defined by the Convention) on their territory. See e.g. Article 16, “Emergency Preparedness”.

81. See Kiss, A. (1993), “Les Traités-cadres : une Technique Juridique Caractéristique du Droit International de l’Environnement” (Framework Treaties: A Legal Technique Characterising International Environmental Law), *Annuaire Français de Droit International* (AFDI) (French Yearbook of International Law), pp. 792-797.

82. In 1991, during the long process that culminated in the adoption of the CNS in 1994, the IAEA held the International Conference on the Safety of Nuclear Power: Strategy for the Future, at which the President, the then German Minister for the Environment, the Conservation of Nature and Nuclear Safety Klaus Töpfer, made the proposal to establish a framework convention combined with regularly updated technical protocols. See Reyners, P., *supra* note 72, p. 143.

## B. Provisions

### 1. Possibilities

There exists no reason, in theory, not to use the existing range of non-compliance tools and institutional bodies described in the previous section in the conventions on nuclear safety. But non-compliance mechanisms must naturally be adapted to the nature of the treaty under consideration, and reasons (not necessarily legal) therefore exist to rule some out of one or other convention. In the assistance procedures related to facilitation measures, for example, the situation faced by a developing state that has an environmental crisis (possibly caused by external factors) – which the relevant convention, to which the state is a signatory, is supposed to improve – and that needs (technical and financial) assistance to meet its commitments under this convention will differ from that faced by a state deciding to start up a nuclear programme (unless the start-up is vital to its economic development in order to comply with caps on greenhouse gases).<sup>83</sup> The legal situation is more problematic for states that started a nuclear power programme before the CNS came into existence, without complying with the safety principles enshrined therein. In this case assistance is necessary<sup>84</sup> if the closure of the installation is to be avoided.<sup>85</sup>

### 2. Reality

#### a) Content

First, no article in either the CNS or the Joint Convention refers to non-compliance (unlike the Montreal Protocol, for example, in which Article 8 is entitled “Non-compliance”), although this does not preclude the existence of such procedures. Examining non-compliance mechanisms in international law in the same order as the previous section, it appears that:

- national reports are central requirements of the conventions. Details of their content are provided in the circular INFCIRC/572/Rev.5 of 16 January 2015, “Guidelines regarding National Reports under the Convention on Nuclear Safety” and in the equivalent circular for the Joint Convention,<sup>86</sup> which provide that “each Contracting Party has the right to submit a National Report with the form, length and structure it believes necessary”.<sup>87</sup> The suggestion voiced at the Sixth Review Meeting of the Contracting Parties to the CNS in 2014 to post the national reports to the

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83. The reason why developed (nuclear) states rejected this mechanism in nuclear safety conventions was indeed that they were afraid of being drawn into a process of uncontrolled assistance.

84. The IAEA has every tool it needs to provide this assistance and does so frequently, but within a different framework.

85. Article 6 of the CNS on “Existing Nuclear Installations” provides for this (without mentioning non-compliance measures), but is too pragmatic, stipulating that the installation be shut down “as soon as practically possible”.

86. IAEA (2015), “Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management: Guidelines regarding the Form and Structure of National Reports”, IAEA Doc. INFCIRC/604/Rev. 3, p. 9. The rest of the text refers only to CNS documents, since the conclusions apply also to the Joint Convention. Those of the Joint Convention are only cited if the conclusions are different.

87. IAEA (2015), “Guidelines regarding National Reports under the Convention on Nuclear Safety” (Guidelines regarding National Reports under the CNS), IAEA Doc. INFCIRC/572/Rev.5, p. 2, § II.A.4.

convention's website<sup>88</sup> could be seen as an invitation to name and shame, putting pressure on the "failing" states, but it is in no way mandatory<sup>89</sup>;

- Article 25 of the CNS (Article 34 in the Joint Convention) refers to the report drawn up by the chair of the review meeting as a summary report (adopted by consensus), but it does not consist of a formal summary of national reports as in Conventions under international environmental law. It makes no recommendations specific to states parties,<sup>90</sup> only making general recommendations<sup>91</sup> that cannot be seen as amounting to even so much as a mild non-compliance procedure;
- conversely, there is no procedure for verifying the implementation of obligations, let alone for inspecting them. The national reports are designed to describe the measures that a contracting party "has taken to implement each of the obligations of this Convention",<sup>92</sup> but nowhere are the review meetings presented as a verification of these obligations.<sup>93</sup>

Apart from the national reports, then, there are no tools for identifying and resolving possible cases of non-compliance. The absence of non-compliance procedures excludes facilitation and enforcement procedures. Facilitation measures include international co-operation that can exist outside formal measures of non-compliance. Unfortunately, international co-operation was not included<sup>94</sup> in the texts of the conventions on nuclear safety during negotiations; a single reference to the benefit of this kind of co-operation appears in the preambles.<sup>95</sup>

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88. See IAEA (2014), "6<sup>th</sup> Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, 24 March – 4 April 2014, Vienna, Austria - Summary Report" (Summary Report of the 6<sup>th</sup> Review Meeting), IAEA Doc. CNS/6RM/2014/11\_Final, Annex 3, § 2 "Publication of national reports on the CNS public website".
89. The practice of publishing national reports began after the first meeting of the states parties in 1999, but is far from being universal (of the 77 states parties, 32 states published a report in 2014).
90. The Summary Report of the Second Review Meeting in 2002 stated that "[the review process was not designed to] review the safety of individual nuclear installations". IAEA (2002), "Second Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, 15-26 April 2002, Vienna, Austria – Summary Report", IAEA Doc. CNS-RM-2002/02, § 9. But, these could be reviewed in national reports. See Guidelines regarding National Reports under the CNS, *supra* note 87, § II.A.5.
91. "The Summary Report would not identify any particular Contracting Party by name, but it should point out any significant areas of concern and interest, highlight Good Practices and make recommendations for the future." See IAEA (2015), "Guidelines regarding the Review Process under the Convention on Nuclear Safety" (Guidelines regarding the Review Process under the CNS), IAEA Doc. INFCIRC/571/Rev. 7, § XIV, 45.
92. See Article 5 of the CNS. The title of Article 32 of the Joint Convention is different, but the subject matter is the same.
93. "The intent of the review process of the Convention taking place at regular intervals is to encourage the continuous improvement of safety as a whole." Guidelines regarding National Reports under the CNS, *supra* note 87, § A.II.4. (emphasis added).
94. For the Joint Convention, see the draft Article 4 submitted to the negotiation expert group in 1995, entitled "International co-operation", providing that: "The Contracting Parties shall co-operate with each other to improve and achieve safe management of radioactive waste. Such co-operation may include:  
i) technical co-operation related to safe waste management,  
ii) joint research programmes to promote safe waste management,  
iii) agreements leading to the use of waste management facilities under the jurisdiction of one Contracting Party for the benefit of other Contracting Parties".
95. See paragraph (vii) of the Preamble to the CNS and paragraph (ix) of the Preamble to the Joint Convention.

While sanctions measures could indeed be seen as running counter to the incentive nature of the conventions, non-compliance facilitation measures would have helped give a clearer legal framework to the idea of incentive (enhancing safety) by giving greater impetus to “failing” states to take action.

Nor is there a non-compliance “committee”, which does not, in principle, prevent decisions being taken by the meeting of the parties. This absence does, however, reveal the states’ preference not to embark on procedures enforcing the commitments made under the terms of these conventions.

So far from discussing actual violations, then, the two conventions refuse even to use the term non-compliance.

Furthermore, despite their weakness, the provisions have not been fully adhered to. At the CNS’s 2014 review meeting,<sup>96</sup> for example, 40% of contracting parties had not sent their reports before the deadline and 40% had sent no questions to their peers out of what would appear to be a lack of interest in peer reviews. Similarly, in 2012, the Summary Report of the Fourth Review Meeting of the Contracting Parties to the Joint Convention reports that “nine Contracting Parties did not participate in the Fourth Review Meeting, three further Contracting Parties did not attend Country Group sessions and six Contracting Parties had not submitted National Reports”.<sup>97</sup>

The risk of conflict between the non-compliance and dispute resolution procedures is naturally unlikely to arise in this instance, given the weakness of both, but this is a poor consolation.

#### b) The debatable relevance of promoting peer reviews

There is no doubt that review meetings can help encourage states parties to enhance nuclear safety, by pooling experience, and also improve the safety standards (law-making functions<sup>98</sup>) represented by the standards of the IAEA, but Article I.3 of the Guidelines regarding the Review Process under the CNS makes it clear that these meetings are not non-compliance tools.<sup>99</sup> They are certainly mandatory, but failing states are not issued with any findings inviting them to remedy the weaknesses identified. Apart from this obligation of national reports, they are identical to the

96. See Summary Report of the 6<sup>th</sup> Review Meeting, *supra* note 88.

97. IAEA (2012), “Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Fourth Review Meeting of the Contracting Parties, 14 to 23 May 2012, Vienna, Austria – Final Summary Report” (Summary Report of the Fourth Review Meeting), IAEA Doc. JC/RM4/04/Rev.2, § 56.

98. See Handl, G., *supra* note 74, pp. 7-27.

99. “The aim of the review process should be to achieve a thorough examination of National Reports submitted in accordance with Article 5 of the Convention, so that Contracting Parties can learn from each other’s solutions to common and individual nuclear safety problems and, above all, contribute to improving nuclear safety worldwide through a constructive exchange of views.” Guidelines regarding the Review Process under the CNS, *supra* note 91.

peer reviews<sup>100</sup> the IAEA has conducted for many years and for which demand is growing<sup>101</sup> after initial caution.

The peer review procedure can also be seen as a kind of name and shame, to put pressure on failing states, but it does not seem to be effective in the arena of nuclear safety, where states are reluctant to point the finger at their peers.<sup>102</sup> The practice seems to be more effective when it does not concern states at all, as in the example of the World Association of Nuclear Operators (WANO),<sup>103</sup> created in 1989, whose mission is to help the operators of nuclear power plants (and more recently of reprocessing plants) reach the highest standards of nuclear safety.

The accident at Fukushima in 2011 put peer reviews back on centre stage, outside the framework of the CNS, and they are now cast as the universal panacea for safety improvement, although this remains to be seen.

### c) Result

Conventions on nuclear safety have not taken account of the trend in international environmental law towards a regime of non-compliance procedures described in the previous section.<sup>104</sup> The question of the existence of procedures for the implementation of conventions on nuclear safety has not been ignored, but the solutions adopted are based solely on voluntary decisions whose results are not conclusive, almost twenty years after the CNS came into force in 1996, although all efforts to achieve the highest level of safety are undeniably worthwhile.

The general nature of most of the provisions in both conventions was perhaps unlikely to encourage the adoption of non-compliance procedures, but the vague wording of many provisions of environmental law conventions did not prevent it. The complete absence of such measures prevents a proportional, positive reaction to situations of non-compliance (which can amount to actual violations) with the obligations of the two conventions. Some examples of non-compliance that have been seen in some countries, but remained confidential and did not elicit remedial action in the countries at fault, are: safety authorities that are not independent from

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100. This is probably why the literature has adopted the term “peer reviews” for review meetings (the term used in the conventions), since it corresponds to the definition of peer review used by the OECD, see OECD (2003), *Peer Review – An OECD Tool for Co-operation and Change*, OECD, Paris, p. 9, and the 2012 United Nations Conference on Sustainable Development, and not to the kind of meetings that constitute the first step in non-compliance procedures under international law. There is, however, a (significant) difference concerning the form of peer reviews conducted on the initiative of the IAEA (see below in note 103) and the review meetings of the conventions on nuclear safety: the latter consist of session meetings at which the national reports are examined by the representatives of other Contracting Parties (who may be experts) whereas the former are conducted in the field by teams of international experts.

101. For example: OSART Missions (Operational Safety Review Team) since 1982, ASCOT (Assessment of Safety Culture in Organizations Team) in 1993 and more recently IRRS (Integrated Regulatory Review Service).

102. The weaknesses of the Japanese authorities were known about before the Fukushima accident, but were only mentioned privately.

103. WANO recently forced an operator in India to delay the start-up of a new power plant owing to the insufficient training of the staff identified by a peer review. Conversely, however, its limited powers are revealed by the regrettable failure to take account of instances of non-compliance with the rules of nuclear safety exposed by the peer reviews of the TEPCO operator in Japan.

104. On the subject of the CNS, see Birnie, P. and A. Boyle (2002), *International Law & the Environment*, 2<sup>nd</sup> edition, Oxford University Press, Oxford, p. 463: “The Nuclear Safety Convention’s control regime has much in common with early environmental treaties, but it compares unfavorably with most of the more recent global agreements”.

the bodies promoting or using nuclear energy<sup>105</sup> and arrangements that are not sufficient to cope with an emergency, for which the convention requires plans that “cover the activities to be carried out in the event of an emergency”.<sup>106</sup>

The state’s supreme responsibility in terms of nuclear safety (a principle that is surely inescapable on an international level) seems incompatible with international control (despite there being no formal conflict), but there is no bar to binding non-compliance measures adopted by the states parties.

The provisions of the conventions on nuclear safety clearly support the “managerial strategy” developed by Antonia Handler and Abram Chayes,<sup>107</sup> but this approach has not delivered results.

In the end, it is not a matter of drafting an “ideal” non-compliance mechanism for both conventions, but rather to give attention to the fact that the lack of tools for combating breaches of the universally-recognised safety principles established by the IAEA and Western European Nuclear Regulators Association (WENRA)<sup>108</sup> seems to be thwarting efforts to obtain the high level of safety that the conventions are aiming to achieve worldwide.

### C. Conclusion

#### 1. Observation

There unquestionably exist “good” political (and technical) reasons why conventions on nuclear safety contain no precise provisions and perhaps also for the absence of sanction mechanisms. Given the nuclear risk it is, however, regrettable, legally speaking, that since these conventions have a clear objective (ensuring that a high level of safety is maintained) they have no provisions, binding or otherwise, to ensure the implementation of the obligations they set out, with the exception of the peer reviews, whose weaknesses are described above. The legal experts who negotiated these conventions undoubtedly knew about the non-compliance mechanisms described above, but they must have been unable to take account of all the possibilities raised by applying these procedures in the field of nuclear safety; some of these mechanisms could have been adopted without any effect on the incentive nature of the conventions. The bottom line is that the conventions form an unfinished instrument. The existence of non-compliance procedures does not guarantee the effectiveness of the recommendations made, but their absence deprives conventions of efficiency, like the conventions on nuclear safety.

Naturally, we cannot know what level of nuclear safety states would have if they had not adopted the conventions and if we had continued to manage nuclear safety worldwide through the IAEA on the basis of non-binding safety standards and on

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105. Article 20, § 2 of the Joint Convention uses the term “independence”. Article 8, § 2 of the CNS uses the term “separation”.

106. Article 16, § 1, of the CNS.

107. See Handl, G., *supra* note 74, pp. 7-27.

108. The International Nuclear Regulators’ Association (INRA), created in 1997, is less operational than WENRA, created in 1999.

states' voluntary requests for assistance;<sup>109</sup> hence we cannot know whether it would be better or worse than it is today.

These conventions were hailed by some commentators as “a singular accomplishment of nuclear energy law, if not a milestone in the development of modern international environmental law in general”.<sup>110</sup> Günther Handl was of the opinion that these conventions testify to a “treaty management” approach involving the application and making of law, but asked the question suggested by the question mark in the title of his article: were they an example of successful treaty management?<sup>111</sup> In 2014, the answer seems to be no for the CNS because the peer review procedure (which has no meaningful non-compliance mechanism, let alone provision for sanctions) has not been able to remedy the weaknesses identified, despite the global improvement in safety (obtained in part by the existence of the CNS); “law making” has continued through the reinforcement of IAEA standards but has not really been led by the CNS. Similarly, the Joint Convention, despite its comprehensive content, suffers from the same lack of non-compliance procedures.<sup>112</sup>

## 2. The position of conventions on nuclear safety in nuclear law

We may also ask a question related to the central issue of this paper: is the weakness of implementation procedures specific to nuclear safety law, or does it permeate all law affecting civil and military nuclear activities? The answer is complex and offers no easy conclusions: in the wider field of the non-proliferation of nuclear weapons, the Treaty on the Non-Proliferation of Nuclear Weapons<sup>113</sup> does not set out a specific non-compliance procedure (although there are means of ensuring compliance outside the NPT itself: either through the IAEA or through the United Nations Security Council) whereas treaties establishing nuclear-weapon-free zones do have variously worded provisions on compliance with the commitments

109. See Article III.A.6. of the Statute of the IAEA under which the Agency will “establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property (including such standards for labour conditions), and to provide for the application of these standards to its own operation as well as to the operations making use of materials, services, equipment, facilities, and information made available by the Agency or at its request or under its control or supervision; and to provide for the application of these standards, at the request of the parties, to operations under any bilateral or multilateral arrangements, or, at the request of a State, to any of that State’s activities in the field of atomic energy” (emphasis added).

110. See Handl, G, *supra* note 74, p. 8. See also de Kagenek, A. and C. Pinel (1998), “The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management”, *International & Comparative Law Quarterly*, Vol. 47, Issue 2, pp. 424-425 (“[i]t is in the main body of the text [of the Joint Convention], however, that many key principles of international law appear, making this instrument a modern convention”).

111. See Handl, G., *supra* note 74.

112. “The principles of protection of the environment, of prevention of accidents and mitigation of their consequences, of sustainable development, the ALARA principles, and the principles of protection of future generations and of good neighborliness are all mentioned in the text” de Kagenek, A. and C. Pinel, *supra* note 110, p. 425.

113. Treaty on the Non-Proliferation of Nuclear Weapons (1968), 729 UNTS 161, entered into force 5 March 1970 (NPT).



and corresponding *ad hoc* committees.<sup>114</sup> The 2005 International Convention for the Suppression of Acts of Nuclear Terrorism contains in Article 20 (perhaps symbolically) a requirement that states conduct consultations with one another “to ensure effective implementation of the Convention”.<sup>115</sup> The 1980 Convention on the Physical Protection of Nuclear Material,<sup>116</sup> which is sometimes bracketed with non-proliferation conventions but more properly belongs to nuclear security, and its 2005 Amendment,<sup>117</sup> do not include any provisions dealing with compliance. On the other hand, the Regional Seas Conventions that ban the dumping of radioactive waste do generally set out non-compliance rules, as does the London Convention (especially radioactive waste) and its 1996 Protocol.<sup>118</sup>

If we can conclude anything from this observation, it is that with regard to the prevention of pollution by radioactive waste, marine pollution is well regulated by the implementation procedures set forth in conventions under international environmental law, whereas the Joint Convention, as a “sister convention”<sup>119</sup> to the CNS, is silent on the subject.

## V. Final conclusion

It may have been justified for the conventions on nuclear safety not to include non-compliance procedures when the CNS was drafted in 1994 (although it was less so for the Joint Convention in 1997) in order to “kickstart” the process of signing an international treaty on nuclear safety, but it is far harder to justify twenty years later after the deficiencies of these texts have been exposed. While the Fukushima Daiichi nuclear power plant accident of 11 March 2011 led to improvements in technical safety standards (under the aegis of the IAEA and other specialised international organisations) that are not included in the CNS, it is obvious that it also revealed Japan’s non-compliance with some of the convention’s provisions, like the lack of independence of the safety authorities and poor preparation for emergency situations, which were either implicitly or delicately restated by the IAEA in reports drawn up after the accident.<sup>120</sup> An awareness of this unsatisfactory situation

114. These treaties, with the exception of the first (the Treaty for the Prohibition of Nuclear Weapons in Latin America (1967), 634 UNTS 326, entered into force 22 April 1968 (Treaty of Tlatelolco)), feature, perhaps strangely, provisions on preventing pollution by radioactive waste in their respective areas, which makes them both treaties on environmental protection and on nuclear safety.

115. International Convention for the Suppression of Acts of Nuclear Terrorism (2005), 2445 UNTS 137, entered into force 7 July 2007, Article 20 (Nuclear Terrorism Convention).

116. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INF/CIRC/274 Rev. 1, 1456 UNTS 125, entered into force 8 February 1987 (CPPNM).

117. Amendment to the Convention on the Physical Protection of Nuclear Material (2005), IAEA Doc. GOC/INF/2005/10-GC(49)/INF/6, pp. 3-11 (not yet in force).

118. Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (1996), entered into force 24 March 2006 (London Protocol). But these conventions cannot be categorised under “nuclear law”.

119. See paragraph 3 of the minutes of the meeting of 6 July 1995 by the Chair of the Group of negotiation experts (unreferenced and unpublished): “to develop a ‘sister’ convention on radioactive waste: notably it should be an ‘incentive’ convention and should follow a similar structure” (emphasis added).

120. These instances of non-compliance by Japan and, in different circumstances, by other states, detected before accidents or incidents, were ignored insofar as they were not specifically commented on in the summary reports of review meetings. There may be no such thing as zero risk, nor are accidents inevitable, in the event of non-compliance with safety standards, but it is in any case better to comply with provisions designed to limit the impact of accidents and not to count on accidents not being inevitable.

appears, for example, in the Action Plan put forward by the Agency at the General Conference of September 2011,<sup>121</sup> which presses the adoption of a number of improvements to safety provisions<sup>122</sup> and advises states parties to: “explore mechanisms to enhance the effective implementation of the Convention”.<sup>123</sup> This subject also came up in the ordinary and extraordinary review meetings<sup>124</sup> of the CNS, which were held after the accident. So far, only improvements (albeit useful improvements) have been made to the CNS’s guidance documents.<sup>125</sup> Revisions to the guidance documents are easier to adopt than amendments to the CNS. The adoption of genuine non-compliance procedures was never considered.<sup>126</sup>

It is true, however, that it remains difficult to effect serious change in a convention by means of an amendment. It was decided at the Sixth Meeting of the Contracting Parties, held in Vienna from 24 March to 4 April 2014, to convene a Diplomatic Conference in 2015 to examine the amendment put forward by Switzerland<sup>127</sup> consisting of the addition of a subsection to Article 18 on the design and construction of nuclear installations.<sup>128</sup> To cite a document prepared by the European Commission<sup>129</sup> ahead of this meeting: “the Swiss Confederation considered that making the principle of ‘avoiding off-site contamination’ legally binding in the Convention would be a vital step towards improved global nuclear safety,” but the principle is already implicit in the current wording of subsection i) of the current text of Article 18. Limiting the subject of the amendment in this way confirms the

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121. See IAEA (2011), “Draft IAEA Action Plan on Nuclear Safety: Report by the Director General”, IAEA Doc. GOV/2011/59-GC(55)/14, p. 4.
122. These recommendations were largely implemented by states with nuclear installations, but not made binding.
123. The European Union gave its reaction to the consequences of the Fukushima Daiichi accident at the European Council meeting of 24 to 25 March 2011. See European Council (2011), “European Council, 24/25 March 2011, Conclusions”, EUCO 10/1/11 REV 1, Brussels, § 31, which launched stress tests. Further, 2009/71/Euratom Directive, which established an EU framework for the safety of nuclear installations, was amended by adopting Council Directive 2014/87/Euratom of 8 July 2014, which strengthened a number of provisions of the previous Directive and introduced others such as “On-site emergency preparedness and response” (new Article 8d) and “Peer reviews and reporting” (new Article 8e), although it does not set out explicit non-compliance procedures (notwithstanding the Commission’s traditional role of ensuring adherence to Directives).
124. See Article 23 (“Extraordinary Meetings”) of the CNS. The equivalent article in the Joint Convention is Article 31 (“Extraordinary Meetings”).
125. “Guidance documents”, the term used in the summary reports, designates the Guidelines regarding the Review Process under the CNS, *supra* note 91, the Guidelines regarding National Reports under the CNS, *supra* note 87, and the IAEA (2015), “Convention on Nuclear Safety: Rules of Procedure and Financial Rules”, IAEA Doc. INFCIRC/573/Rev.6.
126. These meetings also identified technical safety improvements, which are simple recommendations.
127. See Summary Report of the 6<sup>th</sup> Review Meeting, *supra* note 88, § 42.
128. “iv) Nuclear power plants shall be designed and constructed with the objectives of preventing accidents and, should an accident occur, mitigating its effects and avoiding releases of radionuclides causing long-term off-site contamination. In order to identify and implement appropriate safety improvement these objectives shall also be applied at existing plants”.
129. See European Commission (2014), “Proposal for a Council Decision issuing directives to the Commission for the negotiation of amendments to the Convention on Nuclear Safety (CNS) in the framework of a Diplomatic Conference”, COM(2014) 566 final, Brussels.

“timidity” of the contracting parties in approaching change to this convention,<sup>130</sup> since the legally binding nature of the proposed subsection iv) is still worded somewhat vaguely, in keeping with the spirit of the initial text.

The Diplomatic Conference was held in Vienna on 9 February 2015 and was preceded by several meetings of an informal working group (decided by the Contracting Parties at their 2014 meeting) from July 2014 to help prepare for the event. The members of the working group agreed that the Diplomatic Conference’s decisions would be taken by consensus, which is recommended but not required by the CNS.<sup>131</sup> No consensus was reached,<sup>132</sup> probably because the provisions of subsection were to be applied to existing installations. To remedy this issue, the contracting parties attending the Diplomatic Conference adopted,<sup>133</sup> also by consensus, the “Vienna Declaration on Nuclear Safety – On principles for the implementation of the objective of the Convention on Nuclear Safety to prevent accidents and mitigate radiological consequences”.<sup>134</sup> Without undermining the benefit of this recommendation, the results of the Diplomatic Conference were disappointing and missed the opportunity to bring real change to this convention both by updating the technical provisions and by failing, deliberately, to adopt non-compliance provisions.

Furthermore, the increasing embedding of provisions of nuclear law and environmental law in the licensing procedure (based on nuclear safety standards) for the construction and operation of a nuclear installation<sup>135</sup> ought to argue for equally stringent rules for obtaining compliance with provisions of both these branches of international law. The obligations applicable to nuclear installations under international environmental law, for example, which can be considered as forming part of the wider field of nuclear safety, but which are not included in the conventions, are subject to non-compliance procedures (e.g. the Espoo and Aarhus Conventions). This disparity may not be illegal, but it is shocking.

It is not the flexibility of the conventions’ commitments that is objectionable, nor their incentive nature, but the lack of meaningful (legal) means of forcing the states parties to meet their commitments. Incidentally, at the 2014 Colloquium of the SFDI (French International Law Society) on “International Law and Development”,

130. Other changes that were useful but not significant from the standpoint of compliance were suggested in Switzerland’s proposal, presented at the second extraordinary meeting in 2012, focused mainly on greater transparency. An amendment was suggested by the Russian Federation at the same meeting, although it is not mentioned in the 2012 report. There are also plans to improve review meetings (without issuing an amendment) for the Joint Convention (see the minutes of the 4<sup>th</sup> meeting of the Contracting Parties in 2012) although they will not include non-compliance procedures.

131. See CNS, Art. 32, § 4.

132. Contrary to the provisions of CNS, Art. 32, § 4, no vote was taken.

133. See IAEA (2015), “Diplomatic Conference to consider a Proposal by Switzerland to amend the Convention on Nuclear Safety, 9 February 2015, Vienna, Austria: Summary Report”, IAEA Doc. CNS/DC/2015/3/Rev.2.

134. IAEA (2015), “Vienna Declaration on Nuclear Safety: On principles for the implementation of the objective of the Convention on Nuclear Safety to prevent accidents and mitigate radiological consequences”, IAEA Doc. INFCIRC/872.

135. See Raetzke, C. (2013), “Nuclear Law and Environmental Law in the Licensing of Nuclear Installations”, *Nuclear Law Bulletin*, No. 92, NEA, Paris, pp. 55-88. More generally, on the links between nuclear law and environmental law on an international level, see the following works on international environmental law that devote a chapter to nuclear energy: Birnie, P., et al. (2009), *International Law and the Environment*, 3<sup>rd</sup> edition, Oxford University Press, Oxford, p. 888 and Sands, P. and J. Peel (2012), *Principles of International Environmental Law*, 3<sup>rd</sup> edition, Cambridge University Press, Cambridge, p. 898.

Professor Abi-Saab mentioned in his presentation that perfecting standards in an international instrument is pointless if the instrument itself is flawed, since the conditions of its implementation constitute a decisive factor. The prescriptive content of the CNS (and the Joint Convention), despite being rather vaguely worded, is in fact first-rate and relatively comprehensive, but the results in terms of delivering a high level of nuclear safety across the globe remain poor, particularly because of this absence of real implementation conditions.

The two conventions therefore appear to represent the revival of the ubiquitous “rule-making” instead of “rule-implementation and compliance” criticised by Winfried Lang, a ubiquity which he already judged to be outdated in 1998.<sup>136</sup>

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136. Lang, W., *supra* note 24, p. 381.

## **Crisis, criticism, change: Regulatory reform in the wake of nuclear accidents**

*by Kimberly A. Sexton\**

Accidents are a forcing function for change in the nuclear industry. While these events can shed light on needed technical safety reforms, they can also shine a light on needed regulatory system reforms. The TEPCO Fukushima Daiichi nuclear power plant (NPP) accident in Japan is the most recent example of this phenomenon, but it is not the only one.

In the wake of the three major accidents that have occurred in the nuclear power industry – Three Mile Island (TMI) in the United States; Chernobyl in Ukraine, in the former Soviet Union; and the Fukushima Daiichi NPP accident in Japan – a commission or committee of experts issued a report (or reports) with harsh criticism of the countries' regulatory system. And each of these accidents prompted changes in the respective regulatory systems. In looking at these responses, however, one must ask if this crisis, criticism, change approach is working and whether regulatory bodies around the world should instead undertake their own systematic reviews, unprompted by crisis, to better ensure safety.

This article will attempt to analyse the issue of regulatory reform in the wake of nuclear accidents by first providing a background in nuclear regulatory systems, looking to international and national legal frameworks. Next, the article will detail a cross-section of current regulatory systems around the world. Following that, the article will analyse the before and after of the regulatory systems in the United States, the Soviet Union and Japan in relation to the TMI, Chernobyl and Fukushima accidents. Finally, taking all this together, the article will address some of the international and national efforts to define exactly what makes a good regulator and provide conclusions on regulatory reform in the wake of nuclear accidents.

### **I. International conventions**

The Convention on Nuclear Safety (CNS)<sup>1</sup> and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint

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1. Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293.

Convention)<sup>2</sup> are ingrained in the world of nuclear energy today, but, for the greater part of the history of nuclear power these conventions did not exist. The negotiators and drafters of these conventions therefore had the difficult task of establishing “an instrument that can be implemented by countries with very different industrial, regulatory and legal systems, at different stages of development, and even with widely different approaches to nuclear power.”<sup>3</sup> It is a supreme accomplishment that these individuals were able to craft the conventions in a way that countries in such different stages of nuclear development were able to agree on three major points: who is responsible for safety, the functions of the regulator and the characteristics necessary for regulatory bodies.

### A. Convention on Nuclear Safety

The CNS specifically addresses legislation and regulation in Articles 7 through 9. Article 7 requires a legislative and regulatory framework for safety and provides a list of basic elements. Article 8 addresses the regulatory body, stating “Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7”.<sup>4</sup> Further, the regulator “shall [be] provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities”.<sup>5</sup>

The principle of regulatory independence is embedded in Article 8 in the requirement for assurance of “an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.”<sup>6</sup> This does not mean that the regulator should be “entirely separate from other government bodies”, but rather “that it is able to perform its functions without undue pressure or constraint.”<sup>7</sup>

Article 9 of the CNS establishes the fundamental principle that the licence holder, or operator, of an NPP bears “prime responsibility for the safety of a nuclear installation”. But, the regulatory body is accountable for ensuring that the “license holder meets its responsibility.”<sup>8</sup>

### B. Joint Convention

During the drafting of the CNS, consensus could not be reached on the scope of the convention, with some states desiring that it include radioactive waste management;<sup>9</sup> thus, the issue was left for another day.<sup>10</sup> Soon after the adoption of

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2. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997), IAEA Doc. INFCIRC/546, 2153 UNTS 357.
  3. Jankowitsch-Prevor, O. (1994), “The Convention on Nuclear Safety”, *Nuclear Law Bulletin*, No. 54, NEA, Paris, p. 19. Although this quote relates directly to the CNS, it can be understood in the context of the Joint Convention as well.
  4. CNS, *supra* note 1, Art. 8(1). Article 7 of the CNS enumerates a number of activities for which the legislative and regulatory framework must provide, but does not specify which governmental body is to be responsible for crafting the legislative and regulatory framework.
  5. *Ibid.*, Art. 8(1).
  6. *Ibid.*, Art. 8(2).
  7. IAEA (2010), “General Safety Requirements Part 1: Governmental, Legal and Regulatory Framework for Safety”, IAEA Safety Standards, No. GSR Part 1, Vienna, p. 6.
  8. CNS, *supra* note 1, Art. 9.
  9. Tonhauser, W. and O. Jankowitsch-Prevor (1997), “The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Sources”, *Nuclear Law Bulletin*, No. 60, NEA, Paris, p. 12.

the CNS, preliminary discussions began on the development of a convention for the safety of radioactive waste management and not long after a Group of Experts was convened.<sup>11</sup> Due to the success of the CNS, the Group of Experts determined that this new convention should be modelled on the CNS.<sup>12</sup> Not surprisingly then, the articles dealing with the regulatory body are quite similar. For example, Article 20 is an exact mirror of CNS Article 8. And just like Article 8, the Joint Convention also speaks towards the independence of the regulator, though this time it uses the term expressly, imploring contracting parties to “take the appropriate steps to ensure the effective independence of the regulatory functions from other functions where organizations are involved in both spent fuel or radioactive waste management and in their regulation”.<sup>13</sup>

Again, reflecting the CNS, Article 21 of the Joint Convention also holds that the licence holder bears “prime responsibility for the safety of spent fuel or radioactive waste management” while the contracting party is responsible for ensuring that the licence holder takes appropriate steps to meet that responsibility.<sup>14</sup>

## II. National level

### A. Regulatory responsibility

As enshrined in the CNS and Joint Convention, there is broad agreement among national and international organisations that the fundamental objective of all nuclear safety regulatory bodies – the regulator’s prime purpose – is to ensure that nuclear licensees operate their facilities at all times in a safe manner. This usually forms the basis of a definition of safety, or an overarching mission statement or foundational principle applied by the regulatory body.

Some countries explain their regulatory responsibility in a positive way, detailing what they will *provide for* or *ensure* as a regulatory body. For example, in the United States, the US Atomic Energy Act states that the US Nuclear Regulatory Commission must ensure that licensed uses are “in accord with the common defense and security and will provide adequate protection to the health and safety of the public”.<sup>15</sup> “Adequate protection is the statutory minimum safety standard – the floor below which safety standards may not fall – to be ensured by the NRC before allowing licensed activities to take place.”<sup>16</sup> It is then up to the NRC to determine what is “in accord with the common defense and security” and what provides “adequate protection” of public health and safety. Similarly, Japan’s post-Fukushima Act for Establishment of a Nuclear Regulation Authority also takes a positive approach, stating that “In order to protect the lives, health and property of the population, preserve the environment and contribute to the national security of

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10. See Preamble to the CNS, *supra* note 1, para. IX, “Affirming the need to begin promptly the development of an international convention on the safety of radioactive waste management as soon as the ongoing process to develop waste management safety fundamentals has resulted in broad international agreement.” See also Tonhauser, W. and O. Jankowitsch-Prevor (1997), *supra* note 9, p. 12.
  11. Tonhauser, W. and O. Jankowitsch-Prevor (1997), *supra* note 9, p. 12.
  12. *Ibid.*
  13. Joint Convention, *supra* note 2, Art. 20(2).
  14. *Ibid.*, Art. 21(1).
  15. US Atomic Energy Act of 1954, 42 USC 2232(a), Section 182a.
  16. Ostendorff, W. and K. Sexton (2013), “Adequate protection after the Fukushima Daiichi accident: A constant in a world of change”, *Nuclear Law Bulletin*, No. 92, NEA, Paris, p. 24.

Japan, the task of the Nuclear Regulation Authority is to ensure safety in nuclear power use".<sup>17</sup>

Other countries take a different approach, defining their regulatory responsibility in terms of what they will *prevent*. For example, instead of using a phrase like "provide adequate protection" as in the US, the Nuclear Safety and Control Act of Canada states that the objective of the Canadian Nuclear Safety Commission (CNSC) is to "prevent unreasonable risk".<sup>18</sup> Similarly, France's Act on Transparency and Security in the Nuclear Field also speaks to what the regulations will prevent – "preventing accidents or limiting their effects" and "preventing or reducing the harmful effects of ionizing radiations caused to people, directly or indirectly, including by their adverse environmental impact" – rather than what it will ensure.<sup>19</sup>

Regardless of which approach is taken, however, the end regulatory goal is the same: safety.

## **B. Regulatory structures**

Because the conventions do not prescribe a specific form or structure for the regulator, each country is free to determine that which works best to meet the attributes and carry out the functions prescribed in the conventions. Although there is no requirement, or even preference, for a certain regulatory structure in the conventions, the structures still generally fall into one of two categories: either a multi-member agency or commission, or a regulatory authority headed by a single director or administrator that is organised within a governmental ministry.

### *1. Commissions / multi-member agencies*

Canada, France, Spain and the United States are headed by multi-member agencies or commissions. The number of commissioners or members varies by country, with France,<sup>20</sup> Spain<sup>21</sup> and the United States<sup>22</sup> headed by five commissioners or members and Canada's regulator headed by no more than seven permanent members, with the ability to have temporary members whenever the Governor in Council deems necessary.<sup>23</sup>

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17. Act for Establishment of the Nuclear Regulation Authority, Act No. 47 of June 27, 2012, Extra Official Gazette of June 27, 2012, Art. 3.

18. Nuclear Safety and Control Act (S.C. 1997, c. 9), Sec. 9(a).

19. Act No. 2006-686 of 13 June 2006 on Transparency and Security in the Nuclear Field (TSN Act), Title I, Art. 1(I).

20. The Nuclear Safety Authority (*Autorité de sûreté nucléaire*, ASN) is made up of five members, three of whom, including the chairman, are appointed by the President of the Republic, while the other two members are appointed respectively by the President of the National Assembly and the President of the Senate. *Ibid.*, Art. 10.

21. The Nuclear Safety Council (*Consejo de Seguridad Nuclear*, CSN) is made up of a Chairman and four Commissioners who are appointed by the Government, on the proposal of the Minister of Industry, Tourism and Trade. Act 15/1980 of 22 April, Creating the Nuclear Safety Council, amended by Act 33/2007 of 7 November, Arts. 4(1) and 5(2).

22. The US Nuclear Regulatory Commission has five Commissioners who are nominated by the President of the US and confirmed by the US Senate. Energy Reorganization Act of 1974, as amended (ERA), section 201, 42 USC 5841.

23. Nuclear Safety and Control Act, *supra* note 18, Sec. 10(1).



Regardless of the number of commissioners or members, the governing legislation of Canada,<sup>24</sup> France,<sup>25</sup> Spain<sup>26</sup> and the United States<sup>27</sup> all call for one of the commissioners or members to be appointed to serve as the chairman or president. The chairman or president has similar responsibilities across these countries. For example, it is specified in the US<sup>28</sup> and France<sup>29</sup> that the chairman has special authorities in an emergency, while in the United States<sup>30</sup> and Canada<sup>31</sup> it is specified that the chairman and president are the principal or chief executive officer of the regulatory body.

Independence is a key component to these regulatory bodies, with this characteristic being established in either law or practice. France's TSN Act states that "The members of the college exercise their duties entirely impartially without receiving any instructions from the Government or from another other person or institution."<sup>32</sup> The United States Congress established the NRC as an independent federal agency<sup>33</sup> that does not report to any other agency of the executive branch and which enjoys considerable discretion in regulatory matters but is overseen in certain respects by the president and the congress.<sup>34</sup> The Canadian Nuclear Safety and Control Act established the CNSC as a "body corporate",<sup>35</sup> which makes reports to the Minister of Natural Resources but is not under the supervision of the Minister of Natural Resources and remains an independent body.<sup>36</sup> Finally, the Act Creating

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24. The Governor in Council designates one of the permanent members as President. *Ibid.* at 10(3). The President is a full-time member of the Commission and the other members may be appointed as full-time or part-time members. *Ibid.* at 10(4).
  25. The chairman is appointed by the President of the Republic. TSN Act, *supra* note 19, Art. 10.
  26. The Chairman is appointed in the same manner as the other Commissioners. Act 15/1980, *supra* note 21, Art. 5(1) and (2).
  27. The President of the US designates one member of the Commission as Chairman, who serves as Chairman at the pleasure of the President. ERA, *supra* note 22, section 201(a)(1), 42 USC 5841(a)(1).
  28. See e.g. 45 FR 40561, Reorganization Plan No. 1 of 1980 (16 June 1980), sec. 3(a): "there are hereby transferred to the Chairman all the functions vested in the Commission pertaining to an emergency concerning a particular facility or materials licensed or regulated by the Commission, including the functions of declaring, responding, issuing orders, determining specific policies, advising the civil authorities, and the public, directing, and coordinating actions relative to such emergency incident."
  29. TSN Act, *supra* note 19, Art. 11. "In the event of an emergency, the chairman of the Authority or, in his absence, the member he has appointed, takes the measures required by the situation in the fields within the competence of the college. He convenes the college as swiftly as possible to report to it on the measures thus taken."
  30. Reorganization Plan No. 1 of 1980, *supra* note 28, sec. 2(b). "The Chairman shall also be the principal executive officer of the Commission."
  31. Nuclear Safety and Control Act, *supra* note 18, Sec. 12(1). "The President is the chief executive officer of the Commission and has supervision over and direction of the work of the members and officers and employees of the Commission, including the apportionment of work among the members and, where the Commission sits in a panel, the assignment of a member or members to the panel and of a member to preside over the panel."
  32. TSN Act, *supra* note 19, Article 13.
  33. ERA, *supra* note 22, section 201(a)(1), 42 USC 5841(a)(1). "There is established an independent regulatory commission to be known as the Nuclear Regulatory Commission which shall be composed of five members".
  34. For more information on the creation and governmental structure of the NRC, see Ostendorff, W. and K. Sexton (2013), *supra* note 16, pp. 24-26.
  35. Nuclear Safety and Control Act, *supra* note 18, Sec. 8(1).
  36. See NEA (2009), "Nuclear Legislation in OECD and NEA Member Countries: Canada", available at: [www.oecd-nea.org/law/legislation/canada.pdf](http://www.oecd-nea.org/law/legislation/canada.pdf), p. 21.

the Nuclear Safety Council in Spain specifies that the CSN was created in 1980 to be independent from the central administration of the state and its role has been modified since then only to ensure the preservation of the effective independence of the organisation.<sup>37</sup>

## 2. Single director or administrator

The regulatory bodies in Sweden, Finland, Germany and the Russian Federation, on the other hand, are headed by a single director or administrator, sometimes organised within a ministry. For example, the Swedish Radiation Safety Authority reports to the Ministry of the Environment and is led by a Director General appointed by the government.<sup>38</sup> The Finnish Radiation and Nuclear Safety Authority (STUK) is also headed by a Director General appointed by the government.<sup>39</sup> Although STUK is administratively under the Ministry of Social Affairs and Health, which has overall authority for radiation safety, it is able to function independently of the Ministry in carrying out its regulatory functions.<sup>40</sup>

In Germany, the “regulatory body” is actually composed of two parts: one is the federal government authority – the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) – and the other is the Länder government authorities.<sup>41</sup> The Minister of the BMUB is the head of the regulatory body and it is the BMUB that is responsible for the fulfilment of obligations arising from the CNS. The BMUB also provides federal oversight of the actions of the Länder and is responsible for international co-operation. Supporting the BMUB is the Federal Office for Radiation Protection (BfS), which acts as the technical support organisation for the BMUB and was established in 1989, in part due to the Chernobyl accident. The BfS is also headed by a single-administrator, the President. Although there are five different Länder licensing and supervisory authorities for nuclear installations in Germany, the basic organisational structure is much the same: it is headed by a single minister who is supported by a ministerial directorate (headed by a Director General), which is in turn subdivided into divisions for the execution and the licensing and oversight of nuclear installations.<sup>42</sup>

The state regulatory authority for safety in the use of nuclear energy in the Russian Federation is the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor). Rostekhnadzor is headed by a single administrator, a Chairman. Within the past five years, there have been some changes to the reporting structure of Rostekhnadzor to ensure true independence. In 2008, Rostekhnadzor was re-subordinated to the Ministry of Natural Resources and Environment of Russia, but over a period of two years it was determined that “for the state safety regulatory authority in the field of the use of atomic energy to exercise its functions efficiently, it must be genuinely independent and must not be

37. Act 15/1980, *supra* note 21, Preamble.

38. Swedish Radiation Safety Authority (2013), “About the Authority”, [www.stralsakerhetsmyndigheten.se/In-English/Facts-about-us/](http://www.stralsakerhetsmyndigheten.se/In-English/Facts-about-us/).

39. STUK (n.d.), “Organization”, [www.stuk.fi/web/en/about-us/organization](http://www.stuk.fi/web/en/about-us/organization).

40. IAEA (2012), Integrated Regulatory Review Service (IRRS) Mission to Finland, available at: [www.stuk.fi/documents/12547/281526/iaea-irrs-mission-report-to-finland-2012.pdf/52130c5b-acb2-44d3-aa67-4fe9233a7989](http://www.stuk.fi/documents/12547/281526/iaea-irrs-mission-report-to-finland-2012.pdf/52130c5b-acb2-44d3-aa67-4fe9233a7989), pp. 16, 30.

41. Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (2014), Convention on Nuclear Safety – Report by the Government of the Federal Republic of Germany for the Sixth Review Meeting in March/April 2014, available at: [www.bmub.bund.de/fileadmin/Daten\\_BMU/Pool/Broschueren/bericht\\_uebereinkommen\\_nukl\\_sicherheit\\_en\\_bf.pdf](http://www.bmub.bund.de/fileadmin/Daten_BMU/Pool/Broschueren/bericht_uebereinkommen_nukl_sicherheit_en_bf.pdf), p. 46.

42. *Ibid.*, p. 53.

part of any ministry [or] other authorities”.<sup>43</sup> Thus, it was decided in 2010 to re-subordinate Rostechnadzor directly to the government of the Russian Federation where it is now independent of the state bodies that control the uses of atomic energy.<sup>44</sup>

### C. Regulatory functions

Regardless of whether the regulatory body is headed by a single administrator or a commission, the conventions make clear that the legislative and regulatory framework governing the safety of nuclear installations must provide for certain basic regulatory functions. For example, national safety requirements and regulations or directives must be established.<sup>45</sup> Within the legal framework of the regulatory system, a licensing system shall be established for nuclear installations, which includes authorisations and prohibitions.<sup>46</sup> Moreover, the regulator is to be empowered to verify compliance with such standards and regulations through inspections and assessments.<sup>47</sup> Finally, the regulator must be able to enforce compliance with established standards and regulations using measures that include the suspension, modification or revocation of a licence.<sup>48</sup>

Korea describes its regulatory functions as encompassing, among other activities: the establishment of policies and systems, the issuance of licences and permits and the performance of inspections and issuance of executive actions.<sup>49</sup> Similarly, Spain’s CSN states that its functions are to: “regulate[] the operation of nuclear and radioactive facilities”, “propose[] rules and regulations”, “issue[] operator’s licenses” and “propose[] coercive measures”, among others.<sup>50</sup> India’s Atomic Energy Regulatory Board (AERB) also details its functions quite comprehensively, which include the development of safety policies, codes, guides and standards; grant consent; and ensure compliance.<sup>51</sup> The UK Office of Nuclear Regulation explains that it regulates through permission and compliance inspection, enforcement and influence.<sup>52</sup>

Although countries may use different words to describe their duties, there is a broad consensus regarding the functions of nuclear regulators.

### D. Summary

At a high level, it appears that there are more similarities than differences in the current responsibilities, structures and functions of regulatory bodies. But, key

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43. Answers of the Russian Federation to the questions of the Contracting Parties to the 6<sup>th</sup> National Report of the Russian Federation on implementation of CNS over (the period of) 2011-2013, available at: <http://en.gosnadzor.ru/international/Answers%20Russian%20Federation.pdf>, p. 41
  44. Rosatom (2013), Sixth National Report of the Russian Federation on the Fulfillment of Commitments Resulting from the Convention on Nuclear Safety, Sixth Review Meeting under the Convention on Nuclear Safety, available at: [www.rosatom.ru/en/resources/8e6c70804524ef3ba621b77680b11dae/cns\\_rf\\_nr\\_6\\_eng.pdf](http://www.rosatom.ru/en/resources/8e6c70804524ef3ba621b77680b11dae/cns_rf_nr_6_eng.pdf), p. 132.
  45. CNS, *supra* note 1, Art. 7(2)(i); Joint Convention, *supra* note 2, Art. 19(2)(i).
  46. CNS, *supra* note 1, Art. 7(2)(ii); Joint Convention, *supra* note 2, Arts. 19(2)(ii) & (iii).
  47. CNS, *supra* note 1, Art. 7(2)(iii); Joint Convention, *supra* note 2, Art. 19(2)(iv).
  48. CNS, *supra* note 1, Art. 7(2)(iv); Joint Convention, *supra* note 2, Art. 19(2)(v).
  49. NSSC (n.d.), “Nuclear regulation that everyone can trust”, available at: [www.nssc.go.kr/nssc/en/nci/elif/Qhqd.pdf](http://www.nssc.go.kr/nssc/en/nci/elif/Qhqd.pdf), p. 7.
  50. CSN (2015), “Functions”, [www.csn.es/en/funciones-del-csn](http://www.csn.es/en/funciones-del-csn).
  51. Government of India, Atomic Energy Regulatory Board (2013), “Functions of AERB”, [www.aerb.gov.in/AERBPortal/pages/English/AboutAERB/functions\\_aboutUs.action](http://www.aerb.gov.in/AERBPortal/pages/English/AboutAERB/functions_aboutUs.action).
  52. Office of Nuclear Regulation, Information about ONR, available at: [www.onr.org.uk/onr-information-leaflet.pdf](http://www.onr.org.uk/onr-information-leaflet.pdf).

differences and outliers still remain, with the revelations following the Fukushima accident being a key indicator of this. While there is great support for the safety conventions (78 parties to the CNS and 70 parties to the Joint Convention, as of the date of publication), not every party has fully subscribed to the articles on responsibility, functions and characteristics of regulatory bodies. This speaks to the “incentive” nature of the conventions,<sup>53</sup> which was critical to reaching agreement,<sup>54</sup> but left much up to the will of the contracting parties.<sup>55</sup> Without any forcing function in the conventions, countries are left with only encouragement to subscribe to the principles of the conventions.

### III. Three Mile Island

The two-unit Three Mile Island Nuclear Station is located in Middletown, Pennsylvania, about ten miles (16 km) southeast of Harrisburg, Pennsylvania. On 28 March 1979, Unit 1 was shut down for refuelling, while Unit 2 was undergoing some maintenance procedures. Just after 4:00 in the morning, two pumps connected with one of the steam generators shut down, which caused “an almost simultaneous and automatic shutdown of the Unit 2 turbine.”<sup>56</sup> A subsequent series of equipment malfunctions, design-related problems and operator errors led to the partial meltdown of TMI Unit 2.<sup>57</sup>

Though the accident resulted in only very small off-site releases of radioactivity, and involved no deaths or injuries, it was, at the time, “unquestionably the most serious [accident] in the history of commercial nuclear power.”<sup>58</sup> Countless reports and investigations were written and conducted following the accident, with the two most important being: the Report of the President’s Commission on the Accident at Three Mile Island<sup>59</sup> and the NRC’s Special Inquiry Group Report to the

53. See CNS, *supra* note 1, preambular paras. vii, “Affirming the importance of international co-operation for the enhancement of nuclear safety through existing bilateral and multilateral mechanisms and the establishment of this incentive Convention” and viii, “Recognizing that this Convention entails a commitment to the application of fundamental safety principles for nuclear installations rather than detailed safety standards”. See also Joint Convention, *supra* note 2, preambular paras. ix, “Affirming the importance of international co-operation in enhancing the safety of spent fuel and radioactive waste management through bilateral and multilateral mechanisms, and through this incentive Convention” and x, “Mindful of the needs of developing countries, and in particular the least developed countries, and of States with economies in transition and of the need to facilitate existing mechanisms to assist in the fulfillment of their rights and obligations set out in this incentive Convention”.

54. Jankowitsch-Prevor, O. (1994), *supra* note 3, p. 13.

55. For further information on the incentive nature of the CNS and Joint Convention, see Handle, G. (2004), “The IAEA Nuclear Safety Conventions: An Example of Successful ‘Treaty Management’?”, *Nuclear Law Bulletin*, No. 72, NEA, Paris, pp. 7-27; deWright, T. (2007), “The ‘Incentive’ Concept as Developed in the Nuclear Safety Conventions and its Possible Extension to Other Sectors”, *Nuclear Law Bulletin*, No. 80, NEA, Paris, pp. 29-47.

56. NRC (1980), “1979 Annual Report”, NUREG-0690, Washington, DC, p. 12.

57. See e.g. NRC (2013), “Backgrounder on Three Mile Island Accident”, [www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.pdf](http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.pdf). For a more detailed account of the accident and the events that followed, see Walker, J. S. (2004), *Three Mile Island: A Nuclear Crisis in Historical Perspective*, University of California Press, Berkeley, California.

58. 1979 Annual Report, *supra* note 56, p. 11.

59. President’s Commission on the Accident at Three Mile Island (1979), “Report of the President’s Commission on the Accident at Three Mile Island – The Need for Change: The Legacy of TMI”, GPO Document Number 1979 0-303-300, Washington, DC (hereafter the “Kemeny Commission Report”, so named for John G. Kemeny, the President of Dartmouth College and Chairman of the President’s Commission).

Commissioners and to the Public.<sup>60</sup> In fact, the proliferation of reports even generated its own report, with the Government Accountability Office (GAO) tasked “to determine whether the various TMI investigations fully and accurately disclosed what happened and why it happened.”<sup>61</sup> What follows is a review of those reports and recommendations, as well as the reforms that were ultimately made.

### A. **Kemeny Commission Report**

Within two weeks of the start of the TMI accident, on 11 April 1979, US President Jimmy Carter issued Executive Order 12130 (EO), which called for an independent body (or group or committee) to investigate and explain the accident at TMI.<sup>62</sup> Specifically, the EO established the President’s Commission on the Accident at Three Mile Island, to be composed of not more than 12 people appointed by the President who are nominally independent of the Executive Branch. In a six month period, EO 12130 required the President’s Commission to study and investigate a number of specific items, though the structure and functioning of the Commission itself was not one of the enumerated items.

In the six months of investigation, the President’s Commission took more than 150 depositions and interviewed many others.<sup>63</sup> Public hearings were also held, where individuals provided testimony under oath.<sup>64</sup> The result of all of this was a document collection that could cover 91 meters (300 feet) worth of self-space,<sup>65</sup> a final report of 179 pages and 44 recommendations deemed to be of “vital importance”.<sup>66</sup> The President’s Commission concluded its investigation with this powerful overall assessment:

With its present organization, staff, and attitudes, the NRC is unable to fulfil its responsibility for providing an acceptable level of safety for nuclear power plants.<sup>67</sup>

To the President’s Commission, “fundamental changes [were] necessary in the organization, procedures, and practices – and above all – in the attitudes of the Nuclear Regulatory Commission, and to the extent that the institutions we investigated are typical, of the nuclear industry.”<sup>68</sup>

The recommendations related to the organisation and management of the NRC led off the President’s Commission’s recommendations. Finding that “as presently constituted, the NRC does not possess the organizational and management

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60. NRC Special Inquiry Group (1980), “Three Mile Island: A Report to the Commissioners and to the Public”, NUREG/CR-1250, Washington, DC. (hereafter the “Rogovin Report”, so named for Mitchel Rogovin, a noted Washington, DC attorney and director of the NRC group).

61. Government Accountability Office (GAO) (1980), “Three Mile Island: The Most Studied Nuclear Accident in History”, EMD-80-109, Washington, DC, p. 4 (“Most Studied Accident Report”).

62. Carter, J. (1979), Executive Order 12130 – President’s Commission on the Accident at Three Mile Island, Washington, DC.

63. Kemeny Commission Report, *supra* note 59, p. 3.

64. *Ibid.*

65. *Ibid.*

66. “Nevertheless, we feel that our findings and recommendations are of vital importance for the future of nuclear power. We are convinced that, unless portions of the industry and its regulatory agency undergo fundamental changes, they will over time totally destroy public confidence and, hence, they will be responsible for the elimination of nuclear power as a viable source of energy.” *Ibid.*, p. 25 (emphasis in original).

67. *Ibid.*, p. 56.

68. *Ibid.*, p. 7.

capabilities necessary for the effective pursuit of safety goals”, the President’s Commission recommended a complete restructuring of the agency, starting first with abolishing the five-member commission and instituting a single administrator.<sup>69</sup> Expanding on this point, the report stated:

we recommend a total restructuring of the NRC. We recommend that it be an independent agency within the executive branch, headed by a single administrator, who is in every sense chief executive officer, to be chosen from outside NRC. The new administrator must be provided with the freedom to reorganize and to bring new blood into the restructured NRC’s staff. This new blood could result in the change of attitudes that is vital for the solution of the problems of the nuclear industry.<sup>70</sup>

As Dr Kemeny described it at an October 1979 US Senate Joint Hearing on the President’s Commission on the Accident at Three Mile Island Findings, this change was recommended “not necessarily [because the NRC is] a mismanaged agency, [but because] it is an unmanaged agency.”<sup>71</sup> In fact, Dr Kemeny went so far as to say: “Nobody is running the show down there.”<sup>72</sup>

His position was not roundly supported. Four of the five sitting Commissioners “felt that the objectives of the President’s Commission could be accomplished by reforms effected within the existing structure.”<sup>73</sup> NRC Commissioner Peter Bradford outspokenly stated that the proposal to create a single-administrator agency “does not make good sense” and actually proved a “contradiction in terms”.<sup>74</sup> At the same October 1979 US Senate Hearing, Senator Gary Hart, Chairman of the Subcommittee on Nuclear Regulation, stated in his opening statement that a single administrator would “eliminate[] the diversity of views provided by a multimember commission.”<sup>75</sup>

## **B. Rogovin Report**

Before President Carter established the President’s Commission, the NRC instituted its own “Special Inquiry” into the accident. The NRC contracted with a private Washington law firm to conduct the inquiry, but the bulk of the inquiry staff was made up of NRC staff members who volunteered for the job.<sup>76</sup> Although the Special Inquiry consisted of approximately “70 nuclear engineers, scientists, lawyers and investigators” and 21 outside consultants, the conclusions and recommendations were solely the product of two lawyers: Mitchell Rogovin and George T. Frampton, Jr.<sup>77</sup> In their inquiry, the team deposed approximately 270 individuals – including top management of the NRC, Metropolitan Edison (the utility company) and Babcock & Wilcox (the reactor’s manufacturer) – and conducted hundreds of additional interviews, in addition to the access the Special Inquiry team was given to the transcripts from other post-TMI investigations.<sup>78</sup>

Although “the Special Inquiry was not intended to duplicate the efforts of the President’s Commission”, in the end, the authors of the Rogovin Report strongly

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69. *Ibid.*, p. 61.

70. *Ibid.*, p. 22.

71. United States Senate (1979), Joint Hearing on the President’s Commission on the Accident at Three Mile Island Findings, Transcript, p. 78.

72. *Ibid.*

73. 1979 Annual Report, *supra* note 56, p. 43.

74. *Ibid.*, p. 58.

75. Joint Hearing, *supra* note 71, p. 4.

76. Rogovin Report, *supra* note 60, p. ix.

77. *Ibid.*, p. x.

78. *Ibid.*, p. ix.

agreed with much of the Kemeny Commission. Echoing much of the same language as Dr Kemeny in his Senate testimony, the Rogovin Report bluntingly declared:

We have found in the Nuclear Regulatory Commission an organization that is not so much badly managed as it is not managed at all. In our opinion, the Commission is incapable, in its present configuration, of managing a comprehensive national safety program for existing nuclear powerplants adequate to ensure public health and safety. A radical reorganization of the Commission's structure and management is called for, now.<sup>79</sup>

And, in no uncertain terms, the Special Inquiry team stated what it believed the reorganisation should be: "The central and overwhelming need is ... to establish a single chief executive with the clear authority to supervise and direct the entire NRC staff."<sup>80</sup>

In championing the single administrator, the Report firmly took to task the oft-cited rationales for retaining a commission structure at the NRC, that a commission structure: (1) is more transparent, (2) provides for a diversity of views, (3) ensures that a pro-nuclear head does not overlook legitimate safety concerns and (4) provides for more effective congressional oversight.<sup>81</sup> The Report was remarkably frank when it stated that "Mounting an affirmative, comprehensive safety program is not a task that requires a diversity of opinion. It is a task that absolutely requires strong central management controls and unified policymaking."<sup>82</sup> The Report went on to note that the "NRC is virtually the only agency in the Federal Government charged with protecting public health and safety that is headed by a Commission",<sup>83</sup> and that a 1971 report by the President's Council on Executive Organization (the "Ash Report") decried commission structures for their inefficiency, inertia, insularity and inflexibility, among other unfavourable traits.<sup>84</sup>

Not only did the Report call for the abolishment of the Commission, but just like the Kemeny Commission, it also called for the scaling back of the independence of the agency. Instead of being an independent Congressionally-created administrative agency, the Report would restructure the NRC as an executive agency that formulates standards, implementable only after presidential and congressional review and approval.<sup>85</sup> This recommendation, while only meriting a brief paragraph in the 183 page report, would actually have been the most substantive change to the organisation and functioning of the NRC.

### C. Government Accountability Office Leadership Report

In 1980, the GAO released a report that bore directly on the management and structure of the Nuclear Regulatory Commission following TMI.<sup>86</sup> Not surprisingly, the GAO report also had negative outlooks on the then-current commission. But what is interesting is that the Leadership Report, which was initiated before TMI and

79. *Ibid.*, p. 112.

80. *Ibid.*, p. 115.

81. *Ibid.*

82. *Ibid.*, p. 117 (emphasis in original).

83. *Ibid.*, p. 115.

84. *Ibid.*, p. 116.

85. *Ibid.*

86. GAO (1980), "The Nuclear Regulatory Commission: More Aggressive Leadership Needed", EMD-80-17, Washington, DC ("Leadership Report"). This report was already underway before the accident at TMI as it was required under the Energy Reorganization Act of 1974, ERA, *supra* note 22, sec. 306(b), 42 USC 5876(b), which required an audit and report of the Commission's performance within five years of its establishment. Letter from the Comptroller General of the United States to the President of the Senate and the Speaker of the House of Representatives (1980), introducing the Leadership Report.

ostensibly was not related to the problems associated with the accident, stated that “the Commission’s regulatory performance can be characterized best as slow, indecisive, and cautious – in a word, complacent”; however it did at least note that it was “showing signs of improvement.”<sup>87</sup>

Although the Leadership Report did not specifically address the TMI accident, because of the conclusions in the Kemeny Report, the GAO provided an analysis of which organisational form was best for a nuclear regulator. The Leadership Report took a more contemplative view of the subject matter than either the Kemeny Commission or Rogovin Reports, noting that neither approach is perfect. Acknowledging that there are advantages and disadvantages to both, the GAO made the perceptive comment that “To some extent, NRC’s leadership problem may be a price that must be paid for the benefits of a commission rather than a single-headed agency.”<sup>88</sup>

Interestingly, however, much of the analysis focused on the two chief roles of the Commission and their potential conflict: on the one hand, the Commission is in charge of making policy, which “requires deliberate contemplation of issues that affect both the near- and long-term direction of regulated nuclear activities”, while on the other hand, the Commission has a daily regulatory function, which “requires firm and timely” decision making.<sup>89</sup> And with each role, one organisational form is better suited than the other. A single administrator is better equipped to “develop goals and objectives, measure performance, and address and resolve regulatory issues in a timely manner”,<sup>90</sup> while the commission form “offers continuity of regulation and independence from the policies and actions of the executive branch.”<sup>91</sup> Thus, the authors of the report looked into the possibility of separating the NRC into two agencies – one with a commission responsible for nuclear regulatory policy and the other, headed by a single administrator, to handle the day-to-day regulation. Ultimately, however, the Leadership Report recommended to Congress that it retain the current commission organisational form but with a strengthened mandate for the Chairman and the Executive Director for Operations.<sup>92</sup>

#### **D. Regulatory reform in the United States**

In the end, although President Carter “agreed fully with the spirit and intent of the Kemeny Commission’s recommendations”, he did not sign off on its recommended reorganisation of the agency. Instead of abolishing the commission structure, President Carter set out more modest organisational changes.<sup>93</sup> In December 1979, President Carter issued a statement that he would send Congress a reorganisation plan that would strengthen the role of the Chairman of the NRC, providing “power to act on a daily basis as the chief executive officer” and would ensure the Chairman could act on behalf of the commission during an emergency.<sup>94</sup>

87. Leadership Report, *supra* note 86, pp. ii, 6.

88. *Ibid.*, p. 26.

89. *Ibid.*, p. 50.

90. *Ibid.*, p. v.

91. *Ibid.*, p. 52.

92. *Ibid.*, pp. iv, 41, 52-54.

93. Carter, J. (1979), “President’s Commission on the Accident at Three Mile Island: Remarks Announcing Actions in Response to the Commission’s Report”, Washington DC.

94. *Ibid.*



President Carter submitted his first proposal, “Reorganization Plan No. 1”, to Congress on 27 March 1980. This first draft generated great controversy for the authority given to the Chairman, despite assurances by Harrison Wellford, the architect of President Carter’s plan, that this was “not a radical shift in the system to regulate nuclear power”.<sup>95</sup> Questions were raised in a three-day Senate hearing in April 1980 about whether the Chairman was made too strong and whether the Commissioners would still have sufficient access to information.<sup>96</sup> After this, President Carter made several amendments to the original plan to “underscore that the collegial role of the Commission remains strong notwithstanding the added powers granted to the Chairman”.<sup>97</sup> These amendments gave the Commissioners a greater role in the selection of key agency officers, ensured the free flow of information to the Commission and vested more direct management responsibility in the Executive Director for Operations (EDO) (rather than the Chairman).

Ultimately, the final version of Reorganization Plan No. 1 of 1980 vested the five-member Commission with authority to formulate policy, issue rules and orders and adjudicate matters.<sup>98</sup> It then transferred all other functions not specifically outlined in the first section to the Chairman, designating that individual as the “principal executive officer” and spokesman for the Commission.<sup>99</sup> Most importantly, in response to TMI, it:

transferred to the Chairman all the functions vested in the Commission pursuant to an emergency concerning a particular facility ... including the functions of declaring, responding, issuing orders, determining specific policies, advising the civil authorities and the public, directing, and coordinating actions relative to such emergency incident.<sup>100</sup>

But, while the Chairman was imbued with additional authority under the Reorganization Plan, it ensured that the Chairman was still “governed by the general policies of the Commission and by such regulatory decisions, findings, and determinations ... as the Commission may by law ... be authorized to make.”<sup>101</sup>

A second GAO report from 1980 endorsed the President’s Reorganization Plan.<sup>102</sup> The GAO came out strongly against the recommendations in the Kemeny Commission and Rogovin Reports, stating that a single administrator would not solve the “management ills” of the NRC.<sup>103</sup> Instead, it is the commission form of the organisation that “is clearly superior”, due to its ensuring “continuity of regulation and independence from the policies and actions of the executive branch.”<sup>104</sup>

## **E. Summary**

The post-crisis environment of TMI came close to resulting in major changes to the regulatory system at the NRC, though in the end, moderation prevailed. While the accident made clear that some changes were necessary, there was no need to

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95. Hearing Before the Comm. on Governmental Affairs on Reorganization Plan No. 1 of 1980, to Strengthen Management of the Nuclear Regulatory Commission, 96th Cong. 8 (1980).

96. See *ibid.*, p. 22.

97. Statement of Harrison Wellford, Executive Associate Director of the Office of Management and Budget, Before the House Government Operations Committee, 6 May 1980.

98. Reorganization Plan No. 1 of 1980, *supra* note 28, sec. 1(a).

99. *Ibid.*, sec. 2(a).

100. *Ibid.*, sec. 3(a).

101. *Ibid.*, sec. 2(c).

102. Most Studied Accident Report, *supra* note 61, p. v.

103. *Ibid.*, p. 39.

104. *Ibid.*

radically overhaul the system. The success of the final approach can be seen with the passage of time: in the intervening 35 years since Reorganization No. 1 of 1980, there have been no significant changes to the agency's structure.<sup>105</sup> While there have been minor progressive developments to further refine certain elements, the overarching structure of the agency has remained the same.

#### IV. Chernobyl

In the early morning hours of 26 April 1986, a test was set to be carried out on a reactor system of Unit 4 of the Chernobyl nuclear power station in the former Soviet Union (now the Ukraine). During this test, a sudden surge of power occurred that ultimately led to a steam explosion.<sup>106</sup> As a result of the first explosion, a second explosion occurred, this time ejecting hot pieces of the reactor from the destroyed reactor building.<sup>107</sup> The violent explosions and series of fires that followed led to large releases of radioactive material for more than a week.<sup>108</sup> The whole northern hemisphere was "affected by the radioactive plume and the consequent deposition of radioactive substances on the ground".<sup>109</sup> Clean up of the Chernobyl disaster continues to this day.

According to the IAEA's International Nuclear Safety Advisory Group (INSAG), the factors leading to the accident were threefold: (1) the safety features of the design of the plant, (2) the inadequate actions of the operators and (3) the general safety and regulatory framework in existence at the time.<sup>110</sup> This was truly a systemic failure and no part of the nuclear power programme was blameless.

Like in the United States at the time of TMI, at the time of the Chernobyl accident, nuclear power had been deployed in the Soviet Union for a few decades, but the regulatory system was not well developed. The state oversight of NPP safety

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105. This is not to say, however, that there have not been questions, or even challenges, raised regarding the Commission's structure in the years following the Reorganization Plan. In fact, the US Senate held a series of 10 hearings over the course of a one-year-period just seven years after the Reorganization Plan was issued. Among a number of proposals related to the Commission's organisation was one to re-structure the NRC into a single-administrator agency. Senate Bill 1770, "To reorganize the functions of the Nuclear Regulatory Commission by abolishing the Commission and, in its place, establishing the Nuclear Regulatory Agency, in order to promote more effective and efficient nuclear licensing and regulation", 100<sup>th</sup> Congress (1987). Three of the five sitting Commissioners supported the legislation (Chairman Zech, Commissioner Roberts and Commissioner Bernthal), believing it would enhance accountability and responsibility, while those who did not support it (Commissioners Carr and Rogers) believed that such changes would only result in minor enhancements. Proposals to Reorganize the Nuclear Regulatory Commission: Hearing on S. 14, S. 100, S. 908, S. 1769, and S. 1770 Before the Subcomm. on Nuclear Regulation of the S. Committee on Environment and Public Works, 100<sup>th</sup> Cong. 14-22 (1987). Ultimately, after still more hearings in the House and Senate in 1988 and 1989, no changes were made.
106. IAEA (1986), "INSAG-1 Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident" (hereafter "INSAG-1"), Safety Series No. 75-INSAG-1, IAEA, Vienna, pp. 3-4.
107. *Ibid.*, p. 4
108. NEA (1995), *Chernobyl Ten Years On: Radiological and Health Impact – An Assessment by the NEA Committee on Radiation Protection and Public Health*, NEA, Paris, p. 6
109. NEA (2002), *Chernobyl: Assessment of Radiological and Health Impacts, 2002 Update of Chernobyl: Ten Years On*, NEA, Paris, p. 11.
110. IAEA (1992), "INSAG-7 The Chernobyl Accident: Updating of INSAG-1, A Report by the International Nuclear Safety Advisory Group" (hereafter "INSAG-7"), Safety Series No. 75-INSAG-7, IAEA, Vienna, p. 22.

was carried out by three different organisations, which were responsible for: (1) engineering safety, (2) nuclear safety (Gosatomenergonadzor) and (3) radiation safety (State Sanitary Inspection).<sup>111</sup> Just like in the United States, these organisations were still in their infancy at the time of the accident (four years for the NRC and TMI<sup>112</sup> versus three years for Gosatomenergonadzor and Chernobyl). The requirements, however, had been in existence for longer. The regulatory requirements for NPP safety were adopted in 1973, but presented only general requirements without concrete detail.<sup>113</sup> Further detail and specificity for the design and operation of NPPs were provided in codes, guides, rules and procedures, the most important of which were developed in 1975.<sup>114</sup> There was not, however, any overarching law governing the use of nuclear power.<sup>115</sup>

The vast analysis and debate around nuclear safety and regulatory reform that occurred following TMI did not have an apparent impact in the Soviet Union prior to the accident at Chernobyl.<sup>116</sup> One could even go so far as to say that the accident at Chernobyl can be partly attributed to this lack of reflection.<sup>117</sup> But, up to this point, the Soviet nuclear establishment had shown no ability to learn from the accidents that occurred within its own territory either (three accidents in the Kyshtym/Chelyabinsk region of the Urals between 1949 and 1967<sup>118</sup>). And it took an extraordinarily long time for the Soviet Union to make the necessary reforms post-Chernobyl.

#### A. IAEA Reports: INSAG-1 and INSAG-7

Within four months of the accident, the IAEA and the Soviet Union held a Post-Accident Review Meeting, which was summarised in a report by INSAG, referred to as INSAG-1. In this first report, it was declared that “[t]he root cause of the Chernobyl accident ... is to be found in the so-called human element.”<sup>119</sup> To correct this, the INSAG-1 report listed three necessary action items: training, auditing and “[a] permanent awareness by all personnel of the potential safety implications of any deviation from the procedures.”<sup>120</sup> Importantly, this is the first mention of the concept of “nuclear safety culture”.<sup>121</sup>

A follow-up INSAG report, INSAG-7, released six years later in 1992, de-emphasised the human factor and instead emphasised plant design and regulatory regime deficiencies. Although one can point to deficiencies in plant

111. Semenov, B.A. (1986), “Nuclear power in the Soviet Union”, *IAEA Bulletin*, Vol. 25, No. 2, pp. 53-54.

112. The NRC was formed on 19 January 1975. Ford, G. (1975), Executive Order 11834 – Activation of the Energy Research and Development Administration and the Nuclear Regulatory Commission, sec. 1. Prior to this, the NRC was the Atomic Energy Commission, which was assigned the functions of both promoting nuclear power as well as regulating its safety. US Atomic Energy Act, *supra* note 15, 42 USC 2011 et seq.

113. *Ibid.*, p. 54.

114. *Ibid.*

115. INSAG-7, *supra* note 110, p. 87 (Annex 1).

116. Vishnevsky, Y. (1996), “Radiation Safety Following the Chernobyl Accident”, paper submitted to the international forum One Decade after Chernobyl: Nuclear Safety Aspects, IAEA and UNDHA, Vienna, 1 to 3 April, p. 448.

117. See e.g. INSAG-7, *supra* note 110, Foreword.

118. See e.g. Collins, D. (1992), “Nuclear Accident in the Former Soviet Union: Kyshtym, Chelyabinsk and Chernobyl”, Defense Nuclear Agency, Armed Forces Radiobiology Research Institute, Bethesda, MD.

119. INSAG-1, *supra* note 106, p. 76.

120. *Ibid.*

121. *Ibid.*, pp. 77, 83.

design to potentially absolve the regulator of responsibility, the design issues were not an unknown element. Standards existed, but the “design fell well short” of those standards and “even incorporated unsafe features”.<sup>122</sup> While there was an approval process for the design of the Chernobyl reactors, it “was approved despite the lack of conformity to many of the USSR’s design requirements for nuclear power plants.”<sup>123</sup> More serious was the fact there were three potential precursor events, one in 1975 (Leningrad, Unit 1), another in 1983 (Ignalina plant) and even one at Chernobyl (Unit 1) in 1982, that indicated important design problems with the Chernobyl plant design but this information was either not adequately reviewed or “not fully understood and ... essentially ignored.”<sup>124</sup>

Serious issues like this arose because there was no such thing as “a strong and independent regulatory regime, properly resourced, backed at Government level and with all necessary enforcement powers” in existence in the Soviet Union prior to or at the time of the Chernobyl accident.<sup>125</sup> The regulatory regime in the Soviet Union was “insufficiently effective” and “unable to counter pressures for production”.<sup>126</sup> Part of this lack of effectiveness was due to “[i]nsufficient attention [being paid] to independent safety review”,<sup>127</sup> a fundamental component of any regulatory regime.

Although the INSAG-7 report minimised the significance of the lack of safety culture, it was still noted as an important contributing factor to the accident. Part of this was the fault of the regulator (or lack thereof). While there were apparently requirements for certain elements of safety culture in the regulations, there were no enforcement mechanisms in place.<sup>128</sup> “Many other necessary features did not exist at all.”<sup>129</sup> This lack of safety culture was not a flaw of simply one organisation in the nuclear structure of the Soviet Union; instead, these deficiencies existed at every level: from the Chernobyl plant to the “operating and regulatory organizations for nuclear power that existed at the time”, and from the national level to the local level.<sup>130</sup>

## **B. Chernobyl Commission Report**

On 27 February 1990, almost four years after the accident, the USSR State Committee for the Supervision of Safety in Industry and Nuclear Power (SCSSINP) set up a six-member Commission. Over the course of approximately a year, the Chernobyl Commission looked into the causes and circumstances of the accident by analysing and making “generalizations” from previously-available documents and reports.<sup>131</sup> Even though a Governmental Commission to Investigate the Causes of the Accident at the Chernobyl NPP had been formed the same day as the accident,<sup>132</sup> at the time the Chernobyl Commission report came out in 1991, “no scientific organization in

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122. INSAG-7, *supra* note 110, pp. 20, 24.

123. *Ibid.*, p. 21.

124. *Ibid.*, p. 20.

125. *Ibid.*, p. 21.

126. *Ibid.*, p. 25.

127. *Ibid.*, p. 23.

128. *Ibid.*, p. 22.

129. *Ibid.*

130. *Ibid.*, pp. 23-25. See also *ibid.*, pp. 84-85 (Annex 1).

131. *Ibid.*, pp. 29-30 (Annex 1).

132. Voznyak, V. Y. (1996), “Social, Economic, Institutional and Political Impacts: Report for the Soviet Period”, paper submitted to the international forum One Decade After Chernobyl: Summing up the Consequences of the Accident, IAEA, Vienna, 8 to 12 April, p. 370.

the USSR [had] published a thoroughly substantiated comprehensive account explaining how the accident originated and developed.”<sup>133</sup>

As explained succinctly by the Chernobyl Commission, Chernobyl Unit 4’s design deficiencies “predetermined the severe consequences of the accident”; however, that is not the end of the story.<sup>134</sup> The Commission determined that the design of the plant “violated the safety standards and regulations so seriously that it could only be operated in a country where there was an inadequate safety culture.”<sup>135</sup> And it was this deficiency of the regulatory regime that allowed this situation to arise that was the true cause of the Chernobyl accident.

To put it mildly, Soviet regulatory authorities were “lax in bringing plants with the [Chernobyl reactor design] into line with the safety standards and regulations.”<sup>136</sup> There were “many violations in the design of Chernobyl Unit 4 of the safety standards and regulation in force at the time of the design, construction and operation of the plant. Nevertheless, the design was approved and authorization given for construction by all the relevant authorities and regulatory bodies.”<sup>137</sup> Such careless oversight was bound to occur when at the time of the Chernobyl accident there was no atomic energy law in the Soviet Union; “when there is no law governing the utilization of nuclear power, no one bears the full responsibility for the safety of the operating nuclear power plants.”<sup>138</sup> There was no operating organisation in existence and plant management decisions were carried out by governmental ministries.<sup>139</sup> In fact, the concept of an “operating organization/utility” did not exist in the USSR until 1988.<sup>140</sup> Thus, the same bodies that were building nuclear power plants and supplying the nation’s electricity were also the same bodies responsible for developing safety standards. As explained by the Chernobyl Commission:

The USSR State Committee for the Supervision of Nuclear Power Safety [Gosatomenergondzor] was established only three years before the Chernobyl accident and, notwithstanding the safety culture concept, it could not be regarded as an independent body, since it was part of the same state authorities responsible for the construction of nuclear power plants and electricity generation.<sup>141</sup>

Ultimately, when these governmental processes were viewed as a whole, one could but determine that the nuclear power plants in the Soviet Union “are dangerous facilities for which no one is responsible.”<sup>142</sup>

When the Chernobyl Commission report came out in 1991, five years after the accident, although many reforms had been taken, the most important were still in the waiting. There was still no law on the use of atomic energy, thus continuing a situation wherein the regulatory bodies had “no legal basis, no economic methods of control”.<sup>143</sup> A challenging nuclear economy decreased financial resources making it

133. INSAG-7, *supra* note 110, p. 30 (Annex 1).

134. *Ibid.*, p. 85 (Annex 1).

135. *Ibid.*

136. *Ibid.*, p. 50 (Annex 1).

137. *Ibid.*, p. 87 (Annex 1).

138. *Ibid.*

139. *Ibid.*

140. Vishnevsky, Y. (1996), *supra* note 116, p. 449.

141. INSAG-7, *supra* note 110, p. 88 (Annex 1).

142. *Ibid.*, p. 87 (Annex 1).

143. *Ibid.*, p. 88 (Annex 1).

very difficult to ensure well-staffed and well-trained organisations.<sup>144</sup> Therefore, five years after the accident, there was still “finicky supervision of nuclear power plants, rather than a full blooded regulatory system”.<sup>145</sup> And “[t]he system of legal, economic and sociopolitical correlations that existed prior to the accident” continued to exist in the Soviet Union and still did not meet the standards to ensure the safe use of nuclear power.<sup>146</sup>

### C. Regulatory reform in the Soviet Union

Regulatory reforms came slowly to the Soviet Union. Two years after the accident, in 1988, the Soviet Union finalised a new regulatory document, “Generic provisions on NPP safety”, modelled on INSAG-3’s “Basic principles of NPP safety”.<sup>147</sup> In addition to including needed concepts like defence in depth and beyond design basis accidents, “safety culture” was introduced as “the readiness of personnel, having an adequate professional and psychological background, to realize that safety ensuring is a priority aim and inherent need which results in understanding by personnel of its responsibility and need for self-control in safety-related actions.”<sup>148</sup>

One document, however, is not enough as evidenced by the harsh language used by the Chernobyl Commission in 1991. The same year that the Chernobyl Commission report was issued, the State Committee on Supervision of Nuclear and Radiation Safety (Gosatomnadzor) was formed and designated as the state regulatory body for nuclear and radiation safety.<sup>149</sup> Although it had many of same responsibilities as its predecessor (Gosatomenergondzor), one organisation for the first time had “the responsibility to regulate and supervise safety not only at [NPPs], but also in the whole nuclear industry, including nuclear materials and fuel cycle facilities.”<sup>150</sup>

Seven years after the accident, in 1993, the first application was submitted to Gosatomnadzor for an operating permit.<sup>151</sup> The application was reviewed against the just passed “provisions on issuing provisional permits for NPP operation” and it took less than a year and a half for this permit to be reviewed and issued.<sup>152</sup> Four years after the first license was submitted, in 1997, the final provisions on licensing in the field of nuclear energy, which established the licensing procedures and conditions, were approved.<sup>153</sup> By this time, at least three temporary operating permits were already issued.

144. *Ibid.* See also Aleksashin, P. P., A. M. Bukrinskii and B. G. Gordon (2006), “Safety Regulation – 20 Years After the Chernobyl Accident”, *Atomic Energy*, Vol. 100, No. 4, p. 274; Mikhailov, M. V. and S. A. Sitnikov (1999), “The Role of the Gosatomnadzor of Russia in National Regulating of Safety of Radiation Sources and Security of Radioactive Materials”, IAEA-CN-84/55, p. 349.

145. INSAG-7, *supra* note 110, p. 88 (Annex 1).

146. *Ibid.*, p. 87 (Annex 1).

147. Vishnevsky, Y. (1996), *supra* note 116, p. 448.

148. *Ibid.*, p. 449.

149. This was not the end of the reforms, however, of the Russian regulatory body. In March 2004, by the Decree of the President of the Russian Federation, Gosatomnadzor was renamed the Federal Nuclear Supervision Service and then two months later it was combined with the Federal Industrial Supervision Service and transformed into the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor).

150. Vishnevsky, Y. (1996), *supra* note 116, p. 448.

151. *Ibid.*, p. 450.

152. *Ibid.*, pp. 449-450.

153. Resolution of the Government of the Russian Federation No 865 of 14 July 1997 “On Approval of the Regulation on Licensing of Activities in the Field of Nuclear Energy Use”.

The most important reform, however, came in the form of a federal law – “On the Use of Atomic Energy” – which was adopted on 21 November 1995. It took over nine years for the Russian Federation to draft and pass its first law on the use of nuclear energy, but it finally did put a proper system into place. For the first time, there was to be a legal relationship between the people and the organisations involved in the different stages of nuclear energy usage. For the first time, it was specified, in law, that the operator “should be solely responsible for the safety of the nuclear facility, radiation source or storage facility, and also for the proper handling of nuclear materials and radioactive substances.”<sup>154</sup> The requirement for state regulatory bodies was also finally put into law and their powers were enumerated.<sup>155</sup> Even the need for independence was explicitly addressed.<sup>156</sup> But, further provisions were needed to effectuate parts of the new federal law. Another two and four years were needed for these to be approved by the government.<sup>157</sup>

#### D. Summary

Unlike in the United States where more modest changes were needed, dramatic changes were needed in the Soviet Union following Chernobyl. But, these changes took entirely too long to institute. Although delays were understandable given the untold challenges it faced in the wake of Chernobyl (including the dissolution of the Soviet Union), had the Soviet Union progressively assessed its system, and learned lessons from the more minor incidents prior to Chernobyl, it may not have taken a decade to implement change.

### V. Fukushima

Unlike at TMI and Chernobyl, the 11 March 2011 TEPCO Fukushima Daiichi NPP accident was precipitated by natural disasters: a 9.0 magnitude earthquake followed by a 14-15 metre tsunami. The earthquake, which was centred 150 kilometres northeast of Fukushima Daiichi, resulted in the loss of all off-site power to the Fukushima Daiichi NPP, triggering the supply of backup power from the emergency diesel generators (EDGs). The EDGs provided power to the plant for approximately 40 minutes, until the tsunami struck. The tsunami, which was approximately ten metres higher than what the plant was designed for, caused wide-scale flooding and knocked out four of the six EDGs,<sup>158</sup> as well as other essential plant safety systems.

154. Federal Law No 170 of 21 November 1995 “On the Use of Atomic Energy”, Article 35.

155. *Ibid.*, Arts. 23-25.

156. *Ibid.*, Art. 24, “The abovementioned authorities are independent from other state bodies and organisations whose activities are related to the use of atomic energy.”

157. Decree of the President of the Russian Federation of 21.01.1997 No 26 “On Federal Executive Bodies, Authorized to Execute State Nuclear Safety Regulation” and Government Decree of 1 December 1999 No 1511, “Provisions on Development and Approval of Federal Norms and Rules in the Field of Nuclear Energy”. See also Vishnevsky, Y. G., A. T. Gutsalov, S. M. Bukrinsky and B. G. Gordon (1999), “Development of NPP State Regulation in Russia”, Report presented to the International Conference on the Strengthening of Nuclear Safety in Eastern Europe, Vienna, 14 to 18 June, p. 446.

158. At the time, Units 1, 2 and 3 were operating, but Units 4, 5 and 6 were shut down for refuelling. One of Unit 6’s EDGs continued to operate, which enabled it to keep power to both Units 5 and 6. NRC (2015), “Backgrounder on NRC Response to Lessons Learned from Fukushima”, available at: [www.nrc.gov/reading-rm/doc-collections/fact-sheets/japan-events.html](http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/japan-events.html). For a more detailed description of the Fukushima Daiichi accident progression, see IAEA (2015), “The Fukushima Daiichi Accident: Report by the Director General”, IAEA Document GC(59)/14, IAEA, Vienna.

Eventually, Fukushima Daiichi units 1, 2 and 3 experienced core melting, while built-up hydrogen in the reactor buildings of units 1, 3 and 4 caused explosions in the upper portions of these units exposing the spent fuel pools to the outside environment and releasing radioactive materials. Like Chernobyl, the Fukushima Daiichi NPP accident was rated a 7, “Major Accident”, on the International Nuclear Events Scale (INES) because of the major release of radioactive material with widespread environmental effects.<sup>159</sup> The difference from Chernobyl, however, is that there were no widespread health effects. In the end, approximately 150 000 people were evacuated.<sup>160</sup>

Following the accident, nuclear power plant countries around the world immediately began looking at the safety of their facilities in light of what occurred in Japan. For example, 12 days after the accident, the (now former) Chairman of the NRC directed the staff “to conduct a methodical and systematic review of [the agency’s] processes and regulations to determine whether the agency should make additional improvements to [its] regulatory system”.<sup>161</sup> One day later, the European Council determined that all European Union nuclear power plants should undertake “comprehensive and transparent risk and safety assessment[s]” (so-called “stress tests”), which would reassess the safety margins of nuclear power plants.<sup>162</sup>

International organisations got involved as well, with the NEA establishing a Senior-level Task Group on Impacts of the Fukushima Daiichi NPP Accident on 30 March 2011. Two months later, on 7 and 8 June 2011, the NEA co-organised a Ministerial Meeting on Nuclear Safety with the French government, in their role as G8-G20 Chair for 2011, and sponsored a forum on Fukushima, which was “the first international regulatory meeting with industry that focused exclusively on the Fukushima accident and the path forward”.<sup>163</sup> Later that same month, the IAEA convened a Ministerial Conference on Nuclear Safety.<sup>164</sup> Everyone, however, was waiting for a report from Japan.

### A. **Kurokawa Report**

On 30 October 2011, approximately seven months following the accident, the Act regarding Fukushima Nuclear Accident Independent Investigation Commission (the NAIIC Act) was enacted. One of the mandates charged to the NAIIC by the Speaker and the President of the National Diet was “To recommend measures to prevent nuclear accidents and any consequential damages based on the findings of the above investigations. The recommendations shall include assessments of essential nuclear policies and the structure of related administrative organisations.”<sup>165</sup> Additional direction was given by the Joint Council of the Committee on Rules and Administration of Both Houses on the Accident at the Fukushima Nuclear Power Plants of the Tokyo Electric Power Company that, among other actions, “The

159. IAEA (2011), “Fukushima Nuclear Accident Update Log – Updates of 12 April 2011”, [www.iaea.org/newscenter/news/fukushima-nuclear-accident-update-log-15](http://www.iaea.org/newscenter/news/fukushima-nuclear-accident-update-log-15).

160. The National Diet of Japan (2012), “The Official Report of the Fukushima Nuclear Accident Independent Investigation Commission”, Executive Summary (hereafter “NAIIC Report”), p. 19.

161. COMGBJ-11-0002, “NRC Actions Following the Events in Japan” (11 March 2011).

162. ENSREG (n.d.), “EU Stress Tests and Follow-up”, [www.ensreg.eu/EU-Stress-Tests](http://www.ensreg.eu/EU-Stress-Tests).

163. NEA (2011), “Proceedings of the Forum on the Fukushima Accident: Insights and Approaches”, NEA Document NEA/CNRA/R(2011)12, NEA, Paris.

164. More information on the Ministerial Conference is available on the IAEA’s website at: [www-pub.iaea.org/iaea meetings/42466/IAEA-Ministerial-Conference-on-Nuclear-Safety](http://www-pub.iaea.org/iaea meetings/42466/IAEA-Ministerial-Conference-on-Nuclear-Safety).

165. NAIIC Report, *supra* note 160, p. 10.



investigation should result in recommendations to benefit the nation's future, and provide an opportunity for strengthening the legislative body of the nation."<sup>166</sup>

In December 2011, the National Diet appointed a chairman of the NAIIC, Kiyoshi Kurokawa (a medical doctor and former President of the Science Council of Japan), and nine other members, among whom were two lawyers, a seismologist, another medical doctor and a former United Nations ambassador. After approximately six months of investigation, the report was released on 5 July 2012. In its investigation, the NAIIC:

- conducted more than 900 hours of meetings;
- interviewed 1 167 people;
- held 19 public commission meetings and broadcast 18 simultaneously in Japanese and English, with over 800 000 viewers total;
- utilised various social media outlets to communicate with the public, receiving over 170 000 comments;
- held 3 town hall meetings for evacuees with over 400 attendees; and
- surveyed residents of the designated evacuation area as well as on-site workers, receiving 10 633 and about 500 responses respectively.<sup>167</sup>

In an exceedingly frank and candid Message from Chairman Kurokawa introducing the report, he stated that the “disaster was ‘Made in Japan’” and that it “could and should have been foreseen and prevented.”<sup>168</sup> The lessons learned from TMI and Chernobyl were not absorbed in Japan and long after many governments had reformed their regulatory structure, Japan still entrusted the regulation of nuclear power “to the same government bureaucracy responsible for its promotion.”<sup>169</sup> The “regulatory capture” described in the NAIIC report went well beyond what one might imagine at the advanced stage of Japan’s nuclear programme: “Their independence from the political arena, the ministries promoting nuclear energy, and the operators was a mockery. They were incapable, and lacked the expertise and the commitment to assure the safety of nuclear power. Moreover, the organization lacked transparency.”<sup>170</sup> In the end, the Commission’s overall conclusion was that:

In order to prevent future disasters, fundamental reforms must take place. These reforms must cover both the structure of the electric power industry and the structure of the related government and regulatory agencies as well as the operation processes. They must cover both normal and emergency situations.<sup>171</sup>

A number of findings were made to support this, including the three most relevant here:

- “A ‘manmade’ disaster: The TEPCO Fukushima Nuclear Power Plant accident was the result of collusion between the government, the regulators and TEPCO, and the lack of governance by said parties ... We

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166. *Ibid.*, p. 11.

167. *Ibid.*, p. 11.

168. *Ibid.*, p. 9.

169. *Ibid.* At the time of the Fukushima Daiichi accident, the Nuclear and Industrial Safety Agency (NISA) was “a part of the Ministry of Economy, Trade & Industry (METI), an organization that ha[d] been actively promoting nuclear power.” *Ibid.*, p. 17.

170. *Ibid.*, pp. 20-21.

171. *Ibid.*, p. 16.

believe that the root causes were the organizational and regulatory systems that supported faulty rationales for decisions and actions, rather than issues relating to the competency of any specific individual.”<sup>172</sup>

- “Reforming the regulators: The Commission has concluded that the safety of nuclear energy in Japan and the public cannot be assured unless the regulators go through an essential transformation process. The entire organization needs to be transformed, not as a formality but in a substantial way. Japan’s regulators need to shed the insular attitude of ignoring international safety standards and transform themselves into a globally trusted entity.”<sup>173</sup>
- “Cosmetic solutions: Replacing people or changing the names of institutions will not solve the problems. Unless these root causes are resolved, preventive measures against future similar accidents will never be complete.”<sup>174</sup>

Out of these findings, seven recommendations were made. While many contained aspects related to regulatory and legal reform, the most direct was Recommendation 5, “Criteria for the new regulatory body”. The NAIIC determined that the new regulatory body must adhere to five “conditions”: independence, transparency, professionalism, consolidation and proactivity.<sup>175</sup>

## **B. Regulatory reform in Japan**

Ultimately, the Japanese regulatory body underwent a dramatic reform. In August 2011, just five months after the accident but almost a full year before the NAIIC Report, a Cabinet decision was made to restructure the bodies responsible for nuclear regulation.<sup>176</sup> Under this decision, a new organisation was to be created, tentatively called the “Nuclear Safety and Security Agency”, which would be an “Affiliated Organization” of the Ministry of the Environment (thus outside of METI) and integrating the function of the Nuclear Safety Commission. The goal was to complete this reorganisation by April 2012. The government submitted a bill to the Diet on 31 January 2012 to establish the Nuclear Safety and Security Agency, which was to be headed by a single Commissioner.<sup>177</sup> The opposition parties, however, submitted a counterproposal to the Diet on 20 April 2012 that proposed a multimember commission.<sup>178</sup>

Discussions then took place between the government and the opposition parties, resulting in a collaborative submission of a reformed bill to the Diet – Act for

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172. *Ibid.*

173. *Ibid.*, p. 20.

174. *Ibid.*, p. 21.

175. *Ibid.*, p. 23.

176. Cabinet Decision (2011), “Basic Policy on the Reform of an Organization in charge of Nuclear Safety Regulation”, available at: [www.meti.go.jp/english/earthquake/nuclear/iaea/pdf/20110911/annex4.pdf](http://www.meti.go.jp/english/earthquake/nuclear/iaea/pdf/20110911/annex4.pdf).

177. Reform of Japan’s Nuclear Safety Regulation (2012), available at: [www.nsr.go.jp/data/000099642.pdf](http://www.nsr.go.jp/data/000099642.pdf).

178. NEA (2012), “National Legislative and Regulatory Activities: Japan – Nuclear Regulation Authority Act”, *Nuclear Law Bulletin*, No. 90, NEA, Paris, p. 122; Burns, S. (2012), “The Fukushima Daiichi Accident: The International Community Responds”, *Washington University Global Studies Law Review*, Vol. 11, No. 4, p. 759.

Establishment of the Nuclear Regulation Authority – on 15 June 2012.<sup>179</sup> This bill was adopted on 27 June 2012.<sup>180</sup>

The new bill created the Nuclear Regulation Authority (NRA), which was established under the Ministry of the Environment on 19 September 2012. Under the Act, the NRA's mission is “to ensure safety in the use of nuclear energy ... for the purpose of contributing to the protection of the life, health, and property of the citizens, preservation of the environment, and national security of Japan.”<sup>181</sup>

The new organisation is quite similar to the US NRC with four commissioners and one chairman (Article 6) who are appointed by the Prime Minister with the consent of both Houses of the Diet (Article 7) and serve five year terms (Article 8). Unlike the US NRC, however, the NRA commissioners have “role-over terms”, where they will continue to serve as commissioner until their successor is appointed (Article 8(3)), thus preserving a full commission.<sup>182</sup>

The independence and technical competence of the commissioners and NRA as an organisation was a prominent component of the Act. Going beyond structural independence, the Act ensured greater protections by classifying the NRA as an “article 3 Authority”, which is a way of “ensuring its independence without any control or supervision by other organizations (i.e., Ministers of other Governmental organizations).”<sup>183</sup> Further, Article 5 specifically states that “The Chairman and the Commissioners of the Nuclear Regulation Authority shall exercise their authority independently.” They are to have “noble character and have excellent knowledge and experience concerning the ensuring of safety in the use of nuclear energy” (Article 7(1)) and must “exercise their authority independently, based on their own expertise, from a neutral and fair standpoint, thereby contributing to the protection of the lives, health, and property of the citizens, preservation of the environment, and national security of Japan” (Article 1). Thus, organisational and personal independence became legislatively mandated as well.

### C. Regulatory reform around the world

The regulatory lessons from Fukushima did not begin and end in Japan. Many other nations, as well as international and regional organisations took note. For example, although the National Assembly of the Republic of Korea had already initiated the regulatory reform process prior to the Fukushima accident, the events in Japan

179. Task Force for the Reform of Nuclear Safety Regulations and Organisations, Cabinet Secretariat, Government of Japan, “Reform of Nuclear Regulation Organisation and System in Japan”, slide 5. See also Fukasawa, J. and M. Okusaki (2012), “Reform of the Nuclear Safety Regulatory Bodies in Japan”, presented at the International Nuclear Law Association 2012 Congress, Manchester, England, 8 to 11 October.

180. Act No. 47, *supra* note 17.

181. *Ibid.*, Art. 3.

182. The NRC is actually an outlier in this regard, as most US regulatory agencies have role-over terms. Breger, M. J. and G. J. Edles (2015), *Independent Agencies in the United States: Law, Structure, and Politics*, Oxford University Press, New York, p. 157. See also 42 USC 7171(b)(1), “Appointment and administration” (“A Commissioner [of the Federal Energy Regulatory Commission] may continue to serve after the expiration of his term until his successor is appointed and has been confirmed and taken the oath of Office, except that such Commissioner shall not serve beyond the end of the session of the Congress in which such term expires.”).

183. Act No. 47, *supra* note 17, Art. 2; NRA, “Nuclear Regulation for the People and the Environment”, available at: [www.nsr.go.jp/english/e\\_nra/nsr\\_leaflet\\_English.pdf](http://www.nsr.go.jp/english/e_nra/nsr_leaflet_English.pdf), p. 3.

“expedited [the] review process.”<sup>184</sup> On 29 June 2011, the National Assembly adopted reform legislation and on 26 October 2011 the Nuclear Safety and Security Commission (NSSC) was established.<sup>185</sup> Previously, Korea’s regulator, the Korean Institute of Nuclear Safety (KINS), had been organised under the Ministry of Education, Science & Technology (MEST), which had the responsibility for the promotion of nuclear energy.<sup>186</sup> But, the new NSSC was organised directly under the President (now the Prime Minister) rather than within in a specific ministry.<sup>187</sup> Under the new organisation, KINS and the Korea Institute of Nuclear Non-proliferation and Control (KINAC) have become technical support organisations. The NSSC is headed by one chairperson, one standing commissioner and seven non-standing commissioners, each appointed for three-year terms with only one possibility of reappointment.<sup>188</sup>

The need for independence is specified in Article 2 of the Act, which requires the NSSC to “maintain fairness and independence” in its activities and it is assured that commissioners will not “be compelled to do unjust work or [be] interfered [with] in the performance of their duties”.<sup>189</sup> Ethical restrictions are outlined in Articles 10 and 18, providing that no one may serve on the Commission if they have either “worked as head or employee of nuclear energy users’ groups” or were “involved in research projects or business of nuclear energy users’ groups”.<sup>190</sup> Article 18, “Duty to Maintain Integrity”, goes further providing that “Any commissioners of a special committee of NSSC referred as in Article 15 shall not acquire bribes, favors or other unjust benefits from people involved in any nuclear business, which is subject to deliberation or regulated by this Act”<sup>191</sup> with harsh penalties contained in Article 19: violation can result in “imprisonment with/without labor for a limited period of not less than 10 years.”<sup>192</sup>

At the regional level, the European Commission (EC) took significant action to reinforce an earlier commitment to safety when it amended the 2009 Safety Directive.<sup>193</sup> The 2014 amendment strengthens the power, independence and resources of national regulatory authorities; increases transparency on nuclear safety matters; and promotes an effective nuclear safety culture.<sup>194</sup> And, while the 2009 Safety Directive “reflects the provisions of the main international instruments in the field of nuclear safety, namely the Convention on Nuclear Safety”,<sup>195</sup> the 2014 amendment goes further, incorporating more expressly aspects of the CNS related to

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184. Ryu, Y. H. (2012), “Nuclear Regulatory Organization Changes in Korea”, presentation given at the International Workshop on Nuclear Safety Regulation, NEA, Tokyo (18 January 2012), Slide 2.

185. Act on the Establishment and Management of Nuclear Safety and Security Commission (2011), amended in 2013.

186. Ryu, Y. H. (2012), *supra* note 184.

187. Act on the Establishment and Management of Nuclear Safety and Security Commission (2011), *supra* note 185, Art. 3.

188. *Ibid.*, Arts. 4, 7.

189. *Ibid.*, Arts. 2, 8.

190. *Ibid.*, Art. 10.

191. *Ibid.*, Art. 18.

192. *Ibid.*, Art. 19.

193. Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, *Official Journal of the European Union (OJ)*, L 172 (2 July 2009) (2009 Safety Directive).

194. 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).

195. *Ibid.*, preambular paragraph 2.

ensuring that regulatory authorities have the “appropriate means and competencies to properly carry out the responsibilities assigned to them”.<sup>196</sup>

At the international level, just a few short months after the Fukushima Daiichi NPP accident, the member states of the IAEA adopted the “IAEA Action Plan on Nuclear Safety”.<sup>197</sup> Under the IAEA Action Plan, among many other actions, member states are encouraged to review their regulatory bodies and assess “their effective independence, adequacy of human and financial resources and the need for appropriate technical and scientific support, to fulfil their responsibilities”.<sup>198</sup>

#### **D. Summary**

There was no doubt that changes needed to be made to the Japanese regulatory system following the Fukushima Daiichi NPP accident and the Japanese government took immediate action on this. Although it seemed that everyone agreed that something needed to be done, no one could quite agree on the right approach. Fortunately, however, with the benefit of time, a compromise was able to be reached on a bill that reflected the regulatory principles contained in the international nuclear safety treaties and exhibited in international best practices. Time will tell if the implementation of these reforms proves successful.

### **VI. The ideal regulator**

In the almost 65 years since electricity was first generated by nuclear fission, the ideas regarding how to best regulate this source of energy have converged. For the most part, national, regional and international best practices now all but describe the same ideal regulator. Whether this harmonisation developed from the national programmes up or the international efforts down, the roadmap is clear.

#### **A. International and regional perspective**

The NEA and the IAEA have contributed much to the international perspective on regulatory reform. From the safety conventions discussed at the outset to the IAEA’s Fundamental Safety Principles and its Safety Standards<sup>199</sup> to the work over the past 15 years by the NEA’s Committee on Nuclear Regulatory Activities (CNRA) in providing regulatory guidance, there is uniformity of opinion on what is needed for an effective regulator.

For example, the CNRA, which is made up of senior representatives from nuclear regulatory authorities around the world, developed a document in 2014 called “The Characteristics of an Effective Nuclear Regulator”.<sup>200</sup> The document details the characteristics determined by this leading group of international nuclear regulators to be necessary components of an effective nuclear safety regulator.<sup>201</sup> To this international body, “an effective nuclear regulator:

- is clear about its regulatory roles and responsibilities, its purpose, mandate and functions;

196. *Ibid.*, preambular paragraph 6.

197. IAEA (2011), “Draft IAEA Action Plan on Nuclear Safety, Report by the Director General”, GOV/2011/59-GC(55)/14.

198. IAEA Action Plan on Nuclear Safety (2011), available at: [www.iaea.org/sites/default/files/actionplanns.pdf](http://www.iaea.org/sites/default/files/actionplanns.pdf), p. 3.

199. See e.g. IAEA (2006), “Fundamental Safety Principles”, IAEA Safety Standards Series No. SF-1, Vienna, Principle 2: Role of government; IAEA (2010), *supra* note 7.

200. NEA (2014), *The Characteristics of an Effective Nuclear Regulator*, OECD, Paris.

201. *Ibid.*, p. 7.

- has public safety as its primary focus;
- has independence in regulatory decision making from any undue influence on the part of the nuclear industry and those sectors of government that sponsor this industry;
- has technical competence at its core, with other competencies built upon this fundamental and essential requirement;
- is open and transparent in its regulations and decisions;
- has a regulatory framework and requirements that are clear and easily understood by all stakeholders;
- makes clear, balanced and unbiased decisions, and is accountable for those decisions;
- has a strong organisational capability in terms of adequate resources, strong leadership and robust management systems;
- performs its regulatory functions in a timely and efficient manner;
- has and encourages a continuous self-improvement and learning culture, including the willingness to subject itself to independent peer reviews.”<sup>202</sup>

The CNRA has made the determination that “A regulator with [these] characteristics should be effective in ensuring that nuclear facilities are operated at all times in a safe manner, in accordance with international safety principles and with full respect of the environment.”<sup>203</sup>

None of these characteristics breaks new ground. In fact, the IAEA’s Integrated Regulatory Review Service (IRRS), an optional peer review service provided to member states, tests some of these very concepts.<sup>204</sup> Components like “Independence of the Regulatory Body” and “Prime Responsibility for Safety” trace back to IAEA Safety Standards that have been in existence since 2000.<sup>205</sup>

Moreover, following the Fukushima Daiichi NPP accident, regional organisations also detailed their ideal regulatory characteristics. As mentioned earlier, in 2014, the EC amended its 2009 Safety Directive to strengthen the powers and independence of national regulatory authorities that supervise the activities of nuclear operators. The EC stated that:

A strong competent regulatory authority with effective independence in regulatory decision-making is a fundamental requirement of the Community nuclear safety regulatory framework. It is of utmost importance that the competent regulatory authority has the ability to exercise its powers impartially, transparently and free from undue influence in its regulatory decision-making to ensure a high level of nuclear safety. Regulatory decisions

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202. *Ibid.*, pp. 7-8.

203. *Ibid.*, p. 8.

204. IAEA (2013), “Integrated Regulatory Review Service (IRRS) Guidelines for the Preparation and Conduct of IRRS Missions”, Service Series 23, Vienna, Module 1: Responsibilities and Functions of the Government, p. 36.

205. *Ibid.* Although the IRRS Guidelines specifically reference IAEA (2010), “Governmental, Legal and Regulatory Framework for Safety”, IAEA Safety Standards, General Safety Requirements Part 1, Vienna, this document superseded IAEA (2000), “Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety”, IAEA Safety Standards Series, No. GS-R-1, Vienna.

and enforcement actions in the field of nuclear safety should be based on objective safety-related technical considerations and should be established without any undue external influence that might compromise safety, such as undue influence associated with changing political, economic or societal conditions.<sup>206</sup>

These high-level principles were then worked into amended Articles 5, 7 and 8 of the Safety Directive. Member states have three years to transpose the new requirements into their national legislations. The requirements in the amended Safety Directive match up with those specified by the IAEA, the NEA and the safety conventions, thus ensuring greater harmonisation across nuclear power generating countries.

## **B. National perspective**

The move towards harmonisation of regulatory principles is evident across a great many national regulatory bodies, as a number of nuclear regulatory organisations make public the doctrines or foundations upon which they operate. For example, the US Nuclear Regulatory Commission adheres to its so-called “Principles of Good Regulation”, which are: independence, openness, efficiency, clarity and reliability.<sup>207</sup> With the re-organisation of the Korean regulator, “Core Values” were adopted. Analogous to those of the NRC, the NSSC’s values are:

- technical excellence: accumulate expertise and experiences that the people can build trust on;
- independence: progress vigorously with works only for the nation and people;
- transparency: leave no doubts throughout the safety regulatory process;
- impartiality: stand with impartiality and objectiveness;
- reliability: comply with principles and maintain clarity and consistency.<sup>208</sup>

The Japanese NRA has similarly established five “Guiding Principles” for its operations, which are: independent decision making, effective actions, open and transparent organisation, improvement and commitment, and emergency response.<sup>209</sup> These principles, first published in January 2013, very clearly trace back to criticisms Japan faced (both internally and externally) in their handling of the Fukushima Daiichi NPP accident. For example, under “Independence”, it is explicitly stated that decisions will be made “free from any outside pressure or bias”. In the “Open and Transparent Organization” principle, the NRA states that it “shall be open to all opinions and advice from Japan and the international community and avoid both self-isolation and self-righteousness”. Interestingly, the CNSC has explicitly modelled its ten “Attributes of a World-Class Regulator” off of the NEA’s “Characteristics of an Effective Regulator”.<sup>210</sup>

206. Council Directive 2014/87/Euratom, *supra* note 194, preambular paragraph 6.

207. NRC (2015), “Values”, [www.nrc.gov/about-nrc/values.html](http://www.nrc.gov/about-nrc/values.html).

208. NSSC (2012), “Our Mission and Values”, [www.nssc.go.kr/nssc/en/c1/sub1.jsp](http://www.nssc.go.kr/nssc/en/c1/sub1.jsp).

209. NRA (n.d.), “NRA’s Core Values and Principles”, [www.nsr.go.jp/english/e\\_nra/idea.html](http://www.nsr.go.jp/english/e_nra/idea.html).

210. See e.g., Jamieson, T. (2015), “Insights on the Canadian Nuclear Safety Commission’s Safety Culture Journey”, presentation at the NEA/CNRA/CSNI/CRPPH Joint Workshop on Challenges and Enhancements to Safety Culture of the Regulatory Body, Paris, 3 June, slide 12. The “Attributes” are: (1) clear legislation and regulations; (2) safety focus; (3) independence; (4) open and transparent; (5) technical competence; (6) modern, flexible regulatory framework; (7) science-based decision making; (8) dissemination of

This is not an exhaustive review of all the principles, values or guidelines of national regulatory bodies, but rather a mere sampling. Other national regulators, like the ASN in France<sup>211</sup> and the Federal Authority for Nuclear Regulation in the United Arab Emirates<sup>212</sup> have similar fundamental concepts guiding their work.

## VII. Conclusion

At this stage in the development of nuclear power, the lessons on regulatory effectiveness are known. There is no reason for countries to sit idle only to be forced into action in a worst case scenario. Proactive development of the law, regulations, standards and guidance for the safe and secure use of nuclear energy is essential for a thoughtful, well-considered approach. The same holds true for the improvement of regulatory systems. The time to review, and potentially make changes to, a regulatory system is before the crisis and before the criticism, not after.

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information; (9) well-managed and well-resourced organization; and (10) continuous improvement. For an interesting look at the meaning of regulatory independence in Canada, see MacKenzie, B. (2010), "The Independence of the Nuclear Regulator: Notes from the Canadian Experience", *Nuclear Law Bulletin*, No. 85, NEA, Paris, pp. 35-63.

211. ASN (n.d.), "ASN's General Regulatory Policy", [www.french-nuclear-safety.fr/Media/Files/General-Regulatory](http://www.french-nuclear-safety.fr/Media/Files/General-Regulatory).

212. FANR (2014), "Our Vision, Mission & Core Values", [www.fanr.gov.ae/En/AboutFANR/Pages/Our-Vision-Mission-Core-Values.aspx](http://www.fanr.gov.ae/En/AboutFANR/Pages/Our-Vision-Mission-Core-Values.aspx).



## Case law

### Canada

#### **Decision of the Canadian Federal Court of Appeal overturning a decision to send back for reconsideration an environmental assessment of a proposed new nuclear power plant in Ontario<sup>1</sup>**

In a two-to-one majority decision dated 10 September 2015, the Federal Court of Appeal in Canada found in favour of the appeals filed to contest a decision of the Federal Court that allowed, in part, a challenge to an environmental assessment (EA).<sup>2</sup> The Federal Court decision would have sent back for reconsideration the EA of a proposal by Ontario Power Generation (OPG) to build four new power reactors at the site of the existing four-unit Darlington nuclear generating station. But, where the Federal Court sent the EA back to the Joint Review Panel (Panel) (or duly constituted panel) to address three identified “gaps” in the EA, the Federal Court of Appeal decision effectively confirmed that the EA was complete and had no gaps, that it was adequate and met the requirements of the relevant legislation, and that the licence to prepare the site (LTPS), which was issued by the Canadian Nuclear Safety Commission (CNSC) on the basis of the EA decision, is reinstated.

#### *Background*

In 2006, Ontario Power Generation (OPG) began the process of seeking federal approval for new nuclear power generation units at an existing nuclear power generating site. That same year, OPG applied to the Canadian nuclear regulator, the CNSC, for an LTPS 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.

This application prompted the need for an environmental assessment under the Canadian Environmental Assessment Act (CEAA), as well as other federal approvals that would trigger a CEAA assessment, including authorisations under the Fisheries Act and the Navigable Waters Protection Act. The project was referred for review to a Panel, which would conduct an environmental assessment of the project under the CEAA and also function as a CNSC panel to review the licence application under the Nuclear Safety and Control Act (NSCA).

At the time the Environmental Impact Statement (EIS) was prepared for the EA, the Province had not yet selected a specific reactor technology for the new build. OPG therefore prepared its EIS using a “plant parameter envelope”, or PPE approach, where the EA 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 EA report and concluded that the project was

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1. This matter was also discussed in NEA (2013), “Judicial review of Ontario Power Generation’s Darlington new nuclear power plant project licence to prepare site”, *Nuclear Law Bulletin*, No. 91, NEA, Paris, p. 105; NEA (2014), “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 Ontario”, *Nuclear Law Bulletin*, No. 94, NEA, Paris, pp. 113-115.
  2. Canada et al. v. Greenpeace Canada et al., 2015 FCA 186.

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

Several non-governmental organisations challenged these two decisions before the Federal Court, which in 2014 found that the requirements of the Canadian Environmental Assessment Act were not met in three ways:

- the Panel failed to consider the issue of the management of spent nuclear fuel;
- the Panel failed to adequately consider severe “common-cause” multi-reactor accidents; and
- there were gaps in the bounding scenario regarding hazardous substance emissions.

#### *The appeal decision*

OPG, the Attorney General of Canada and the CNSC appealed the Federal Court decision, and the appeal was allowed. This appeal decision has the effect of upholding the EA decision and reinstating the LTPS that was issued by the CNSC. In overturning the lower court findings, all three appellate judges agreed that the spent fuel management issue and the common cause accident issue had been adequately addressed by the Panel, such that there was no reviewable error. On the hazardous substance emissions issue, a majority of the three-judge panel found that there had been no error and that the lower court had been wrong to substitute its own views for those of the expert EA Panel.

#### *Management of spent fuel*

Respecting spent fuel management, the Court of Appeal was satisfied that the Panel's Terms of Reference did not require it to consider the viability of long-term off-site storage of spent nuclear fuel, only its management within the reactor building, and the transfer of wastes and used fuel for storage during operational and decommissioning phases. The Court found:

had the Panel deferred consideration of the issue of spent nuclear fuel to the Nuclear Waste Management Office (NWMO - the agency responsible for finding long term storage solutions) as urged originally by OPG, there would have been a concern as to whether the Panel had discharged its duty under section 16.<sup>3</sup> However, that was not the case. The Panel's recommendation and conclusions were predicated on OPG's commitment to store all fuel on site and in perpetuity.

The exploration by the Panel of the viability and appropriateness of a long term geological storage may have prompted the questions that the Judge considered to be unanswered; however, the failure to do so does not constitute a basis upon which the Panel decision with respect to spent fuel can be set aside. The Panel's consideration of spent nuclear fuel was consistent with its Terms of Reference; that is, the Panel considered the issue and made specific recommendations, which obviated the question of off-site storage, as well as transportation to and from any off-site storage. It recommended that the fuel be stored on site in perpetuity.

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3. Section 16 of the Canadian Environmental Assessment Act enumerates the mandatory factors that must be considered by any review panel conducting an EA.

The Panel's decision reveals a careful consideration of the issue of waste and includes a rationale for its conclusion. The conclusion was defensible notwithstanding unanswered questions and the Judge erred in essentially substituting his view for that of the Panel.<sup>4</sup>

Thus, whereas the Federal Court found that the Panel had attempted to defer the issue of spent fuel management and was not entitled to do so, the Court of Appeal was satisfied that the specific treatment and specific recommendations made by the Panel dealt fully with the issue, by recommending on-site storage in perpetuity.

#### *Severe common cause accident*

On the severe common cause accident issue, the Court of Appeal again unanimously found that the Panel had respected its Terms of Reference and complied with the statute, contrary to the finding by the Federal Court. It found:

It is important to recall that paragraph 16(1)(a) of the Act requires a panel to consider the environmental effects of malfunctions or accidents that “may” occur in conjunction with the project, as well as any cumulative effects that are “likely to result”. The Act does not require the Panel to consider the environmental effects of all improbable scenarios. Here, the panel considered the potential environmental effects of malfunctions and accidents that may occur and given this, there was an evidentiary foundation for its recommendation that severe common cause be considered as part of the emergency preparedness plan.

Therefore, the Panel's assessment of the probability of the accident, and hence its limited assessment of the environmental effects, was a matter within the scope of its discretion and its conclusion was reasonable in the context of the evidence and issues before it.<sup>5</sup>

The lower court found that the Panel erred by what the court saw as not analysing potential accidents and malfunctions that could affect both the existing and new plants on the site, as part of its cumulative effects analysis – “highly improbable, possibly catastrophic events” – in the words of the lower court. The Court of Appeal, however, ruled that the Panel's consideration of those accidents and malfunctions that were likely to result was adequate and that its recommendations to ensure that severe common cause accidents would be considered as part of the emergency preparedness plan at the licensing stage were appropriate.

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4. Canada, 2015 FCA 186, paras. 58-60.

5. *Ibid.*, paras. 71-72.

### *Hazardous substances emissions*

The Court of Appeal split on the question of whether the effects of hazardous substances emissions (HSE) had been properly considered. Whereas the dissenting justice agreed with the lower court that the Panel had “avoided its statutory obligation and instead placed sole responsibility for section 16 considerations on [the] Project proponent after the completion of the EA process”, the majority of the court found that the Federal Court judge had “imposed his own opinion as to how the HSE environmental effects ought to have been considered by the Panel” and thereby erred. The majority was satisfied that the lack of bounding scenario analyses respecting the effects of the HSE was a logical consequence of the PPE approach accepted by the Panel:

In our view, the lack of bounding scenario analyses with respect to all of the environmental effects of HSE was a logical consequence of the use of the PPE approach, which was adopted because of the Province of Ontario’s decision to defer the selection of reactors. We are also of the view that the Judge’s finding that the Panel erred (i.e. acted unreasonably) in failing to insist upon obtaining unobtainable information constitutes an incorrect application of the reasonableness standard. To hold otherwise would, in effect, constitute the acceptance of the argument that the Judge rejected, namely, that it was inappropriate for the Panel to base the EA and EA Report on the PPE approach. We agree with the Attorney General that it was open to the Panel to consider the proposed regulatory controls and mitigation measures and to decide, in its expert opinion, that these measures could be relied upon to mitigate the adverse environmental effects of the Project.<sup>6</sup>

This meant that the Panel gave “some consideration” to the HSE potential environmental effects, which is what the EA legislation required.

### *Conclusion*

The Court of Appeal gave a good degree of deference to the expert scientific body that heard the evidence (the Panel, whose statutory task was to evaluate the potential environmental effects of the new build project), and reversed what it saw as the lower court’s substitution of its view for that of the expert body.

In practical terms, the result of this decision is that the EA Panel Report is restored and the LTPS for up to four new reactors is now effective and in place again. This licence has a term of 10 years, so it will be effective until expiration in August 2022. To date, there have been no licensed activities commenced under this licence as a result of the court processes, nor provincial decisions about energy in the province of Ontario. With this decision, however, the authorisation is valid.

Leave of the Supreme Court of Canada would be required to appeal the decision. At the time of writing, there has been no application for such leave of the Court, which may be granted in a matter raising an issue of public importance.

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6. *Ibid.*, para. 147.

## France

### **Conseil d'État decision, 28 November 2014, Fédération Réseau sortir du nucléaire and others vs. Electricité de France (EDF) (Request No. 367013)**

In a request filed with the Conseil d'État, la Fédération Réseau sortir du nucléaire (in English, "Nuclear Phase-Out" network) and other environmental protection associations sought the annulment of:

- The resolution of the French Nuclear Safety Authority (ASN or *Autorité de sûreté nucléaire*) dated 4 July 2011 specifying additional regulations for *Electricité de France* (EDF) designed to strengthen the reactor basemat of reactor No. 1 in the Fessenheim nuclear power plant;
- The resolution of ASN dated 19 December 2012 approving the start of work on reinforcing the reactor basemat in accordance with the dossier submitted by EDF.

The associations sought annulment on the grounds that the work on the basemat was a significant modification of a basic nuclear installation (INB or *installation nucléaire de base*) within the meaning of paragraph 2 of Article 31 of the Decree of 2 November 2007 concerning basic nuclear installations and the monitoring, with regard to nuclear safety, of the transport of radioactive substances (called the "Procedures Decree").

Under this Article, a modification is considered significant in the case of a modification of the key elements protecting the interests mentioned in the first paragraph of Article L. 593-1 of the *code de l'environnement* (French Environmental Code), which are safety, public health, and the protection of nature and the environment.

Under Article L. 593-14 of the French Environmental Code, significant modifications require a new authorisation pursuant to a public enquiry.

The Conseil d'État noted that the Decree of 3 February 1972 licensing the Fessenheim nuclear power plant stipulated, in point 6, as an essential requirement for the protection of interests, that containment integrity must be maintained in all circumstances. It nevertheless considered that the nature and extent of the work to improve the strength of the basemat did not compromise containment integrity and was therefore not a key element for protecting interests. Consequently, the work should not be considered as a significant modification of a basic nuclear installation within the meaning of Article 31 of the "Procedures Decree" and should not give rise to a new authorisation and public enquiry.

Lastly, the Conseil d'État added that the statements by the President of the French Republic cited by the petitioning associations and the decision to create an inter-ministerial delegation in charge of the closure of the plant should not, in the absence of a decree authorising the decommissioning and dismantling (*MAD/DEM* or *décret de mise à l'arrêt définitif et démantèlement*) of the plant, affect the way ASN carries out its duties with regard to ensuring the safety of basic nuclear installations and that, in light of this, ASN made no error of assessment in not annulling the two resolutions in question.

## Germany

### **Judgment of the European Court of Justice on the nuclear fuel tax**

The Nuclear Fuel Tax Act of 8 December 2010, as amended by Article 240 of the Ordinance of 31 August 2015,<sup>7</sup> imposed an excise duty on nuclear fuel on the operators of nuclear installations that is used for the commercial production of electricity. The tax should be levied for the period from 1 January 2011 to 31 December 2016 and was, based on the polluter-pays-principle, designed to contribute to the Federal budget with a view to covering the costs of the Asse II mining site, which is used to store radioactive waste from the use of nuclear fuel. The operator of the nuclear power plant Lippe-Ems in Germany challenged that duty before the Finance Court Hamburg arguing that the tax, which amounts to more than EUR 150 million, is not compatible with European Union (EU) law.

The Finance Court, by decision of 19 November 2013, submitted the questions of compatibility of the tax with EU law to the EU Court of Justice for preliminary ruling. In parallel, the Finance Court referred the question of whether the Act complies with the German Basic Law (*Grundgesetz*, the Constitutional law of Germany) to the German Federal Constitutional Court (*Bundesverfassungsgericht*).

On 4 June 2015, the EU Court of Justice ruled that the tax is compatible with EU law,<sup>8</sup> finding that:

- nuclear fuel is not exempt from taxation under the Council Directive 2003/96/EC<sup>9</sup> because nuclear fuel is not included in the exhaustive list of energy products to which the Directive applies, and it cannot be applied by analogy;
- Council Directive 2008/118/EC<sup>10</sup> does not preclude the nuclear fuel tax. Since the tax is levied on the use of nuclear fuel for the commercial production of electricity and not on the consumption of electricity or on any other product subject to excise duty, the duty is not an excise duty or other indirect tax. In particular it is not apparent that there is a direct link between the use of nuclear fuel and the consumption of electricity produced by a reactor;
- the tax does not constitute a state aid incompatible with EU law. It does not select among various ways of producing electricity and other, non-nuclear, ways of producing electricity are not affected by the tax. Moreover, electricity production through the use of nuclear fuel is the only form that generates radioactive waste;

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7. *Bundesgesetzblatt* (BGBl) (Federal Law Gazette) 2010 I, p. 1804; BGBl 2015 I, p. 1474. A note on the adoption of the Nuclear Fuel Tax Act in 2010 can be found in NEA (2010), “Amendment to the Atomic Energy Act extending the operating lifetime of nuclear power plants (2010)”, *Nuclear Law Bulletin*, No. 86, NEA, Paris, p. 76. The Nuclear Fuel Tax Act is available (in German) at: [www.gesetze-im-internet.de/bundesrecht/kernbrstg/gesamt.pdf](http://www.gesetze-im-internet.de/bundesrecht/kernbrstg/gesamt.pdf).
  8. Judgment of the Court (Third Chamber) of 4 June 2015 in case C-5/14, reproduced at: <http://curia.europa.eu/juris/document/document.jsf?jsessionid=9ea7d0f130d51997001ba3e64c0b933aafcc987d5f82.e34KaxiLc3eQc40LaxqMbN4Oc30Se0?text=&docid=164722&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=583081>.
  9. Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity, *Official Journal of the European Union* (OJ) L 283 (31 October 2003), p. 51.
  10. Council Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/12/EEC, OJ L 9 (14 January 2009), p. 12.

- the Euratom Treaty does not preclude the duty. First, this duty is not equivalent to a customs duty. Further, the duty is not charged because the nuclear fuel crossed a border but rather because it is used for commercial electricity production irrespective of its country of origin. Moreover, member states are free to tax the use of nuclear fuel and thus make it less attractive. Finally, the duty is imposed on the use and not on the purchase of nuclear fuel, which means that it does not interfere with the duty of Euratom to ensure a regular and equitable supply of ores and nuclear fuel.

The Court also dealt with the question concerning the preliminary ruling in the context of the parallel submission of the case to the European Court of Justice and to the German Federal Constitutional Court, ruling:

In the light of the foregoing considerations, the answer to the first question is that Article 267 TFEU must be interpreted as meaning that a national court which has doubts as to whether national legislation is compatible with both EU law and with the Constitution of the Member State concerned neither lose the right nor, as the case may be, is exempt from the obligation to submit questions to the Court concerning the interpretation or validity of that law, on the ground that an interlocutory procedure for review of the constitutionality of that legislation is pending before the national court responsible for carrying out such review.<sup>11</sup>

## India

### ***Judgment of the High Court of Kerala in a public interest litigation challenging the constitutional validity of the Civil Liability for Nuclear Damage Act, 2010***

In a public interest litigation (PIL)<sup>12</sup> filed before the High Court for the Indian State of Kerala, the constitutional validity of the Civil Liability for Nuclear Damage Act, 2010 (CNLD Act, 2010) was upheld.<sup>13</sup> The PIL challenged the constitutional validity of 14 different sections of the CLND Act, 2010.<sup>14</sup> As argued by the petitioners, the challenged provisions of the CNLD Act, 2010 are *ultra vires* of the Constitution of India because those provisions interfere with the right to life of the citizens guaranteed under Article 21. Further, petitioners argued that the provisions violate Article 14 of the Constitution of India because the provisions are arbitrary,

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11. Judgment of the Court, *supra* note 8, No. 39 of the Judgment.
  12. Public Interest Litigation (PIL) was developed in the 1980s by the Supreme Court of India as part of judicial activism to enforce the fundamental rights enshrined in Part III of the Constitution of India through exercising its power to issue directions, order or writs including *habeas corpus*, *mandamus*, prohibition, *quo warranto* and *certiorari*.
  13. Yash Thomas Mannully and another v. Union of India and Others, W.P.(C). No. 27960 of 2011, by the High Court of Kerala, 422 K LW 240 (21 August 2015). The full text of the opinion is available at: [www.keralaw.com/volume/42/2240](http://www.keralaw.com/volume/42/2240). There is an option to approach the Supreme Court of India (India's highest court) against this decision through a Special Leave Petition (SLP).
  14. Specifically, the following sections of the CLND Act were questioned: 3(1) (notification of nuclear incident by Atomic Energy Regulatory Board); 4(2) and proviso; 4(4) (operator liability); 5 (operator not liable in certain circumstances); 6 (liability limits); 9(2) (independence of Claims Commissioners); 15(2) (time limitation); 16(5) (finality of award by Claims Commissioners); 18(b) (extinction of right to claim); 19 (Nuclear Damage Claims Commission); 20 (composition of Commission); 32(10) (finality of award by Nuclear Damage Claims Commission); 35 (exclusion of jurisdiction of civil courts); and 38(1) (dissolution of Commission in certain circumstances).

unreasonable and confer unrestrained power onto the authorities without appropriate checks and balances.

Petitioners relied upon the judgment of the Supreme Court in *M.C. Mehta v. Union of India*<sup>15</sup> in which the Court laid down the principle that when an enterprise is permitted to carry on a hazardous or inherently dangerous activity for profit, the law must presume that such permission is conditional on the enterprise absorbing the cost of any accident or any other expenditure arising on account of such a hazardous or inherently dangerous activity. Petitioners also contended that the adjudicating authorities created under the Act violate the doctrine of judicial independence that is part of the basic structure of the Constitution of India.<sup>16</sup>

The court held that there is no reason to doubt the independence of the Atomic Energy Regulatory Board (AERB) since it is a statutory board and exercises only those powers delegated to it by the Central Government. On the claim that there are no standards or objective evaluation criteria by which to make a notification of a nuclear incident (CLND Act, 2010, Section 3(1)), the court held that since the AERB operates according to internationally accepted standards and codes, the Board can prescribe its own methodology for deciding the existence of nuclear damage.<sup>17</sup>

Regarding the challenge to CLND Act, 2010, Section 9(2) (independence of the Claims Commissioner), the court negated the contention finding that the issue is not yet ripe. Further, the court found that any orders passed by the Claims Commissioners are subject to judicial review by the High Court under Article 226 of the Constitution of India.

In relation to the challenge to the time limits on claiming compensation (CLND Act, 2010, Section 15(2)), the court held that the CLND Act provides sufficient flexibility to raise claims and that there is no error in the provision since the “law of limitation” is well-accepted.

On the issue of taking away the jurisdiction of civil courts (CLND Act, 2010, Section 35), the court held:

When a special Tribunal has been constituted and special rights had been given to persons who suffer damage on account of a nuclear incident, constituting such Special Tribunal cannot be stated to be arbitrary. Further civil courts may not be equipped to decide such complicated questions and a specialized tribunal may be required. The Supreme Court has upheld constitution of Special Tribunals for various purposes and in different enactments and therefore there is no reason to impugn the constitution of the Tribunal.

This judgment is an initial judicial response to the CNLD Act, 2010 and it is expected that the Supreme Court of India will provide further clarity when it decides the PIL challenging the constitutional validity of the CNLD Act, 2010.<sup>18</sup>

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15. 1987 AIR 1086, 1987 SCR (1) 819.

16. See *P. Sampath Kumar v. Union of India*, 1987 AIR 386, 1987 SCC (1) 124.

17. *Yash Thomas Mannully and another v. Union of India and Others*, *supra* note 13, “It is therefore for the Board, which is an expert agency, to consider whether any nuclear incident can cause unacceptable radiation damage or not. Only those incidents which may cause radiation damage can give rise to a claim for compensation. Hence the challenge to Section 3 of the Act is unsustainable.”

18. *Common Cause and others v. Union of India*, W.P.(C). No. 464 of 2011, admitted by the Supreme Court of India on 16 March 2012.



## Japan

### **District court decisions on lawsuits related to the restart of Sendai NPP and Takahama NPP**

After the Fukushima Daiichi nuclear power plant (NPP) accident, all nuclear power reactors in Japan were taken offline. Since that time, the Nuclear Regulation Authority (NRA) has reviewed the conformity of all NPPs to the strengthened regulatory requirements enacted following the Fukushima Daiichi NPP accident. The NRA granted permission for the basic design changes of the nuclear units at Sendai and Takahama NPPs in September 2014 and February 2015, respectively.

Residents around the Sendai NPP and the Takahama NPP filed lawsuits against Kyushu Electric Power Company and Kansai Electric Power Company, the respective operators, seeking preliminary and permanent injunctions to prevent the restart of the Sendai and Takahama NPPs.

District courts in the Kagoshima and Fukui districts addressed the claims for the preliminary injunctions in advance of the judgments on the merits, reaching different conclusions. The Kagoshima district court rejected the claim against the Sendai NPP, while the Fukui district court issued a preliminary injunction against the restart of the Takahama NPP. Both decisions have been appealed. Meanwhile, all review and inspection procedures were completed in September 2015 for unit 1 of the Sendai NPP and it restarted operation, which is the first such restart under the new regulatory requirements. Unit 2 of the Sendai NPP restarted operation in October 2015.

#### *Kagoshima district court decision rejecting the request for an injunction*

In reaching its decision, the Kagoshima district court reviewed the risk of the nuclear reactors on the basis of the NRA's safety goals<sup>19</sup> and new regulatory requirements. The court stated that the safety goals were established by the NRA taking into account the latest expertise, including experience in the Fukushima Daiichi NPP accident. The court considered that as long as these safety goals are assured, the risk of a severe accident with the release of radioactive materials causing health damage should be insignificant to the public, if not assuring absolute safety; therefore, the court did not consider that there was any actual risk against the rights of residents. Based on this premise, the court reviewed:

- whether the NRA's new regulatory requirements, which are to assure the safety goals, are justified in light of the latest scientific knowledge, including the experience of the Fukushima Daiichi NPP accident; and
- whether the review and decision-making process of the NRA was implemented properly.

The plaintiffs argued that there were earthquake and volcanic safety problems at the Sendai NPP units, but the court found no error or fault in the new regulatory requirements or in the review and the decision-making process of the NRA.

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19. The NRA introduced new safety goals in 2013, which included the following qualitative goal: "The possibility of health effects to the public caused by utilization of nuclear power should be limited to the level not to cause a significant increase in the public risk." The NRA also introduced limits on the amount and frequency of radioactive material release as part of its safety goals, stating "The occurrence of accident resulting in Cs-137 release of 100 TBq or larger should be less than the probability of approximately 10<sup>-6</sup> per year."

*Fukui district court decision issuing a temporary injunction against the restart of units 3 and 4 of the Takahama NPP*

The Fukui district court stated that nuclear regulatory requirements must be strict enough to ensure that a severe disaster never occurs at a nuclear power plant operating in conformance with the regulatory requirements. In reviewing the NRA's new regulatory requirements, the district court found that they do not address post-Fukushima safety measures and thus are not justified.

The court reviewed the risk of the Takahama NPP units without reference to the NRA's new regulatory requirements, finding that the units have many weaknesses. The district court determined that the following measures must be implemented to address those weaknesses, based on the experience of the Fukushima Daiichi NPP accident:

- the seismic activity level for the Takahama plant design must be significantly raised to resist the maximum seismic activity records of other regions. Accordingly, fundamental seismic strengthening works must be implemented at Takahama;
- the off-site power supply facilities and the main cooling water supply must be improved to meet the highest seismic resistance level;
- spent nuclear fuel must be stored in stronger facilities;
- the cooling water supply system for spent nuclear fuel pool(s) must be improved to meet the highest seismic resistance level;
- seismic resistance of the measurement devices for spent nuclear fuel pool(s) must be improved; and
- a seismic isolated building with radiation protection shall be installed.

Without these measures, the court determined that there exists actual risk against the rights of residents. Therefore, the court issued the injunction.

## Poland

***Decision of the Masovian Voivod<sup>20</sup> concerning the legality of the resolution on holding a local referendum in the Commune of Różan regarding a new radioactive waste repository***

On 3 July 2015, the Masovian Voivod annulled a resolution<sup>21</sup> adopted on 27 May 2015 by the Municipal Council of Różan to hold a local referendum regarding siting a new radioactive waste repository. The authority concluded that the resolution violates provisions of the Local Referendum Act (LRA)<sup>22</sup> and the Local Self-Government Act,<sup>23</sup> and is inconsistent with the Spatial Planning and Land Management Act.<sup>24</sup>

20. The Voivod is a centrally appointed governor of a Voivodship (province) in Poland.

21. Resolution No. X/60/2015 on holding the referendum regarding siting of the new radioactive waste repository in the Commune of Różan.

22. Local Referendum Act (LRA) of 15 September 2000, *Journal of Laws of 2013*, item 206, with amendments.

23. Local Self-Government Act of 8 March 1990, *Journal of Laws of 2013*, item 594, with amendments.

24. Spatial Planning and Land Management Act of 27 March 2003, *Journal of Laws of 2015*, item 199.

## Background

The Commune of Rózan, with a population of about 4 500, is located 70 kilometres north-east of Warsaw. Since 1961, it hosts the only radioactive waste repository in Poland designated for low- and medium-level waste containing short-lived beta and gamma isotopes. It also temporarily stores some long-lived waste. The disposed radioactive waste comes from the operation of two research reactors and institutional applications of nuclear energy (medical, industrial, etc.). The facility is a surface repository located in an old military fort (3 045 hectares). It enjoys the status of a “national radioactive waste repository”, which brings financial benefits to the hosting community.<sup>25</sup> The annual payment from the national budget constitutes a significant share of the commune’s budget (currently 40%) allowing the commune to considerably improve the quality of public services and the local infrastructure.

The repository is expected to close between 2023 and 2025 due to the gradual filling. Responsibility for the selection of a suitable site for a new repository rests with the Minister of Economy, the authority competent for the activities involving nuclear energy use for national social and economic needs. The new facility will still be a surface repository, designated for low- and medium-level waste but for much larger quantities as it is expected to receive waste also from new nuclear power plants to be built in Poland.

### Resolution of the Municipal Council of Rózan

Since the 2014 local elections, the disposal of radioactive waste in Rózan has for the first time become a hot political issue in the town, as it was raised by some local politicians who were in opposition to the re-elected mayor. The resistance came about because of a plan (communicated by the Ministry of Economy to the commune) to conduct a preliminary geological site investigation to determine whether the site could be taken under consideration in the further stages of the siting process. The proposal to undertake the geological studies has been rejected by the municipal council. As a result, the site was rejected by the Ministry of Economy as a candidate site for a new repository. The Ministry accepted the local community’s rejection as binding although there is no legal requirement to take local acceptance into consideration in the siting process. The Ministry then focused on the other candidate sites.

Irrespective of the above, a group of local politicians led by a member of the municipal council initiated a campaign against siting a new repository in the Commune of Rózan. They launched a signature campaign for holding a referendum in this field. On 28 May 2015, in response to the signature campaign, the Municipal Council of Rózan adopted a resolution with the following referendum question: “Do you support the siting of a radioactive waste repository in Rózan? Yes/No”.<sup>26</sup>

25. According to Article 54, Section 2 of the Atomic Law Act (unified text: *Journal of Laws of 2014*, item 1512), a radioactive waste repository may be declared as a “national radioactive waste repository” by decision of the President of the National Atomic Agency. According to Article 57, Section 1 of the Act, the commune on whose territory the national radioactive waste repository is sited shall be eligible for an annual payment from the national budget: i) in the amount of 400% of the previous year’s income from local real estate tax, but not exceeding PLN 10.5 million (about EUR 2.5 million); ii) after closure of the disposal facility, in the amount of 50% of the income from local real estate tax in the year of the closure of the repository, for the period corresponding to the duration of operation of the repository.

26. Resolution No. X/60/2015, *supra* note 21.

Soon after the resolution was adopted, the Masovian Voivod initiated *ex officio* proceedings to verify its legality. In parallel, the Masovian Voivod received a letter from one of the Rózan residents with a request to verify the validity of the resolution. The author stressed that holding the proposed referendum was meaningless and it would be a waste of commune funds, since the site had already been rejected by the Ministry of Economy.

#### *Decision of the Masovian Voivod*

The Voivod annulled the resolution on 3 July 2015 based on the formal objections; however, in the reasoning for decision, the Voivod also raised some material objections.

First, the Voivod found that the resolution violated Article 13, section 2, and Article 17 in connection with Article 16, section 5 of the LRA. The procedure regarding initiating and holding a local referendum at the request of commune residents is described in the LRA. A referendum may be initiated by a group of 15 commune residents, a local political party or a local non-governmental organisation. The requisite number of signatures must be attained on a referendum petition and the petition must then be submitted to the mayor, who in turn submits it to the municipal council. Once the petition is at the municipal council, an appropriate committee should be convened to verify the petition's compliance with LRA requirements described in Articles 11-14. These requirements include in particular the obligation for the referendum sponsor to make information on the referendum available to commune residents before submitting the referendum petition (Article 13, section 1). The sponsor's announcement should contain referendum question(s) to be selected by the voters (Article 13, section 2). The referendum sponsor is also obliged to collect signatures of commune residents supporting the referendum. Finally, if all legal requirements are met, the municipal council should adopt a resolution on holding the proposed referendum (Article 17).

The Masovian Voivod found that none of the three announcements on the proposed referendum published by the referendum sponsor fulfilled the requirement to contain a clear referendum question. The third announcement admittedly contained the referendum question, but it was delivered to the public only after the referendum petition was submitted to the mayor, so it was without legal effect. As a result, the petition cannot be considered valid because of its non-compliance with Article 13, section 2 of the LRA.

The Masovian Voivod partly based its reasoning on a previous administrative court judgment in this matter,<sup>27</sup> as well as on the common view provided by the existing legal doctrine that the referendum question(s) is both the obligatory and the main element of the referendum announcement. It was also noted that neither the signature pages nor the valid announcement contained referendum question(s), as both contained only the general subject of the referendum, i.e. "new radioactive waste repository". According to the Masovian Voivod, the referendum question(s) should be placed on the signature pages since they were not included in the referendum announcements, despite the lack of an explicit requirement in Article 14 of the LRA. Otherwise, all possible questions regarding the general nature of the proposed referendum subject could be raised. This could lead to a situation where people support an idea they would not have otherwise supported had they known the exact intention of the referendum sponsor. The Voivod concluded that in order to

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27. Judgment of the Higher Administrative Court in Wrocław of 10 April 2015 (III SA/Wr 85/15).

correctly assess the commune's opinion, the referendum questions on the voting pages should be identical with those on the signature pages, which was not the case.

The Voivod further emphasised that the consultative commission set up by the municipal council failed to verify the legality of the referendum petition. The commission considered the referendum petition to be valid regardless of the aforementioned violation of the Article 13, section 2 of the LRA. Therefore, the resolution adopted by the Council on the basis of the commission's approval violated Article 17 of the LRA.

Non-compliance with Article 13 section 2 of the LRA by the referendum sponsor at the initial stage of the referendum procedure (announcements without clear referendum questions) caused further administrative stages of the procedure to be invalid and ultimately caused the resolution to be found unlawful.

Aside from the procedural objections to the resolution, the Voivod raised several substantive objections, namely that it violated Article 18, section 2, clause 5 of the Local Self-Government Act and that it was inconsistent with the Spatial Planning and Land Management Act. It was noted that based on Article 18, section 2, clause 5 of the Local Self-Government Act, the siting of a new radioactive waste repository belongs to the exclusive competence of the municipal council at the commune level. As a result, radioactive repository siting cannot be the subject of local referendum at all. The Voivod referred to the previous judgments of the Supreme Administrative Court in this field.<sup>28</sup>

The Voivod's decision is consistent with relevant court judgments. In a similar case, the Supreme Administrative Court found that a petition to hold a referendum on a prohibition to site a wind farm on their commune's territory was also invalid as "it touches upon the municipal council right to define commune spatial policy, exceeding the scope of the local referendum".<sup>29</sup> The conclusion is that a local referendum cannot be used as a tool to prohibit the siting of a specific type of construction investment on the commune territory (such as a radioactive waste repository or a wind farm) because the municipal council has exclusive competence in this field.

The Municipal Council decided not to appeal to the Voivodship Administrative Court and as a result the authority's decision became final.

***Certain provisions of the Regulation of the Minister of Health of 18 February 2011 on the conditions for safe use of ionising radiation for all types of medical exposure have been declared unconstitutional by a judgment pronounced by the Constitutional Tribunal***<sup>30</sup>

The judgment by the Constitutional Tribunal was the outcome of a petition submitted to the Tribunal by the Polish Commissioner for Human Rights (the Ombudsman) challenging the constitutionality of several provisions<sup>31</sup> of the Regulation of the Minister of Health of 18 February 2011 on the conditions of the safe use of ionising radiation for all types of medical exposure (the regulation),<sup>32</sup> which

28. See Judgments of the Supreme Administrative Court of 21 July 1999 (IV SA 2452/98) and of 20 March 2014 (II OSK 344/14).

29. Judgment of the Supreme Administrative Court of 20 March 2014 (II OSK 344/14).

30. Constitutional Tribunal Judgment of 30 July 2013 (Ref. No. U 5/12).

31. I.e. section 9; section 12, clause 2; section 16, clause 2; section 18; and section 20.

32. Journal of Laws of 2011, No. 51, Item 265.

implemented into Polish law Council Directive 97/43/Euratom.<sup>33</sup> The regulation was issued on the basis of Article 33c, section 9, item 9 of the Atomic Law Act,<sup>34</sup> empowering the Minister of Health to establish “rules for the control of physical parameters of the radiological equipment”.<sup>35</sup> But, the regulation did not only address these rules; it also required medical physicians to hold a special certificate allowing them to conduct such control. The regulation specified that the National Centre for Radiological Protection in Health Care (NCRP) would be responsible for issuing these certificates, although this was not one of the NCRP’s competences listed in its delegating statute.

The Ombudsman raised formal and material objections against the contested provisions of the regulation based on Article 92, section 1 and Article 65, section 1 of Polish Constitution. Regarding the first objection, the Ombudsman claimed that because the delegating statute does not clearly authorise the Health Minister to determine the qualifications required from medical physicians to control radiological equipment, he was not authorised to introduce the requirement to hold a special certificate allowing them to conduct such control. The competence of the Minister to do so could not be derived from the general competence to establish “rules for the control of radiological equipment” contained in Article 33c, section 9, item 9 of the Atomic Law Act. On the basis of such general competence, the Minister could not assume the competence to address by regulation such a detailed issue like the requirement in question. As a result, the contested provisions of the regulation exceeded the limits of the delegation of authority to legislate contained in the delegating statute. This violated Article 92, section 1 of the Constitution according to which “Regulations shall be issued on the basis of specific authorization contained in, and for the purpose of implementation of, statutes by the organs specified in the Constitution”. Regarding the second objection, the Ombudsman claimed that the regulation’s requirement for medical physicians to obtain a relevant certificate is an unlawful nonstatutory limitation upon the exercise of the constitutional freedom of occupation. This is because without obtaining such certificates, medical physicians would not be allowed to conduct some activities at their work. This violates Article 65, section 1 of the Constitution,<sup>36</sup> according to which any exceptions regarding freedom of occupation may be specified only by statute, not by regulation, as was the case. Finally, the Ombudsman noted also that the tasks of the NCRP, which are precisely listed in Article 33j, section 3, do not include the certification of medical physicians. The regulation therefore enlarged the tasks of the NCRP without statutory authorisation, thus violating Article 33j, section 3.<sup>37</sup>

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33. Council Directive 97/43/Euratom of 30 June 1997 on health protection of individuals against the dangers of ionizing radiation in relation to medical exposure, and repealing Directive 84/466/Euratom, *Official Journal of the European Union (OJ)* L 180 (9 July 1997), p. 22.

34. Atomic Law Act, Journal of Laws of 2014, Item 1512 (unified text).

35. Article 33c, section 9, item 9 states that “The minister competent for health matters shall establish by regulation the conditions for safe use of ionizing radiation for all types of medical exposure ... taking into account the standards valid in the European Union. These conditions shall include: 9) rules for the control of physical parameters of the radiological equipment, and internal and external clinical audits to verify the compliance with the requirements for radiological protection of the patient” (emphasis added).

36. “Everyone shall have the freedom to choose and to pursue his occupation and to choose his place of work. Exceptions shall be specified by statute” (emphasis added).

37. The Ombudsman’s argument was reinforced by the General Prosecutor’s opinion that the legalism principle requires competences of state authorities to be determined only in statutes.

The Minister of Health disagreed with the Ombudsman that the statutory authorisation to establish rules for the control of radiological equipment does not cover the competence to introduce the qualification requirements. In his view, this can be derived from Article 7, section 1 of Directive 97/43, under which member states shall ensure that medical physicians have the relevant competence in radiation protection. He argued that introducing such a requirement does not invalidate the qualifications previously acquired by the medical physicians; however, those qualifications are not sufficient for the control of the radiological equipment in a safe manner. As a result, it was necessary to introduce additional requirements, i.e. the authorisation from the NCRP. Therefore, the contested provisions of the regulation implement the delegating statute and are thus consistent with it.

Regarding second objection, the Minister claimed that the contested provisions cannot be seen as a limitation of the freedom of occupation because of their entitling nature. He noted that they are even beneficial to the medical physicians since they enable them to enhance their qualifications and, as a result, to increase their salaries. The Minister stressed also that tasking NCRP with the certification of medical physicians was justified by the equity rules due to a lack of separate provisions of law in this field. Otherwise, if this issue were not addressed in the contested regulation, there would be no legal basis to control radiological equipment by medical physicians, which could endanger the patients.

The Tribunal dismissed the Minister's arguments and sustained the Ombudsman's challenges, holding that the contested provisions of the regulation violate Article 92, section 1 of the Constitution. It did not examine further whether the regulation also violates Article 65, section 1 of Constitution since it was not required according to the relevant provisions of the Constitutional Tribunal Law<sup>38</sup> and the Tribunal's case law. To ensure that the judgment will not have any negative impact on controlling radiological equipment, the Tribunal decided to postpone the application of the decision for one year.

In its decision, the Tribunal clearly stated that because the regulation covered issues not directly addressed in the delegating statute, the regulation lost its implementing character and appeared to be a stand-alone legal document. This was unacceptable in the light of Article 92, section 1 of the Constitution. At the same, time as long as the contested regulation is inconsistent with the Constitutional requirements, it cannot be justified by Directive 97/43.

Regarding the fundamental question of how detailed the statutes should be and which issues may be delegated to regulate in the regulation, the Tribunal held that it generally depends on the subject matter and its possible relations with the sphere of constitutional rights and freedoms. The closer an issue is to the sphere of constitutional rights and freedoms, the more precisely it should be regulated by statute with less opportunity for regulation by regulation. Delegating via statute for some issues to be covered by regulation cannot, however, cause the statute to have a blanket nature.<sup>39</sup> This is because the function of a regulation is to implement the statute, not to modify or complement it.

The importance of the judgment is that the delegated legislator (the Minister of Health in this case) can never assume competences not directly contained in the

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38. Constitutional Tribunal Law of 1 August 1997 (Journal of Laws No. 102, Item 643 with changes).

39. This occurs when the relevant authority is entitled to regulate by regulation the issues that are not listed in the delegating statute.

delegating statute, even if this would be justified by the equity rules or the common sense.

## Slovak Republic

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

The litigation regarding Greenpeace Slovakia's demand that the Nuclear Regulatory Authority (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. 211/2000 Coll., started in April 2010 and was closed in June 2015.

As explained in *Nuclear Law Bulletin* No. 92,<sup>40</sup> the case originated in a claim by Greenpeace Slovakia for information, especially environmental information, and the NRA dismissal of Greenpeace's application,<sup>41</sup> stating that such important information may endanger the public security if made publicly available. Greenpeace lodged a claim for review of the lawfulness of the decision with the District Court and in October 2011 the District Court decided in favour of the NRA. Greenpeace then appealed this decision to the Supreme Court, which in August 2012 reversed the District Court judgment. The case was then returned to the District Court.

On remand, the District Court overturned NRA decision No. 39/2010 in June 2013 and remanded the case to the NRA for renewed administrative proceedings in which the NRA should consider Greenpeace's appeal against the NRA's initial administrative decision. Not satisfied with the reasoning of the District Court, the NRA appealed the judgment to the Supreme Court in July 2013.

In June 2015, the Supreme Court confirmed the judgment of the District Court. Therefore, on 23 July 2015, the NRA had to re-open the previous administrative proceedings including Greenpeace and the builder of Mochovce units 3 and 4 (*Slovenske elektrarne*) as participants. During the re-opened proceeding, when asked if it wished to have access to the preliminary safety report,<sup>42</sup> Greenpeace Slovakia withdrew its appeal reasoning that the legislative restrictions on the disclosure of sensitive information and the cost of copying thousands of pages of the redacted preliminary safety report was not justified without the ability to gain any relevant or meaningful information. Thus, the NRA closed the reopened administrative proceedings.

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40 NEA (2013), "New developments in the matter involving Greenpeace's demands for information under the Freedom of Information Act", *Nuclear Law Bulletin* No. 92, NEA, Paris, p. 91

41. NRA decision 39/2010, 1 February 2010.

42. As explained in NEA (2014), "Developments in relation to the disclosure of information concerning the Mochovce nuclear power plant", *Nuclear Law Bulletin* No. 93, NEA, Paris, p. 92, in October and November 2013, a redacted version of the safety documentation for Mochovce units 3 and 4 was made publicly available (all sensitive information pursuant to Articles 3(14) and (15) of the 2004 Atomic Act, as amended, was redacted). Such disclosure was made as part of the renewed administrative proceedings on the approval of modifications to construction prior to the completion of the Mochovce nuclear power plant units 3 and 4.



## National legislative and regulatory activities

### Australia

#### General legislation

##### *Bill to amend the Australian Radiation Protection and Nuclear Safety Act 1998*

A bill to amend the Australian Radiation Protection and Nuclear Safety Act 1998 (ARPANS Act) was passed by the Australian Parliament on 18 August 2015. After obtaining royal assent, the amendments passed into law on 8 October 2015.

Since 1999, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has been regulating Australian government entities undertaking activities involving radiation. The scheme administered by ARPANSA regulates a broad range of applications from baggage x-ray units in airports to the Open Pool Australian Lightwater (OPAL) research reactor at Lucas Heights in New South Wales.

The ARPANS Act has not been substantially updated since it was introduced in 1998. Since that time:

- there have been changes to international approaches to radiation and nuclear safety;
- there have been changes in practice that require an adjusted regulatory response;
- ARPANSA's experience administering the legislation has highlighted areas for improvement; and
- there have been a number of reviews of the ARPANSA regulatory scheme.

This has included reviews by the International Atomic Energy Agency and by the Australian National Audit Office. On the whole, the regulatory scheme was found to be appropriate; however, changes were suggested to clarify the reach of the legislation, to strengthen the monitoring and enforcement powers of the regulator and to continue to ensure the legislation aligns with evolving international approaches.

Drawing on the recommendations of the various reviews and the experience of ARPANSA, changes have been made to the legislation to provide greater clarity regarding its reach, improve risk management of radiation activities undertaken by Australian government entities and provide greater capacity for ARPANSA to act in the event of an emergency or non-compliance with the legislation. Specifically, amendments have been made in four main areas.

First, the amendments provide ARPANSA with greater powers to monitor compliance with the legislation and to take action in the event of non-compliance. For example, the amendments enable the chief executive officer (CEO) of ARPANSA to require a licence holder to produce information or documents, or to appear before the CEO to answer questions. Inspectors are also being empowered to issue improvement notices to require licence holders to address contraventions of the legislation, or likely contraventions, within certain time frames.

These changes ensure that ARPANSA can access the information it needs to assess compliance with the legislation and can adopt a graduated and proportionate response to non-compliance, should it be identified.

The amendments also enable the CEO of ARPANSA to issue directions to licence holders to minimise any risks to people and the environment in unforeseen circumstances, for example in the event of an emergency.

Second, the amendments clarify the application of the legislation to contractors and others working with the Australian government or operating from facilities owned or controlled by Australian government entities. This provides greater regulatory certainty and ensures there is no gap in regulatory coverage between entities regulated by ARPANSA and those regulated by Australian State and Territory Government authorities.

Third, the proposed amendments improve the licensing regime and make it more efficient by:

- enabling ARPANSA to issue time-limited licences in circumstances where time limits may be more appropriate;
- making some adjustments to the licensing regime to expressly enable ARPANSA to regulate remediation and other activities involving contaminated legacy sites; and
- clarifying that ARPANSA may issue single licences for multiple facilities to reduce regulatory burden and streamline arrangements where this supports end-to-end risk management.

Finally, a number of minor technical and administrative amendments, such as updates to definitions and removal of outdated provisions to improve the operation of the legislation, have been made.

## France

### General legislation

*Law No. 2015-992 of 17 August 2015 on the energy transition for green growth*<sup>1</sup>

One year after its presentation to the French Council of Ministers, the bill on the energy transition for green growth was passed into law on 18 August 2015.

This law comprises 215 articles under eight sections: Objectives (section I); Renovating buildings (section II); Developing green transport (section III); Tackling waste and promoting the circular economy (section IV); Developing renewable energies (section V); Strengthening nuclear safety and public information (section VI); Simplifying and clarifying procedures (section VII); and Providing citizens, businesses and regions with the means to take action together (section VIII).

In particular, the energy transition is based on the following priorities, enshrined by law in the Energy Code:

- reduce greenhouse gas emissions by 40% between 1990 and 2030;
- reduce the final energy consumption of fossil fuels by 30% by 2030 in relation to the 2012 benchmark;

1. Loi n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte, Journal Officiel Lois et Décrets (Journal of Laws and Decrees) (J.O.L. et D.), 18 August 2015, p. 14263, Text No. 1.

- increase the proportion of renewable energies to 32% of gross final energy consumption and to 40% of electricity production by 2030;
- reduce final energy consumption by 50% by 2050 in relation to the 2012 benchmark;
- halve the amount of waste disposed of in landfill sites by 2050; and
- diversify electricity production and bring the proportion of nuclear energy used in electricity generation down to 50% by 2025.

Concerning nuclear matters, the objective of section VI of the law is to strengthen nuclear safety at, and public information on, basic nuclear installations (INBs or *installations nucléaires de base*) by supplementing the provisions of the *code de l'environnement* (French Environmental Code) governing nuclear activity and INBs.

There is a reinforced role for the Local Information Commissions (CLIs or *commissions locales d'information*) created for all sites with one or more INBs, and tasked with a general mission of follow-up, information and consultation in terms of nuclear safety, radiation protection and the impact of nuclear activities on people and the environment. Moreover, membership of CLIs is extended to residents of foreign states if the nuclear plant is situated in a border department.

The legal regime applicable to INBs, as provided for in Articles L. 593-1 *et seq.* of the French Environmental Code, has been amended, notably with regard to significant modifications of a basic nuclear installation during operation, safety reviews, and the closure, dismantling and decommissioning of sites.

In terms of third party liability in the field of nuclear energy, Article 130 of the law provides for an increase in the third party liability of the operator of a nuclear installation to EUR 700 million (EUR 70 million for low-risk installations and EUR 80 million for the transport of nuclear substances), in anticipation of the entry into force of the February 2004 Protocols to amend the Paris and Brussels Conventions.

It should also be noted that the government is authorised to make, within a 6-to-12 month timeframe, provisions by ordinance for many areas governed by the law, notably with regard to:

- improving the effectiveness of nuclear safety and radiation protection controls;
- adapting the responsibilities, duties and powers of the French Nuclear Safety Authority (ASN or *Autorité de sûreté nucléaire*);
- transposition of the following directives: 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; 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; 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; Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions; Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances.

### *ASN Report on the state of nuclear safety and radiation protection in France in 2014<sup>2</sup>*

In accordance with Article L. 592-31 of the French Environment Code, the ASN published its report on the state of nuclear safety and radiation protection in France in 2014, which was submitted to the Parliament, the Government and the President of the Republic.

In the report, the ASN states that the situation in terms of nuclear safety and radiation protection is, on the whole, relatively satisfactory. Nevertheless, it specifies that the scale of the challenges and the expectations of society mean that nuclear safety and radiation protection requirements must be gradually tightened in light of accident analysis, increasing scientific knowledge and technological developments.

At the international level, the ASN adds that 2014 was a significant year, as:

- the European directives on nuclear safety and radiation protection were significantly reinforced; and
- a co-ordinated approach to the management of emergency situations was proposed by all the European safety and radiation protection regulators.

The ASN also considers that 2015 will be marked by:

- the beginning of examination of the Flamanville EPR nuclear power plant commissioning file;
- continued work to limit the doses resulting from public exposure to radon; and
- continued work to ensure improved management of the exposure of patients and health care professionals, particularly in diagnostic radiology and during interventional procedures.

## **Germany**

### **Radioactive waste management**

#### *First Ordinance to amend the 2005 Gorleben Development Freeze Ordinance (2015)*

The 2005 Gorleben Development Freeze Ordinance (2005 Ordinance)<sup>3</sup> was amended by the First Ordinance of 7 July 2015 to amend the Gorleben Development Freeze Ordinance (2015 Ordinance).<sup>4</sup> Based on Section 9g, paragraph 1, sentence 1 of the German Atomic Energy Act, the 2005 Ordinance was issued to secure the exploration of the area of the salt dome at Gorleben as a final repository for radioactive waste. Section 5 of the 2005 Ordinance stipulated it shall expire 10 years after its entry into force, i.e. at the end of 16 August 2015.

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2. The ASN's report is available (in English) at: [www.asn.fr/annual\\_report/2014gb/](http://www.asn.fr/annual_report/2014gb/).
  3. More information on the 2005 Ordinance can be found in NEA (2005), "Ordinance on Establishing a Prohibition to Alter the Conditions of the Subsoil Within the Gorleben Salt Formation (2005)", *Nuclear Law Bulletin*, No. 76, NEA, Paris, p. 76.
  4. *Erste Verordnung zur Änderung der Gorleben-Veränderungssperren-Verordnung* of 7 July 2015 (Bundesanzeiger AT 21.07.2015 V1). The text of the Ordinance is available (in German) at: [www.bmub.bund.de/fileadmin/Daten\\_BMU/Download\\_PDF/Gesetze/gorleben\\_vsp\\_v\\_bundesanzeiger.pdf](http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Gesetze/gorleben_vsp_v_bundesanzeiger.pdf). A consolidated text of the 2005 Ordinance as amended by the 2015 Ordinance is available (in German) at: [www.gesetze-im-internet.de/gorleben\\_vspv/BJNR515320005.html](http://www.gesetze-im-internet.de/gorleben_vspv/BJNR515320005.html).

Meanwhile, however, the 2013 Repository Site Selection Act<sup>5</sup> entered into force, which, in Section 29, contains a special provision regarding the Gorleben salt dome. Pursuant to this provision, the Gorleben salt dome shall be included in the site selection procedure under the Act in the same way, and subject to the same criteria and requirements, as all other potential sites for a final repository. Gorleben could only be excluded as the result of the procedure foreseen under the Repository Site Selection Act. As a consequence of this provision, securing the exploration of the Gorleben area needed to be continued.

The federal government introduced a draft regulation to Parliament to extend the validity of the 2005 Ordinance until 16 August 2025, at the latest.<sup>6</sup> The draft regulation of the government did not receive the necessary approval by the Länder in Parliament (*Bundesrat*) and failed.<sup>7</sup> Agreement could be achieved on the following text, which now forms Section 5, paragraph 1, sentence 1 of the 2015 Ordinance: “This Ordinance shall expire on the day at which the Gorleben salt dome, in accordance with Section 29 paragraph 1 sentence 5 of the Repository Site Selection Act, is excluded from the site selection procedure but at the latest at the end of 31 March 2017.”<sup>8</sup>

Justification for this new wording can be taken from a resolution adopted by the *Bundesrat*. In that resolution, the *Bundesrat* requests the federal government to work out statutory regulations that ensure early securing site regions or planning areas for potential final repositories without delay and, at the latest, by 31 March 2017 and in co-operation with the “Commission Storage Highly Radioactive Waste” established under the Repository Site Selection Act.<sup>9</sup>

## Greece

### Radioactive waste management

*Joint Ministerial Decision establishing the national policy on the management of spent fuel and radioactive waste*<sup>10</sup>

The act above empowers the Greek Atomic Energy Commission (EEAE) to develop the initial (first) “national programme” referred to in Articles 11 and 12 of the Radioactive Waste and Spent Fuel Management Directive.<sup>11</sup>

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5. More information on the 2013 Act can be found in NEA (2013), “Repository Site Selection Act (2013)”, *Nuclear Law Bulletin*, No. 92, NEA, Paris, pp. 103-105.
  6. *Verordnung der Bundesregierung: Erste Verordnung zur Änderung der Gorleben-Veränderungssperren-Verordnung* 27 March 2015 (*Bundesrats-Drucksache* 136/15). The draft regulation is available (in German) at: [www.umwelt-online.de/PDFBR/2015/0136\\_2D15.pdf](http://www.umwelt-online.de/PDFBR/2015/0136_2D15.pdf).
  7. *Bundesrats-Drucksachen* 136/1/15, 136/2/15, 136/3/15.
  8. The German original reads: “Diese Verordnung tritt an dem Tag außer Kraft, an dem der Salzstock Gorleben nach § 29 Absatz 1 Satz 5 des Standortauswahlgesetzes aus dem Standortauswahlverfahren ausgeschlossen wird, spätestens mit Ablauf des 31. März 2017.”
  9. *Bundesrats-Drucksache* 136/15 (*Beschluss*), available (in German) at: [www.umwelt-online.de/PDFBR/2015/0136\\_2D15B.pdf](http://www.umwelt-online.de/PDFBR/2015/0136_2D15B.pdf).
  10. Joint Ministerial Decision No. 131207/13/27.08.2015, Government Gazette Folio No. 1858/B/27.08.2015, “National policy on the management of spent fuel and radioactive waste”.
  11. 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, *Official Journal of the European Union* (OJ) L 199 (2 August 2011).

The basic principles of the Greek national policy are:

- disposal of radioactive waste in the country is allowed only for radioactive waste generated within the Greek territory and takes place in an authorised disposal facility within the country. The import of radioactive waste within the country's borders for management, including disposal, is prohibited. Until the establishment of the disposal facility, the storage of radioactive waste generated within the Greek territory is carried out in authorised interim storage facilities or storage areas (centralised or at waste producers' facilities);
- research reactor spent fuel is returned permanently to the country where the research reactor's fuel was supplied or manufactured, based on an international agreement concluded compulsorily at the time of import of any nuclear fuel;
- for radioactive sources, repatriation is the preferred management option (back-end solution);
- for liquid very short-lived waste originating from nuclear medicine laboratories, decay and clearance options are applied;
- on a 10-year periodic basis, if necessary, withdrawal projects are carried out to collect and export radioactive sources and materials to foreign authorised recycling facilities;
- the storage of radioactive waste, sources and materials does not constitute a final management solution. The temporary storage period is specified in the licensing conditions/terms of the facility or practice. Maximum storage periods are defined; and
- Greece supports the idea of sharing common activities, practical solutions and research and development programmes in the context of agreements between the countries.

## Lithuania

### **Nuclear safety and radiological protection**

#### *Revised requirements for modifications*

On 1 November 2015, an amendment<sup>12</sup> to the “Rules of procedure for categories of nuclear facility modifications and implementation of modifications” will come into force. The current rules establish categories of modifications of nuclear installations and assign the licensee the responsibility to document the modification process, carry out safety assessments and, for those modifications important to safety, submit documents for the approval of State Nuclear Power Safety Inspectorate (VATESI). The amendment endeavours to streamline the modification procedure during construction and commissioning of nuclear facilities and refines upon the description for categorisation of modifications.

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12. Order No. 22.3-57 (2015), “On the Amendment of Order No. 22.3-99 (2011), BSR-1.8.2-2011 ‘Rules of Procedure for categories of nuclear facility modifications and implementation of modifications’”, available (in Lithuanian) at: [www.e-tar.lt/portal/lt/legalAct/38739f30d15e11e4bcd1a882e9a189f1](http://www.e-tar.lt/portal/lt/legalAct/38739f30d15e11e4bcd1a882e9a189f1).

*Plan for enhancement of nuclear safety*

On 24 March 2015, the Head of VATESI approved the Plan for Enhancement of Nuclear Safety Based on Evaluation of the Experience Gained after the Accident at the Japanese Fukushima Daiichi Nuclear Power Plant (Plan).<sup>13</sup> The Plan establishes measures for improving overall nuclear safety in Lithuania, as well as in Lithuania's nuclear facilities in the areas of management of nuclear accidents, external hazards, loss of safety systems and emergency preparedness, among other areas. The Plan replaces a previous plan of a similar scope, approved in 2013.

*New requirements for the commissioning of nuclear power plants*

New requirements for nuclear safety were approved by the Head of VATESI in Order No. 22.3-141 of 16 July 2015 on "Commissioning of Nuclear Power Plant".<sup>14</sup> The new order sets requirements for the commissioning of nuclear power plants with pressurised or boiling light water reactors and pressurised heavy water reactors. It includes requirements for the preparation, content, scope and implementation of the commissioning programme, as well as for the management of the commissioning process. The new requirements came into force on 1 November 2015.

*Revised requirements regulating the provision of information on abnormal events*

On 30 July 2015, an amendment to the nuclear safety requirements for abnormal event notifications was approved.<sup>15</sup> The amendment specifies more detailed procedures for VATESI's analysis of licensees' reports on abnormal events. It also establishes the procedure for the independent investigation of nuclear and radiological accidents, to be carried out by VATESI, including the scope of the investigation and the rights and responsibilities of the investigation commission.

**Radioactive waste management***Revised requirements for acceptance criteria for near surface repository*

New nuclear safety requirements were approved on 27 May 2015 that establish waste acceptance criteria for the near surface repository for low and intermediate level short-lived radioactive waste and requirements for radioactive waste package specifications of low and intermediate level short-lived radioactive waste to be disposed of in the near surface repository.<sup>16</sup> The new requirements replace Order No. 22.3-40 of 27 April 2009 "On the approval of Regulation on general waste acceptance criteria for disposal in near surface disposal facility". The new requirements came into force on 1 November 2015.

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13. Order No. 22.3-62 (2015), "On the Approval of the Plan for Enhancement of Nuclear Safety Based on Evaluation of the Experience Gained after the Accident at the Japanese Fukushima Daiichi Nuclear Power Plant", available (in Lithuanian) at: [www.e-tar.lt/portal/lt/legalAct/801a6e40d22b11e4bcd1a882e9a189f1](http://www.e-tar.lt/portal/lt/legalAct/801a6e40d22b11e4bcd1a882e9a189f1).
  14. BSR-2.1.5-2015 (2015), "Commissioning of Nuclear Power Plant", available (in Lithuanian) at: [www.e-tar.lt/portal/lt/legalAct/0d6fbed02baa11e5be2eca50406acf3c](http://www.e-tar.lt/portal/lt/legalAct/0d6fbed02baa11e5be2eca50406acf3c).
  15. Order No. 22.3-151 (2015), "On the Amendment of Order No. 22.3-60 (2010), BSR-1.8.1-2010 'Notification on Abnormal Events in Nuclear Power Plants'", available (in Lithuanian) at: [www.e-tar.lt/portal/lt/legalAct/b514cb8036a911e5aee6f3ae4a9cfa2d](http://www.e-tar.lt/portal/lt/legalAct/b514cb8036a911e5aee6f3ae4a9cfa2d).
  16. BSR-3.2.1-2015 (2015), "Radioactive Waste Acceptance Criteria For Near Surface Repository", available (in Lithuanian) at: [www.e-tar.lt/portal/lt/legalAct/b91cfee0047811e588da8908dfa91cac](http://www.e-tar.lt/portal/lt/legalAct/b91cfee0047811e588da8908dfa91cac).

## **Nuclear security**

### *Revised requirements for physical protection*

In July 2015, an amendment to the physical protection requirements was approved.<sup>17</sup> Pursuant to IAEA recommendations in its Nuclear Security Series, the amendment establishes clear criteria for when the security areas to which the nuclear facility needs to be divided have to be reviewed/reconsidered. The amendment also strives to streamline the procedure for the preparation, review and renewal of the security plans by the applicants and licensees and the subsequent agreement to the security plans by the regulatory body. Finally, the amendment provides for a more detailed programme for the evaluation of the effectiveness of nuclear facility physical protection systems.

## **Romania**

### **Licensing and regulatory infrastructure**

#### *Government Decision No. 600/2014 for approval of National Nuclear Safety and Security Strategy*

In July 2014, a National Strategy for Nuclear Safety and Security (“the Strategy”) was adopted that aims to create a framework for addressing, in a uniform and consistent manner, the objective of improving the nuclear safety and security and the joint efforts of relevant authorities and institutions with responsibilities in the nuclear sector.

The Strategy takes into account the current state of development of the national nuclear field, the projects and activities underway or planned, the experience of authorities and institutions involved, the relevant responsibilities and international standards, and also the legal obligations derived from treaties, conventions and agreements to which Romania is a party.

### **International co-operation**

#### *Government Decision No. 525/2014 for approval of the Co-operation Agreement on the radioactive waste management between the French National Radioactive Waste Management Agency (ANDRA) and Nuclear Agency and Radioactive Waste (ANDR)*

Strengthening international co-operation in the nuclear field is a key objective in Romania for implementing a safe and effective management of radioactive waste. As such, in July 2014, the Romanian Nuclear Agency and Radioactive Waste (ANDR) and the French National Radioactive Waste Management Agency (ANDRA or *Agence nationale pour la gestion des déchets radioactifs*) entered into an agreement that envisages establishing a favourable legal framework between the two parties in the field of radioactive waste management in accordance with the actions contained in the strategic partnership between France and Romania. The Romanian and French parties agreed to the following areas of co-operation:

- radioactive waste management;
- research and development in the field of radioactive waste management;
- public acceptance;

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17. Order No. 22.3-147 (2015), “On the Amendment of Order No. 22.3-37 (2012), BSR-1.6.1-2012 ‘Physical protection of nuclear facilities, nuclear material and nuclear fuel cycle material’”, available at: [www.e-tar.lt/portal/lt/legalAct/f1fe0411352011e5b1be8e104a145478](http://www.e-tar.lt/portal/lt/legalAct/f1fe0411352011e5b1be8e104a145478).



- inventory of radioactive waste;
- characterisation, treatment and conditioning of radioactive waste for storage in deposits for radioactive waste with low and medium level of radioactivity;
- geological disposal of spent nuclear fuel and radioactive waste with high levels of radioactivity;
- audit on the activities related to radioactive waste management;
- recycling of spent nuclear fuel;
- back-end cycle solutions for spent nuclear fuel; and
- decommissioning of nuclear installation.

The co-operation may also involve the exchange of information and experience, as well as participation in joint projects and technical assistance.

*Memorandum of Understanding for Co-operation and Exchange of Information in Nuclear Regulatory Matters between the National Commission for Nuclear Activities Control (CNCAN) of Romania and the President of National Atomic Energy Agency (PAA) of Poland*

In September 2014, the National Commission for Nuclear Activities Control (CNCAN) of Romania and the National Atomic Energy Agency (PAA) of Poland, both authorities responsible for regulating nuclear activities within their areas of competence, entered into a memorandum of understanding (MOU) for technical co-operation and the exchange of information. Given that Romania and Poland are member states of the European Union, both parties agreed that it was in their mutual interest to conclude such an agreement. The MOU also addresses:

- the exchange of personnel between the participants;
- the training of personnel; and
- the provision of assistance in the field of nuclear regulations.

In accordance with their laws, regulations and political guidelines, the CNCAN and the PAA agreed to establish co-operation in the regulation and control of activities related to nuclear and radiological safety.

*Government Decision No. 540/2015 for approval of the Agreement between the Government of Romania and the Government of the People's Republic of China regarding co-operation in the peaceful uses of nuclear energy, signed on 1 September 2014, in Beijing*

Following governmental actions aimed at attracting potential new investors in the construction of units 3 and 4 of the Cernavodă nuclear power plant, the People's Republic of China has been identified as a partner with significant potential due to its power companies' extensive experience in the construction and operation of nuclear power plants, and also its funding capacity and interest in nuclear projects.

In this context, to establish a general framework for nuclear co-operation and promote specific common projects in this area, the two governments have agreed on the need to sign an agreement for co-operation on the peaceful uses of nuclear energy. The parties have also decided to encourage the conduct of joint actions aimed at completing projects, as well as to engage in other projects of common interest in the nuclear field.

**Nuclear security***Order No. 181/2014 for approval of norms regarding the protection of nuclear installation against cyber threats*

In October 2014, norms were established regarding the general requirements for the protection of systems, components and equipment, including software for instrumentation and control systems and networks from nuclear facilities, against cyber threats. These norms represent an essential step in authorising the activities of commissioning, operation and decommissioning of nuclear installations.

**Nuclear safety and radiological protection***Order No. 51/2015 for approval of the Nuclear Safety Guide regarding industrial codes and standards for nuclear power plants*

In April 2015, a Nuclear Safety Guide was established based on CNCAN recommendations for utilising nuclear industry codes and standards in the siting, construction, commissioning and operation of a nuclear power plant.

*Order No. 199/2015 for approval of the norms regarding nuclear safety policy and technical operation conditions for nuclear installations.*

In April 2015, norms were established regarding general nuclear safety requirements related to operating limits and technical conditions for nuclear installations. These norms apply to the following categories of nuclear facilities:

- nuclear power plants;
- research reactors, zero power reactors and subcritical assemblies; and
- demonstration reactors.

*Order No. 177/2015 for approval of norms regarding nuclear safety policy and independent assessment of nuclear safety*

In September 2015, norms were established regarding the general requirements for nuclear safety policy and the independent assessment of nuclear safety for nuclear installations. The provisions of these norms shall apply to holders of an authorisation and applicants for authorisation for the construction, commissioning and operation of a nuclear installation from the following categories:

- nuclear power plants;
- research reactors, zero power reactors and subcritical assemblies;
- demonstration reactors;
- nuclear fuel plants; and
- other nuclear installations that CNCAN considered necessary to apply these rules in the authorisation process.

*Order No. 180/2015 for approval of the guide regarding independent verification of the nuclear safety analyses and evaluation for nuclear installations*

In September 2015, a guide was established based on the CNCAN recommendations for the independent verification of analyses and evaluations of nuclear safety for nuclear installations. The provisions of this guide shall apply to holders of an authorisation and applicants for authorisation for the construction, commissioning and operation of a nuclear installation from the following categories:

- nuclear power plants;
- research reactors, zero power reactors and subcritical assemblies;

- demonstration reactors;
- nuclear fuel plants; and
- other nuclear installations that CNCAN considered necessary to apply these rules in the authorisation process.

*Order No. 198/2015 for approval of the guide regarding the framework and content of the nuclear safety final report for nuclear power plants*

In September 2015, norms were established regarding the framework and content of the nuclear safety final report for nuclear power plants. The provisions of these norms apply to holders of an authorisation for construction and applicants for authorisation for commissioning and operation of a nuclear power plant.

## **Slovak Republic**

### **International co-operation**

*Details about international agreements concluded by the Slovak Republic*

Since the last edition of the *Nuclear Law Bulletin* No. 95, as regards the international agreements in the field of nuclear energy and their status, the Slovak Republic renewed the arrangement between the Nuclear Regulatory Authority (NRA) of the Slovak Republic and the United States Nuclear Regulatory Commission for the Exchange of Technical Information and Cooperation in nuclear safety matters (signed in Vienna on 16 September 2015).

The Program of Cooperation in the field of Nuclear Safety Regulation between the Nuclear Regulatory Authority of the Slovak Republic and the Czech State Office for Nuclear Safety was prolonged for the third time since 1999.

### **Liability and compensation**

*Regulation No. 170/2015 Establishing a List of Radioactive Materials, Their Quantities and Their Physical and Chemical Parameters Justifying the Low Risk of Nuclear Damage*<sup>18</sup>

Based on Article 5(6) of the new Act No. 54/2015 Coll. On Civil Liability for Nuclear Damage and its Financial Coverage,<sup>19</sup> the NRA issued new regulation No. 170/2015 Coll. Establishing a List of Radioactive Materials, Their Quantities and Their Physical and Chemical Parameters Justifying the Low Risk of Nuclear Damage on 6 July 2015. The new regulation will enter into force on 1 January 2016, replacing regulation No. 47/2006 Coll. on Details of Maximum Limits on Amounts of Nuclear Materials and Radioactive Waste at which Nuclear Damage is not Envisaged.

Regulation No. 170/2015 lays down the list, the quantities and physical and chemical parameters of radioactive materials justifying the low risk of nuclear damage:

- during their transportation; and
- in the nuclear installation during the decommissioning phase, if there are nuclear materials or radioactive waste in certain quantities and with

18. Regulation No. 170/2015 is available (in English) at: [www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Regulation%20170%202015/\\$FILE/Regulation%20170%202015.pdf](http://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Regulation%20170%202015/$FILE/Regulation%20170%202015.pdf).

19. Act No. 54/2015 Coll. is available (in English) at: [www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Act%20no.%2054\\_2015%20/\\$FILE/Act%2054\\_2015%20EN\\_na%20web.pdf](http://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/Act%20no.%2054_2015%20/$FILE/Act%2054_2015%20EN_na%20web.pdf).

certain physical and chemical parameters and if non-irradiated nuclear fuel or spent nuclear fuel is not present at the same time in such nuclear installation.

The risk of the nuclear damage occurrence is so low at those quantities and activities that they are excluded from the obligatory coverage for nuclear damage.

As the Slovak Republic is party to the 1963 Vienna Convention, the 2014 Resolution of the IAEA Board of Governors establishing maximum limits for the exclusion of small quantities of nuclear material from the application of the Vienna Convention (GOV/2014/63, 10 December 2014) formed the basis for the regulation. Similarly, so did the Nuclear Energy Agency Steering Committee decision and recommendation on the exclusion of nuclear installations in the process of being decommissioned from the application of the Paris Convention (NEA/SUM(2014)2).

### **General legislation**

In October 2015, a number of amendments to existing NRA regulations were approved, and notifications were made to the European Commission. These amendments will enter into force as of 1 March 2016.

The amendments were introduced based on the recommendations and suggestions resulting from a 2012 IAEA Integrated Regulatory Review Service mission to the NRA and are as follows:

- Regulation amending Regulation No. 430/2011 Coll. on details on nuclear safety requirements;
- Regulation amending Regulation No. 431/2011 Coll. on a quality management system;
- Regulation amending Regulation No. 30/2012 Coll., laying down details of requirements for the management of nuclear materials, radioactive waste and spent nuclear fuel;
- Regulation amending Regulation No. 33/2012 Coll. on the regular, comprehensive and systematic evaluation of the nuclear safety of nuclear equipment;
- Regulation amending Regulation No. 57/2006 Coll. on detailed requirements for shipment of radioactive material; and
- Regulation amending Regulation No. 58/2006 Coll., laying down details on the scope, contents and manner of preparation of documentation for nuclear facilities needed for individual decisions.

## **Slovenia**

### **General legislation**

#### *Amendments to the Ionising Radiation Protection and Nuclear Safety Act*

A relatively long process of amending the Ionising Radiation Protection and Nuclear Safety Act (the Act) was finally concluded in September 2015. The process began in 2013, but was frozen in May 2014 due to the resignation of the government. The amendment process resumed after the formation of a new government that same year. At the beginning of November 2014, amendments to the Act were sent for inter-ministerial co-ordination to all Ministries, the Information Commissioner and the Government Office for Legislation. The government adopted the amendments to the Act in May 2015 while the Parliament enacted it in September 2015.

The Act simplifies certain administrative procedures by:

- merging into a single administrative procedure radiation protection assessments of exposed workers and the license to carry out a radiation practice;<sup>20</sup>
- streamlining the issuance of licenses for the use of radioactive sources; and
- eliminating the need for a certificate of entry in the register of radiation sources as a special administrative decision and instead requiring only registration under the simplified procedure.

Several amendments have been introduced as a consequence of the lessons learned following the Fukushima Daiichi nuclear power plant accident and the European stress tests:

- a new article on the design basis of a nuclear facility and another article on the extended design basis of a nuclear facility;
- new provisions on safety culture management systems; and
- new provisions to prevent the incorporation of non-conforming, counterfeit, fraudulent and suspect items into nuclear and radiation facilities.

Other topical amendments include:

- a new provision related to the construction of a new nuclear facility allowing an investor to submit progressively and in parts the required documentation that accompany the application for consent to the construction;
- clear definitions regarding the obligations of the Agency for Radioactive Waste Management related to the provisions governing the implementation of various public utility services (management of radioactive waste, radioactive waste disposal, long-term monitoring and maintenance of mining disposals and tailings);
- provisions concerning the vetting of persons working in nuclear facilities; and
- more detailed determination of different types of operational monitoring (pre-operational, operational and post-operational).

The Act also includes minor, editorial corrections as well as the elimination of minor inconsistencies and deficiencies that have been identified during the application of the Act.

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20. Previously, the Slovenian Radiation Protection Administration (SRPA), the regulatory body for activities involving radiation and the use of radioactive sources in medicine and veterinary medicine, was responsible for approving the radiation protection assessment of all exposed workers (not only those in medicine and veterinary medicine, but also for those working in other areas/radiation practices, such as industry, research, etc.). At the same time, the Slovenian Nuclear Safety Administration (SNSA) was responsible for issuing the license to carry out a radiation practice. From now on, the SRPA will approve the assessment of exposed workers as well as issue the license to carry out a radiation practice in medicine and veterinary medicine, while the SNSA will approve the assessment of exposed workers as well as issue the license to carry out a radiation practice in industry, research, etc.

These amendments to the Ionising Radiation Protection and Nuclear Safety Act, together with amendments to several implementing governmental decrees and ministerial rules, transpose the new nuclear safety directive,<sup>21</sup> as well as 2014 updated Western European Nuclear Regulators Association reference levels. The new European Union basic safety standards<sup>22</sup> will be transposed by the end of 2017.

The amendments to the Act entered into force on the 15<sup>th</sup> day following its publication in the Official Gazette of the Republic of Slovenia, on 17 October 2015. The adopted amendments together with the introductory explanations and clarifications, as well as clean copy of the Act, are available in Slovenian on the Slovenian Nuclear Safety Administration website.

## Switzerland

### **Radioactive waste management**

On 7 October 2015, the Federal Council decreed a second revision of the Ordinance on the Decommissioning Fund and the Waste Disposal Fund for Nuclear Installations. The financing of the decommissioning of nuclear facilities and the disposal of radioactive waste is regulated in the Nuclear Energy Act as well as in the mentioned Ordinance, which regulates the specific details.

While working on the first revision of the Ordinance on the Decommissioning and Waste Disposal Funds for Nuclear Installations, which came into effect on 1<sup>st</sup> January 2015,<sup>23</sup> the responsible Federal Department of the Environment, Transport, Energy and Communications (DETEC) identified the need of a further revision concerning several governance-related issues. An evaluation by the Swiss Federal Audit Office confirmed this observation. These issues are taken into account with this latest, second revision.

The most important issue covered is the reform of the permissible composition of the executive bodies of the Decommissioning Fund and the Waste Disposal Fund (“the Funds”). Employees of the DETEC, which is in charge of supervision on behalf of the Federal Council, and the Swiss Federal Nuclear Safety Inspectorate (ENSI), the national regulatory body with responsibility for the nuclear safety and security of Swiss nuclear facilities, are no longer eligible to be members of the Funds’ boards or its committees.

But, while individual employees of DETEC are no longer eligible to serve, to strengthen the supervision of the Funds, DETEC as an organisation is given more oversight responsibility. For example, the DETEC will set the guidelines for the quinquennial Cost Study, which is carried out by the nuclear power plant operators, and will also set the estimated costs on which the annual contributions by the operators into the Funds are calculated. Furthermore, in place of the Federal Council, DETEC is empowered to change the parameters for the calculation of contributions in accordance with the Federal Department of Finance and the Federal Department of Economic Affairs, Education and Research.

The revision will come into effect on 1 January 2016.

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21. 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).
  22. 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).
  23. More information can be found in NEA (2014), “Revision of Decommissioning and Waste Disposal Funds Ordinance”, *Nuclear Law Bulletin*, No. 94, NEA, Paris, pp. 129-130.

## Liability and compensation

*Obligation of insurance, risks not covered by private insurers – Partial revision of the Ordinance on Nuclear Third Party Liability (Ordonnance sur la responsabilité civile en matière nucléaire) (ORCN)*<sup>24</sup>

On 13 June 2008, the Parliament adopted a new Law on Nuclear Third Party Liability (*Loi sur la responsabilité civile en matière nucléaire*) (LRCN) and approved the revised corresponding international conventions (Paris Convention and Brussels Supplementary Convention). Switzerland subsequently ratified these two conventions in March 2009. The complete revision of the Ordinance on Nuclear Third Party Liability (ORCN) based on the new LRCN was adopted by the Federal Council on 25 March 2015.<sup>25</sup> The revised versions of the LRCN and ORCN cannot come into force before the revised Paris Convention enters into force (when it is ratified by at least two-thirds of its 16 contracting parties). This is not likely to take place before early 2017.

The partial revision of the ORCN relates to the existing LRCN,<sup>26</sup> which states that the operator of a nuclear power plant bears an unlimited liability for nuclear damage and has to take out an insurance coverage of CHF 1 billion. This coverage shall, as far as possible, be guaranteed by private insurance. The Confederation covers, on a subsidiary basis, nuclear damage that cannot be covered by private insurance and receives premiums for that purpose.

Private insurances can partially or totally exclude some nuclear damage (ORCN, article 4, paragraph 1). The list of non-contractual risks has been revised as international reinsurance pools are not able to provide the coverage required by the legislation on nuclear third party liability.

The revisions are as follows:<sup>27</sup>

- Nuclear damage between CHF 500 million and CHF 1 billion, arising despite a permanent compliance with radiation exposure limits, are excluded from the scope of private insurance. The Confederation's insurance bears the coverage for that damage and receives premiums for that purpose. Consequently, the premiums paid by the operators of the Swiss nuclear power plants and the Interim Storage Facility Würenlingen SA to the Confederation are increasing from 2 to 3%. At the same time, premiums paid to private insurers are decreasing due to the reduction of the coverage. Hence, the partial revision of the ORCN has little effect on the total amount of premiums.
- The wording regarding risks related to terrorism, partially excluded from the scope of the private coverage, has been slightly modified (the restriction “against which protection at a bearable costs is impossible” has been deleted). Therefore, there is no need to adapt the premiums.

The partial revision of the ORCN entered into force on 15 February 2015.

24. Ordinance of 5 December 1983 on Nuclear Third Party Liability (ORCN), RS 732.441, available (in French) at the following address: [www.admin.ch/gov/fr/accueil/droit-federal/recueil-systematique.html](http://www.admin.ch/gov/fr/accueil/droit-federal/recueil-systematique.html).

25. See NEA (2015), “The Swiss Federal Council adopts the revised Nuclear Energy Third Party Liability Ordinance”, *Nuclear Law Bulletin*, No. 95, NEA, Paris, pp. 81-82.

26. Law of 18 March 1983 on Nuclear Third Party Liability (LAR), RS 732.44.

27. For additional information, see the explanatory report regarding the modification of Article 4, al. 1 of the Ordinance of 5 December 1983 on Nuclear Third Party Liability, available (in French) at the following address: [www.admin.ch/ch/f/gg/pc/ind2013.html](http://www.admin.ch/ch/f/gg/pc/ind2013.html) (section DETEC).

## United States

### **Licensing and regulatory infrastructure**

#### *Commission authorises issuance of combined licence for Fermi Nuclear Power Plant in Monroe County, Michigan*

On 4 February 2015, the US Nuclear Regulatory Commission (NRC) held a mandatory public hearing to consider the NRC staff's review of DTE Electric Company's combined licence application for a new nuclear reactor at the Fermi Nuclear Power Plant site in Monroe County, Michigan. The Commission concluded that the staff's review was adequate to support NRC regulations for combined licences and public hearing proceedings.<sup>28</sup> The combined licence was therefore issued on 1 May 2015.<sup>29</sup>

DTE filed an application for a combined licence on 18 September 2008 and sought to build a GE-Hitachi Economic Simplified Boiling Water Reactor (ESBWR) at the Fermi site.<sup>30</sup> DTE planned to build the ESBWR adjacent to the company's existing reactor. The ESBWR is a 1 600 megawatt electric reactor that includes passive safety systems to cool down the reactor after an accident without the need for AC power.<sup>31</sup>

The Commission reviewed the staff's Final Environmental Impact Statement (FEIS) and found that it had established all the requirements needed under the National Environmental Policy Act (NEPA). The Commission noted that the environmental review identified appropriate alternatives for DTE, including alternative sites, power sources and designs.<sup>32</sup> The NRC staff concluded that none of the alternatives were environmentally preferable to the proposed action and the Commission agreed.

The Commission was also provided with an independent assessment of NRC requirements imposed relating to the Fukushima Daiichi nuclear power plant accident.<sup>33</sup> The NRC has taken regulatory actions in response to the Fukushima accident that include examination of seismic hazards, mitigating strategies for beyond-design-basis external events, spent fuel pool instrumentation and emergency preparedness.<sup>34</sup>

### **Radioactive waste management**

#### *NRC conducts final public meetings on Yucca Mountain Environmental Report Supplement*

The NRC is holding a series of public meetings to seek public comment on a supplement to the Department of Energy's (DOE) Environmental Impact Statement for the Yucca Mountain Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste. The final public meeting was held on 12 November 2015.<sup>35</sup>

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28. DTE Electric Company (Fermi Nuclear Power Plant, Unit 3), CLI-15-13, 81 NRC \_\_ (30 April 2015), pp. 50-51.

29. 80 Federal Register 26,302, "DTE Electric Company; Fermi 3" (7 May 2015).

30. Fermi, *supra* note 28, p. 2.

31. *Ibid.*, p. 28

32. *Ibid.*, p. 47

33. *Ibid.*, p. 4

34. *Ibid.*, p. 28

35. 80 Federal Register 56,501, "Department of Energy; Yucca Mountain, Nye County, Nevada" (18 September 2015).



The NRC staff reviewed the Environmental Impact Statements submitted by the DOE in 2002 and 2008 and found that they did not adequately address groundwater effects. In February 2015, the Commission directed its staff to develop an Environmental Impact Statement supplement evaluating these impacts. A draft supplement was issued for public comment in August 2015.

The draft supplement concerns potential environmental impacts from the proposed repository on groundwater and from surface discharges of the groundwater. The analysis evaluates potential radiological and non-radiological environmental impacts at groundwater and surface discharge locations over a one-million year period following repository closure. The analysis also examines potential impacts on aquifer environment, soils, ecology, public health and the potential for disproportionate impacts on minority or low-income populations. Additionally, the draft supplement examines possible cumulative impacts that may be associated with other past, present or reasonably foreseeable future actions. The NRC staff concluded in the draft supplement that the impacts on the resources analysed would be small.



## Intergovernmental organisation activities

### European Atomic Energy Community

#### Non-legally binding instruments

*Communication from the European Commission “Towards an Integrated Strategic Energy Technology (SET) Plan: Accelerating the European Energy System Transformation”*<sup>1</sup>

The European Strategic Energy Technology Plan (SET-Plan) was established in 2007<sup>2</sup> and has since been a cornerstone of the European Union (EU) energy and climate policy. It has triggered substantial investments in low-carbon technologies and has boosted co-operation across the EU among stakeholders in research.

The Communication for a new SET-Plan was adopted by the European Commission on 15 September 2015. Building on the important successes achieved so far, the new integrated SET-Plan aims to upgrade and adapt the priorities and actions previously defined in light of the core objectives set in the Energy Union Strategy, presented by the European Commission in February 2015.<sup>3</sup> The integrated SET-Plan is therefore a key element of the new European Energy Research and Innovation approach, as defined under the fifth dimension of the Energy Union.

Based on a new approach going beyond technology silos, the integrated SET-Plan proposes ten focused research and innovation actions to accelerate the energy system’s transformation in the EU. These actions will contribute to achieve the research and innovation objectives of the Energy Union to: become the global leader in renewable energy; facilitate consumer participation and accelerate the progress to a smart energy system; develop and reinforce energy efficient systems; diversify and strengthen options for sustainable transport; drive ambition in carbon capture and storage deployment; and increase safety in the use of nuclear energy.

In the months to come, and in the context of the development of the overall Energy Union approach to research and innovation, these ten priorities should serve as a starting point for discussions with member states of the European Union and stakeholders in the development of new research and innovation programmes and activities at a European and national level.

#### *2014 Annual Report of the Euratom Supply Agency*

The 2014 Annual Report of the Euratom Supply Agency (ESA)<sup>4</sup> provides, as usual, information on nuclear energy developments both in the EU and globally, including,

1. C(2015)6317 (15 September 2015) (the Communication).
2. COM(2007)723 (22 November 2007).
3. COM(2015)80 (25 February 2015).
4. The ESA, which has been set up on the basis of the Treaty establishing the European Atomic Energy Community (Euratom Treaty), 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. In addition to this, the ESA acts as an observatory of the global nuclear fuel market, trying to anticipate potential problems for the security of supply in the EU, including supply of medical radioisotopes. The ESA Annual Report is available on the agency’s website: <http://ec.europa.eu/euratom/ar.html>.

most importantly, data on the market for nuclear fuels. Compared to its past versions, the report under review contains two new chapters. One of these two chapters is dedicated to the security of nuclear supply and focuses on the requirement of diversification of sources of supply for nuclear materials and services, in line with the objectives of the European Commission Communication of 28 May 2014 on a European Energy Security Strategy,<sup>5</sup> while the other one covers ESA's activities in the area of radioisotopes. As pointed out, the Agency continued its efforts, including through the conclusion of a memorandum of understanding with the US Department of Energy, to establish the conditions for the supply of high-enriched uranium (HEU) for users that still need it, in compliance with international nuclear security commitments. Last but not least, the report also sets out the ESA's work programme for 2015, built around five specific objectives, including, notably, to maintain a regular and equitable supply of ores and nuclear fuels for EU users through the exercise of prerogatives the ESA is endowed with.

*Report of June 2015 from the Euratom Supply Agency to the European Commission on the Security of Supply of Medical Radioisotopes*<sup>6</sup>

The ESA was mandated in 2013 by the European Commission to follow all aspects related to the supply of medical radioisotopes in the EU, in the light of conclusions of the Council of the European Union adopted on this issue in 2010<sup>7</sup> and 2012.<sup>8</sup> The above-mentioned report therefore presents the activities undertaken by the European Commission and ESA, in close co-operation with AIPES, the Association of Imaging Producers and Equipment Suppliers, to improve the security of supply of medical radioisotopes, as well as the main achievements in this field. ESA also co-operates closely with the corresponding NEA High-level Group on the Security of Supply of Medical Radioisotopes, of which it is a member.

## **International Atomic Energy Agency (IAEA)**

### **Convention on Nuclear Safety (CNS)**

The Organizational Meeting to prepare for the Seventh Review Meeting of contracting parties to the Convention on Nuclear Safety<sup>9</sup> took place on 15 October 2015 at IAEA Headquarters in Vienna. Sixty-five contracting parties attended the Review Meeting, as well as the Nuclear Energy Agency as observer. The contracting parties, *inter alia*, elected the officers for the Seventh Review Meeting and established Country Groups. The contracting parties also discussed the preparation and the content of the National Reports for the upcoming Review Meeting.

### **59<sup>th</sup> regular session of the IAEA General Conference**

The 59<sup>th</sup> regular session of the IAEA General Conference was held in Vienna, Austria from 14 to 18 September 2015. More than 3 000 delegates from 165 member states and representatives of various international organisations participated in the Conference.

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5. COM(2014)330 (28 May 2014).
  6. SWD(2015)179 (June 2015). The report is available at: [http://ec.europa.eu/euratom/docs/ESA-MEP-web\\_final%2014.09.2015.pdf](http://ec.europa.eu/euratom/docs/ESA-MEP-web_final%2014.09.2015.pdf).
  7. Council conclusions "Towards the secure supply of radioisotopes for medical use in the EU", 6 December 2010, <http://ec.europa.eu/euratom/docs/118234.pdf>.
  8. Council conclusions "Towards the secure supply of radioisotopes for medical use in the EU", 19 December 2012, [http://ec.europa.eu/euratom/docs/2012\\_council\\_radioisotopes.pdf](http://ec.europa.eu/euratom/docs/2012_council_radioisotopes.pdf).
  9. Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293.

### *Resolutions of the Conference*

A number of resolutions were adopted by the General Conference.<sup>10</sup> As in previous years, two resolutions, namely GC(59)/RES/9 relating to international co-operation in nuclear, radiation, transport and waste safety<sup>11</sup> and GC(59)/RES/10 relating to nuclear security,<sup>12</sup> include sections that are of legal relevance.

#### *Measures to Strengthen International Cooperation in Nuclear, Radiation, Transport and Waste Safety (GC(59)/RES/9): 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 programmes, 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 Management.<sup>13</sup> 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)<sup>14</sup> and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the Assistance Convention),<sup>15</sup> 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.

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10. All resolutions adopted during the 59<sup>th</sup> regular session of the General Conference are available on the IAEA website: [www.iaea.org/About/Policy/GC/GC59/Resolutions/](http://www.iaea.org/About/Policy/GC/GC59/Resolutions/).
  11. IAEA (2015), "Measures to strengthen international cooperation in nuclear, radiation, transport and waste safety", GC(59)/RES/9.
  12. IAEA (2015), "Nuclear Security", GC(59)RES/10.
  13. 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.
  14. Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 275.
  15. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 133.

### *Nuclear liability*

In preambular paragraph (ee) 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”.<sup>16</sup> It 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 recognised the entry into force of the Convention on Supplementary Compensation for Nuclear Damage, noting that “these instruments can provide the basis for establishing a global nuclear liability regime based on the principles of nuclear liability law.”

In Part 2 of the resolution, 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, including through the identification of actions to address gaps in and enhance the existing nuclear liability regimes; encouraged the continuation of INLEX, especially 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.

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. It also 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, utilising 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 Convention particularly when preparing for the Seventh Review Meeting of the Convention to be held in 2017. It welcomed the adoption by consensus of the Vienna Declaration on Nuclear Safety at the CNS Diplomatic Conference of February 2015. The Conference also encouraged all contracting parties to report as decided by the Diplomatic Conference and encouraged all member states to contribute to the realisation of its principles including through the implementation of the relevant provisions of the resolution.

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16. IAEA (2015), “Vienna Declaration on Nuclear Safety: On principles for the implementation of the objective of the Convention on Nuclear Safety to prevent accidents and mitigate radiological consequences”, IAEA Doc. INFCIRC/872, IAEA, Vienna.

*Safe management of radioactive sources*

In Part 12 of the resolution, the Conference encouraged member states to support the dedicated international meetings under the auspices of the IAEA 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. It requested the Secretariat to continue to foster information exchange on implementation of the Code of Conduct and its associated Guidance.

*Nuclear and radiological incident 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.

**Nuclear Security (GC(59)/RES/10)**

The Conference again reaffirmed the importance of the Convention on the Physical Protection of Nuclear Material<sup>17</sup> (CPPNM) and of its 2005 Amendment; recognised the importance of acceptance, approval or ratification by further states; and further recognised the importance of and welcomed all efforts by contracting parties to promote the entry into force of the Amendment at the earliest possible date.<sup>18</sup>

The Conference also encouraged member states that have not yet done so to become party to the CPPNM; urged all parties to the Convention to ratify, accept or approve the 2005 Amendment as soon as possible; and encouraged all parties to the Convention to act in accordance with the objectives and purposes of the Amendment until such time as it enters into force. It further encouraged the Agency to continue efforts to promote the entry into force of the 2005 Amendment at the earliest possible date.<sup>19</sup>

The Conference further 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.<sup>20</sup> It also invited states that have 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.<sup>21</sup> The Conference also noted the discussion on the ongoing development of supplementary guidance to the Code of Conduct regarding the management of disused sealed sources.<sup>22</sup>

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.<sup>23</sup>

17. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125.

18. GC(59)/RES/10, *supra* note 12, preambular paragraph (l).

19. *Ibid.*, operative paragraph 8.

20. *Ibid.*, preambular paragraph (t).

21. *Ibid.*, operative paragraph 26.

22. *Ibid.*, operative paragraph 27.

23. *Ibid.*, preambular paragraph (o).

The Conference noted the recommended requirements for measures to protect against sabotage of nuclear facilities and unauthorised 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, as well as the ongoing work by the Agency on further guidance on their implementation, including during the processes of design, construction, commissioning, operation, maintenance and decommissioning of nuclear facilities.<sup>24</sup>

The Conference also encouraged the Secretariat, in consultation with member states, to consider ways of further promoting and facilitating the exchange, on a voluntary basis, of information on the implementation of the international legal instruments relevant to nuclear security.<sup>25</sup>

### **IAEA Treaty Event**

The yearly IAEA Treaty Event took place during the 59<sup>th</sup> 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.

During the event, Botswana deposited an instrument of ratification to the 2005 Amendment to the CPPNM, while the Kyrgyz Republic deposited an instrument of accession to the CPPNM.

Botswana also deposited an instrument of acceptance of the Fifth Extension of the Regional Co-operative Agreement for Research, Development and Training related to Nuclear Science and Technology (AFRA).

Following these treaty actions, representatives from several member states were briefed on the treaties featured at the Treaty Event.

### **Legislative assistance activities**

The IAEA Secretariat continued to support member states, upon request, under its legislative assistance programme. 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.

In addition, the IAEA Secretariat's outreach capabilities are being further enhanced through, *inter alia*, the development of new online training material and a third volume of the *Handbook on Nuclear Law*, which will cover various areas of nuclear law beyond the regulatory matters covered in the previous two volumes.

### **Nuclear Law Institute**

The fifth session of the Nuclear Law Institute was organised by the IAEA Office of Legal Affairs in Baden, Austria, from 28 September to 9 October 2015. 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-three representatives from IAEA member states participated. Using modern teaching methods based on interaction and practice, all areas of nuclear law were comprehensively addressed.

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24. *Ibid.*, preambular paragraph (s).

25. *Ibid.*, operative paragraph 16.



## OECD Nuclear Energy Agency (NEA)

### **European Nuclear Energy Tribunal (ENET) Inaugural Session for the 9<sup>th</sup> mandate**

On 6 July 2015, the Inaugural Session of the 9<sup>th</sup> mandate of the ENET was held under NEA auspices. The Tribunal consists of seven independent judges appointed for five years by decision of the OECD Council and has jurisdiction over disputes between states parties to the Paris Convention on Nuclear Third Party Liability or the Brussels Convention Supplementary to the Paris Convention concerning the application or interpretation of these Conventions. The seven countries that nominated judges for the 9<sup>th</sup> term of office are Austria, Denmark, France, Greece, Ireland, Sweden and Switzerland. The mandate of the judges took effect on 1 January 2015. More information on the ENET is available at: [www.oecd-nea.org/law/european-nuclear-tribunal.html](http://www.oecd-nea.org/law/european-nuclear-tribunal.html).

### **New signatories to the extension of the Generation IV International Forum (GIF) Framework Agreement**

On 27 August and 15 September 2015, Switzerland and South Africa respectively signed the ten-year extension of the Framework Agreement for International Collaboration on Research and Development of Generation IV Nuclear Energy Systems, paving the way for its continued collaboration among participating countries in this important area of generation IV research and development. GIF is a co-operative international endeavour set up in 2005 to carry out the research and development needed to establish the feasibility and performance capabilities of the next generation of nuclear energy systems. More information on GIF is available at: [www.gen-4.org](http://www.gen-4.org).

### **Joint Declaration on the Security of Supply of Medical Radioisotopes**

Belgium has adhered to the Joint Declaration on the Security of Supply of Medical Radioisotopes,<sup>26</sup> bringing the number of adhering countries to 14. The Joint Declaration, which seeks to ensure the security of supply of the most widely used medical radioisotope, molybdenum-99 (Mo-99), remains open to adhesion by additional countries wishing to do so.

### **International Framework for Nuclear Energy Cooperation (IFNEC)**

Following the approval of the NEA Steering Committee on 23 April 2015, the NEA has accepted the invitation of the Executive Committee of IFNEC to become the Technical Secretariat for this initiative,<sup>27</sup> in a similar role as that the NEA has in relation to GIF and the Multinational Design Evaluation Programme (MDEP). IFNEC is a forum for co-operation among 33 participating countries to explore mutually beneficial approaches to ensure that the development of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation. More information on IFNEC is available at: [www.ifnec.org](http://www.ifnec.org).

### **15<sup>th</sup> session of the International School of Nuclear Law (ISNL)**

The 15<sup>th</sup> session of the ISNL was held from 24 August to 4 September 2015 in Montpellier, France, and was attended by 57 participants from 30 NEA member and non-member countries. This year's session brought together an exceptional group of

26. The declaration and the list of adhering countries is available at: [www.oecd-nea.org/med-radio/jointdeclaration.html](http://www.oecd-nea.org/med-radio/jointdeclaration.html).

27. Previously, the US Department of Energy performed the secretariat function for IFNEC.

graduate students and professionals from across the globe to learn more about the legal framework and major issues affecting the peaceful uses of nuclear energy, focusing on areas such as nuclear safety, environmental law, security, safeguards and liability. Organised by the NEA and the University of Montpellier with support from the International Atomic Energy Agency (IAEA), the ISNL has since 2001 attracted over 750 participants worldwide from an increasingly diverse range of countries, many of whom are now key experts in the nuclear law field. More information on the ISNL is available at: [www.oecd-nea.org/law/isnl/](http://www.oecd-nea.org/law/isnl/).

**2016 session of the International Nuclear Law Essentials (INLE)**

The next session of the INLE will take place on 15-19 February 2016 at the OECD Conference Centre in Paris, France. The five-day INLE course has been designed to provide participants with a comprehensive understanding of the various interrelated legal issues relating to the safe, efficient and secure use of nuclear energy. This intensive course has been designed to accommodate the needs and interests of lawyers working in either the public or the private sectors but will also be of interest to scientists, engineers, policymakers, managers and other professionals working in the nuclear field. More information on the course and how to apply is available at: [www.oecd-nea.org/law/inle/](http://www.oecd-nea.org/law/inle/).

## **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 is now available online at: [www.oecd-nea.org/law/multilateral-agreements](http://www.oecd-nea.org/law/multilateral-agreements).



## News briefs

### 10<sup>th</sup> European Nuclear Energy Forum Plenary Meeting, 26-27 May 2015, Prague

The European Nuclear Energy Forum (ENEF or Forum) held its 10<sup>th</sup> plenary meeting in Prague on 26-27 May 2015. It gathered more than 200 participants, coming from EU member states governments and administrations, national regulatory authorities, nuclear industry, EU institutions and non-governmental organisations. The participants in the Forum discussed the role of nuclear energy in the Energy Union and its contribution to the EU decarbonisation and security of supply objectives (first panel session), the role of the EU as a world leader in nuclear safety (second panel session), as well as the opportunities and perspectives of the decommissioning market in the EU (third panel session).

The next plenary ENEF meeting will be held in Bratislava in 2016.

Further information is available on the Europa Energy website: <https://ec.europa.eu/energy/en/events/2015-european-nuclear-energy-forum-enef-plenary-meeting>.

### Nuclear Safety in Europe, 3<sup>rd</sup> Regulatory Conference, 29-30 June 2015, Brussels

The 3<sup>rd</sup> Conference of the European Nuclear Safety Regulators Group (ENSREG) brought together around 300 participants, including national regulators, non-governmental organisations, nuclear operators, academics, as well as representatives from Argentina, China, South Korea and the United States, to discuss potential challenges faced by nuclear safety regulators in Europe and globally and to promote the continuous improvement of nuclear safety.

Key issues and challenges that emerged from the presentations given by invited speakers and the discussions with delegates covered:

- public engagement: the existence of a large variety of instruments regarding public participation was mentioned. In term of challenges, the importance of effective and efficient implementation of these instruments, including participation in decision-making regarding the long term operation of existing reactors, and the importance of providing comprehensive technical information that can be easily understood was highlighted.
- operation of nuclear power plants: the value of the European and international legal frameworks was recognised. In term of challenges, the interface with security issues and the balance between the best available and best applicable nuclear safety solutions were mentioned.
- new legislation: the challenge for member states' safety regulators of ensuring that the intentions of the amended Nuclear Safety Directive<sup>1</sup> are

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1. 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, *Official Journal of the European Union (OJ)* L 219 (25 July 2014), p. 42-52.

implemented and deliver real improvements in nuclear safety was stressed, as well as the challenge of optimising peer reviews and crosslinking them with reporting obligations.

- spent fuel, decommissioning and radioactive waste management: it was noted that legal provisions are now in place and that several good practices exist, but also that progress is still needed (no final repository for high level radioactive waste or spent fuel in operation). The challenges of the implementation of the legal provisions as well as remaining challenging technical and financial issues were also mentioned.
- improvements in emergency preparedness and response: while it was recognised that improvements in emergency preparedness and response had been made since the previous ENSREG Conference, concerns on whether enough had been done were also expressed.

The conference was transmitted live on the ENSREG website. The presentations and a report, as well as photos and the video recordings from the event are available on the ENSREG website: [www.ensreg.eu/ensreg-conferences](http://www.ensreg.eu/ensreg-conferences).

### **30<sup>th</sup> Plenary meeting of the European Nuclear Safety Regulators Group (ENSREG), 30 June and 1 July 2015, Brussels**

The main points discussed at the 30<sup>th</sup> Plenary meeting of ENSREG were as follows:

- the outcomes of the 3<sup>rd</sup> ENSREG Conference: while the high quality of the event and the increased engagement of civil society were acknowledged, the reduced participation, in particular from the industry, was noted.
- the 2017 topical peer review exercise under the amended Nuclear Safety Directive: among the three topics presented by Hans Wanner, chairman of the Western European Nuclear Regulators Association (WENRA), i.e. natural hazards, periodic safety reviews and ageing management, there was strong consensus within ENSREG to focus the 2017 exercise on ageing management. WENRA was invited to further develop its technical proposal for presentation at the next ENSREG meeting, while in parallel ENSREG would develop a proposal for the Topical Peer Review process.
- the ENSREG Work Programme starting in 2016, with the decision to redraft it to realign ENSREG activities with the European Commission's priority objectives in support of the implementation of the amended Nuclear Safety Directive, the Radioactive Waste and Spent Fuel Directive<sup>2</sup> and the Basic Safety Standards Directive.<sup>3</sup>
- the National Action Plan Peer Review Workshop, with the approval of the National Action Plan Peer Review Summary Report: in view of the delays in implementation of the identified safety improvements, ENSREG, upon the invitation of the European Commission, accepted to deliver a

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2. 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), p. 48-56.
  3. 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), p. 1-73.

statement on ENSREG's assessment of the implementation status in the autumn of 2015. Furthermore, ENSREG will prepare a proposal for the follow-up reporting and closure of the implementation actions.

- the preparation of ENSREG's twice-yearly report to the European Parliament and the Council of the European Union, in view of its presentation in the autumn of 2015.

In addition, ENSREG established an ad hoc task group to perform the peer review of the Armenian Stress Test report and received a detailed presentation from the IAEA on the Fukushima Daiichi Accident Comprehensive report.

The next ENSREG Plenary will take place on 24 November 2015 in Luxembourg.

Further information is available on the ENSREG website: [www.ensreg.eu/news](http://www.ensreg.eu/news).





## Recent publications

### ***Burges Salmon Guide to Nuclear Law – Second Edition (2015) edited by Ian Salter***

Following on from the First Edition, the Second Edition of the *Burges Salmon Guide to Nuclear Law* covers a significant number of new areas as well as providing an update on earlier topics to reflect international and United Kingdom (UK) nuclear law as it stood in March 2015.

The Second Edition of the *Burges Salmon Guide to Nuclear Law* is not intended to be an encyclopaedia of nuclear law in the UK but instead a collection of practical articles on topics of importance.

Recognising that much of the expertise in nuclear law in the UK resides with those in-house lawyers in key nuclear companies, the book is unique in combining the insights of in-house legal and technical practitioners in the UK nuclear industry, such as Roger Brunt and Peter Carter, with the experience of Burges Salmon's specialist nuclear lawyers.

The book begins with a summary of the rich history of the nuclear industry in the UK and the key developments that have led to the industry that we see today. Having set out the basic foundations of international and domestic nuclear law, the book then deals with a variety of overarching key principles including safety, security, safeguards and liability.

The book then examines in more detail some key operational areas in the UK such as licensing, decommissioning and long-term radioactive waste management before moving on to the UK's new build sector, covering topics including justification, consent, construction, electricity market reform, grid connection and environmental law.

In recognition of the global renaissance of nuclear new build, the book also examines the challenges facing countries embarking on the development of a nuclear programme for the first time. Topics covered in this part include applicable international legislation, key policy decisions, developing nuclear legislation and building nuclear regulatory capacity.

Finally the book covers a number of wider themes such as the operation of research reactors, the control of high activity sealed sources and the UK's current research into nuclear fusion.

The book was written by a number of specialist nuclear lawyers at the law firm of Burges Salmon, often in close partnership with leading UK industry experts. The editor, Ian Salter, is head of Nuclear Law at Burges Salmon and is one of the leading nuclear lawyers in the UK. Mr Salter has over 20 years' experience advising operators, regulators, government and contractors in both the UK and across the globe. Mr Salter is a Board Member of the International Nuclear Law Association and Chair of the Legal and Financial Affairs Working Group for the UK Nuclear Industry Association.



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## NEA PUBLICATIONS AND INFORMATION

### Printed material

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Feature articles in this issue include "Treaty implementation applied to conventions on nuclear safety" and "Crisis, criticism, change: Regulatory reform in the wake of nuclear accidents".