

# **International Pooling of Operators' Funds: An Option to Increase the Amount of Financial Security to Cover Nuclear Liability?**

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## **The problem**

Financial security to cover the third party liability of the operators of nuclear installations is nearly exclusively provided by the insurance industry. The recent revision exercises of the international nuclear liability conventions resulted in higher liability amounts and in a broader concept of compensable nuclear damage. This marks a new challenge for the insurance industry: its financial capacity is not unlimited, and there seems to emerge difficulties to cover the new liability in full.

According to the concept of the international nuclear liability conventions, coverage and liability amount are interlinked. The problems which insurers might have with the revised conventions could therefore put the results of the revision exercises at risk. In general terms, the shortcomings in the size and extent of coverage have a direct impact on the size and extent of the operator's liability. As a consequence, today liability amounts exist worldwide which largely correspond to the insurance capacity but does not in every case match the nuclear risk. This situation is, of course, unfortunate for victims of a nuclear incident. It therefore has triggered justified criticism by the general public and does not support public acceptance of the peaceful uses of nuclear energy.

This paper aims at answering the question whether international pooling of operators' funds could open a viable avenue to complement financial security provided by insurance and thus to either fill gaps in insurance coverage or increase the amount of compensation for nuclear damage.

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\* The IAEA International Expert Group on Nuclear Liability (INLEX) was established by the IAEA Director General in 2003. It is an independent group of legal experts from nuclear and non-nuclear States who are appointed by the Director General *ad personam*. The group's task is to advise the Director General in nuclear liability law matters. The views expressed in this article are under the exclusive responsibility of the author.

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## Part 1: The Current Legal Situation

### 1.1. *Providing Coverage for Nuclear Liability*

#### 1.1.1. *The Legal Framework*

Article VII, paragraph 1, sentence 1 of the Vienna Convention on Civil Liability for Nuclear Damage (VC)<sup>1</sup> requires the operator of a nuclear installation “to maintain insurance or other financial security covering his liability for nuclear damage in such amount, of such type and in such terms as the Installation State shall specify”. There are substantially identical provisions in Article 10 of the Paris Convention (PC)<sup>2</sup> and in Article 5 of the Annex to the Convention on Supplementary Compensation (CSC).<sup>3</sup> The provisions serve a double purpose. On the one hand, they ensure the availability of funds for compensation of nuclear damage, which is to the benefit of victims. On the other hand, they protect the operator against ruinous claims. This so-called principle of congruence between liability and coverage is one of the internationally agreed pillars of nuclear liability law.

In the light of these obvious advantages, it has for a long time been neglected that the principle implies disadvantages too. Making the congruence of liability and financial coverage mandatory may limit the discretion of lawmakers to establish liability amounts which are risk adequate. Actually, the factor which, for a long time, has been and still is considered as decisive is not the amount needed to match the nuclear risk but the availability of financial security. This is no sound starting point for a legislator. Nuclear liability limited in amount, mostly at a rather low level, has been the corollary of the congruence principle. Therefore it is not at all surprising that all of the revision exercises of the nuclear liability conventions to a very large extent were governed by the fight to increase the liability amounts, and any increase suggested needed evidence that financial coverage for the new amount was available.

#### 1.1.2. *Covering the Nuclear Risk – A Genuine Task of Insurance Industry*

As a means of coverage, the conventions require insurance or other financial security. For good reasons, insurance contracts are almost the exclusive instrument for providing coverage. The insurance industry is the proper and experienced partner in providing nuclear liability coverage. However, its capacity is not unlimited, neither regarding the extent nor regarding the size of coverage. The nuclear risk is of a specific type, it differs from other risks. Certain heads of damage are, from an insurer’s point of view, not calculable, in particular damage to the environment or damage which becomes evident later than ten years after the incident. Furthermore, the potential magnitude of nuclear damage is a major challenge for the insurance industry. Claim handling expenses form an additional cost factor if a major nuclear accident with thousands of claimants occurs. National insurance companies have to pool their capacities; at international level, reinsurance is necessary. The recent revisions of the Vienna and the Paris Conventions which broaden the concept of compensable damage and at the same time establish significantly increased minimum liability amounts contribute to the difficulties. This holds particularly true since insurance against acts of international terrorism consumes considerable

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1. 1963 Vienna Convention: IAEA INFCIRC/500 or UNTS vol. 1063 p. 266; 1997 Vienna Convention: IAEA INFCIRC/566 Annex.
  2. 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy as revised 1964 and 1982, [www.nea.fr/html/law/nlpari\\_conv.html](http://www.nea.fr/html/law/nlpari_conv.html); 1960 Paris Convention as revised 2004 [Supplement to *Nuclear Law Bulletin* No. 75 (2005/1) p. 3].
  3. 1997 Convention on Supplementary Compensation for Nuclear Damage [IAEA INFCIRC/567].

capacity worldwide. Consequently, it is not surprising that in some States insurance coverage for the new minimum liability amounts of 300 million Special Drawing Rights (SDRs) of the International Monetary Fund (IMF) and of 700 million euros (EUR) respectively and for the expanded concept of damage under the revised Vienna and Paris Conventions will possibly not be available.<sup>4</sup>

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

### 1.1.3. Other Financial Security

It follows that States and operators should turn to the second alternative for coverage offered by the Conventions, namely other financial security. Such other financial security may be provided either by public funds or by private money.

The conventions already stipulate an obligation of the Installation State to step in, up to the reference amount of the respective State, if insurance coverage is not available or is insufficient.<sup>5</sup> State money can, of course, also be used to supplement the operator's reference amount, which means higher compensation for victims. There exist examples of that approach under both international<sup>6</sup> and national<sup>7</sup> law. In a number of States public money will be made available against a fee to be paid by the operator, which brings State intervention close to being a competitor to private insurance.<sup>8</sup>

Public money to cover liabilities is not the first and the most favoured option. State coverage is adverse to market economy and, in particular if granted without a fee, it may conflict with the polluter-pays principle, even if one takes into account that the Installation State, by licensing the installation, assumes responsibility for safe operation and preventing nuclear incidents. Despite these valid reasons

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4. See on this issue in greater detail: Mark Tetley, "Revised Paris and Vienna Conventions – Challenges for Nuclear Insurers", in: *Nuclear Law Bulletin* No. 77 (2006/1) pp. 27 *et seq.*; Sebastiaan M. S. Reitsma, "Revised Nuclear Liability: A Challenge for Insurers", in: Norbert Pelzer (ed.), "*Bausteine eines globalen Atomrechtsregimes/Elements of a Global Nuclear Law Regime*", *Tagungsbericht der AIDN/INLA-Regionaltagung* in Goslar 2006, Baden-Baden 2007 (pp. 225 *et seq.*); Reitsma, "Nuclear Liability Conventions: Limits of Insurability", Paper presented at the OECD/NEA Nuclear Law Committee Meeting on 6-7 February 2007 in Paris. Insurance industry raised its concern already at an early stage, see: Letter of the *Comité Européen des Assurances* of 8 December 2000.

5. Article VII para. 1 VC, Article 10 para. c PC (rev.), Article 5 para. 1 CSC Annex.

6. Article 3 1963 Brussels Convention Supplementary to the Paris Convention as revised 1964, 1982, 2004 [Supplement to *Nuclear Law Bulletin* No. 75 (2005/1) p. 21]; Article III para. 1 (b) CSC.

7. In many States, there exist provisions in nuclear legislation that the Government has to step in up to the liability amount of the operator if necessary, and may increase the amount of compensation if there is nuclear damage in excess of the operator's liability. Examples for the latter case are Articles 5 and 18 of the Dutch 1979 *Wet aansprakelijkheid voor kernongevallen – WAKO* – as amended (*Staatsblad* 1979: No. 225; 1991: No. 373).

8. The Swiss Nuclear Liability Act 1983 as amended explicitly defines the State intervention for which a fee has to be paid as "insurance" [Articles 12, 14 *Kernenergiehaftpflichtgesetz*, SR 732.44].

against financial security provided by tax money, States use this option while private alternatives to insurance coverage do not play a major role, if at all.

In which way could private financial security be used to replace or complement insurance contracts or State intervention? From a theoretical point of view, there may be a number of options. The most obvious of them are bank guaranties and self-coverage. It has also been proposed to use the international capital market to raise major funds for covering the nuclear risk.<sup>9</sup> In reality, none of these possibilities is being used.<sup>10</sup> They are too expensive and in most cases not reliable enough to attain the approval by the competent authority as valid financial security to cover nuclear liability.

In the light of the recent difficulties of the insurance industry to provide sufficient capacity and in particular with a view to considerably increasing the amount of compensation available, the concept of coverage by private means other than insurance needs to be revisited and reconsidered.

## **1.2. Coverage of the Nuclear Risk by Private Means Other than Insurance**

### *1.2.1. Prerequisites of Other Private Coverage*

Reconsidering the coverage of the nuclear risk by private means other than insurance requires a thorough prior analysis of the reasons why this type of financial security has not, or only rarely, been used in the past.

Insurance is the specifically designed legal instrument to cover – against payment of a premium – a defined risk to which the insured person is exposed. In the case of third party liability insurance, the insurer guarantees indemnification against claims for compensation by third parties including defence against unjustified claims. This concept describes exactly what the nuclear liability conventions require under their respective articles on financial security: the liability of the operator has to be fully covered.

Obviously, what is achieved by the conclusion of a third party liability insurance contract is also the yardstick for any other type of financial security. In particular, it is required that the guarantor has sound financial standing ensuring that the guaranteed indemnification is available reliably and without delay when needed.<sup>11</sup> Here we see the first problem of other financial security. While the insurance industry is subject to a comprehensive regime of State supervision particularly designed to make sure that insurers will fulfil their legally standardised insurance contracts, there is no such control system

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9. J.-R. Tyran, P. Zweifel, “Environmental Risk Internalisation through Capital Markets (ERICAM): The Case of Nuclear Power”, Paper presented at the 9<sup>th</sup> Annual Conference of the European Association of Law and Economics, London, 17-19 September 1992; Jean-Robert Tyran, “Das Modell ERICAM: Ein Vorschlag zur Verbesserung der Kernenergiehaftpflicht durch Einbeziehung von Kapitalmärkten”, in: Norbert Pelzer (ed.), “Neues Atomenergierecht – Internationale und nationale Entwicklungen/New Atomic Energy Law – International and National Developments”, *Tagungsbericht der AIDN/INLA-Regionaltagung in Landshut* 1994, Baden-Baden 1995, pp. 163 *et seq.*

10. States often use self-coverage if they act as operators. This applies e.g. to German State-owned research reactors.

11. As an example at national level: Section 3, para. 1 of the German 1977 Financial Security Ordinance as amended [*Bundesgesetzblatt* 1977 I p. 220; 2005 I pp. 2365, 2405, 2976] stipulates that other financial security must be available in full and without delay when requested.

regarding other financial security.<sup>12</sup> Insurers have the experience, the skills and the manpower to organise claim handling while other guarantors do not have that capacity. Of course, control and claim handling skills can be established and organised. Making other financial security conform to the standards of insurance would therefore require some expenditure in organising the conditions necessary. Here we come to the second problem of other financial security: it may be more costly than insurance.

There is no need to go into greater detail here. In summarising, it has to be kept in mind that any attempt to use private money other than insurance as financial security has to meet the requirements described above.

### *1.2.2. Self-coverage of Operators*

As a rule, self-coverage of an individual operator is not an option to be used. Very often, the only asset of an operator is the nuclear installation itself which, in the event of a nuclear incident, will be damaged. So there are no assets to be used as coverage. If the operator is the subsidiary of a rich parent company, this company may guarantee the coverage. However from a legal point of view, this is not a case of self-coverage. Operator and parent company are distinct legal persons, and piercing the corporate veil is not an issue to be seriously discussed in the special field of nuclear law.

Self-coverage of operators can only be accepted as a realistic and viable option if we succeed in making instrumental the solidarity of all operators including their parent companies. The combined financial means of all operators ensures reliable availability of coverage. Requesting and promoting joint obligations of the operators is not arbitrary but has a legal background. The operators are the potential polluters, and they carry responsibility. They are part of a risk community. This fact provides the basis of solidarity. It is without any doubt to the benefit of all of them if they join forces to make available an amount of financial security as high as achievable. Jointly they are in a position to deploy a greater amount of coverage. High coverage of liability is supportive to public acceptance. Sharing the burden makes the obligation acceptable to each of the partners of the system.

Addressees of a system to jointly provide additional financial security are of course in the first line the operators in an individual State. But transboundary cooperation should also be considered, for two reasons: first, to increase the number of participants, thereby either decreasing the individual share to be contributed or increasing the coverage amount; and secondly, to include operators from States where only one or very few nuclear installations are situated and where national pooling would therefore not be possible or would not create any significant advantage.

At national level, there already exist examples of pooling operators' sources to increase the amount of financial security. Various efforts to make use of operators' solidarity at international level failed in the beginning of the 1990s.

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12. The Conventions contain provisions that the financial security must not be used for purposes other than for the compensation of nuclear damage under the Conventions. This shall ensure availability of the coverage and shall protect against spending the money for other purposes. See Articles VII para. 3 VC; 10 para. (e) PC (rev.); 5 para. 3 Annex to CSC. The prohibition to use the coverage for other purposes entails that any disposition of the coverage for other purposes is null and void.

### 1.3. Existing Regimes of Operators' Pooling

#### 1.3.1. The US. Price-Anderson Retrospective Pooling

In 1975, the US Congress amended the nuclear liability provisions of the so-called Price-Anderson Act, which is contained in Section 170 of the US Atomic Energy Act 1954, by inserting an innovative approach with a view to providing higher amounts of coverage and at the same time increasing the maximum liability of the operator. The instrument to achieve this goal was the “industry retrospective rating plan” as provided for in Section 170 subsection b of the Atomic Energy Act.<sup>13</sup>

According to this provision, the operator of a nuclear power plant<sup>14</sup> – “licensee” – has to provide financial means to cover his legal liability in two layers. The first layer (“primary financial protection”) is provided for by an insurance contract up to the highest amount available at reasonable cost and on reasonable terms on the market, which is currently fixed to 300 million US Dollars (USD).<sup>15</sup> In addition to the first layer, operators are required, as a second layer of coverage, to maintain “private liability insurance available under an industry retrospective rating plan providing for premium charges deferred in whole or major part until public liability from a nuclear incident exceeds or appears likely to exceed the level of primary financial protection”.<sup>16</sup> The standard maximum deferred premium, which in the case of a nuclear incident causing damage in excess of the USD 300 million may be charged from each of the US operators of nuclear power stations, shall be USD 95.8 million per incident.<sup>17</sup> Since there are 104 nuclear power plants in operation in the US, the retrospective premium system will raise an amount of USD 9.96 billion, which are in addition to the USD 300 million of the first coverage layer. The total compensation amount of USD 10.26 billion (EUR 7.71 billion) achieved by the system is most remarkable.<sup>18</sup>

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13. Atomic Energy Act 1954 as amended (Public Law 83-703, 68 Stat. 919, 42 U.S.C. 2011). The Price-Anderson Act 1957 (Public Law 85-256) added Section 170 to the Atomic Energy Act. The section was repeatedly amended. The industry retrospective rating plan was introduced by Act of 31 December 1975 (Public Law 94-197). The latest relevant amendment to the Price-Anderson Act is the Price-Anderson Amendment Act of 2005 which is contained in Chapter VI “Nuclear Matters” of the Energy Policy Act of 2005 (Public Law 109-58).
  14. The following installations (reactors) are covered: “ ... facilities designed for producing substantial amounts of electricity and having a rated capacity of 100 000 electrical kilowatts or more ...” [Section 170, Subsec.b, sentence 1 Atomic Energy Act, 140 C.F.R. 11(a)(4)].
  15. See 140 C.F.R. 11(a)(4). The primary financial protection may be provided by private insurance, private contractual indemnities, self-insurance, other proof of financial responsibility, or a combination of such measures [Section 170, Subsec. b, sentence 2, Atomic Energy Act].
  16. Section 170, Subsec. b, sentence 3, Atomic Energy Act.
  17. The premium is subject to adjustment for inflation, Section 170, Subsec. t, Atomic Energy Act. It will be called for in instalments of not more than USD 15 million per year. See also 140 C.F.R. 11 (a)(4).
  18. The amount is much higher than any of the amounts provided by Contracting Parties to the international nuclear liability conventions. It tops even the German guaranteed amount of EUR 2.5 billion (≈ USD 3.32 billion). On the other hand, German nuclear liability is not limited in amount, which adds other assets of the operator liable to the guaranteed compensation. Moreover, compensation under the nuclear liability conventions does not include legal costs (interest, costs awarded by the court, claims handling costs). Such costs have to be paid in addition to the compensation amount and must not be paid out of it. The US amount covers the public liability of the operator which includes legal costs [Section 11, Subsecs. k, w, jj, Atomic Energy Act]. However, if the claims and legal costs are in excess of the maximum amount of appr. USD 10 billion, a 5% surcharge is due, see: “Insurance Coverage for Third Party Liability and Material Damage Arising From Nuclear Incidents Caused by Terrorist Acts – Note by

The attraction of the US system is that operators are not required to pay premiums in advance.<sup>19</sup> They are only due after the incident has occurred. This marks the difference with classical insurance where premiums have to be paid in advance and irrespective of whether an incident occurs or not. There is apparently no contractual obligation of the licensees to pay the deferred premium but the payment is made mandatory directly by the Atomic Energy Act. The act calls the industry retrospective rating plan “private liability insurance ... providing for deferred premium charges”.<sup>20</sup> However, it appears to be rather a hybrid concept consisting of elements of an insurance contract with premium payment and of elements of joint industry coverage with fixed shares to be paid.<sup>21</sup> But this may be legal semantics only which do not touch upon the extreme usefulness of the system. It perfectly complements the capacity of private insurance industry in a most cost effective way.

### 1.3.2. The German Agreement on Operators’ Solidarity

In Germany, the concept of pooling the operators’ financial means was first discussed in the beginning of the 1970s. An increase of the financial security to be provided by the operator up to an amount of 1 billion Deutschmark (DEM) (≈ EUR 500 million) was on the agenda of the legislature. This amount should, up to DEM 500 million, be covered by private means and the other half of the amount by State money. As a result of the talks, insurers and operators agreed to cover the private tier of DEM 500 million in full by an insurance contract as follows: DEM 200 million were provided by the insurance industry while regarding the additional DEM 300 million, insurers only fronted the contract and were re-insured by the entirety of the operators of nuclear power plants according to a certain key. For that purpose, the operators founded a private law company, the *Nuklear Haftpflicht GbR*.<sup>22</sup> The regulatory bodies accepted that arrangement, and it remained valid until 2002.<sup>23</sup>

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the OECD/NEA Secretariat”, in: *Nuclear Law Bulletin* No. 78 (2006/2), pp.19 *et seq.* (table p. 35). – Among the States with very high compensation amounts is also the Netherlands but it cannot be compared to the US and Germany. While those two States base compensation on the liability of the operator, the Netherlands provides for a combination of operator’s liability and State compensation in addition to the operator’s liability. The operator’s liability is limited to EUR 226.9 million, beyond that liability ceiling the State – against a fee – provides additional compensation up to EUR 2.27 billion (reference see footnote 7).

19. See on the system in greater detail including a discussion of its advantages and “vulnerabilities”: “Note on the US System for Retrospective Premium Pooling Under the Price-Anderson Act – Note by the US Delegation for the OECD/NEA Nuclear Law Committee meeting on 6-7 February 2007 (OECD/NEA Doc. NEA/NLC/DOC (2007) 4, 25 January 2007).
20. Section 170, Subsec. b, sentence 3, Atomic Energy Act, identical language in 140 C.F.R. 11 (a)(4).
21. The note referred to in footnote 19 on its page 2 underlines the character of the system as an insurance: “While it might appear that in this arrangement the power reactor licensees are both insurers and insured parties, they are, as a legal matter, simply the latter and the funds that they pay in are designed and designated **as deferred insurance premiums** (emphasis by the authors of the note). No one licensee assumes any obligation for the liability of another.” See also: J. Marrone, “Nuclear Liability Insurance – The Price-Anderson Reparations System and The Claims Experience of the Nuclear Industry”, *Nuclear Law Bulletin* No. 33 (June 1984), pp. 45 *et seq.* (47); John L. Quattrocchi, “The Price-Anderson Act in The New Millennium – An Insurer’s Perspective”, in: *Nuclear Inter Jura* 1999, Washington, D.C. 1999, pp. 249 *et seq.* (250).
22. See on the history: Dieter von Moock “*Probleme der Deckungsvorsorge und des Staatseintritts für die Betreiber von Kernkraftwerken*”, in: *Drittes Deutsches Atomrechts-Symposium* Göttingen 1974, Köln, etc., 1975 pp. 299 *et seq.*

When at the end of the 1990s the German Government decided to request operators of nuclear power plants to provide financial security up to an amount of DEM 5 billion and EUR 2.5 billion respectively ( $\approx$  USD 3.32 billion) industry reacted by establishing a new system of self-coverage.

In 2001, the four parent companies of the 19 German nuclear power plants concluded the so-called “Solidarity Agreement” (“*Solidarvereinbarung*”).<sup>24</sup> The Agreement aims at providing the required financial security by mutually guaranteeing the availability of the amount of EUR 2.5 billion. The Agreement consists of six sections and four annexes.<sup>25</sup>

In accordance with Section 1, paragraph 1, the partners undertake to enable the operators of the nuclear power plants listed in Annex 1 to the Agreement to provide financial security as required under Sections 13, 14 of the Atomic Energy Act<sup>26</sup> up to the amount of EUR 2.5 billion. The Agreement continues using the two tier approach of the former *Nuklear Haftpflicht GbR*. That means coverage in the first tier will be provided by the insurance industry while the second tier of coverage will be provided by operators’ pooling. The insurance layer is fixed at EUR 255.6 billion ( $\approx$  USD 340 million); the operators’ money amounts to EUR 2.24 billion ( $\approx$  USD 2.98 billion). The operators’ amount will be made available for each nuclear incident irrespective of whether the insurance is made available or not [Section 1, paragraph 2 of the Agreement].<sup>27</sup>

Each partner under the Agreement accepts liability vis-à-vis the other partners to contribute a certain percentage of the total amount of operators’ money, which for each nuclear power plant is based on the square root of the thermal reactor power. This sum is agreed to correspond to 100%. Based on, and corresponding to, the shares a partner holds in an individual power plant, the percentage of this plant will be attributed to the partner; the sum of all percentages forms the total size of the guarantee of that partner. Annex 2 provides a list of shares and percentages at the time of the conclusion of the Agreement [Section 1, paragraph 3 of the Agreement].<sup>28</sup>

If a nuclear incident occurs for which an operator covered by the Agreement is held liable, the guarantee is due to be paid to that operator provided neither the operator nor the respective parent company are in a position to provide the money necessary for the compensation up to the amount of

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23. Today, the *Nuklear Haftpflicht GbR* is only used to jointly cover costs of evacuation between EUR 0.5 and 15 million.
  24. The Agreement is reproduced in: Herbert Posser, Malte Schmans, Christian Müller-Dehn, “*Atomgesetz, Kommentar Zur Novelle 2002*”, Köln, etc., 2003, pp. 342 *et seq.* Parties to the Agreement are: Energie Baden-Württemberg AG (EnBW), E.ON Energie AG, Hamburgische Electricitäts-Werke AG (now: Vattenfall Europe AG), RWE AG.
  25. See on the Agreement: Malte Schmans, “*Die Deckung der Nuklearen Haftpflicht Durch Betreibermittel in Deutschland*”, in: Norbert Pelzer (ed.), *Brennpunkte des Atomenergierechts/Nuclear Law Problems in Focus, Tagungsbericht der AIDN/INLA-Regionaltagung* in Wiesbaden 2002, Baden-Baden 2003, pp. 163 *et seq.* A brief sketch of the Agreement is also contained in: Axel Vorwerk, “The 2002 Amendment to the German Atomic Energy Act Concerning the Phase-out of Nuclear Power”, in: *Nuclear Law Bulletin* No. 69 (2002/1) pp. 7 *et seq.* (14).
  26. *Bundesgesetzblatt* 1985 I p. 1565, 2005 I pp. 2365, 2976.
  27. As a consequence of this provision, the State intervention as provided for under Section 34 of the Atomic Energy Act (maximum amount: EUR 2.5 billion) only comes into play when the operators’ tier is exhausted, and consequently, it is limited to the insurance tier amount of EUR 255.6 million.
  28. More recent figures can be taken from the company reports on the websites of the four pooling partners. The approximate percentages read as follows: E.ON: 42%, RWE: 25.9%, EnBW: 23.9%, Vattenfall: 8.2%.

EUR 2.24 billion. Inability to provide the money has to be proved by a certificate of a public accountant [Section 1, paragraphs 5 and 6 of the Agreement]. Like under the US deferred premium system, the partners are not obliged to pay any contribution in advance but only after an incident has occurred. The partners who paid their contribution gain a right of recourse against the operator; however, claims of victims for compensation have priority over those rights of recourse.

The partners furthermore undertake to support the operator liable in claims handling. In doing so, they in particular deploy infrastructure and specialised manpower. They will use their influence to achieve additional assistance from their respective group of companies [Section 2 of the Agreement].

In order to satisfy the regulatory bodies that the guarantors are reliably in a position to meet their obligations when requested, the partners have annually, and in connection with the year-end accounting of the company, to submit a certificate of a public accountant that sufficient solvent means are available [Section 3 of the Agreement]. This is the prerequisite for accepting the system as valid maintenance of financial security to be provided by the operator under Sections 13, 14 Atomic Energy Act and Article 10 Paris Convention.<sup>29</sup>

### *1.3.3. International Efforts to Establish Operators' Pooling*

During the negotiations to revise the Vienna Convention the issue of providing supplementary funding for compensation of nuclear damage in addition to the funds to be provided by the operator liable was the subject of intensive deliberations, which eventually resulted in the Convention of Supplementary Compensation for Nuclear Damage.<sup>30</sup> This convention does not use operators' money for its second tier of compensation but exclusively draws the supplementary layer of compensation from public funds.<sup>31</sup> At an early stage of the negotiations, experts also discussed international pooling of operators' funds. Draft conventions establishing additional tiers of compensation consisting of collective public funds of the Contracting Parties and of operators were presented ("Levy Draft", "Pool Draft") but they did not find support and eventually failed.<sup>32</sup>

In hindsight, there exist obvious reasons for the failure of those drafts. The drafters and promoters of the operators' pooling concept apparently underestimated and neglected the extreme complexity of making operators' money available to cover nuclear damage caused by other operators. This is already a problem at national level and even more so at regional level. But it seems to aim at the impossible if the concept is to be used in a worldwide treaty regime. It will already be a most difficult task to convince national Parliaments and national ministers of finance to use tax money to meet the obligations under the worldwide Convention of Supplementary Compensation for Nuclear Damage. But it is naïve to expect private operators to agree with the concept of using their own money for worldwide compensation of nuclear damage caused by other operators. There is no universal risk

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29. There is a model certificate in Annex 4 to the Agreement.

30. Footnote 3.

31. Article III paragraph 1(b) CSC. The same applies to the other international supplementary funding convention, namely the 1963/1964/1982 Brussels Convention Supplementary to the Paris Convention, [www.nea.fr/html/law/nlbrussels.html](http://www.nea.fr/html/law/nlbrussels.html), 2004 version: *Nuclear Law Bulletin* No. 75 (2005/1) p. 21.

32. See a brief history of the negotiations with references in: "The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage – Explanatory Texts", Vienna 2007 (IAEA International Law Series, 3), p. 63. No. 3.2. (in particular footnote 202).

community of operators. States were therefore well advised not to embark on obligations binding under international law to impose such levies on their operators.

## **Part 2: Establishing International Operators' Pooling**

### **2.1. International Operators' Pooling – Purpose and Approaches**

#### *2.1.1. Purpose of, and Reasons for, Operators' Pooling*

After the failure of the early 1990s attempts to establish international pooling of operators' funds, any new approach to this concept has to be based on a more realistic assessment of States' and of operators' readiness to cooperate in this field.

A first step to match reality is a prior agreement of States and entities involved about the purpose of, and the reasons for, the exercise. What shall be achieved? Operators' pooling is meant to provide financial security if and to the extent insurance coverage is not available and State intervention is regarded as being an inappropriate means to cover private liabilities because it would conflict with the polluter-pays principle and would interfere with principles of market economy. Under these circumstances, the pooling could serve two purposes. Firstly, it could be used to fill gaps in coverage due to specific exclusions from insurance coverage. Secondly, it could be used to increase the total amount of compensation beyond the capacity of the insurance industry. Using the pooling for both purposes is desirable.

At this stage, it appears to be necessary to return to the insurance industry's problems regarding the coverage of certain nuclear risks, which in general have already been outlined above.<sup>33</sup> The insurance industry expressed the view that it has difficulties to cover a considerable number of heads of damage under the revised Vienna Convention, the revised Paris Convention and the Convention on Supplementary Compensation for Nuclear Damage.<sup>34</sup> Sebastiaan Reitsma and Mark Tetley<sup>35</sup> in their most informative contributions elaborated on the issue and presented impressive arguments to explain the insurers' problems.<sup>36</sup> The insurance industry's main points of concern may be summarised as follows:

- costs of measures of reinstatement of impaired environment [Articles I(1)(k)(iv) VC, 1(a)(vii)(4) PC, I(f)(iv) CSC];
- loss of income deriving from an economic interest in any use or enjoyment of the environment [Articles I(k)(v) VC, I(f)(v) CSC]; ... deriving from a direct economic interest ... [Article 1(a)(vii)(5) PC];
- costs of preventive measures [Articles I(1)(k)(vi) VC, 1(a)(vii)(6) PC, I(f)(vi) CSC];
- coverage of nuclear damage caused by radioactive emissions within the permitted dose limits under normal operational conditions;

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33. See Section 1.1.2.

34. See references in footnote 4.

35. Reitsma is Manager of the Swiss Nuclear Pool. Tetley is Managing Director of Nuclear Risk Insurers Limited in the United Kingdom.

36. See reference in footnote 4.

- coverage of nuclear damage caused by a nuclear incident directly due to a grave natural disaster of an exceptional character;
- coverage of nuclear damage which becomes evident more than ten years after the nuclear incident occurred; that applies to claims for compensation of personal injury the period of prescription or extinction of which extends to 30 years from the date of the nuclear incident [Articles VI(a)(i) VC, 8(a)(i) PC; the CSC does not extend the period of personal injury to 30 years, Article 9(1) Annex to CSC];
- in a number of States, there might be difficulties to cover the minimum amounts of liability of SDR 300 million under Articles V VC, II(1)(a) CSC and in particular of EUR 700 million under Article 7(a) PC;
- insurance industry finally expressed concern regarding the costs of claim handling in the case of a major nuclear accident where possibly many thousands of justified and unjustified claims have to be dealt with.

Actually, this list of “problematic risks” covers nearly all of the improvements of nuclear liability law and of victims’ protection gained by the revision exercises. That means the shortcomings in insurance coverage are dramatic. How serious the situation is will be stressed by a quotation from the conclusion of Mark Tetley’s article.<sup>37</sup>

*“Making an industrial “polluter” pay more money to more people is a fair objective for any government, but to impose such regime on the nuclear industry without restricting the danger posed by these obligations threatens the delicate equilibrium that has allowed insurers to support the nuclear industry throughout its development.*

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

That is clear language, but the conclusion drawn by the author cannot be accepted. Tetley’s conclusion clearly confirms the old school of thinking that liability means insurability. Legislators cannot agree to that view nor is it in the best interest of operators – not to mention the interest of possible victims – to be tied to the insurance industry without alternatives. For good reasons and after long difficult negotiations, States agreed on the revised conventions with a view to establishing a more risk adequate liability regime and to better protecting victims. There is no “inconsistent approach” which would warrant a change or an insurance adequate streamlining of the new liability concept only for the reason that the insurance industry is unable to cover the liability.<sup>38</sup> The only conclusion which can be drawn from the insurers’ reluctant position is to look for coverage other than insurance.

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37. Page 39 of the article (footnote 4).

38. Tetley in his article identifies a number of problematic issues in the revised conventions, and in particular stresses in bold that “**almost all forms of environmental liability are currently uninsurable**” (p. 36, reference in footnote 4). That may be correct generally. But a closer look into the heads of environmental damage in the nuclear conventions show that the definitions contain qualifiers which enable judges to restrict and define an individual damage quite clearly in terms of money. This applies also to the term “unless insignificant” which the author on p. 37 explicitly marks as “also open to confusion and debate”.

In accordance with the conventions, gaps in insurance coverage have to be covered by the Installation State that has to step in to the extent that insurance or other financial security is not available or not sufficient to satisfy claims up to the reference amount.<sup>39</sup> This applies to the “problematic risks” gaps too. Hence, from a victim’s point of view, there is no need to establish international operators’ pooling. But politically it certainly would be the wrong signal if the advantages of the revised nuclear liability law could only be implemented with the help of State money. For convincing reasons, the general public would criticise that solution. Operators in their own best interest would therefore be well advised if they look for solutions to cover the insurance gaps by means of their own.

Of course, operators will probably not base their decision in favour or against pooling solely on political deliberations<sup>40</sup> but they will also have to ponder which solution is most cost-effective. They might opt for pooling if it is as advantageous and not more expensive but, in the best case, less expensive than other forms of available coverage.

Operators and their parent companies might have an interest in pooling with retrospective payment to avoid regular advance payment of insurance premiums or of fees for government compensation irrespective of whether a nuclear incident occurs and which, consequently, appears to be “lost money”. This holds particularly true if they, like in the case of the Netherlands,<sup>41</sup> are obliged to pay a fee for additional State compensation although they are not any longer legally liable to compensate nuclear damage. In those cases, a deferred premium system might be an incentive to cover additional compensation by money of their own. With a view to protecting their assets, they might prefer international pooling to increase the coverage if liability under the respective national legislation is not limited in amount or is considerably higher than the coverage available from the insurance industry. Last but not least, operators might decide for pooling because of the insurers’ reluctance to cover nuclear liability in full. Pooling would ensure coverage also for risks which insurers are not prepared to cover.

Irrespective of these deliberations, perhaps the most important issue operators have to deal with relates to the question of the way in which sharing risks with other operators, especially from another country, might impair the financial standing of the operator and its parent company on the capital market. Will the shareholders agree to the concept?

As an interim summary, international operators’ pooling is an interesting option. More reliably available compensation money is to the advantage of victims. For the operator liable this option could be an attractive supplement and alternative to other forms of financial security provided pooling can be

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Of course, every legal concept may be debated but there are courts to make a definite decision. However, Tetley distrusts courts as well and would prefer a definition in the convention, which, by the way, also needs (disputable) interpretation. He feels that court decisions add “a further element of uncertainty to this particular aspect of nuclear damage” (p. 37). In this context, it shall be mentioned that the US insurers in reaction to the 1980 Comprehensive Environmental Response, Compensation and Liability Act (Superfund) (CERCLA) as amended 1985, 1996 (42 U.S.C. 9601) apparently developed strategies to deal with environmental damage; see EU Doc. COM (2002) 17 final of 23 January 2002 pp. 7 *et seq* .

39. Articles VII para. 1(a) VC, 10 para. (c) PC, 5 para. 1(a) Annex to CSC. The obligation of the Installation State to step in includes claim handling costs. To the extent the State compensates victims, those costs have to be borne by the State.
40. Which role political deliberations play depends, *inter alia*, on the general political climate in the respective Installation State: Is it pro or contra the peaceful use of nuclear energy?
41. See references in footnotes 7 and 18.

organised appropriately. Higher coverage, in cases of a major nuclear incident, protects the operator and its parent company against legal or political pressure to provide additional assets for compensation in excess of the liability amount or the amount of the legally required coverage. On the other hand, there are uncertainties and stumbling stones which need attention. Perhaps a thorough investigation of the legal and economic implications, as the case may be, will make evident compelling reasons against the concept of internationally pooling operators' money. At this stage of the deliberations, this cannot entirely be excluded.

### 2.1.2. Mandatory or Voluntary Pooling?

The existing pooling systems at national level in the United States and in Germany have, with regard to their basic concepts, a common denominator but regarding their implementation they are governed by different approaches. The common denominator is that premiums or shares to be paid by an individual operator are only due after a nuclear incident has occurred causing damage in excess of a defined size. Retrospective payment is indeed the main and innovative advantage of the systems. The implementation follows different rules, though. While the US system is based on a statutory obligation or duty of the individual operator to contribute although it is called a "private liability insurance providing for deferred premium charges",<sup>42</sup> the German system is formed by a voluntarily concluded contract under civil law among the four leading German energy producing companies, the "*Solidarvereinbarung*".<sup>43</sup> The efforts to establish international pooling as described above under Section 1.3.3. of this paper followed the US approach: the international operators' pooling should be made mandatory.

There are pros and cons for both approaches. Of course, a pooling system based on statutes provides a basis which is solid and cannot easily be done away with. Compared to that, contracts which are not explicitly stipulated by a law but are concluded voluntarily may more easily be changed or terminated. They draw their authority not in the first line from legal obligations but from political and economic usefulness for the Parties to the contract. Consequently, the US system may be deemed stronger than the German.

On the other hand, any mandatory pooling of operators' private means may, at least for some States, imply legal or even constitutional problems. Legislators that impose an obligation on operators to use their private means to cover or contribute to covering the legal liability of another operator might conflict with guaranteed property rights. One might dispute whether that approach could be called mandatory liability insurance to the mutual benefit of all operators. It seems rather to be a specialised levy or a specialised tax which needs reasons to be justified. The concept of risk community was already mentioned as a possibly pertinent reason, but how far reaching is the validity of this concept? Does a risk community exist among operators of different States with different legal regimes? There are questions to be answered, and the answers to these questions depend on the legal system of the respective State and, consequently, may differ.<sup>44</sup> As a modern example of transnational

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42. Reference in footnote 20.

43. Reference in footnote 24.

44. Under German law, the "classical" risk community is established under Section 830, para. 1, sentence 2 of the *Bürgerliches Gesetzbuch* (Civil Code): If several persons are involved in committing a tort and the individual tortfeasor cannot be identified, all of the persons involved are held liable. What is regulated in this provision defines, however, a situation totally different from operators' pooling. In the case of operators' pooling the tortfeasor is well known, which makes it more difficult to require "participation" in the financial consequences of the liability of others.

mandatory risk pooling, the bank deposit guarantee schemes under the EU law may be referred to.<sup>45</sup> Although the underlying idea of bank deposit guarantee schemes, in its basic concept, is fairly similar if not identical to operators' pooling in the nuclear field, the EU Directives on harmonizing national schemes cannot be used as an example for mandatory transboundary pooling outside the special EU regime.

It follows that one should refrain from trying to draft and implement mandatory operators' pooling instruments at international level. The failure of the early 1990s efforts to establish a mandatory treaty regime teaches lessons which most probably are valid still today. International operators' pooling should entirely be left to the discretion of operators and their respective parent companies. It is up to them to decide if and to which extent and under which conditions they are prepared to embark on international pooling of financial means to cover nuclear liability. This decision is not a business of States. It is mainly a responsibility of the individual companies vis-à-vis their shareholders. This conclusion does not, however, exclude State measures designed to support respective efforts of operators if States deem them useful.

## **2.2. *Implementing International Pooling***

### **2.2.1. *Background Conditions***

Effective and reliable coverage of nuclear liability by a system of international operators' pooling can only be achieved if the political, legal and economic background in all States whose operators wish to participate in the system is comparable and at equal level. Pooling is based on trust and confidence. If operators "invest" money in the nuclear risk of another operator they want to remain on familiar ground. Since important amounts of money are involved they cannot afford to explore unknown territory. A minimum condition is that all States involved are democracies operating under the rule of law and with a free market economy. Pooling is easier to agree upon if it takes place among operators of like-minded States that preferably cooperate already in other fields. States that are Contracting Parties to an organisation of regional integration or other nature provide a good basis for operators' pooling. This applies particularly to EU member States. Limitation of the system to a certain geographical region makes pooling more reasonable because only in a geographically limited area a natural transboundary risk community may exist.

Among the background conditions there is, of course, the requirement of equal nuclear liability legislation in all participating States. States should be Party to one and the same nuclear liability convention. If they are Party to different conventions, the conventions need to be linked by either the 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention<sup>46</sup> or by the Convention on Supplementary Compensation.<sup>47</sup> Nevertheless, in any case it is advisable to also have a closer look into the national implementation of the conventions with a view to identifying early on possible difficulties in applying the law to an individual case. Operators participating in international pooling should have a clear picture of the nuclear liability law which will be applied to nuclear incidents occurring in installations of their pooling partners. This includes assurance that the

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45. Directive 94/19/EC of the European Parliament and the Council on deposit-guarantee schemes of 30 May 1994 (Official Journal No. L 135 of 31 May 1994, p.1) as amended by Directive 2005/1/EC of 9 March 2005 (Official Journal No. L 79 of 24 March 2005, p. 9).

46. IAEA Doc. INFCIRC/402.

47. Reference in footnote 3. The CSC would enable so-called Annex States that are not Party to any of the conventions to co-operate too.

Installation States will accept pooled operators' means as valid financial security to cover the respective operator's nuclear liability. Participation in the nuclear liability conventions also ensures free transferability of the shares or premiums provided by the pooling partners.<sup>48</sup> If the pooling partners agree on a right of recourse regarding their shares or premiums against the operator liable, it has to be ensured that such rights are enforceable in the operator's State.

### 2.2.2. Equal or Comparable Levels of Nuclear Safety and Security

Among the first questions an operator interested in pooling will ask are questions relating to the level of nuclear safety and security of the nuclear installations with which the risk will be shared. Operators will only be prepared to pool if the safety and security standards of other installations are up to the standards of their own installations.

There has to be an adequate legal framework in all States whose operators wish to cooperate. This requires participation in the major international instruments on nuclear safety and security, such as the 1994 Convention on Nuclear Safety,<sup>49</sup> the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management,<sup>50</sup> the 1980 Convention on Physical Protection of Nuclear Material as amended 2005,<sup>51</sup> and the other members of the so-called family of Nuclear Safety Conventions.<sup>52</sup> Radiation protection has to be in compliance with the recognised international standards.<sup>53</sup> Needless to say that there also must be in place a sound non-proliferation regime based on the 1968 Non-Proliferation Treaty<sup>54</sup> and implementing cooperation with the IAEA.<sup>55</sup>

Attention has to be given to the national implementation of the international instruments and practices. Operators should try and get familiar with the way in which the regulatory bodies exercise their functions. It is of outstanding importance that operators are granted access to the installations which will participate in the pooling in order to enable the partners to decide on the eligibility of an installation on the ground of knowledge and assessment of their own. Such initial safety appraisals should be continued as permanent safety peer reviews among partners of the pooling which, as a welcome side effect, would contribute to enhancing nuclear safety in general.

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48. Articles XV VC, 12 PC. In the Convention on Supplementary Compensation, there is a provision on free transfer only with regard to the international funds under Article III.1(b) [Article VII.2]. Article 8, para. 2 of the Annex to the CSC stipulates the transferability of compensation but not the transferability of coverage amounts. So there may be doubts as to whether this provision fully corresponds to the respective provisions of the VC and the PC.

49. IAEA Doc. INFCIRC/449.

50. IAEA Doc. INFCIRC/546.

51. IAEA Doc. INFCIRC/274/Rev.1, IAEA Doc. GOV/INF/2005/10-GC(49)/INF/6.

52. The family also includes the 1986 Conventions on Early Notification and on Assistance [IAEA Docs. INFCIRC/335 and 336].

53. As e.g. IAEA International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radioactive Sources, 1996 (IAEA Safety Series 115).

54. IAEA Doc. INFCIRC/140.

55. That means *in concreto* that bilateral agreements have to be concluded with the IAEA based on e.g. IAEA Docs. INFCIRC/153 (corrected), INFCIRC/540 (corrected), and other relevant documents.

### 2.2.3. Equal or Comparable Economic Conditions and Legal Framework

It has already been stated that a free market economy is a basic condition for operators' pooling. Operators in States with a State planned economy will most probably not enjoy the trust to be accepted as partners.

Equally important is the comparability of trade and company law and in particular of tax law. Pooling aims at providing a very considerable amount of money as coverage, otherwise pooling does not make much sense. Depending on the number of participating operators and on the total amount of money to be made available, the individual share or premium to be paid by the individual company may be fairly high.<sup>56</sup> The obligation to pay the share or premium will be identified as a debt in the balance sheet of the company. Hence, it has an impact on the company's rating and may influence its share price and its creditworthiness. This is difficult to explain to the shareholders, may put the company at a disadvantage in competition, may hamper its business flexibility, in short, it implies a number of economic drawbacks. Operators will have to consider whether the advantages of higher and probably more cost-effective financial security to cover the nuclear risk will outweigh the drawbacks possibly linked to the system. The situation might be improved or balanced by favourable national tax legislation provided States acknowledge the purpose of operators' pooling as a useful means to enhance compensation of victims of a nuclear incident. In that case, also additional legislative or other State support is conceivable.

In order to minimise the described problems and to prevent discrimination against operators that join a pooling regime, Installation States should ensure harmonised economic and legal conditions. That requires arrangements among the concerned States.

In this context, the EU could possibly play a supportive role regarding pooling among EU operators. Of course, the Community, in particular Euratom, does not have general and comprehensive competence in the field of nuclear liability law with the exception of jurisdiction.<sup>57</sup> But Article 98 of the Treaty establishing the European Atomic Energy Community,<sup>58</sup> for a very limited field, gives Euratom a competence which might be used here: "*Member States shall take measures necessary to facilitate the conclusion of insurance contracts covering nuclear risks.*" The Council is authorised to issue directives for the application of Article 98. This competence has never been used

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56. As a reminder: the individual amount to be paid under the US system is USD 95.8 million per nuclear power plant and per incident. Under the German system, the partners of the Solidarity Agreement undertook to provide the total amount of EUR 2 244.355 million in the following shares (at the date of the Agreement): EnBW EUR 507.830 million, E.ON EUR 911.140 million, Vattenfall EUR 175.913 million, RWE EUR 649.472 million [Annex 2 to the Agreement, see footnote 24]. In addition, each partner pays 5% of its portion for claim handling costs. In order to make the German figures more comparable to the US figures: The total German amount including 5% claim handling costs would correspond to an average amount of EUR 124.03 million ( $\approx$  USD 164.96 million) per nuclear power plant and per incident.

57. See: Council Regulation (EC) No. 44/2001 of 22 December 2000 on the Jurisdiction and Recognition of Enforcement of Judgments in Civil and Commercial Matters (Official Journal No. L 12 of 16 January 2001 p. 1); Council Decision of 8 March 2004 authorising the Member States which are Contracting Parties to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy to ratify, in the interest of the European Community, the Protocol amending that Convention, or to accede to it [2004/294/EC] (Official Journal No. L 97 of 1 April 2004 p.53).

58. Consolidated version of the Treaty in: <http://eur-lex.europa.eu/en/treaties/dat/12006A/12006A.html>.

but for two less important recommendations of 1965 and 1966.<sup>59</sup> Perhaps the concept of operators' pooling could invite to revisit Article 98. Although the text of the provision refers to "insurance contracts" only and does not mention other financial security, a teleological interpretation entails complementing Article 98 by including the concept of other means of coverage.<sup>60</sup> It follows that there is Community competence in the field of facilitating the coverage of nuclear liability. This interpretation would give the Community authority to issue measures to support operators' pooling within the EU Member States. For the reasons developed above under Section 2.1.2., such measures should by no means make pooling binding upon operators. But they could guide member States on how to support and facilitate operators' pooling by harmonised national actions.

#### 2.2.4. *Limitation of Pooling Partners to Operators of Nuclear Power Plants?*

The existing operators' pooling systems in the US and Germany restrict participation to the operators of nuclear power plants. Operators of other nuclear installations as listed in the articles on definitions in the Conventions<sup>61</sup> are not covered by the system. As a matter of fact, those other operators also suffer from the insurance coverage's *lacunae*. Would it not be reasonable to include them in the system?

The answer is, in principle, yes. But including them would create a number of complex new problems. First of all, the risks involved in other installations are not necessarily the same as the risks of a nuclear power plant. The 1994 Convention on Nuclear Safety is only applicable to land-based civil nuclear power plants.<sup>62</sup> The Joint Convention regulates the safe management of spent fuel and of radioactive waste during all stages.<sup>63</sup> Regarding all of the other nuclear installations there is no comprehensive binding international instrument on safety, there is only soft law if any.<sup>64</sup> This legal situation makes it most difficult for operators to assess the safety of possible partner installations.

What probably will be equally problematic is the fact that the operators of the variety of other installations may have different business concepts and may be owned by shareholders other than those of nuclear power plants. That may entail that they are subject to legal provisions other than those applicable to energy producing companies.

In short, with regard to the problems which are relevant here, other nuclear installations do not have very much in common with nuclear power plants. Pooling among each other may be possible, in particular at national level, but it appears to be more difficult to achieve. International pooling may

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59. Official Journal 1965 p. 2995; 1966 p. 2553. The Recommendations of the Commission of 28 October 1965 and 6 July 1966 respectively relate to harmonising the implementation of the Paris and Brussels Conventions in the Member States.

60. The provision was drafted prior to the Paris Convention in 1957. At that time a clear picture of how to cover the nuclear risk was not yet available.

61. Articles I para. 1(j) VC, 1 para. (a)(ii) PC, 1 para.1(b) Annex to CSC.

62. Articles 3, 2 (i) Nuclear Safety Convention (footnote 49).

63. Article 1 Joint Convention (footnote 50).

64. As it applies e.g. to research reactors, see: Code of Conduct on the Safety of Research Reactors, adopted by the IAEA Board of Governors on 8 March 2004 [Annex to IAEA Doc. GC(48)7, 19 July 2004].

perhaps be easier to be agreed upon if there is a transnational company link between the respective installations.<sup>65</sup> Globalisation is international pooling's ally.

#### 2.2.5. *International Operators' Pooling and Insurance Industry*

If operators' pooling is widely accepted and successful, there might emerge the risk that it drives the insurance industry out of this particular business. This, of course, should not happen. It will not happen if the challenge of competition will produce unexpected capacity on the part of the insurers. Moreover, as has been said above,<sup>66</sup> indemnification against legal risks is a genuine task of insurance industry for which it is designed. It is not an evident task of the operators of nuclear power plants. They only should step in if other solutions are not available or are inadequate.

The two-layer approach established by the German and the US pooling systems therefore is a prudent solution. The insurance industry covers the risk – as a first layer – up to an amount which can be provided by insurers and which is offered at a price acceptable for the operators. Beyond this limit and with regard to risks which insurers exclude from covering, the solidarity of operators comes into play as a second layer of coverage. As an overall umbrella there is State intervention to step in where needed.<sup>67</sup>

The two-layer approach entails a major problem for the insurer. In the event of a nuclear incident, victims and those who allege they are victims will, as the case may be, very quickly make their claims. They will put in their claims either against the operator or, if there is direct action under the respective legislation,<sup>68</sup> against the insurer. That means all claims will first be collected by the insurer. Since at that stage it will be most difficult, if not impossible, to predict whether the amount of insurance coverage will suffice to satisfy all claims made, the second layer of coverage will not yet come into play. It follows that the insurer has to deal with all of the claims whether they are justified or unjustified. That is a costly procedure, and only at a later stage will it become evident whether and which portions of the claims handling costs have to be borne by the operators who cover the second layer of financial security.

In order to exclude this consequence of the two-layer system the insurer and the pooling operators should agree in advance on how to organise claims handling and the transition from the first to the second layer of coverage. As far as there is additional State intervention, the State should be involved in that arrangement.

It follows that there are fields of cooperation among insurance industry and operators. Perhaps the original concept of the German *Nuklearhaftpflicht GbR*<sup>69</sup> could be revitalised and used here: the second layer of coverage is also covered by an insurance contract which is reinsured by the operators.

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65. This may be the case if companies are owners or co-owners of installations in other countries, such as EDF and Vattenfall which hold shares of German nuclear power plants. The international company Urenco may also be an example.

66. Section 1.1.2.

67. See Section 34 of the German Atomic Energy Act (footnote 26).

68. For example in France: Article 14 *Loi* 68-943 du 30 octobre 1968 as amended by *Loi*-90-488 du 16 juin 1990 and by *Loi* 2006-686 du 13 juin 2006 (Official Journal of 31 October 1968, No. 139 du 17 juin 1990, No. 136 du 14 juin 2006).

69. See above Section 1.3.2.

Such approach might combine the advantages of both insurance coverage and operators' pooling. Innovative thinking is requested.

## Conclusions

The operators' pooling systems established in Germany and in the US prove their capacity to deploy many times the amounts required under the revised nuclear liability conventions and in particular the amounts offered by the insurance industry. The money will be provided to cover the legal liability of the operator liable without excluding certain risks from coverage. Defined mechanisms supervised by the Installation State ensure that the coverage is reliably available when compensation of victims of a nuclear incident is due. Premiums or shares of the participating operators shall only be paid after a nuclear incident has occurred and in case the money is needed for compensation. No advance payment of premiums and no payment of premiums irrespective of whether an incident happens or not is requested.

This summary lists considerable advantages of operators' pooling. It is of overriding importance that the system is apt to widen the straightjacket which is formed by the congruence principle with its mutual interdependence of insurance cover and liability amount and which was and still is tailored to match the limitations of insurance capacity. Operators' pooling will not release from this *circulus vitiosus* but it opens new dimensions for significantly higher amounts of compensation without excluding certain risks from coverage. Legislators could request higher liability or coverage ceilings. As a side effect, compensation by State intervention can be reduced.

But there are drawbacks too. In order to raise high amounts one needs either a great number of pooling partners who will be charged relatively low contributions or a small number of partners who dispose of considerable liquid assets to contribute. These prerequisites are not met in all States with nuclear programmes. The situation obviously calls for international pooling which should aim at including not only operators but also their parent companies.

Here we face new problems. The experience of the German and the US systems is limited to national pooling among operators of nuclear power plants. There is no experience of international pooling to build upon. As has been pointed out in this paper, pooling private financial means, particularly transboundary pooling, is a most sensitive matter. Many factors have to be considered, and conflicting interests have to be mitigated. The support of Installation States will be needed to establish and guarantee a background which is favourable for international pooling. States should encourage operators but should not interfere actively. They should act in compliance with the principle of subsidiarity.

The current difficulties of the insurance industry to cover certain nuclear risks offer a chance to break new ground in providing financial security. The still-pending ratification and entry into force of the improved international nuclear liability regime creates some time pressure. All stakeholders are responsible for making those enhancements effective in a timely fashion. Operators' pooling is a means to speed up the process. The time is ripe to explore the option more closely.