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Third Party Nuclear Liability: The Case of a Supplier in the United Kingdom

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Abstract

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With a return to nuclear new build expected in the UK, the clarification of the position of a Supplier and their potential to be liable for nuclear damage is of vital importance for a functioning nuclear supply chain. The research explores the nuclear liability legislation in the UK and identifies the gaps and limitations in existence. The latter problems pose a risk for the Suppliers to operators in the nuclear energy industry, and consequently some approaches that can mitigate those risks are advanced and assessed. The nuclear liability regime in the UK is largely based on international conventions and hence, the risks posed to the Supplier in the UK also exist for Suppliers in other countries. There are resource shortages already in the nuclear energy industry, and currently the Supplier to the nuclear industry is over exposed. This situation needs to

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be resolved and a new legal definition of nuclear damage enacted. Further, the level of liability exposure for a UK Supplier involved in a nuclear project outside the UK needs to be reviewed as there remains too much ambiguity regarding liability in an international nuclear law context.

Keywords nuclear liability, nuclear energy, third party, supplier, nuclear accident, nuclear damage

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The law surrounding third party nuclear liability is important to all parties in the nuclear supply chain whether they are providing decommissioning services, project management expertise or a new reactor. This paper examines third party nuclear liability, and in particular, in relation to a Supplier in the nuclear energy sector in the United Kingdom (UK). The term "Supplier" is used in this paper and, depending on the context, is intended to cover all parties in the supply chain providing services, equipment or technology (e.g. the EPC contractor, the reactor vender, the owner engineer, architect engineer, or the Parent Body Organisation responsible for decommissioning one the UK legacy nuclear installations)..

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1: Introduction

Nuclear power provides many economic and social benefits but it is not without its challenges. It has been recognised since the emergence of the nuclear industry that any nuclear operation carries with it: (1) large capital costs; (2) long term storage and disposal of waste issues; (3) potential nuclear proliferation issues; and (4) the potential for causing accidental nuclear damage that is widespread and catastrophic where no one company, including insurance companies, would have the financial capacity to underwrite the cost. It is the last risk that is examined in this paper and in particular the law surrounding third party nuclear liability.

The damage resulting from a nuclear incident "would not stop at political or geographical borders".[3] This has been demonstrated by a past nuclear incident, the Chernobyl disaster.[4] In recognition of the trans-boundary consequences, a "patchwork of diverse legal regimes"[5] on third party liability was established. These international conventions are applicable to all participants in the nuclear industry and third parties who could be affected by a nuclear incident. The national laws are shaped and influenced by these international conventions[6] and countries either implement legislation to comply with the regime contained in the international instruments; or where the national law allows, adopt the instruments as self-executing. The legislation in the UK is the Nuclear Installation Act 1965, which was enacted to incorporate the principles laid out in the Paris Convention into the UK's national law.

This paper will review the liability regime established by the international conventions and the Nuclear Installation Act 1965 from the perspective of the UK Supplier to both Operators in the UK and in foreign jurisdictions.[7]

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[3] OECD Nuclear Energy Agency (2004: 2): OECD NEA. 2004. Revised Nuclear Third Party Liability Conventions Improve Victims' Rights to Compensation, [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=NEA/COM(2004)1&docLanguage=En].

[4] This research predates the Fukushima incident in Japan in March 2011. In 1986 a nuclear disaster at Chernobyl resulted in widespread environmental and human health consequences (INES 7), and examples of other disasters are: a large off-site release at Kyshtym which resulted in evacuation of the local area (INES 6); the 1957 Windscale accident when radioactivity was released and restrictions placed on consuming food produced locally (INES 5); the core/reactor damage at Three Mile Island (INES 5); and the violation of safety procedure at Tokai Mura in Japan which resulted in two deaths (INES 4).

[5] This is explored in detail in: DG Tren, European Commission, 2005. TREN/CC/01-2005, Legal Study for the Accession of Euratom to the Paris Convention on Third Party Liability in the Field of Nuclear Energy. [Online: Accessed between December 01 2010 – February 28th 2011: from http://ec.europa.eu/energy/nuclear/studies/doc/2009_12_accession_euratom.pdf] This report highlights key discrepancies between the various conventions: "(i) the liability of some operators is unlimited, whereas others have a capped liability; (ii) the operators´ insurances differ both as regards their coverage and payable fees; and (iii) the obligation to compensate victims of a nuclear accident differs both as regards the damages covered and the payable amounts."

[6] Pelzer (2009:2): Pelzer, N. 2009. Nuclear New Build – New Nuclear Law. Nuclear Law Bulletin, 2009.

[7] Transportation is outside the scope of this paper.

2. The International Regime

It was clear from an early stage that the trans-boundary consequences of a nuclear incident could result in damages being paid from the host country to many countries. In recognition of this exposure to trans-boundary damages, the international conventions were drafted resulting in seven key principles in this area of nuclear law (for more detail on these seven principles, see Appendix A):

(1) strict liability of the Operator;
(2) channelization of liability to the Operator;
(3) the Operator's limitation of liability in time;
(4) the Operator's limitation of liability in amount;
(5) compulsory financial security;
(6) jurisdiction; and
(7) applicable law and non-discrimination of victims.[8]

This section covers the Paris Convention - which is the liability regime for the UK - together with a summary of the other main international conventions.[9]

2.1 Paris Convention[10]

The nuclear industries liability regime was founded in 1960 by the OECD's Paris Convention. It is a regional convention with all its fifteen contracting countries being Western European countries. The Paris Convention requires national legislation to be passed in order for it to be ratified and it is based on the aforementioned seven principles:

The Paris Convention sets out the factors that have to be present for the Operator to be liable. Article 3a) provides that the Operator of a nuclear installation shall be liable for nuclear damage upon proof that such damage was caused by a nuclear incident in such installation or involving nuclear substances coming from such installation. There are however some key *exceptions in the Paris Convention* that would result in the Operator being relieved from its liability. The first is nuclear damage caused by a nuclear incident directly due to an act of *armed conflict*,

[8] States with the largest nuclear capacity, such as the US, China, India or Japan, have not ratified any of the conventions currently in force.
[9] There are other liability conventions that will not be covered in this paper, these include: The Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material (1971); and The Brussels Convention on the Liability of Operators of Nuclear Ships (1962) - this latter Convention has not yet entered into force. However, a brief background on the Joint Protocol and the Convention on Supplementary Compensation are included in Appendix B.
[10] Paris Convention on Third Party Liability in the Field of Nuclear Energy (29 July 1960), as amended by the Additional Protocol of 28 January 1964, by the Protocol of 16 November 1982 and by the Protocol of 12 February 2004 (the final Protocol is not yet in force). The countries that have ratified the Paris Convention are: Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Turkey and United Kingdom. Austria and Luxembourg have signed the Paris Convention but not ratified it. Switzerland has ratified the Paris Convention but it does not take effect until the 2004 Protocol comes into force. It is open to all OECD member countries and non-OECD countries if all the contracting countries agree.

hostilities, civil war or insurrection.[11] This exoneration is on the basis that the nation would be responsible for the consequences of a civil war or other armed conflict. It should be noted that "this clause has been interpreted from time immemorial as not granting exemption for acts of *terrorism*, on whatever scale."[12] Following the 11 September attacks, the insurance industry requested Article 9 to be reviewed but in "the final analysis terrorism will remain covered by the conventions."[13] Another is where nuclear damage is caused by a nuclear incident directly due to a *grave natural disaster* of an exceptional character (unless national law provides otherwise), although the 2004 Paris Protocol removed "the exoneration for natural disasters."[14] The court may also relieve the Operator "wholly or partly" from paying compensation, in the event that the Operator can prove that nuclear damage was caused or contributed to by the person suffering damage whether from that person's "*gross negligence*…or from an act or omission of such person done with intent to cause damage".

Importantly for the Supplier, the Operator is not liable for nuclear damage (1) to the *installation itself* including a nuclear installation under construction, on the site where that installation is located. The Exposé des Motifs provides that the purpose of this exemption is to avoid the Operator's financial security, (normally insurance) "from being used principally to compensate damage to [the] installation to the detriment of third parties";[15] or (2) caused to any *property on the site* of the nuclear installation which is used in connection with the nuclear installation. The property would normally fall into two categories: (a) the Operator's property. The Operator would not have any action for compensation against itself for damage to its own property (e.g. a person cannot sue himself).[16] The Operator is also in a position insure loss of or damage to the nuclear installation since almost "all pools…see it as their task to provide cover for [nuclear] installations…[and] nuclear insurance responds to the full definition of a nuclear installation in the international liability conventions";[17] (b) the Supplier's property. Likewise, Suppliers "whose property is on the site of a nuclear installation are obliged to assume the risks of loss or damage thereto, and they too are able to include the cost of this risk in the price of their supply contracts."[18]

There are a number of *activities and materials that fall outside the scope of the Paris Convention*. The obvious gap is that the Paris Convention does not apply to either damage suffered or a nuclear incident in a non-convention

[11] Article 9 of the 2004 Protocol states: "The operator shall not be liable for nuclear damage caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war, or insurrection."
[12] Desart, R.D., (2006) "*The reform of the Paris Convention on Third Party Liability in the Field of Nuclear Energy and of the Brussels Supplementary Convention – An overview of the main features of the modernisation of the two Conventions*" from the Joint Report by the NEA and the IAEA on "*International Nuclear Law in the Post-Chernobyl Period*", p.231.
[13] Desart, R.D., supra note 22 at p.219.
[14] Rautenbach, J., Tonhauser, W., and Wetherall, A., (2006) "Overview *of the International Legal Frameworks Governing the Safe and Peaceful Uses of Nuclear Energy – Some Practical Steps*" from the Joint Report by the NEA and the IAEA on "International Nuclear Law in the Post-Chernobyl Period", p.26.
[15]Exposé des Motifs, paragraph 40: [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.nea.fr/law/nlparis_motif.html].
[16] Ibid.
[17] Tetley, M., and Reitsma, S. M. S., (2010) *Insurance of Nuclear Risks*, International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the ISNL, p. 394.
[18] Schwartz, J.A., supra note 13 at p. 61.

country. However, there are a number of other activities and materials that typically fall outside the Paris Convention. Firstly, activities or materials involving *low levels of radioactivity*. They include (1) "uranium mining or milling or the manufacture [storage] and processing of natural or depleted uranium" which do not present any criticality risk to the public at large;[19] (2) installations where small amounts of fissionable materials are found (including research reactors and particle accelerators);[20] or (3) radioisotopes used in medicine, education and industry which pose much less of a risk are covered by normal civil liability regimes; or (4) uranium salts that are "used incidentally in various industrial activities not related to the nuclear industry."[21] In addition to low levels of radioactivity, non-peaceful operations such as *military installations* or facilities are also outside the scope of the Paris Convention. It is also worth noting that the nuclear *fusion installations* do not currently benefit from the general principles of the international regime. As a result, any Operator of an installation resulting from the ITER projects in France is not covered by the international liability regime and they risk being exposed to unlimited nuclear liability that cannot be insured.[22] Pessimists might argue that there was a "lack of foresight in not covering fusion installations" in the 2004 Protocol.[23] The omission of fusion is particularly relevant to the Supplier in light of the progress of the developing ITER project.

The consequence of legal channelling of liability to the Operator is that victims of nuclear incident do not need to prove that the Operator is negligent or at fault. The victims simply need to prove a connection between the nuclear damage and the nuclear incident. This principle removes the need for Suppliers to take out nuclear liability insurance. However, the Paris Convention provides the Operator with a *right of recourse* in two limited situations. The first is where the Operator has a right of recourse if the damage caused by a nuclear incident results from an act or omission done with intent to cause damage, against the *individual acting or omitting to act with such intent*. The Exposé des Motifs make it clear that this right of recourse is limited to rights against individual persons who act or omit to act with intent to cause damage. The Paris Convention is not intended to provide a right of recourse against the employing company. The employer cannot therefore be held liable when its employee acts or omits to act with intent to cause damage. The second is where Operator has a right of recourse if and to the extent that it is so provided *expressly by contract*. The position set out in the Paris Convention is clear and any Supplier should be aware of the consequences. The basic position is that any Supplier would not be

[19] Schwartz, 2010: 309. Schwartz, J. A. 2010. Liability and Compensation for Third Party Damage resulting from a Nuclear Incident, In International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the ISNL. NEA: OECD, Paris, France.

[20] Exposé des Motifs, at paragraph 9. [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.nea.fr/law/nlparis_motif.html].

[21] Ibid.

[22] Grammatico-Vidal, 2009: 103. Grammatico-Vidal, L. 2009. The International Thermonuclear Experimental Reactor (ITER) International Organisation: Which Laws Apply to this International Nuclear Operator? Nuclear Law Bulletin, 2009, 2.

[23] Desart (2006: 239): Desart, R.D. 2006. The reform of the Paris Convention on Third Party Liability in the Field of Nuclear Energy and of the Brussels Supplementary Convention – An overview of the main features of the modernisation of the two Conventions - from the Joint Report by the NEA and the IAEA: International Nuclear Law in the Post-Chernobyl Period. NEA: OECD, Paris, France.

held liable to the Operator for damage resulting from the goods or services that it provides even if it is negligent or at fault. However, if there is a clause in the contract between the Supplier and the Operator allowing the Operator to have a right of recourse against the Supplier in the event the goods or services being faulty or where the Supplier was negligent, the Supplier would be exposed to claims from the Operator. It should be noted that this does not remove the Operator's liability to third parties; it purely provides the Operator with the right to pursue the Supplier for its negligent or faulty deliverables. The Supplier can therefore decide whether it agrees that the Operator has a right of recourse and if so can limit the extent of that right. For example, liability being limited the contact value with the costs above such limit being borne by the Operator.[24]

2.2 Paris/Brussels Protocols

The 2004 Protocol to Amend the Paris Convention and the 2004 Protocol to Amend the Brussels Supplementary Convention 2004 were prepared with the "aim to make more money available to compensate more victims for more damage than ever before".[25] The drivers for the 2004 Paris Protocol resulted from the type of losses claimed in relation to Chernobyl e.g. loss of turnover, crops, animals, fish, costs of reinstating the environment (i.e. cost of re-introducing a certain species of fish into a contaminated river), or loss of an economic interest in enjoying the environment (hotel owner losing income). These types of loss were not caught by the limited definition of "nuclear damage". Paris Convention representatives began their discussions to amend the Paris Convention in 1998 and concluded that "while the regime was viable and sound, it was in need of improvement"[26]. The contracting states to the Paris Convention agreed a series of amendments to the Paris Convention in 2004. Significantly, however, the 2004 Paris/Brussels Protocol has not yet entered into force; though many countries are underway with the process of enacting laws to reflect these protocols into national law.[27]

The most important changes to the Paris Convention include the position that the Operator and the state will have increased liability and *victims will have access to larger amounts of compensation*. The key enhancement under the 2004 Brussels Protocol is the substantial increase to the three tiers of compensation with the total compensation available equating to €1.5 billion. The 2004 Paris Protocol recognises that countries can have unlimited liability but the corresponding unlimited financial security will not be available. The Operator must then maintain financial security at a lower amount. Under the 2004 Paris Protocol the minimum requirement is €700 million. The second key change is

[24] NEA Secretariat (1994) *Potential Liability of Contractors Working on Nuclear Safety Improvement Projects in Central and Eastern Europe*, Nuclear Law Bulletin No. 53, p. 37.
[25] Schwartz, 2010: 332, supra note 9 at p. 332.
[26] OECD NEA, 2004: 2. OECD Nuclear Energy Agency. 2004. Revised Nuclear Third Party Liability Conventions Improve Victims' Rights to Compensation. [Online: Accessed between December 01 2010 – February 28th 2011: http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=NEA/COM(2004)1&docLanguage=En]
[27] The majority of the countries have enacted legislation into national law but Italy, UK, Spain and Belgium have not finalised the process yet.

the ability for *victims to claim compensation for a wider range of damage suffered*. The term nuclear damage[28] has been widened to cover (i) loss of life or personal injury, and (ii) loss of or damage to property and each of the following to the extent as determined by the law of the competent court:[29]

(iii) economic loss arising from (i) and (ii) above;
(iv) the costs of measures of reinstatement of impaired environment;
(v) loss of income deriving from a direct economic interest in any use or enjoyment of the environment;
(vi) the cost of preventative measures including loss or damage caused by such measures.

The geographical scope of the Paris Convention has also been widened so *more victims will be entitled to compensation*. The Paris Convention will apply to nuclear damage suffered in the territory of a contracting country. In addition, it will apply to nuclear damage suffered in non-convention countries where such country (i) is a party to the Vienna Convention (and both countries are parties to the Joint Protocol[30]); or (ii) does not have any nuclear installations; or (iii) has its own nuclear liability law which affords equivalent reciprocal benefits and is based on principles identical to those of the Paris Convention. This however leaves the risk that a claimant in a non-nuclear country can still make a tortious claim against an Operator in the non-nuclear country's courts. This problem is elevated if the Operator has a presence or assets in such non-nuclear country.

Finally, the limitation period has been extended to allow *victims to have more time in which to make their claims*. The revised period is now consistent with the Vienna Convention. In the event a victim wishes to take an action against the Operator, it would be barred from taking the action (a) in respect of loss of life and personal injury, if thirty years from the date of the nuclear incident has expired; and (b) in respect to other nuclear damage, if ten years from the date of the nuclear incident have expired. It is also worth noting that there is no "priority rule" (unlike the Vienna Convention where priority is given to personal injury claims) and it is the responsibility of the courts to determine and allocate the appropriate compensation to victims.

[28] "Nuclear damage" is uniformly defined and is the most far reaching change with a new definition contained in Article B.vii) of the 2004 Protocol. The definition of nuclear damage in the 2004 Paris Protocol is almost identical to the definition in the Vienna Convention.

[29] The introduction of the reference to "competent court" has been criticised. This restricts the type of damages to be compensable only if the law of the country permits it and Currie comments that it is "an illusory advance" since if the laws of the particular country "allows zero recovery, then the claim would be academic." See – Currie (2008: 111): Currie, D. 2008. The problems and Gaps in the Nuclear Liability Conventions and an Analysis of How an Actual Claim would be brought under the Current Existing Treaty Regime in the Event of a Nuclear Accident. Denver Journal of International Law and Policy, 35 (1), 85-127.

[30] Please see Appendix 2 for an overview of the Supplier's concerns with the Joint Protocol.

2.3 Brussels Convention

The main purpose of the Brussels Convention[31] is to increase the amount of cover in the event of a nuclear incident. It was adopted by the majority of the Paris Convention states in 1963. The Brussels Convention operates alongside the Paris Convention by making additional public funds available to compensate victims of a nuclear incident where the amounts claimed exceed the Operator's liability under the Paris Convention. The Paris and Brussels Conventions set out a three tier structure for liability limits: *tier one* – the Operator would be liable to pay compensation which is covered by insurance or other financial security; *tier two* - compensation would be paid from the installation country's public funds; and *tier three* – compensation from the public funds jointly contributed by all parties to the Brussels Convention. In the event the public funds are exhausted, costs that exceed these limits, in theory, lie where they fall.[32]

2.4 Vienna Convention

The IAEA's Vienna Convention[33] is an alternative to the Paris/Brussels Conventions. The UK is not a party to the Vienna Convention. The parties to the Vienna Convention are predominately from Eastern Europe and Latin America. The Vienna and Paris Conventions are similar in scope and similar principles[34] but these principles are "moulded in different liability rules (differences in liability amounts, membership, territorial scope, rules on conflict of jurisdiction, settlement of disputes and subrogation, etc.)".[35] One of the criticisms of the Vienna Convention relates to the US$5m minimum limitation on the Operator's liability. The US$ referred to in this Convention is however a unit of account equivalent to the value of the US$ in terms of gold on 29 April 1963 - US$35 per one troy ounce of fine gold. The true amount is now a lot higher and based on the

[31] The full title is: Convention of 31 January 1963 Supplementary to the Paris Convention of 29 July 1960, as amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982. It entered into force in 1974 and the following countries are a party to the Brussels Convention: Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Slovenia, Spain, Sweden and the United Kingdom. Austria, Luxembourg and Switzerland have signed it but not in force.

[32] Pelzer (2010: 368): Pelzer, N. 2010. "Main Features of the Revised International Regime Governing Nuclear Liability – Progress and Standstill" International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the ISNL. NEA: OECD, Paris, France.

[33] The full title is: Vienna Convention on Civil Liability for Nuclear Damage (21 May 1963). Vienna Convention Countries are Argentina, Armenia, Belarus, Bolivia, Bosnia and Herzegovina, Brazil, Bulgaria, Cameroon, Chile, Croatia, Cuba, Czech Republic, Egypt, Estonia, Hungary, Latvia, Lebanon, Lithuania, Mexico, Montenegro, Niger, Nigeria, Peru, Philippines, Poland, Republic of Moldova, Romania, Russian Federation, Saint Vincent & the Grenadines, Senegal, Serbia, Slovak Republic, The former Yugoslav Republic of Macedonia, Trinidad and Tobago, Ukraine and Uruguay.

[34] The Vienna Convention refers to absolute liability in paragraph IV (1). The term "strict liability" may have been more appropriate, since it simply refers to liability without fault and the term "absolute liability" is normally used when no causes of exoneration can be called upon (i.e. for liability to be absolute there must not be any exceptions). Both the Paris and Vienna Convention include some cases of exoneration from the Operator's liability, such as damage caused by armed conflict, by acts/omissions of an individual done with intent to cause damage.

[35] DG Tren, European Commission, 2005. Supra note 3.

gold price in September 2010, this equates approximately to US$180m.[36] The Vienna Convention was amended in 1997 by the 1997 Protocol to amend the Vienna Convention, which resulted in similar changes as set out in the 2004 Paris Convention.

2.5 Summary of international regime

The international conventions offer many benefits. However, the victim may see the international regime as being disadvantageous. For example, the limitation of liability in amount placed on the Operator as opposed to unlimited liability and the ability to sue third parties. It is clear that the international regime has not created legal unity but has created a patchwork pattern of diverse legal regimes. The different amounts of compensation under each convention are set out below:

Table 21 Amounts of compensation available under the different conventions

PARIS AND BRUSSELS CONVENTIONS			
	Paris Convention	**Brussels Supplementary Convention**	
	Tier 1: Operator (financial security)	**Tier 2: State** (public funds)	**Tier 3: Members' Contribution** (public funds)
1960 Paris Convention (total compensation: 300m SDR)[37]	5m SDR (min.) 15m SDR (max.)	175m SDR	125m SDR[38]
2004 Paris and Brussels Protocol[39] (total compensation: €1.5b)	€700m (min.)	€500m	€300m

VIENNA CONVENTION		
1963 Vienna Convention	US$5m (min.) (*the 2010 value = US$177.9m*)	No maximum
1997 Vienna Convention[40]	300m SDR[41] (min.)	No maximum[42]

1997 CONVENTION ON SUPPLEMENTARY COMPENSATION	
Tier 1: Operator and/or State (financial security)	**Tier 2: Members' Contributions** (public funds)
300m SDR (min.)	300m SDR[43]

[36] Schwartz, 2010: 320. Supra note 9.
[37] In October 2010, SDR 300m amounted to approximately £300m or €340m or US$475m. SDR means Special Drawing Rights which is based on a basket of currencies, as defined by the International Monetary Fund, consisting of euro, Japanese yen, pound sterling and U.S. dollar. The basket of currencies is reviewed every five years. The US dollar equivalent of SDR is posted daily on the IMF website: [Online: Accessed between December 01 2010 – February 28th 2011: http://www.imf.org/external/np/fin/data/rms_sdrv.aspx]
[38] In October 2010, SDR 125m amounted to approximately £125m, €142m or US$200m. This final tier is apportioned between the member states in accordance with a formula depending on GNP and the nuclear capacity in each member state.
[39] There are minimum limits for transport (€80m) and low risk installations (€70m).
[40] There is a fifteen year transition period, from 1997, for the contacting countries to introduce these liability limits into their laws.
[41] (1) The Operator has the option to only provide 150m SDR but the State is then obligated to provide the additional amount; (2) similar to the Paris Convention, there is a lower minimum 5m SDR for low risk activities such as transport and research reactors but if liability exceeds this sum, the State's public funds to cover any liability up to 300m SDR.
[42] If a country has unlimited liability, the financial security up to 300m SDR must be available.
[43] 300m SDR is an expected amount.

3. The Position in the United Kingdom

3.1 The Nuclear Installations Act 1965 (as amended)

The national law in the UK for nuclear liability can be found in the Nuclear Installations Act 1965 as amended by the Nuclear Installations Act 1969 ("the Act").[44] The Act reflects the regime in the Paris Convention and the Brussels Convention. Under the Act, the Operator[45] is liable for the consequences of a nuclear incident[46] on the site and during transport for which it holds a nuclear site licence.

Principle 1: Strict Liability of the Operator **-** section 7(1) of the Act imposes a strict statutory duty on the Operator. [47] This section reflects the principles of Article 3 of the Paris Convention but it does contain some differences. The Operator can only be liable in accordance with this section and "if a nuclear incident occurs in some other circumstances, the [Operator] will not be responsible for compensating the injured party".[48] Section 7(1) enacts:

> "…where a nuclear site licence has been granted in respect of any site, it shall be the duty of the licensee to secure that:
> (a) no such occurrence involving nuclear matter as mentioned in subsection (2) of this section causes injury to any person or damage to any property of any person other than the licensee, being injury or damage arising out of or resulting from the radioactive properties, or a combination of those and any toxic, explosive or other hazardous properties, of that nuclear matter; and
> (b) no ionising radiations emitted during the period of the licensee's responsibility:
> (i) from anything caused or suffered by the licensee to be on the site which is not nuclear matter; or
> (ii) from any waste discharged (in whatever form) on or from the site,
> cause injury to any person or damage to any property of any person other than the licensee."

This section needs to be broken down into separate parts to understand the implications. The words "*where a nuclear site licence has been granted*" make

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[44] The 1965 Act was enacted to consolidate the Nuclear Installations (Licensing and Insurance) Act 1959 and the Nuclear Installations (Amendment) Act 1965. The 1965 Act and 1969 Act both apply to the whole of the UK with some minor differences for Operators in Scotland and certain powers set out for Scottish Ministers.

[45] The term "the Operator" is not used in the Acts but this term has been used for this paper to maintain consistency with the section on the international regime. The Acts refer to a "licensee" which is defined as "means a person to whom a nuclear site licence has been granted, whether or not that licence remains in force".

[46] The 1965 Act does not define the term "nuclear incident" but sets out that the Operator will be liable for a breach of the section 7 duty.

[47] Lord Justice Chadwick made it clear in Blue Circle Industries plc v. Ministry of Defence [1999] 2 Ch 289 that the Act was a clear example of legislation which contains strict liability. In Magnohard v UKAEA [2004] Counsel for the UKAEA stated that "Act 1965 imposed strict civil liability for breach of a specified duty.

[48] Temple, et al. (2006: 449): Temple, R., Penny, C., and Sullivan, M. A. 2006. Liability for Nuclear Incidents: should the UK now follow the US approach? Journal of Environmental Law, 18 (3), 443-457.

it clear that liability only arises in relation to a nuclear licensed site. The concept of a nuclear licence does not appear in the Paris Convention. Section 1(1) of the Act sets out that a nuclear site licence needs to be granted to an Operator before it constructs or operates a nuclear reactor or installation for the production or use of atomic energy, or any ancillary process which involves the emission of ionising radiations, the storage, processing or disposal of nuclear fuel. However, the inclusion of these words in section 7 suggests that the Operator does not have any duty under section 7 unless a nuclear site licence has been issued. This suggests that where the Operator, for whatever reason, is not issued with a licence or there is a defect in the licence or fails to renew its licence, then the Operator would not have a duty under the Act. The next key part of this section is the "*duty*" placed on the Operator to secure that no injury or damage is caused. This is clearly different from the position in the Paris Convention which places a liability on the Operator for any injury or damage. However, despite the different approach, the outcome is the same in that the Operator is strictly liable for nuclear damage. The claimant must therefore prove injury to persons or damage to property to establish a breach by the Operator of its statutory duty. This section creates a new concept of the "*licensee*" whereas the equivalent term in the Paris Convention is the Operator. Section 3(1) sets out that a nuclear site licence shall not be granted to any person other than a body corporate and shall not be transferable.[49] Section 4 allows the Health and Safety Executive to place conditions on the licensee as it sees fit but generally in relation to safety and security.

Subsection 7(1)(a) imposes a strict liability on the Operator in the event of an *occurrence*[50] *involving nuclear matter*[51] from its licensed site where such nuclear matter causes injury or damage. The section largely reflects the definition of "nuclear incident" in the Paris Convention and strict liability means that there is no need to prove negligence. The word "*occurrence*" is given more meaning in section 7(2) which sets out that it needs (a) to involve nuclear matter; (b) whilst on the nuclear licensed site; and (c) occur during the period of the Operator's responsibility. Section 7(2) goes on to outline other occurrences elsewhere than on the licensed site that involves nuclear matter that is not "excepted matter".[52] There is no liability under the Act for carriage of excepted

[49] The fact that the licence cannot be transferred is important in itself particular in relation to the way the UK's Nuclear Decommissioning Authority has structured the various decommissioning contracts which have been moved from the public to private sector following the successful US decommissioning programme.

[50] The term "occurrence" is defined in the Act (section 26) but only in the context of sections 16(1) and (1A), 17(3) and 18 of the Act and not in relation to section 7. The court in Magnohard v UKAEA [2004] have however held that the term should be given in ordinary Oxford English Dictionary meaning as "something that occurs, happens, or takes place; an event, incident."

[51] Nuclear matter is defined under section 27(1) as: "(a) any fissile material in the form of uranium metal, alloy or chemical compound (including natural uranium), or of plutonium metal, alloy or chemical compound, and any other fissile material which may be prescribed; and (b) any radioactive material produced in, or made radioactive by exposure to the radiation incidental to, the process of producing or utilising any such fissile material as aforesaid;"

[52] "Excepted matter" means nuclear matter consisting only of one or more of the following, that is to say: (a) isotopes prepared for use for industrial, commercial, agricultural, medical scientific or educational purposes; (b) natural uranium; (c) any uranium of which isotope 235 forms not more than 0.72 per cent.; (d) nuclear matter of such other description, if any, in such circumstances as

matter. Subsection 7(1)(b) refers to "*no ionising radiations emitted"* which reflects an equivalent section from the Nuclear Installations (Licensing and Insurance) Act 1959. Unlike section 7(1)(a), it relates to an "emission" rather than an "occurrence". The Operator is strictly liable under section 7(1)(b)(ii) whenever waste is discharged from the site even if it was negligently discharged by a third party. The Operator's liability under section 7(1)(b)(i) appears to be slightly different. The presence on the site of the emitting ionising radiations must have been "caused or suffered" by the Operator. In the event that the Operator (or a party working under its control) did not bring a radioactive source onto the site and the Operator was unaware of its presence, the Operator would not be liable for the damage caused by the radioactive source. However, the Operator would be strictly liable for the emission taking place on the site once it is aware of the presence of the ionising radiations.[53]

The reference to "*injury to any person*" is common to both subsections. Once the claimant has proved that he or she has been injured, they would be able to claim the usual heads of loss such as loss of earnings, pain and suffering, loss of use of limbs etc. In *Merlin*[54] the claimants tried to use the statutory tort under the Act to claim for increased risk of personal injury to their children (in addition to a claim for property damage) as a result of exposure to alpha-emitting radio-nuclides from nuclear matter being discharged into the Irish Sea. It is clear from *Merlin* that for compensation to be payable under the Act, the injury needs to be "proved personal injury [and] not the risk of future personal injury". Gatehouse J stated that the "presence of alpha-emitting radio-nuclides in the human airways or digestive tracts or even in the bloodstream merely increases the risk of cancer to which everyone is exposed from both natural and artificial radioactive sources. They do not per se amount to injury." Therefore, risk of personal injury does not amount to a breach of the section 7 duty under the Act. Likewise, it is also clear that stress and anxiety do not amount to injury.[55]

Similarly, the other key theme is "*damage to any property*". There have been a number of cases where the judge had held that the Operator breached its duty imposed under section 7(1). In *Blue Circle,*[56] the Court of Appeal concluded that the contamination of the marshland (from overflowing ponds containing plutonium from the neighbouring AWE site) was an "occurrence involving nuclear matter" within section 7(1)(a). It was held that there had been damage to property by radioactive material and the consequences were economic. The

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may be prescribed (or, for the purposes of the application of this Act to a relevant foreign operator, as may be excluded from the operation of the relevant international agreement by the relevant foreign law).

[53] Street, and Frame (1966: 53): Street, H and Frame, F. R. 1966. The Law Relating to Nuclear Energy, Butterworths: London, UK.

[54] Merlin and another v. British Nuclear Fuels plc [1990] 2 QB 557. Interestingly, the High Court held that property damage under the 1965 is restricted to "physical damage to tangible property" and prevented the recovery of pure economic loss. The court referred to the definition of "nuclear damage" in the Vienna Convention to help understand the meaning of the term. This was unusual because the UK is not a party to the Vienna Convention.

[55] Rorrison v West Lothian Council, 2000 S.C.L.R. 245; Hansard, 11 February 1965, column 668; Merlin v British Nuclear Fuels plc [1990] 2 Q.B. 557, at pages 570-571.

[56] Blue Circle Industries plc v. Ministry of Defence [1999] 2 Ch 289.

property was damaged from the plutonium intermingling with the topsoil. It was clear that the estate was less saleable and less valuable at least until the contaminated soil was excavated. The Court also considered the possibility for recovering consequential loss resulting from the breach of the section 7 duty. The court established that the damage had been caused by a breach of section 7 and *Blue Circle* was entitled to compensation under section 12(1). The award of damages followed the usual tort principles that *Blue Circle* was to be put in the same position as it would have been in if it had not sustained the injury.[57] *Blue Circle* was entitled to recover all losses caused by the damage which were reasonably foreseeable and not too remote. In *Magnohard*[58] the claimants alleged that their property had been damaged by radioactive particles found on their land near the UKAEA nuclear power station at Dounreay. Similar to *Blue Circle*, the radioactive particles had been intermingled with sand. The court held that there had been damage to the claimant's property. *Magnohard* confirmed the definition of property damage in *Blue Circle*.

The use of the words "*other than the licensee*" makes it clear the duty does not apply to the nuclear installation itself and, because any third party property on the site is deemed to be the property of the Operator, the duty does not extend to the Supplier's property. Section 7(3)(b)(i) and (ii) set out that it does not make any difference whether the property is on the site for construction, operation or decommissioning of the nuclear installation.

Principle 2: Channelling Liability to the Operator - under section 12 of the Act, the Operator is liable to pay compensation, where any injury or damage has been caused by breach of the section 7 duty. Section 12(1)(b) provides that "no other liability shall be incurred by any person in respect of that injury or damage". The effect of these words is to channel such liability exclusively to the Operator. It is important to note, from a Supplier's perspective, that there is no section 7 duty under the Act where the Operator's property is damaged. This importance is emphasised by section 7(3) which results in the Supplier's property, when on the licensed site, being deemed to be the Operator's property. Section 12(2) restricts the ability for a claimant from bringing common law or tortious actions. This appears to provide some additional protection for a Supplier. Say, for example, the Supplier negligently caused a nuclear incident which in turn caused a fire at the nearby administration offices (i.e. non-nuclear damage), compensation for any injury or damage caused by the fire would be recoverable under the Act. However, section 12(2) is subject to section 12(3). This section provides that where any injury or damage is caused (a) partly in breach of the above duty and (b) partly by an emission of ionising radiations which does not amount to a breach of the duty under the Act, this shall not affect any liability of any person in respect of that emission. This section does create an opportunity for possible claims both under the Act and in tort.

Principle 3: Compulsory Financial Security **-** it is important that the Operators have sufficient funds to cover any liability they may have to third

[57] Livingston v Rawyards Coal Co [1880] 5 App Cas 25 at 39.
[58] Magnohard Limited v. UKAEA [2004] Env LR 19.

parties under the Act. Section 19 sets out that the Operators must have provision (either by insurance or by some other means) for sufficient funds to be available at all times to ensure that any claims which have been established against the Operator by virtue of section 7 are satisfied. There are more than thirty civil nuclear sites in the UK. The majority of the Operators satisfy their obligations under section 19 by obtaining insurance from the Nuclear Risk Insurers Limited ("NRIL")[59] on an annual aggregate basis.

Principle 4: The Operator's Limitation of Liability in Time **-** it is clear that some injuries (e.g. forms of cancer or genetic damage in future generation) may not manifest themselves for many years from the exposure to radioactive material. Section 16(3) means that any claims outside a ten-year period but less than thirty-years from the nuclear incident, should be made against the Government. This appears to have been a balance between the insurers and Operators on the one hand and the duration for injuries to manifest themselves on the other.[60] Any claim will be statute barred if made at any time after the expiration of thirty-years from the relevant date.[61] This thirty-year limitation period overrides any other limitation periods implied at law (e.g. the Limitation Act 1980) which for tort generally run from the date when the damage occurred or when the claimant had knowledge of the harm. It is questionable whether this thirty-year period is sufficient, particularly as genetic damage may be passed to future generation and contamination may last for several hundred years. This suggests a limitation period which runs from the date the injury or damage manifests itself.

Principle 5: The Operator's Limitation of Liability in Amount **-** the Operator's limitation on its liability is contained in section 16 of the Act. This section sets out the Operator's maximum liability per occurrence is £140 million and £10 million for certain prescribed sites. This sum has been in place since 1994.[62] The amounts of maximum liability have, from a historical context, been fixed at amounts equal to the maximum level of the insurance available to the Operators.[63] This is likely to be increased to approximately £600m[64] with the amendments implementing the 2004 Paris/Brussels Protocol. This is expected to be implemented in the UK during 2012. Any claims for amounts exceeding the Operators maximum liability would need to be made against the Government and paid from public funds. The Government is currently required to meet claims up to SDR175m and for claims between SDR175m and SDR300m the

[59] NRIL represents about twenty conventional insurers who pool their capacity to cover nuclear risks.
[60] Hansard HL (1958) vol 213 cc331 – 379 which provides the content of the discussions at the House of Lords (regarding various time periods and even an unlimited period) in arriving at the thirty year period.
[61] The relevant date means (i) the date of the occurrence which gave rise to the claim or, (ii) where that occurrence was a continuing one, or was one of a succession of occurrences all caused by a particular event on a particular site, the date of the last event in the course of that occurrence or succession of occurrences to which the claim relates.
[62] See the Nuclear Installations (Increase to Operator's Limits of Liability) Order 1994.
[63] Temple, et al. (2006: 450). Supra note 37.
[64] Based on the requirement in the 2004 Paris Protocol for €700m to be the financial limited and using an exchange rate of £1.00 = €1.17452.

compensation would be recovered from a pool contributed to by the Brussels Convention signatory states. A disadvantage for victims with this principle is that third parties (e.g. Suppliers and regulators), who may normally be liable under common law principles, are excluded from liability even when available funds have been exhausted.[65]

Principle 6: Jurisdiction over claims and the enforcement of judgements in foreign courts are dealt with under section 17, which ensures that the UK approach is consistent with the Paris Convention. Section 17(1), provides that no court in the UK has jurisdiction to determine any claim that falls to be determined by a court of some other relevant territory. This reflects the general position in the Paris Convention that jurisdiction over claims is with the courts of the contracting country where the nuclear incident occurred. Section 17(4) deals with the issue of enforcing judgements in the UK that have been made in the courts of another Paris Convention territory.

Principle 7: Applicable Law and Non-Discrimination of Victims **-** the Act is consistent with the Paris Convention in that it (a) is the national law regarding nuclear liability that applies to the competent courts in the UK and (b) does not discriminate on grounds of nationality, domicile and residence.

3.2 Implementation of the changes to the Paris/Brussels Conventions

It is likely the amendments will be enacted in 2012.[66] These changes will be made to implement the amendments to the Paris and Brussels Convention. The UK Government signed the 2004 Paris Protocol which results in some significant changes to the nuclear third party liability regime. The Department of Energy and Climate Change ("DECC") issued working papers entitled "Implementation of changes to the Paris and Brussels Conventions on nuclear third party liability" in August 2010.[67] The paper details the UK Government's intention to amend the Act by secondary legislation under section 76 of the Energy Act 2004.[68]

The first working paper summarises the approach DECC intends to adopt for *implementing the new categories of damage into the 1965 Act*. As far as

[65] INLEX, at p.15. Civil Liability for Nuclear Damage : Advantages and Disadvantages of Joining the International Nuclear Liability Regime. [Online: Accessed between December 01 2010 – February 28th 2011: http://ola.iaea.org/OLA/documents/liability%20regime.pdf].

[66] NIA, 2010. From the meeting on 24 November 2010 entitled NIA's Limitation of Liability Sub-Group with DECC's Nuclear Policy Unit on 24 November 2010.

[67] DECC, 2010. See [Online: Accessed between December 01 2010 – February 28th 2011: http://www.decc.gov.uk/assets/decc/consultations/paris-brussels-convention-changes/1182-cons-implement-changes-paris-brussels.pdf].

[68] Interestingly section 76 also makes provision for the UK to sign the Joint Protocol and states: "Section 76 also makes provision for ratification of the "Joint Protocol" which allows parties to the two international Conventions (Paris and Vienna) governing liability for civil nuclear accidents to extend reciprocal benefits to each other. The ratification of the Joint Protocol will enable UK participation for the first time in a global compensation regime between the largely Western European parties to the Paris Convention and the parties to the Vienna Convention, which include Former Soviet Union and Eastern European countries and South American countries."

possible, DECC intend to use the wording and definitions in the 2004 Paris Protocol. In general, the new categories of damage will be implemented by amending the duties under sections 7, 8, 9 and 10 of the Act together with section 12. The first category of *economic loss arising from property damage or personal injury* is intended to provide a right to compensation for economic loss that result from property damage or personal injury[69] and not "pure economic loss". This is already covered by the Act. Accordingly, no amendments to the Act are required. However, the statutory duty does not appear to allow claimants to be compensated if they are prevented from accessing their business premises because the premises are located in a contaminated area. The next new category is the *costs of measures of reinstatement of a significantly impaired environment*, which is currently only recoverable if such costs are part of a claim for property damage or personal injury. This working paper sets out that the Government intend to modify the section 7 duty so that certain occurrences of nuclear matter or emissions of radiation do not cause significant impairment to the environment. Compensation would be available where there is a significant impairment of the environment. This does raise the obvious question regarding what is "significant impairment"? This is recognised by DECC and the preference set out in the paper is for the term to remain undefined and allow the courts to consider the meaning of a "significant impairment" on a case-by-case basis. DECC will be providing guidance to highlight relevant factors that the court should consider when evaluating whether there has been a "significant impairment". This category will also have implications for many other associated laws and some standardising between the different arrangements (e.g. consistent definition of "environment") is likely to be required. There is likely to be further review surrounding the meaning of "measures of reinstatement".[70] The working paper sets out that a requirement for reasonableness (e.g. appropriate and proportionate in the circumstances) will be included in the amendments. DECC may provide supporting non-statutory guidance on this aspect.

Another category that has received a lot of attention is *loss of income deriving from a direct*[71] *economic interest of the environment*. This category of economic loss is not connected to any property damage or personal injury and is

[69] The DECC paper also questioned whether the Operator or the Government should meet claims for certain categories of damage before others. This does raise a number of questions in relation to how claims are prioritised and which claims should be paid first. What if the damage/injury does not manifest itself for many years, does this put a hold on all other compensation payments? Would this result in victims not being compensated for certain losses because they fall into the wrong category? Does it mean there will be lot of sub-limits under the overall limit on liability? - NIA, 2010 (supra note 55): outlined that DECC decided against the idea of ranking claims.

[70] NIA, 2010. Supra note 55. Further, Working Paper 1 also provides that DECC consider such measures could potentially cover clean-up costs (such as the costs of removing and disposing of contaminated material), the cost of implementing shielding options (such as dilution or using shielding material) as well as restorative or replacement actions (such as replacing top-soil or organisms). DECC continue to outline that they consider reinstatement measures as covering assessment or monitoring of the environment in circumstances where it is sufficiently closely connected to possible reinstatement action.

[71] This requirement that the economic interest to be "direct" is not contained in the Vienna Convention or the CSC.

sometimes labelled "pure economic loss".[72] The example cited is where fish in the sea are contaminated by radiation and the fisherman is no longer able to sell his catch.[73] The fisherman could not normally recover the loss because he did not own the fish or the sea. The word "direct" only results in compensation being awarded for loss that is not too remote from the use of the environment. The fisherman is likely to have a "direct economic interest" in the environment (e.g. the contaminated fish and sea). However, as Emmerechts[74] indicates, the retailer who sells the fish and who loses business will not receive compensation because the loss is too remote in the chain of causation (i.e. the retailer would have difficulty proving that it has a "direct economic interest" in the environment). The duty is likely to be extended so certain occurrences of nuclear matter or emissions of radiation do not cause significant impairment to the environment. Although this category of damage presents difficulties for insurers, it is narrowly drawn. It is only the loss of income; from a "direct" economic interest resulting from a significant impairment[75] of the environment that is subject to compensation. There is no compensation if someone merely has rights of enjoyment of the environment.[76] The last new category is the *costs of preventive measures* in the event of a nuclear incident, or a serious threat of one.[77] This is intended to allow the costs of these preventive measures to be recovered from the Operator. However, whether public authorities such as the police, NHS and fire brigade would claim compensation, is debatable. There is likely to be (i) a new duty on Operators to secure that no event will arise which creates a grave and imminent threat of a breach of the Operators' other statutory duties; and (ii) an entitlement to compensation where the Operator has breached its statutory duty and claimants have incurred costs from reasonable preventive measures.[78] DECC also recognise the possibility that this category would cover further loss or damage caused by such preventive measures, which could be suffered by someone different from the person taking the preventive measures. For example, where a public authority evacuates someone and that person incurs additional accommodation costs. The person would then be entitled to make a claim directly against the Operator.

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[72] Emmerechts (2010: 148): Emmerechts, S. 2010. Environmental Protection under Nuclear Law: Still a Long Way to Go. International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the ISNL. NEA: OECD, Paris, France.

[73] There are numerous other examples such as: lost income for the outdoor activity instructors in the tourist industry or the inability for dairy farmers to sell milk or farmers unable to sell livestock or crops.

[74] Emmerechts (2010: 148). Supra note 61.

[75] DECC do not intend to define terms such as "significant impairment", "environment" or "direct economic interest". The preference is to leave it to the competent courts who are accustomed to evaluating these issues.

[76] Desart (2006: 15). Supra note 13.

[77] The Working Paper highlights a range of actions that could be taken by public authorities (such as the polices, NHS, government departments, fire brigade etc.) including: securing the area affected, monitoring radiation, evacuating the local population and providing alternative accommodation, decontamination activities, distributing iodine tablets and taking measures to prevent the consumption of contaminated food. In addition, private individuals and organisations could take actions such as leaving the affected area on their own initiative and finding alternative accommodation, evacuating animals, taking iodine tablets and seeking hospital treatment.

[78] This would include where such preventive measures amount to mitigation against injury or damage under one of the other categories of nuclear damage.

The second working paper entitled, *availability of insurance to cover the new types of damage* sets out the arrangements for insurance or other financial security that will need to be maintained for increased liability and preferably longer durations and a wider range of damages in an increased number of countries. This working paper indicates that NRIL[79] could provide insurance to cover the majority of the new categories of damage. However, at present there are gaps and insurance is not currently available to cover all categories – particularly in connection with the cost of reinstating an impaired environment; the extended limitation period for personal injury claims; and gradual occurring releases of radiation that occur in the normal course of the Operator's business.[80] Table 2 is based on the table in the working paper (with an additional available insurance column):[81]

Table 2: Implementation of changes to Paris/Brussels regime and available insurance

Nuclear Damage Category	Current as in the Nuclear Installations Act 1965	Amended Paris/Brussels Conventions	Insurance Available?
Financial limits	• £140m (standard site) • £10m (for low risk "prescribed" sites)[82]	• Minimum €700m (standard site) • Minimum €70m (low risk installations) [83]	Insurable on an annual aggregate basis.
Category of damage	• Property damage • Personal injury/death for the first 10 years	Loss of or damage to property	Insurable
		Personal injury/death up to 30 years	Insurance up to ten years
		Economic loss arising from property damage or personal injury	Insurable for direct and quantifiable damage[84]
		Cost of measures of reinstatement of impaired environment	Very limited insurance available[85]
		Loss of income deriving from a direct economic interest in any use or enjoyment of the environment	Only insurable to the value of a direct and protected economic interest in the environment[86]
		The cost of preventative measures	Insurable only for the direct and quantifiable damage[87]
Time limits	30 years for all claims. Government covers claims made 10 and 30 years after an event	• Limitation period for personal injury/loss of life will be 30 years. • Limitation period for all other types of claims remain at 10 years	All insurance up to a maximum of ten years
Geographical scope	UK and other Paris/Brussels signatory states	• UK and Paris/Brussels states • Non-nuclear states[88] • Vienna Convention countries who have ratified the Joint Protocol[89]	Limited insurance – partly due to insurer's lack of certainty about the competent courts of non-convention countries.

[79] This includes other insurers/competitors such as EMANI, ELINI and NEIL.
[80] The DECC Working Paper state €700m is available for "any confirmed sudden and accidental release of radiation"
[81] The final column was not in the DECC Working Paper but many of the points in the final column have been taken from the article by Tetley (2006: 27): Tetley, M. 2006. Revised Paris and Vienna Nuclear Liability Conventions – Challenges for Nuclear Insurers. Nuclear Law Bulletin, 77 (1).
[82] Accidents in transit £140m from standard sites; and £10m from prescribes sites
[83] Minimum €80m for low risk transit
[84] Tetley (2006: 38). Supra note 70.
[85] The DECC Working Paper 2 states this insurance will not be available outside the UK. However, see the articles by Tetley and Reitsma (2010: 402): Tetley, M., and Reitsma, S. M. S.. 2010. Insurance of Nuclear Risks, International Nuclear Law: History, Evolution and Outlook, 10th Anniversary of the ISNL. NEA: OECD, Paris, France. and Tetley (2006: 38). Supra note 70., which make it clear that almost all forms of environmental liability are currently uninsurable.
[86] Tetley (2006: 38). Supra note 70.
[87] Ibid.
[88] For example, Ireland, Luxembourg and Austria.

		• Any other country not party to any of the above but that has a reciprocal arrangement	

The position is likely to improve as the insurance market obtains a better appreciation of the risk. However, in the meantime, it is likely that Operators and the Government will need to consider other financial security bearing in mind that the Government will need to approve any alternative arrangements under section 19(1) of the Act. It is understood that the Government will be the insurer (or indemnifier) of last resort to the current Operators and would charge a premium for this support.[90]

3.3 Defences

There are situations where the Operator may have a *defence, or entitlement to a reduction of compensation*, to the duties imposed by the Act. These are generally found in section 13 of the Act. The first is contained in section 13(4) and is one of the only defences provided by the Act that would result in no compensation being payable by the Operator in the event that a nuclear incident is caused by *hostile action*. It is similar to Article 9 in the Paris Convention which refers to the Operator as not being liable for nuclear damage due to "armed conflict, hostilities, civil war or insurrection". Despite a request by the insurance industry, this defence has been interpreted as not granting a defence for acts of terrorism[91] and responsibility for terrorist events is with the Operator.[92] Section 13(4)(b) makes it clear that the Operator would be strictly liable for injury or damage resulting from a natural disaster (even if exceptional and could not have been reasonably foreseen).[93] Another important defence that the Supplier should be aware of is in section 13(6) which may result in the claimant's compensation being reduced in the event the claimant has contributed to or caused the injury or damage by an act committed with *intent to cause harm or with reckless disregard* for the consequences of such act. It is essentially a form of contributory negligence and does not exclude or transfer the Operator's liability to another party. Interestingly, this section is more akin to the drafting in the Vienna Convention than the Paris Convention. The Act is still different from the equivalent provision in the Vienna Convention in that (a) the Act only refers to an "act" done with intent whereas both the Paris and Vienna Conventions refer to an "act or omission" done with intent; and (b) the Vienna Convention refers to "gross negligence" whereas the Act refers to "reckless disregard". One of the key benefits for Operators is that the *Operator's liability is limited in time and amount*.

[89] If an when the UK ratifies the Joint Protocol.
[90] NIA, 2010. Supra note 55.
[91] Desart (2006: 231). Supra note 13.
[92] The position is slightly different in Australia, Lithuania, Romania and Ukraine where the liability resulting from a terrorist act would either be covered by Government (Romania) or determined by common law rules. OECD NEA Secretariat (2008: 26): OECD NEA Secretariat, 2008: Insurance Coverage for Third Party Liability and Material Damage Arising From Nuclear Incidents Caused by Terrorist Acts, Nuclear Law Bulletin, 78.
[93] This is allowed under both the Paris and Vienna Conventions although the starting position in these conventions was that the Operator was not responsible for nuclear damage resulting from a natural disaster unless national law provides otherwise.

The limitation periods are a defence in that any actions will be statute-barred if they are brought after ten years (against the Operator) or thirty years (against the Government). Similarly, the Operator is only liable to settle claims up to £140m million. Section 16(3) sets out that any claims exceeding £140 million will be made against the Government. Public funds would meet claims between £140 million and £300 million (approx SDR300 million) but beyond this, losses will lie where they fall.[94] The final *procedural defence* in section 17(5) contains an express defence to proceedings brought in the United Kingdom which attempt to enforce a foreign judgement for the recovery of a sum alleged to be payable in a country outside the UK.

3.4 Damage to the installation itself and other property on the site[95]

The Paris Convention sets out that the Operator shall be liable for nuclear damage other than (i) damage to the nuclear installation itself including any installation under construction, and (ii) damage to the property on the installation site which is being used in connection with the installation. Accordingly, the duty under section 7 and the liability to pay compensation under section 12 of the Act does not apply to the Operator's property (i.e. the installation itself and other property on the site used in connection with the installation). The concern from the Supplier's perspective is that, pursuant to section 7(3), the Supplier's property when on the licensed site is deemed to be the Operator's property:

> "(3) In determining the liability by virtue of subsection (1) of this section in respect of any occurrence of the licensee of a licensed site, any property which at the time of the occurrence is on that site, being:
>
> (a) a nuclear installation; or
> (b) other property which is on that site:
> (i) for the purpose of use in connection with the operation, or the cessation of the operation, by the licensee of a nuclear installation which is or has been on that site; or
> (ii) for the purpose of the construction of a nuclear installation on that site,
>
> shall, notwithstanding that it is the property of some other person, be deemed to be the property of the licensee."

Section 7(3) makes it clear that the Operator's duty under section 7(1) does not apply to any property, including the installation itself, which is on site at the time of the occurrence. This exclusion is extended, in that the Operator does not owe a statutory duty to a Supplier whose property (e.g. any equipment, plant or material) is being used for constructing, operating or decommissioning an installation. In the event that a Supplier's property is damaged whilst on the site, the Operator will not be under any obligation to compensate the Supplier. Interestingly, section 7(3) is in respect of "any occurrences" and therefore the Supplier's property would not be deemed to be the property of the Operator, if

[94] Lee (2000:2). Lee, M. 2000. Civil Liability of the Nuclear Industry. Journal of Environmental Law, 12 (3), 317-332.

[95] This reflects Clause 6(f) of the Paris Convention which provides the Operator with a right of recourse in two limited situations.

the Operator breached its duty under section 7(1)(b) (i.e. the Supplier's property was damaged as a result of ionising radiations being emitted).[96]

The original 1965 Act allowed the Operator or its insurer (through the process of subrogation)[97] to bring an action against a Supplier if property is damaged as a result of the Supplier's breach of contract or negligence caused by a nuclear occurrence. This was recognised when the amending 1969 Act went through Parliament when it was highlighted that the Operator "might be able to make the Supplier of a faulty component liable for damage to the reactor itself if negligence on the part of that Supplier could be proved".[98] It was recognised that "property on the site of a nuclear installation, which is used in connection with the operation or the construction of the installation, is excluded by the [Paris] Convention from the liability of the operator". However, the original 1965 Act allowed "the owner of such property to claim against the operator, or the Supplier of a component, if negligence could be established."[99] This could result in third parties incurring liability. The 1969 Act partly addressed this problem by amending the Act in the form of a new section 12(3A), which introduced two exceptions (i.e. where a third party could incur liability) to the Operator's exclusive liability. Section 12(3A) provides that, where damage is caused to the property of the Operator, no liability:

> "which, apart from this subsection, would have been incurred by any person in respect of that damage shall be so incurred except
>
> (a) in pursuance of an agreement to incur liability in respect of such damage entered into in writing before the occurrence of the damage…. ; or
> (b) where the damage was caused by an act or omission of that person done with intent to cause injury or damage."

This only "partly" addressed the concerns because the words used create problems of their own by introducing two exceptions to the Operator's exclusive liability. The first exception is in section 12(3A)(a). This section provides that, where damage is caused to the property of the Operator, a Supplier or any third party may incur liability for such damage if the Supplier enters into a *written agreement to incur liability* in respect of such damage before the occurrence of the damage. The concern for the Supplier is that many industry standard conditions of contract and many Operators' standard conditions of contract ("standard conditions") do not distinguish between nuclear liability and other types of more conventional liability. The standard conditions often include provisions that make the Supplier liable to the Operator for loss, damage and/or

[96] Tromans (2010: 203): Tromans, S. 2010. (2nd Ed.). Nuclear Law: The Law Applying to Nuclear Installations and Radioactive Substances in its Historic Context. Hart Publishing: Oxford, UK.
[97] The insurer would be able to pursue the claim under the process of subrogation. Bird & Bird define subrogation as "…the right of the insurer who has indemnified his insured to step into the shoes of the insured – the literal meaning of "subrogation" – and in his name pursue any right of action available to the insured which may diminish the loss insured against" – See Bird and Bird (2001: 290): Bird, B. J. and Bird, N. 2001. (5th Ed.). Birds' Modern Insurance Law. Sweet & Maxwell: London, UK. Subrogation has been criticised for resulting in unnecessary litigation that would not otherwise have occurred.
[98] Hansard, House of Lords, 21 April 1969 vol 301 p, 332.
[99] Ibid.

injury arising from the Supplier's breach of contract together with indemnities for such loss, damage and injury including third party claims. These types of clauses can be found in a number of industry standard conditions (such as FIDIC, GC Works; IChemE or NEC3). If they are not in these standard conditions, they are often contained in the Operator's special conditions. These liability and indemnity clauses in relation to damage, although not specifically referring to nuclear damage, could be sufficient to make a Supplier liable for nuclear damage to property, amongst other forms of more conventional damage. There does not appear to be any need for nuclear damage to be specifically mentioned in the relevant contract in order for section 12(3A)(a) to result in the Supplier being liable. The term "damage" is general enough to cover nuclear as well as conventional damage. It is therefore important for a Supplier to amend the conditions of contract so the Supplier is not liable for damage to the Operator's property. This is usually achieved by: (a) an indemnity for nuclear damage; and/or (b) an express provision that nothing either express or implied in the conditions of the Contract is or is deemed to be a written agreement for the Supplier to incur liability within section 12(3A) of the Nuclear Installations Act 1965 as amended. The second category is intended to negate the possibility that the Supplier has entered into such an agreement by accepting standard conditions in which he accepts liability for damage when those conditions of contract draw no distinction between uninsured nuclear and conventional damage. It is also advisable to extend this provision to state that the Operator incurs liability for damage to all property, including any third party property, with the Operator agreeing to "assume this risk by written agreement."[100]

The second exception in section 12(3A)(b) provides that where damage is caused to the property of the Operator, any third party may incur liability for the damage where it was caused by that party's act or omission done with *intent to cause injury or damage*. This conjures up the bizarre situation of a Supplier deliberately causing damage. Although there is a temptation to dismiss this as unworthy of concern, the fact remains that there is a possibility for a Supplier to be responsible for an employee's act or omission and the more senior the employee, the more likely this responsibility. Suppliers have agonised whether this exception could expose them to liability. There appear to be two possible scenarios. The first could be the Supplier being *vicariously liable* for nuclear damage resulting from intentional or deliberate acts or omissions by its employees in the course of their employment. There are a number of legal arguments regarding this point and whether this section would expose the Supplier to vicarious liability.[101] A factor the courts are likely to consider is that the Paris Convention and Vienna Conventions are not intended to provide a right of recourse against the employing company but against the individual whose acts or omissions done with intent caused the nuclear damage (unless the employee was acting on the instructions of his or her employer). Without wanting to rehearse all the arguments, the most appropriate view is that this section does not expose the Supplier to vicarious liability. The second possibility is where the

[100] Temple, et al. (2006: 449). Supra note 37.

[101] These arguments include the view that the intentional infliction of damage to property is not within the usual course of employment and therefore could not result in vicarious liability being imposed on the Supplier.

Supplier is *liable as principal*. This would result from the deliberate act being carried out by an employee at a level of authority to speak and act as the Supplier itself (normally director level or a senior employee). This would be a rather bizarre situation where a director or senior employee deliberately caused nuclear damage. This does not seem to be a risk requiring indemnification. However, if the Operator were willing to indemnify the Supplier for damage deliberately done, which is unlikely, such an indemnity would, in any event, be void under English law because it would purport to indemnify a party against a criminal act.

Generally, the position in section 12(3A) of the 1965 Act is contrary to the Paris Convention, which only allows the Operator to have a right of recourse against the Supplier in two situations.[102] Although, the intent of these articles is reflected in section 7 and 12(3A) of the 1965 Act, there is a clear distinction. The 1965 Act does not allow the Operator to have any rights of recourse but provides that the Operator's exclusive liability is subject to the two exceptions. This difference between the 1965 Act (as amended) is surprising because when the 1969 Act was going through Parliament it was stated that the law in the UK must be consistent with the Paris Convention.[103]

3.5 Claims in tort

The Act does not entirely rule out the possibility of claims in tort.[104] There is a possibility of a common law claim in relation to releases of low levels of radiation or other minor nuclear-related damage or injury.[105] In the event that damage or injury results from a release of radiation which does not constitute a breach of the duties under section 7 to 12, liability to compensate under section 12 does not apply. Liability would then be determined on common law principles.[106] In practice, it appears that almost every conceivable situation is covered by the Act but, for completeness, the point should be borne in mind.[107] There are four main tortious remedies for environmental damage. The first is *negligence*, which has been defined as a "breach of a legal duty to take care which results in damage to the claimant".[108] The four elements for a duty of care to exist are set out below and the claimant has the burden of proving each of these elements exist: (1) *did the defendant owe a duty of care to the claimant?*[109] A duty of care is owed if there is a sufficiently proximate relationship, there is reasonable foresight of harm and

[102] Article 6(f) in the Paris Convention (which is unaffected by the 2004 Paris Protocol).
[103] Hansard, House of Lords, 21 April 1969 vol 301 p, 331.
[104] Tortious claims were considered at first instance in Blue Circle where it was stated that the rule in Rylands v Fletcher could be used if the damage was not covered by the 1965 Act.
[105] The Act does not cover all occurrences relating to all nuclear material (for example isotopes prepared for scientific or medical purposes are excluded).
[106] Tromans (2010: 207): Supra note 85.
[107] There is however a risk of claims from victims in non-convention countries (such as Ireland) regardless of what is stated in the Act.
[108] Rogers (2002:103): Rodgers, W.V.H. 2002. (16th Ed.). Winfield and Jolowicz on Tort. Sweet & Maxwell: London, UK.
[109] The authority for a duty of care is the case of Donoghue v Stevenson [1932] AC 562 (HL), where Lord Atkin famously stated, "you must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour".

it is fair, just and reasonable to impose a duty.[110] It is unlikely that the Irish court would have difficulty finding an Operator in the UK or "France did owe a duty of care to an Irish resident";[111] (2) *did the defendant breach that duty of care?* The defendant's liability will only arise if his action breaches the duty of care and caused a reasonably foreseeable loss or harm.[112] The standard of care applied to professionals with a particular skill or expertise, such a Supplier of specialist nuclear services, is that of the reasonable person with the same skill or expertise;[113] (3) *did the breach cause damage or loss to the claimant's person or property?* There must be a casual link between the defendant's acts or omissions and the claimant's loss or damage. The starting point is to identify a chain of causation.[114] This is sometimes complicated if there are multiple causes (e.g. several Supplier working on the same project) or difficulty identifying which party caused the damage (e.g. integrated Supplier/Operator teams); and (4) *was the damage or loss suffered by the claimant too remote?* Finally, the claimant must establish that the damage suffered is a direct result of the defendant's acts or omissions.[115] If the claimant can prove that the damage suffered is directly attributable to the defendant's acts or omissions, the defendant is liable for all resulting damage.

The second most likely tort is that of *nuisance*. This may be 'private' (affecting individuals) or 'public' (affecting a wider class of the general public). Private nuisance relates to the unreasonable interference with someone's rights to use or enjoy land or some right over or enjoyment of land.[116] Private nuisance is not actionable *per se*; the claimant must suffer loss, damage or injury for a claim to be successful. If following the Chernobyl accident, Welsh farmers were prevented from selling dairy products after radioactive contamination of their land, this is likely to form a private nuisance action. Public nuisance[117] affects a

[110] Caparo Industries plc v. Dickman [1990] 2AC 605 (HL). A duty of care can also be owed to an unborn person. This would become actionable on the child's birth - Burton v. Islington Health Authority [1993] Q.B. 204.

[111] O'Higgins and McGrath (2002: 20): O'Higgins, P. and McGrath, P. 2002. Third Party Liability in the Field of Nuclear Law an Irish Perspective. Nuclear Law Bulletin, 70.

[112] The court, when determining the standard of care will take all relevant circumstances into account, for example: the likelihood of risk occurring and seriousness of potential injury; the cost and practicability for the defendant to take precautionary measures to avoid the risk; the social value of the defendant's activities, where human life is at risk; and what the reasonable person would have foreseen.

[113] Bolam v. Friern Hospital Management Committee [1957] 1 WLR 582 (QBD).

[114] The court is likely to use the "but for" test as established by Lord Denning when h famously stated in Cork v. Kirby MacLean Limited [1952] 2 All ER 402 (CA) that "…if the damage would not have happened but for a particular fault, then that fault is the cause of the damage; if it would have happened just the same, fault or no fault, the fault is not the cause of the damage".

[115] Scrutten LJ, in Re Polemis and Furness, Withy & Co Limited [1921] 3 KB 560 (CA), stated that "if the act would or might probably cause damage, the fact that the damage it in fact causes is not the exact kind of damage one would expect is immaterial, so long as the damage is in fact directly traceable to the negligent act".

[116] The essence of private nuisance has been stated by the courts in Miller v. Jackson [1977] QB 966 (CA) as "…the unreasonable use of man of his land to the detriment of his neighbour".

[117] Section 79 of the Environmental Protection Act 1990 of the Environmental Protection Act 1990 ("EPA") reflects the public nuisance principles and creates a statutory nuisance. In relation to contaminated land, it is likely that any decontamination costs relating to damage to property will fall within the 1965 Act. However, radioactive contamination is catered for in the EPA (as

class of people.[118] The claimant is entitled to damages if special damage is suffered that surpasses the general inconvenience suffered by the rest of the public or class.[119] Another potential tort is the rule in *Rylands v. Fletcher* concerning the position where a person keeps something on his land for some non-natural use and such use results in an increased risk for others, this person may be strictly liable for damage to a third party's property.[120] It is not difficult to see how this applies to the storage of highly radioactive material at a nuclear installation. O'Higgins suggests that as a result of previous decisions where non-domestic use of highly inflammable materials may give rise to strict liability, it is "likely that the production of nuclear energy and the escape of harmful outflows as a result would be actionable under the rule"[121] If the clamant can show the four elements of the *Rylands* test are present and there is no defence, it is likely the defendant would be strictly liable. Interestingly, O'Higgin's indicates that the *Rylands* principles are "probably the most powerful weapon in an Irish plaintiff's armoury, were he or she to sue for loss or damage caused by a nuclear incident".[122] The final likely tort is *trespass to land and person* where the claimant, who has suffered unjustified and direct interference on his land, would be able to take an action against a person who has caused the interference[123] (e.g. the Operator or Supplier who has caused a nuclear incident). Trespass could be a concern for third parties working at nuclear sites in the UK where, for example, they caused a nuclear incident which resulted in unjustified and direct interference with someone's land in Ireland.[124]

4. Recognition and Enforcement of Foreign Judgements

The Supplier may cause or contribute to a nuclear incident, in the UK or another country, which results in nuclear damage in another Paris Convention country or a non-convention country. The nuclear damage could, for example, be caused by negligence in manufacture in the UK where the defective equipment is delivered to an Operator in another country. It is likely, but depending on the laws in such country, that a cause of action would arise in that country. The UK Supplier could then be held liable in that country's courts. The other example is the negligent

amended by the Radioactive Contaminated Land (Modification of Enactments) Regulations 2007) which sets out that the Secretary of country is responsible for the cost of decontaminating or cleaning up the site following a nuclear incident in the event that the Operator is not liable.

[118] The court defined public nuisance in A-G v. PYA Quarries Limited [1957] 2 QB 169 as a nuisance that "materially affects the reasonable comfort and convenience of life of a class of Her Majesty's subjects".

[119] Fritz v. Hobson (1880) 14 Ch.D 542 set out type of damages as: (1) damage to property; (2) economic loss; (3) personal injury, discomfort or inconvenience. Interestingly, pure economic loss is recoverable in public nuisance actions.

[120] The key principles in Rylands v. Fletcher [1866] L.R. 3 H.L 330, stated by Blackburn J., is "…the person who for his own purposes brings on his lands and collects and keeps there anything likely to do mischief if it escapes, must keep it in at his peril, and, if he does not do so, is prima facie answerable for all the damage which is the natural consequences of its escape".

[121] O'Higgins and McGrath (2002: 19): Supra note 100.

[122] Ibid.

[123] Rogers (2002:487): Supra note 97.

[124] The Irish legal system in respect of the torts of negligence, Ryland v. Fletcher, Nuisance and Trespass is similar to English law – see O'Higgins and McGrath (2002: 19): Supra note 100.

Supplier causing a nuclear incident at one of the UK's nuclear installations which results in nuclear damage in Ireland. Ireland is a non-convention country. The Supplier could be sued in Ireland by the victim in tort. The 1965 Act would not be applicable and would offer no protection. The interests of Irish citizens are sometimes viewed as being "better protected by relying upon the substantive law of the state and the system of recognition and enforcement of judgements."[125] These examples outline the potential trans-boundary implications that could expose the Supplier to liability. On the basis that the Supplier does not have any assets in the particular country, the important consideration with actions brought in that country is whether judgements of that country can be recognised and enforced in the UK. The position varies depending on whether the country, which has awarded damages and seeking its award to be enforced in the UK, is a Paris Convention country or a non-convention country.[126]

In the event there is a judgement in another *convention country* (i.e. signatory to the Paris/Brussels convention), section 17(4) of the 1965 Act sets out that such judgements can be registered for enforcement in the UK under the Foreign Judgments (Reciprocal Enforcement) Act 1933. If the judgement is registered, it takes effect as if it was a judgement made by the courts in the UK. This section supports the concept of a single forum as set out in Article 13(d) of the Paris Convention by ensuring final judgements are enforced by the courts of the other contracting states to the Paris Convention. It is usually the Operator who would be liable under this Article but the Exposé des Motifs sets out that judgements are also enforceable under Article 13(d) for actions concerning the Operator's right of recourse.[127] Nevertheless, one of the principles of the Paris Convention is that jurisdiction over actions lies exclusively with the courts of the convention country where the nuclear incident occurred.[128] It is therefore unlikely that a judgement in another Paris Convention country would need to be enforced in the UK, particularly as the Operator is likely to be based in that country, with assets in that country and maintain insurance in that country.[129] However, the UK Supplier providing services or equipment to Operators in other Paris Convention countries is still not wholly free of risk. Nuclear damage could occur in a country that does not have any national nuclear law or acceded to any convention (e.g. Ireland, Austria, and Luxembourg). This difficulty is exacerbated by treaties under which these countries have agreed reciprocal arrangements for enforcing judgements obtained in each other's courts.

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[125] O'Higgins and McGrath (2002: 21): Supra note 100.

[126] Non-convention countries are countries that have not signed the Paris Convention countries.

[127] Revised text of the Exposé des Motifs of the Paris Convention, approved by the OECD Council on 16th November 1982, Paragraph 58.

[128] This is clearly recognised in the 1965 Act and section 17(1) provides: "No court in the United Kingdom…shall have jurisdiction to determine any claim or question under this Act certified by the Minister to be a claim or question which, under [the Paris Convention], falls to be determined by a court of some other relevant territory…and any proceedings to enforce such a claim which are commenced in any court in the United Kingdom…shall be set aside." This section takes away the jurisdiction of the UK court if the Secretary of State certifies that the claim is one that, under the Paris Convention, is properly justifiable in the territory where the nuclear incident has taken place.

[129] INLEX, at p.8: Supra note 54.

In relation to judgements made in *non-convention countries*, section 17(5) sets out a defence to any actions made in the UK that attempt to enforce judgements made in a non-convention country. The defence would prevent any judgements given in respect of nuclear damage in the courts of a non-convention country from being enforced in the UK. This defence appears to be directed at (1) avoiding forum-shopping, where claimants bring actions in a country that has no connection with the nuclear incident but where such country's courts are likely to place the claimant in a more favourable position (i.e. a higher award); and (2) not recognising any actions brought in non-convention countries. This is based on section 17(5) which applies to awards "in respect of injury or damage of a description which is the subject of"[130] the Paris Convention and where the original judgement was made in a non-convention country. Importantly, from a Supplier's perspective, is that any third party may be liable under the laws of non-convention country if the claimant can show that the Supplier caused or contributed to a nuclear incident through its negligence. This is clearly contrary to the principle of channelization and section 17(5) is intended to bar enforcement of judgements in such cases.[131]

The defence in section 17(5) is however subject to section 17(5)A[132] which sets out that the defence cannot be used where the judgement in question is enforceable in the UK in pursuance of an international agreement. The term "international agreement" is not restricted to international conventions in the field of nuclear energy. As a result, there will not be much difficulty for a judgement to be enforced in the UK when the non-convention country is a contracting party to any of the conventions for the enforcement of foreign judgements. A foreign judgement may be enforced in the UK if the country falls under (a) the European Enforcement Order Regulation;[133] (b) the Brussels Regulation;[134] (c) the 1988 or 2007 Lugano Convention;[135] (d) judgements of commonwealth states;[136] and/or (e) countries with which the UK has a bilateral treaty[137] (the "Enforcement Treaties"). Accordingly, in the event that nuclear

[130] Section 17(5) of the Nuclear Installations (Amendment) Act 1965.
[131] Hansard: col. 1279 – HL DEB 04 March 1965 Vol. 263 c. 1279
[132] Section 17(5) had lain dormant for several years until Section 17(5A) was inserted by the Energy Act 1983 (c.25), s. 31.
[133] Council Regulation 805/2004/EC. It applies to all EU member states.
[134] The full title is the Brussels Regulation (Council Regulation (EC) No. 44/2001 on jurisdiction and the recognition and enforcement of judgements in civil and commercial matters). The Brussels Regulation applies to all EU member states.
[135] The full title is the Lugano Convention on Jurisdiction and the Recognition and Enforcement of Judgments in Civil and Commercial Matters. Both Lugano Conventions are very similar to the Brussels Convention. The Lugano Conventions governs the enforcement of judgements between Iceland, Switzerland, Norway and all pre-2004 EU states. Of the ten post-2004 EU states only Poland has ratified it.
[136] The Administration of Justice Act 1920 provides for the enforcement of judgements from the courts of many colony and commonwealth countries. This does not appear as applicable since the countries are not geographically close to the UK (e.g. New Zealand, Papua New Guinea, Christmas Island, Singapore, Fiji, Zimbabwe, Malaysia, Botswana, Uganda etc.).
[137] The Foreign Judgments (Reciprocal Enforcement) Act 1933 contains a list of treaty countries. The 1933 applies to any country which is prepared to give reciprocity of treatment to judgment and includes the Brussels Regulation countries, Lugano Convention countries, commonwealth

damage is incurred in a non-convention country, where that country falls under the auspices of one of the Enforcement Treaties, a claimant would be able to bring an action in that country;[138] the courts of that country are likely to apply their own laws; and in the event that the claimant succeeds, the UK courts would have to recognise and enforce the judgement. These non-convention countries that are parties to some of the Enforcement Treaties include Ireland, Luxembourg and Austria. Tromans uses the example of the civil proceedings brought in Ireland in the 1990s for personal injury, psychiatric illness and mental stress. If the claims[139] were successful, they would have been enforced in the UK against BNFL as a result of the UK and Ireland both being parties to the 1968 Convention and despite the fact that Ireland is not a party to the Paris Convention.[140]

5. Indemnification for Nuclear Liability

The position in the UK and other jurisdictions results in certain liabilities being outside the nuclear liability regime. This results in possible exposure to liability for Suppliers. It would be unwise for a Supplier to rely solely on the Act, the international conventions, or a foreign country's national law. A robust indemnity is often the only mechanism to comfort the Supplier.[141] Indemnity clauses do not absolve the Supplier from liability. The Supplier would be liable to the third party but entitled to recover compensation from the indemnifying party. For example, the Supplier may be commissioned to prepare a working method for repairing pipe-work which contains contaminated water. The Supplier may negligently omit to state the precautions which must be taken before the pipe-work is cut open and as a result contaminated water escapes contaminating part of the installation, the Supplier's property and neighbouring land. A properly drafted indemnity would mean that the Operator has to hold the

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counties etc. It also applies to India, Pakistan, Australia, Tonga, Israel, Surinam, Canada and, the geographically close, Guernsey, Isle of Man and Jersey.

[138] It is likely that the courts would treat any action in relation to trans-boundary nuclear damage as a civil and commercial matters and accordingly governed by the Enforcement Treaties – for a view surrounding a hypothetical case in relation to claims in Ireland and the use of the 1968 Brussels Convention, see Sands and Galizzi (2009: 19): Sands, P. and Galizzi, P. 2009. The 1968 Brussels Convention and Liability for Nuclear Damage. Nuclear Law Bulletin, 64.

[139] If a tort is committed in a non-convention country, MAYSS states that under the Private International Law (Miscellaneous Provisions) Act 1995, it "will be governed by the lex loci delicti, i.e. the law of the country where the tort was committed." It must therefore be shown that the occurrence would be a tort under the law of the country where the injury or damage was incurred. If the tort is not consistent with the types of tort found under English law and such new tort exists under another type of liability (e.g. contract or statutory duty), the court will not hear the action. The type of liability under the extended definition of nuclear damage pursuant to the 2004 Paris Protocol may fall into this category. See: MAYSS, A. 1996. Statutory Reform of Choice of Law in Tort and Delict: A Bitter Pill or a Cure for the ill? Web Journal of Current Legal Issues, In association with Blackstone Press Limited, [Online: Accessed between December 01 2010 – February 28th 2011: available at http://webjcli.ncl.ac.uk/1996/issue2/mayss2.html].

[140] Tromans (2010: 216): Supra note 85.

[141] An indemnity is a specific type of contractual risk allocation mechanism whereby one party expressly agrees to compensate another party in a given set of circumstances, e.g. a promise by one party to take financial responsibility to pay for the loss or damage that the other party may suffer, or to make the other party free of such loss or damage.

Supplier harmless and compensate the Supplier for any loss it incurs as a result of the incident. The above example indicates that the indemnity should cover the nuclear installation itself, on-site property and third party claims.[142] It would not however protect the Supplier from reputational issues which (irrespective of whether any action against the Supplier was successful or not) in themselves could be financially ruinous for the Supplier.[143] It is important to note that any indemnity for nuclear damage will not achieve legal channelization since it is essentially a form of economic channelling of liability to the Operator. Nevertheless, they are an important contractual mechanism for Suppliers who often cite an abundance of arguments when insisting on indemnities – as demonstrated by those listed in Appendix C.

Some Operators recognise the difficulties for the supply chain and include nuclear indemnities in their invitations to tender whereas other Operator's resist providing nuclear indemnities.[144] The indemnities offered by Operators also vary: some, for example, do not apply if the Supplier has been negligent; others have exceptions for a corporate act or omission done with intent whereas others provide for full coverage of the Supplier and its affiliates including all participants in the supply chain. The argument that the indemnity does not apply in the event the Supplier is negligent is self-defeating from the Supplier's point-of-view. These indemnities are illogical because the Operator is insured for the risk; they expose the Supplier to claims for which he is uninsured; and in the vast majority of situations liability will be channelled exclusively to the Operator in any event. It follows that, in order to realise the full intent of the international conventions, Operators should indemnify Suppliers against all forms of nuclear liability and the only exceptions being agreed rights of recourse or nuclear damage caused deliberately.[145] The Supplier will however, need to decide whether the Operator's proposed position is acceptable on a case-by-case basis. This will largely depend on the work being performed and the risk of an incident being caused by the Supplier. For example, the Supplier providing equipment to be used in the nuclear island or instructing/directing the contractor is vastly different to the Supplier providing early feasibility studies. However, the exposure to liability does not depend on the size of the contract since even low

[142] OECD NEA Secretariat (2008: 41): Supra note 81.
[143] OECD NEA Secretariat (2008: 38): Supra note 81.
[144] As an aside, Suppliers are sometimes asked to provide nuclear services to companies, organisations or Government Departments where there is no Operator involvement (e.g. the clean-up of contamination in the aftermath of a terrorist event). In this situation, there may not be any protection under the 1965 Act or any of the international conventions on nuclear third party liability and it is clear a nuclear indemnity would be beneficial. There would be a number of issues to consider such as, the nature of the work, substances being cleaned-up, where did the substance originate, does it fall into the definition of nuclear material, the client etc.
[145] Bowden (2010) expressed the view that that where an Operator, located in a non-convention territory, provides an indemnity to a Supplier, this can sometimes remove the immediate pressure on the country to ratify a particular international convention or even the Joint Protocol. This is likely to be a particular concern for countries with emerging nuclear markets without any existing nuclear capacity. Bowden, P. 2010. In Lecture at the International School of Nuclear Law, 23rd August-03 September, 2010. OECD – Nuclear Energy Agency. University of Montpellier: Montpellier, France.

value contracts with limited services or small quantities of equipment could cause or contribute to a nuclear incident with devastating consequences.[146]

The value of the indemnity to the Supplier is dependent on the financial strength of the indemnifying party. The indemnity would clearly be worthless if the Operator did not have the funds to compensate the Supplier. It is therefore important to obtain an indemnity from a body of substance. Accordingly, Suppliers often require an indemnity from the Government which improves the likelihood of the indemnifier having the financial wherewithal to meet any liabilities.[147] There are however, several key considerations that should be considered by any Supplier when seeking Government indemnities.

- The first is whether the Government (or the Operator if the installation is run by the state) can rely on the defence of *sovereign immunity* against liability. Although contracting countries to the Paris and Vienna Conventions cannot rely on the defence of sovereign immunity, some non-convention countries may be entitled to rely on this defence. Sovereign immunity should therefore be investigated at the negotiation stage. If it is likely to be a concern in a particular territory, the Supplier should evaluate its options including the effectiveness of an express waiver of immunity. If a waiver is required, it is usually advisable for the waiver to be at the same level of law which provides the immunity. This is not always possible with statutory immunity.

- A second consideration is *jurisdiction*. It is important, as with all international contracts, for the Government to accept the jurisdiction of a particular court or arbitrator to hear any disputes. There are different approaches taken in different jurisdictions but the defence of sovereign immunity can be waived by a Government which accepts a contractual clause giving jurisdiction to foreign courts or arbitrators.

- The next is the *supplier's standing*. In some situations there is an overarching instrument which does not name the Supplier as being a beneficiary or a party to an indemnity. The Supplier would need to be in receipt of a signed document which expressly identifies the Supplier as having the benefit of the indemnity.[148]

[146] OECD NEA Secretariat (2008: 38): Supra note 81.
[147] For example, the EBRD funded decommissioning activities at Chernobyl, where the Cabinet of Ministers of Ukraine issued Resolution 223 on Indemnifying Participants in the Shelter Implementation Plan against Civil Liability for Nuclear Damage ("Resolution 223") or the NDA indemnity considered below.
[148] For example, work in relation to the dismantling of Russian nuclear-powered submarines, the relevant instrument is the Supplementary Agreement to the Agreement between the Government of the United Kingdom…and the Government of the Russian Federation on Cooperation in the Peaceful Uses of Nuclear Energy of 3 September 1996. It is important for any Supplier carrying out work in connection with this project to be in receipt of a signed document (i.e. the Model of Indemnity Confirmation Letter from Russian Federation). Similarly with Resolution 223 a Letter of Agreement from Ukraine Government is required.

- Another consideration is whether the concept of indemnity is recognised under the particular *governing law*. For instance, the concept of indemnity is not well recognised in Russia or Kazakhstan. There is a risk that it would confer no greater rights than a claim in damages or be unenforceable under the civil codes for these jurisdictions.[149] The risk for the Supplier is that the indemnity may be displaced in favour of the country's law. It is always advisable to obtain independent local legal advice regarding how the "indemnity" would be treated under a particular governing law.[150]

- Finally, the indemnified party should always consider whether the Government providing the indemnity has the *legal capacity or authority* to provide the indemnity or to agree certain arbitration provisions and whether such positions need the approval from another Government department. The Government of a particular country may not have the legal capacity to provide the indemnity. It may, for example, be another department or federation that should execute agreements.

The issue with nuclear indemnities was witnessed with two recent decommissioning contracts issued by the UK's Nuclear Decommissioning Authority ("NDA").[151] Department for Business Enterprise and Regulatory Reform ("BERR") issued written ministerial statements regarding indemnities that the NDA[152] provided in the contracts relating to (a) the Low Level Waste Repository at Drigg[153] and (b) the Sellafield Parent Body Organisation.[154] The statements outlined how the NDA proposed to indemnify the contractors and its

[149] Knyazhev, A. and Zakharko, A. 2007. The Use of Warranties in M&A Transactions. Salans LLP: [Online: Accessed between December 01 2010 – February 28th 2011: from http://salans.com/en-gb/Locations/~/media/Assets/Salans/Publications/2007/20070925-NeweraofMAinRussiaTheuseofwarrantiesinMAtransactions.ashx]

[150] It is sometimes better to use words like "compensate", "guarantee" or "accept responsibility for". Other possibilities for the Supplier would be to include in their contracts a clear acceptance of responsibility by the Government department (which has the necessary legal capacity) for the safety of nuclear installations regardless of fault.

[151] The NDA was established as a "non-departmental public body" in 2005 under the Energy Act 2004. The NDA is responsible for decommissioning the UK's civil public sector nuclear sites.

[152] The NDA's decommissioning contracts result in a situation that has not previously been seen in the UK nuclear industry. The PBO's will be taking historic nuclear liability that have occurred up to ten years before the date it takes over responsibility for the nuclear site. Temple suggests that the historic liability issues with the decommissioning market could be removed from the private sector altogether by (a) the "Transfer Scheme" in the Energy Act 2004. This would essentially mean that the Government transfers the historic nuclear liabilities from the incoming tier 1 contractor to the NDA or another public sector entity and away from the tier 1 contractor; or (b) the tier 1 contractor only being responsible for incidents occurring while it is an Operator, which would not amount to a departure from the Paris Convention since the concept of site licensee is not recognised by it: Temple, et al. (2006: 457). Supra note 37.

[153] BERR, 2008. Written Ministerial Statement. [Online: Accessed between December 01 2010 – February 28th 2011: from http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file45074.pdf].

[154] BERR. 2008. Departmental Minutes. [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.parliament.uk/deposits/depositedpapers/2008/DEP2008-2381.pdf].

affiliates for uninsurable claims that fall outside the current nuclear liability regime. The statements outlined that given the low probability of any claims, the NDA had "assessed that the benefits of engaging the contractor outweigh the small risk that the indemnity may be called."[155] BERR's rationale for backing the NDA indemnity was partly because some of the shareholder companies were based in the USA whereas Drigg and Sellafield are in the UK.[156] The US is not a party to any convention that is in force. The departmental minute for Drigg stated that there is a "residual risk that the courts of a country who is not party to the Conventions may accept jurisdictions to determine liability in the event of a nuclear incident". This is a risk that most commercial organisations are not prepared to accept particularly as they currently appear uninsurable. The NDA provided a nuclear indemnity to the tier 1 contractors in Drigg and Sellafield.[157] The indemnities cover claims arising from property damage, personal injury and the heads of loss under the 2004 Paris Protocol. The rationale for providing the indemnities was also due to the small risk and the historically very low occurrence of nuclear incidents giving rise to claims. The use of indemnities for nuclear liabilities is not exclusive to civil nuclear facilities. The UK's Ministry of Defence accept that in some circumstances Suppliers will need the protection of an indemnity for nuclear risks.[158]

6. Conclusion

As the global nuclear renaissance continues to evolve,[159] and the changes to the international conventions are implemented, the subject of third party nuclear liability is likely to attract more attention from many of the participants in the nuclear industry and not least the Supplier. However, the law in this area is not without its problems and there have been several criticisms and recommendations for improvement.

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[155] Ibid.

[156] The Sellafield PBO is the company Nuclear Management Partners Limited which is a JV company with shareholders being URS – Washington Division (USA), AMEC (UK) and AREVA NC (France): see [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.nda.gov.uk/contracts/competition/sellafield.cfm]. The Drigg PBO is UK Nuclear Waste Management Limited which is also a JV company with shareholders being URS - Washington Division and others including Studsvik, Areva and Serco Assurance: see [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.nda.gov.uk/contracts/competition/llwr.cfm].

[157] This approach of contractual indemnities to address the concerns of the Supplier chain is akin to the approach with economic channelling in the USA.

[158] This is set out in the MoD's guidance note: The Commercial Toolkit Indemnity Against Risk – Full Guidance – Last Updated 01/09/10: [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.aof.mod.uk/aofcontent/tactical/toolkit/downloadsindexed/indrisk/full_indrisk.pdf].

[159] Many countries have nuclear new build ambitions with others having existing installations requiring operational support or assistance with lifetime extension projects and others with major decommissioning programs.

The most important feature of the international conventions for the nuclear supply chain is the principle of *channelization*.[160] One of the main reasons for the introduction of channelization was to protect Suppliers. However, channelization has been criticised and several legal arguments in support of reforming the principle have been made.[161] From an industry perspective this could have a huge impact. It is likely that some Suppliers would not be willing to accept this exposure to nuclear liability and would simply cease to work in the nuclear industry: they may decide to revise their corporate strategies and re-focus on non-nuclear industries. This would have a considerable impact on an industry that is undergoing a renaissance, particularly as there are already signs of resource shortages and fewer but more global Suppliers. As was shown earlier, the experience in the UK's decommissioning market indicates that many global Suppliers' are not willing to take on potentially ruinous and uninsured exposure and if that situation were present they would focus on other industries instead.

Apart from the Operator's relatively low levels of financial security and limits on liability, Suppliers are concerned with the narrow interpretation of *nuclear damage*. This will be partly addressed with the introduction of the new categories of damage in the 2004 Paris Protocol. Although, these new categories of damage will present some concerns for insurers, the amendments will provide more certainty for Suppliers. The amendments will result in claims for a wider range of nuclear damage being channelled to the Operator thus reducing the Supplier's exposure to tortious claims.

The ambiguity in respect of damage caused to the *nuclear installation itself and property* on the site of the installation is of concern. This is important from a Supplier's perspective and is likely to gain more attention as the new build programs in many countries advance. The ambiguity would be removed, and more certainty created, if the conventions were clarified to state that the Operator is exclusively liable for all damage to property including the installation itself, which would be in addition to the other liability channelled to the Operator.[162]

Another key concern for the Supplier is in relation to the patchwork of international conventions and the *trans-boundary consequences* which may result from a nuclear incident. This creates a number of uncertainties, for example, when identifying which courts have jurisdiction over a claim and which convention/ national laws apply. The Supplier who causes or contributes to a nuclear incident could be exposed to actions from victims in countries where the damage occurs or where the installation is located or where the Supplier is

[160] This is reflected in most national laws apart from the US and Austria.

[161] For instance, see Ameye, E. 2009. Channelling of nuclear third party liability towards the Operator: is it sustainable in a developing nuclear world or is there a need for liability of nuclear architects-engineers? In International Nuclear Law Association (INLA) Nuclear Intra Jura 2009 Proceedings, Volume 2. INLA: Brussels, Belgium.

[162] The Operator would rely on an express right of recourse against the Supplier in its contract - see Pelzer (2010: 428): Supra note 21.

located. The Chernobyl accident[163] raised awareness of the problem but a true global liability regime with widespread adherence has yet to materialise.[164] In fact, the countries with the largest nuclear capacity have not ratified any of the international conventions currently in force. [165] This patchwork of international convention is something that has been recognised as an impediment to nuclear commerce for many years.[166] In Europe alone there is a mixture of Paris Convention, Vienna Convention and non-convention countries. The inconsistent position in Europe[167] could be resolved by all EU member states ratifying one of the conventions and the Joint Protocol.[168] However, there does not appear to be any real incentive for non-nuclear countries to ratify any of the nuclear conventions and it "is surely no coincidence that it is principally nuclear power states which have acceded to" them. [169] Citizens in non-nuclear countries also appear to be in a better position under the Enforcement Treaties. It is therefore unlikely that all countries with nuclear power and neighbouring non-nuclear countries will ratify the same convention or a bridging convention. The position would however be improved for UK Suppliers working in many Vienna Convention countries if the UK ratified the Joint Protocol.

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[163] Greenpeace indicate the economic impact, ignoring deaths/injuries, from the Chernobyl accident (a) the total cost of compensation paid to farmers in the UK is $18 million; (b) Germany Government paid out $307 million; (c) Belarus Government estimate the total economic damage between 1986 to 2015 would be $235 billion [Online: Accessed between December 01 2010 – February 28th 2011: from http://archive.greenpeace.org/comms/nukes/chernob/read25.html]. The USSR spent $18 billion on Chernobyl rehabilitation between 1986 & 1991, when the Union split apart. Of this, 35% went on "social assistance to affected people" and 17% on resettlement." See Van Dyke (2008: 30): Dyke, J. M. 2008. Liability And Compensation For Harm Caused By Nuclear Activities. Denver Journal of International Law and Policy, 35 (16), 13-46.

[164] Roman et al. (1999: 275): Roman, A., Fernando, M. and Salsman, K. 1999. Canada and International Nuclear Liability. International Nuclear Law Association (INLA) Nuclear Intra Jura 2009 Proceedings, Volume 1. INLA: Brussels, Belgium. Also see Schwartz (2010: 313, 340), supra note 9, regarding the difficulties victims experienced when trying to provide a chain of causation between the nuclear incident and the injury/cancer.

[165] These countries include: the USA, China, India and Japan.

[166] Brown, O. 1999. Nuclear Liability: A Continuous Impediment to Nuclear Commerce. 24th Annual International Symposium 1999 of the Uranium Institute. [Online: Accessed between December 01 2010 – February 28th 2011: from http://www.world-nuclear.org/sym/1999/brown.htm].

[167] The decision in Commune de Mesquer v Total France SA and another (Case C 188/07, 28 June 2008) is of interest because the ECJ's decision departed from the position set out in very similar international conventions in the oil and gas industry. Although, the impact of this case on the nuclear liability conventions would require more detailed review, if the decision was applied to the nuclear liability conventions, it would seriously undermine the international regime. There are similarities with the Paris and Vienna Conventions. The International Conventions on Civil Liability for Oil Pollution channels liability to the ship-owner, it creates strict liability for the ship-owner (with the exception of intent and acting recklessly) together with the requirement for compulsory insurance. Total France argued that the conventions were applicable and protected them accordingly. However, the ECJ stated that the EC had not acceded these conventions and not all EU states are bound by them (similar to the nuclear liability conventions). As a result, the EC were not bound by them either. The ECJ then applied the Waste Framework Directive. This ECJ decision was a departure from the international conventions.

[168] Any concerns about the different limits on liability could be addressed with a reciprocity provision in the Joint Protocol or even introducing unlimited liability on all Operators in Europe.

[169] Sands and Galizzi (2009: 27): Supra note 85.

Often the only real protection available to the Supplier from potentially ruinous liability is indemnification for nuclear damage. The indemnity should be provided by a body of substance which is usually the Operator and/or the Government of the installation state. It is important for the indemnity to be clearly drafted to cover any loss incurred in connection with (1) the nuclear installation itself, (2) on-site property (including the Supplier's property) and (3) third party claims. The Supplier should however bear in mind that any reputational damage would not be covered by such an indemnity.

The law surrounding third party nuclear liability is important to all parties in the nuclear supply chain, whether they are providing decommissioning services, project management expertise or a new reactor. Irrespective of the services, equipment or technology being provided, it is likely that all Suppliers will share one consistent view in that they are unwilling to accept liability for uninsurable claims that fall outside the current nuclear liability regime.

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Appendix A:

Table A.1: The Seven Principles of the Paris Convention

	Principle	Explanation
1	**Strict Liability**	The operator of a nuclear installation ("**Operator**") is strictly liable. Victims do not need to prove that the Operator is negligent or at fault. It "is only necessary to demonstrate that the nuclear damage is caused by the nuclear incident". The victim only needs to prove a "causal link between the damage and the nuclear accident." Although the Paris Convention does not refer to the term strict liability, it states that the Operator is liable upon proof that damage was caused by a nuclear incident in its nuclear installation.
2	**Channelling liability to the Operator**	From the Supplier's perspective, this is probably the most important principle. The Operator is exclusively liable for damage resulting from a nuclear incident. The Operator, with limited exceptions, is liable to the exclusion of any other person and regardless of who caused the damage. The victims of a nuclear incident would only pursue the Operator and not the Suppliers. The channelling liability appears, on the face of it, unfair, because the Operator could be liable even if a third party was negligent or at fault. It has however become a cornerstone of the liability regime. It provides certainty to the Operator and victims of a nuclear incident; compensation settlements should be quick; it avoids the wrong person being sued which can be costly and time-consuming; it avoids double insurance. The certainty provided by the channelization (together with limitations on liability) helped encourage investment in the nuclear industry.
3	**Limitation of Liability in Time**	This limitation is particularly important because injury "may not manifest for some time after the exposure to radiation has actually occurred." The limitation period is intended to help both the claimant (where the consequences will not be understood for several years) and the defendant and insurers (where liability exposure for an indefinite period would be unacceptable).
4	**Limitation of Liability in Amount**	The Operator's liability is limited in amount. The Operator is therefore sheltered from the full potential consequences of a nuclear incident. This limit on the Operator's liability is viewed as the "*quid pro quo* for strict and exclusive liability." Public funds will provide supplementary compensation to meet victims' claims in the event that the Operators liability is exhausted.
5	**Insurance or other Financial Security**	Operators are obligated to carry financial security to cover their potential "liability to third parties in an amount corresponding to their imposed liability amount." Financial security is usually provided by insurance from special nuclear pools. There are however other methods such as the Operator self insuring, government guarantees/indemnities, bank guarantees, letters of credit, mutual fund, Operators' pooling.
6	**Jurisdiction**	Jurisdiction over actions lies exclusively with the courts of the contracting country where the nuclear incident occurred. The courts of other contracting countries will not be competent to hear the claims. Judgements made by the competent court will be recognised and enforced in other contracting countries. This principle is only effective when many countries have ratified either the same convention or a bridging convention. Victims may, on first impressions, see it as an advantage to be entitled to sue all possible parties in different courts for nuclear damage. This is however in the victim's interest in that compensation is distributed in a fair/equitable manner. If the victim were free to sue any party in any court it would create a situation where victims who are first to sue would have their losses compensated but victims who sued later, would "receive loss or nothing".
7	**Applicable Law**	The applicable law is the national law of the competent court that has jurisdiction. The national law must also be applied without discrimination on grounds of nationality, domicile and residence. The applicable law principle helps prevent costly and lengthy arguments about which law applies with parties discussing the complexities of the national and international rule surrounding the conflict of laws.

Appendix B:

1: Joint Protocol[170]

The Paris Convention and the Vienna Convention, although sharing the same basic principles, are clearly distinct. The absence of any relationship between the two conventions could result in the situation where a nuclear incident in country A (that is a contracting party to the Paris Convention) results in damage being suffered by victims in country B (that is a contracting party to the Vienna Convention). The Operator in country A would then be exposed to claims from the victims in country B and liability would not be determined in accordance with the Paris Convention principles. This issue was highlighted by the Chernobyl accident which raised global awareness about the "potential for trans-boundary damage in the case of serious nuclear accidents."[171] The Chernobyl accident renewed the interest in finalising the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention ("Joint Protocol"),[172] which links the Paris and Vienna Conventions and is a step towards the creation of one global regime. The Joint Protocol extends the territorial scope of the two conventions. It essentially grants victims in a state that is a party to the Paris Convention the same rights to compensation for accidents occurring in a Vienna Convention state and vice versa (i.e. it extends the rights under the one Convention to victims in the territory of the other Convention[173]). For example, in the event a Romanian[174] Operator is liable for a nuclear incident at its nuclear installation in Romania and the nuclear incident results in injury to victims in Turkey,[175] the victims in Turkey will be entitled to claim compensation from the responsible Operator in Romania. The liability of the Romanian Operator will be determined by the Paris Convention and the national law in Romania. It means that contracting states to the Paris Convention "are no longer treated as non-Contracting countries within the meaning of the Vienna Convention and vice versa".[176] It also ensures that only the Paris Convention or the Vienna Convention will apply exclusively to a nuclear incident.[177]

One of the problems for a UK Supplier, operating in a global market, is that the UK has not ratified the Joint Protocol and would be viewed as a non-convention country in the event of a nuclear incident in a Vienna Convention country. If a UK Supplier is working for an Operator in a Vienna convention country, and negligently causes or contributes to a nuclear incident, a victim may be able to bring an action or enforce a foreign judgement against the Supplier in the English courts. The UK Supplier would be in the unfortunate position of not having the protection under the international conventions. The Supplier is unlikely to have insurance to cover this liability and could be exposed to an unacceptable risk. In this situation an indemnity for nuclear liability is often agreed in the contract between the Supplier and Operator. The reasons for the UK not ratifying the Joint Protocol are probably due to the UK's island status with all its closest neighbours being Paris Convention signatories (although the scale of the trans-boundary contamination following Chernobyl undermines this view). However, the principal reason is likely to be the lack of reciprocity between the Operator's

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170 The full title is the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (21 September 1988).

171 Hamilton, J., (1999) *Access by Victims to the Compensation Regime of the Vienna Convention on Civil Liability for Nuclear Damage – The Question of "Geographical Scope",* Reform of Civil Nuclear Liability, International Symposium Budapest, p. 102.

172 The Joint Protocol entered into force in 1992 and as of September 2010 has been ratified by the following states: (V) Bulgaria, (V) Cameroon, (V) Chile, (V) Croatia, (V) Czech Republic, (P) Denmark, (V) Egypt, (V) Estonia, (P) Finland, (P) Germany, (P) Greece, (V) Hungary, (P) Italy (V) Latvia, (V) Lithuania, (P)Netherlands, (P) Norway, (V) Poland, (V) Romania, (V) Saint Vincent & the Grenadines, (V) Slovak Republic, (P) Slovenia, (P) Sweden (P) Turkey, (V) Ukraine and (V) Uruguay. The following countries have signed the Joint Protocol but it is not in force: (V) Argentina, (P) Belgium, (P) France, (non-convention country) Morocco (V) Philippines, (P) Portugal, (P) Spain, (PC) Switzerland and (P) United Kingdom.

173 INLEX supra note 20 at p. 1.

174 Romania is a party to the Vienna Convention and Joint Protocol.

175 Turkey is a party to the Paris Convention and Joint Protocol.

176 BUSEKIST, Otta von (1989) *A Bridge Between Two Conventions on Civil Liability for Nuclear Damage: the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention*, Nuclear Law Bulletin, No. 43, p. 134.

177 Schwartz, J.A., supra note 17 at p. 325.

limits of liability required under the Paris/Brussels Conventions and Vienna Convention. Victims suffering damage from an installation situated in a Paris Convention country (with a high compensation amount) have more available compensation than those who suffer damage from a Vienna Convention country, which are likely to have lower liability amounts. There is no adequate balance between the high compensation territory and the low compensation state. This could result in territories not increasing their compensation amounts, in order to avoid the obligation to share any compensation with a neighbouring state that provides less compensation. Pelzer indicates that one solution is to introduce the concept of reciprocity into the Joint Protocol, which he argues is entirely in line with the character of international treaties where the general rule is that one can only require what one is prepared to give.[178] This exchange of reciprocal benefits would apply in relation to the compensation amounts. If, for example, the victim, in a Vienna Convention country suffered damage from an installation situated in a Paris Convention country, that victim would only be entitled to recover such sum as is recoverable under the regime in the Vienna Convention country.

Another step which is arguably an approach towards "normalising nuclear liability law"[179] is to introduce the concept of unlimited liability in amount. The countries that have introduced unlimited liability are Austria, Germany, Switzerland and Japan. There are also indications that Finland, Sweden and Denmark will follow.[180] The Operators in these territories, who are exposed to unlimited liability, do not carry unlimited insurance since this is impossible to obtain but they do maintain insurance to a high level, which is consistent with many commercial undertakings. It is questionable whether unlimited liability will become the norm. In practice, not many countries have "opted for unlimited liability, which could easily lead to the ruin of the operator without affording any substantial contribution to the compensation of the damage caused."[181] However, as Currie indicates, it might well lead to the ruin of the Operator but it might well lead to the ruin of the victim too.[182]

2: Convention on Supplementary Compensation ("CSC")[183]

The IAEA introduced the CSC in 1997 to supplement the funds available to compensate victims. The supplementary compensation is available through state funding. It can operate by countries either (a) adhering to it as a supplementary convention to the existing Paris or Vienna Conventions to which it is a party or (b) in the event that the state is not a party to either the Paris or Vienna Convention, they can adopt the CSC and implement the provisions set out in its Annex which are similar to the principles set out in the Paris and Vienna Conventions. The CSC sets out that compensation is split into two tiers. The first tier of 300m SDR minimum (which is the same as the minimum amount required under the Vienna Convention) is used to compensate nuclear damage[184] inside and outside the installation state on a non-discriminatory basis. This minimum amount can be provided by the Operator and/or the state. The second tier is an international fund for nuclear damage inside and outside the installation state (i.e. for trans-boundary victims) that have not been compensated under the first tier. Fifty percent of the

178 Pelzer, N., (1999) *Focus on the Future of Nuclear Liability Law*, Reform of Civil Nuclear Liability, International Symposium Budapest, p. 440.
179 Pelzer, N., supra note 7 at p. 17.
180 Ibid.
181 IAEA, supra note 35 at p. 12.
182 Currie, D., supra note 46 at p. 91.
183 The full title is the Convention on Supplementary Compensation for Nuclear Damage. The CSC was adopted in September 1997 but is not yet in force. It requires a minimum of five ratifications with the countries having a combined minimum of 400k megawatts of thermal power or installed nuclear capacity before it enters into force. It is has been ratified by four countries so far which are Argentina, Morocco, Romania and the USA.183 The USA is the only ratifying country with "significant nuclear generating capacity at 111,612 MWe for the year 2009". This is far short of the required 400k megawatts of the installed nuclear capacity. For the CSC to be in force it will require other countries, with significant generating capacity, to ratify it – for example, Japan or both Canada and Ukraine. The current signatory countries are Argentina, Austrlia, Czech Republic, Indonesia, Italy, Lebanon, Lithuania, Morocco, Peru, Philippines, Romania, Ukraine and the USA.
184 Nuclear Damage is defined in the same manner as the 1997 Vienna Convention and 2004 Paris Protocol.

international fund is to be used exclusively for trans-boundary victims.[185] However, this requirement is removed if member states allocate more than 600m SDR available for tier one. The amount available under this tier is dependent on the number of member countries who have ratified the CSC. The member countries will be required to contribute in accordance with their nuclear capacity at the time of the nuclear incident.[186] There is no requirement for a country to make funds available to cover the compensation required by tier one or two until the nuclear incident occurs. The CSC has been criticised in respect of the "grandfather"[187] clause. This provision allows the USA to maintain its nuclear liability legislation without making any modifications. This is a concern because the national law in the USA is not consistent with the position in the international conventions. The main difference being that US law is based on economic channelling of liability resulting from a nuclear incident rather than legal channelling. Legal channelling results in the Operator being the only party who is legally liable for the nuclear damage to the exclusion of all other parties. Economic channelling can result in other parties being legally liable but the Operator being responsible for all economic consequences. The parties held legally liable "will be indemnified by the liability insurance coverage of the nuclear operator".[188] It has been argued that legal channelling is superior to economic channelling, because the latter "still has other companies in lawsuits even if they don't have to pay, which has its own costs."[189] However, McRae comments the parties held legally liable would be "indemnified if they incur costs because of legal liability."[190]

Appendix C:

Table C.1: Indemnities for nuclear damage

Title	Reason
Limitations in the 1965 Act	The 1965 Act is not gilt edged and contains various limitations on the Operator's liability. Any indemnity should therefore be drafted so it is independent of the 1965 Act. The limitations include: • the limits on liability, in amount (section 18) and in time (section 15) may not be viewed as satisfactory; • the possibility that a Supplier could be deemed partly liable, if the Supplier were partly responsible, for a nuclear occurrence where the Operator can demonstrate that such partial responsibility is attributable to something outside the Operator's statutory duties (section 12(3)); • the Operator not being strictly liable when hostile acts cause the breach of duty (section 13(4)); • there is also a low risk that the nuclear site license may be revoked or surrendered at any time (section 5(1)), or there may be a defect in licence granted, where the section 7 duty would not then apply.
Gaps in the 1965 Act	• There is a possibility that the Supplier is deemed to have accepted liability for nuclear damage to the Operator's property (which includes the installation itself and any other property on site used in connection with the construction or operation of a nuclear installation). This possibility should be expressly excluded or, to negate any possibility of the Supplier unwittingly accepting liability for property damage elsewhere in the contract, the Supplier could use words like "notwithstanding anything to the contrary" in the indemnity. • There are various categories of damage (as detailed in the 2004 Paris Protocol) that are currently outside the 1965 Act that should be covered by the nuclear indemnity (e.g. costs of reinstating an

185 Pelzer states that "there was considerable opposition against this provision during the negotiations of the CSC and delegates said that a victim is a victim and there should be no discrimination among victims. Pelzer, N., supra note 48 at p. 380 (footnote 52)

186 McRae sets out that "90% of the contributions come from nuclear power generating countries on the basis of their installed nuclear capacity, while the remaining portion comes from all member countries on the basis of their United Nations rate of assessment" and because nuclear power generating countries have high United Nations rates of assessment, this formula should result in 98% of the contributions being provided by the nuclear power generating countries. McRae, B., supra note 12 at p. 192.

187 Pelzer states that the grandfather clause creates contradictions in that the CSC stresses that member countries are "desirous of establishing a worldwide liability regime" but the grandfather clause contradicts this ambition by creating a loophole that allows the USA to avoid having to harmonise its national law to conform with the international regime. Pelzer, N., supra note 48 at p. 381.

188 Henault, J., (2009) "*Comparison of Canadian and United States Nuclear Civil Liability Legislation*", Nuclear Inter Jura 2009, p. 295.

189 Pelzer, N., (2009) "*Panel Notes: October 8, 2009*" Nuclear Inter Jura 2009, p. 465.

190 McRae, B., supra note 12 at p. 191 [footnote 14].

	impaired environment; economic loss from a direct economic interest in the environment; and costs of preventive measures).
Trans-boundary claims	• If the Supplier is providing services/equipment to foreign nuclear installations, there may be risks associated with the installation state not being a party to the Paris Convention. The Supplier will therefore not benefit from channelization under the international regime. In such a situation it may also be prudent for claimants to bring compensation claims against as many defendants as possible which may be a particular concern for the Supplier that has greater disposable assets than the Operator. Victims and/or the Operator may therefore decide to sue the Supplier by making the claim, or enforcing it, against the Supplier in the UK. The claims may also be brought in a country that is more sympathetic to nuclear damage claims or more likely to award higher levels of compensation or punitive damages than the courts of the installation state. • The Supplier working in the UK or another Paris Convention country is still not wholly free of risk. Nuclear damage could occur in a non-Paris Convention country. The national law of this country is unlikely to recognise the channelization or jurisdiction principles set out in the conventions. The Supplier could then be sued by victims in such country with the judgement being enforced in the UK. This is exacerbated by the Enforcement Treaties under which many countries have agreed reciprocal arrangements for enforcing judgements. For this risk to be avoided, the installation state and all neighbouring countries need to be party to a liability convention with appropriate national laws together with the UK ratifying the Joint Protocol. • The installation state's national law may present its own risks (e.g. in *India* - the Operator is likely to have rights of recourse against the Supplier if its equipment/services are defective; *Russia* - the position is less clear whether the Operator requires financial security, is exclusively liable or has a maximum liability; (c) *Switzerland* - no convention is yet in force; or *USA* which is effectively a non-convention country (e) *Canada* - there is a relatively low limitations at CAD$75million or £47m/€56m and ten years). The Operator's indemnity should provide the Supplier with the protection for the variances these gaps in the national laws create.
No nuclear liability insurance	• Suppliers do not generally insure for nuclear liability (in fact Supplier's insurance policies usually contain exclusions for radioactive contamination) whereas the Operator has to maintain insurance or other financial security. If Suppliers did insure, the parties would be maintaining insurance for the same risk and the cost of such double insurance is likely to be passed to the Operator anyway. Although nuclear liability insurance may be available to Suppliers at a premium, it is likely insurance would be for limited coverage and in certain circumstances it might not be available at all. Given the extent of damage which a single, serious nuclear incident could cause, and the vast number of claims which might then arise, Supplier's maintaining such insurance cannot realistically offer a solution. • Operators sometimes ask Suppliers to accept liability for a threshold amount of a nuclear damage claim. The amount of such threshold often becomes a commercial argument. If Suppliers decide against insurance or it is not available, they may decide to self-insure. This approach may remove minor or nuisance claims or even be an attempt by the Operator to cover any excess or deductible. However, the concern is that the Operator is essentially asking Suppliers to give up a statutory protection and take on liability which Parliament has decided by statute should be the Operator's liability. It is also a liability that only the Operator should insure.
Vicarious Liability	There is a risk that the Supplier will be found liable for nuclear damage as a result of such damage being intentionally caused by the Supplier's employee. This appears to be a low risk unless the employee was acting under the instructions of the employing Supplier.
Nuclear new build in the UK	All of the proposed NPPs are on adjacent sites to existing UK nuclear installations that are operational or being decommissioned. The cost of a new NPP has been estimated at more than €5 billion. This presents new risks for Suppliers. In the event of a nuclear incident during decommissioning or at one of the operational installations resulting in damage to a new NNP, the cost of such damage is likely to be far in excess of the available nuclear liability insurance or the funds available under the Brussels Convention. It is also likely that political pressure will result in accident victims being compensated ahead of the funders/owners of the new NPPs. Funders/owners may attempt to pass some of this risk down the supply chain and is a risk Suppliers may need to consider.
Supply chain	• The indemnity should enure for the benefit of sub-suppliers at any tier in the supply chain. This is logical because liability is channelled to the Operator who is, by law, obligated to maintain insurance or financial security and strictly liable. Nevertheless, Operators sometimes request the Supplier to provide the indemnity to its sub-supplier on the basis that it has a back-to-back indemnity from the Operator. This presents risks for the Supplier because it may be required to compensate the sub-supplier without first receiving the corresponding compensation from the Operator. The risk for the Supplier is that the Operator's limits of liability and financial security may be exhausted and the Operator may not have the financial wherewithal to honour its indemnity. The Supplier would then be left with the burden of indemnifying its sub-suppliers without any insurance coverage or indemnification from the Operator. The absence of an indemnity may also create unnecessary challenges for the Supplier in finding suitably qualified and experienced sub-suppliers. • In the event the Operator indemnifies the supply chain the Supplier should consider whether the rights of third parties to enforce contractual provisions have been excluded. In the UK, the Contract (Rights of Third Parties) Act 1999 ("the 1999 Act"), allows third parties to rely on clauses in contracts to which they are not a party. The implication being that a third party can enforce a positive obligation, such as an indemnity, in the contract. Sub-suppliers can rely on an indemnity clause where the parties to the contract cannot show that they did not intend the third party to benefit from the indemnity. The

	indemnified third party can be identified either expressly by name, as a member of a class or as answering to a particular description. If the parties want to extend the benefit of the contract to a sub-supplier or affiliate this should be expressly set out in the contract. In the UK it is common for contracts to exclude such third party rights. This type of provision often appears in the contract boiler plate as standard and can easily be overlooked. It is important that the Supplier makes the indemnity an exception to any such clause excluding third parties' rights to enforce contractual provisions.