Modernization of the International Regime of Civil Liability for Nuclear Damage

Protocol to Amend the 1963 Vienna Convention and the Convention on Supplementary Compensation for Nuclear Damage of September 1997

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1. Introduction

The nuclear accidents at Three Mile Island in 1979 (United States) and at Chernobyl in 1986 (Ukraine) revealed the full extent of the environmental interdependence of states. The accidents were clear manifestations of the risk that nuclear technology may create to all states, whether or not they themselves have the benefit of this source of energy. The total shift in perception of public opinion on the acceptability of nuclear energy had a very powerful impact on the further "development and practical application of atomic energy for peaceful uses throughout the world",[1] diminishing also opportunities of major nuclear exporting nations to continue global sales and promotional activities.[2] The Chernobyl accident, which caused enormous and in some respects unmeasurable environmental damage, particularly contributed to reconsideration of nuclear energy as an inexpensive and safe source of power, and opened an era of major legislative challenge to the international community, with a final goal of creating the comprehensive and global legal regime which should encompass prevention, mitigation but also compensation of damage resulting from nuclear accidents.

The response to the Chernobyl catastrophe started with the drafting and adoption of the Convention on Early Notification of Nuclear Accident[3] and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency in 1986.[4] The speed with which the two conventions were drafted and

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1 See Article III, A.1. of the Statute of the International Atomic Energy Agency.

2 According to the estimation of the United States General Accounting Office contained in a document that originates before the Chernobyl accident (Report to Congress: International Response to Nuclear Power Safety Concerns, General [GAO/NSIAD-85–128]), by the year 2000 more than half of the countries of the world with nuclear reactors should be developing countries. See: David A. Bagley, The United States and International Nuclear Civil Liability, Brooklyn Journal of International Law, 1992, Vol. XII, No. 2, 499.

3 International Atomic Energy Agency (hereafter: IAEA), Doc. INFCIRC/335.

4 IAEA, Doc. INFCIRC/336.

ratified is remarkable.[5] In 1994 the Convention on Nuclear Safety was opened for signature,[6] and in 1997 the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.[7] All the aforementioned conventions regulate, in a broad sense, various aspects of nuclear safety.

Besides conventions which aimed primarily at the prevention of a risk, systematic and worthy efforts have been made to modernize the existing international nuclear liability regime. Namely, international conventions on civil liability for nuclear damage may have been considered as rather innovative legal solutions at the beginning of the 1960s, but for many reasons these conventional solutions ceased to be considered as acceptable.[8] The Paris Convention on Third Party Liability in the Field of Nuclear Energy of 1960 has been opened to member states of the Organization for Economic Cooperation and Development.[9] The Vienna Convention on Civil Liability for Nuclear Damage of 1963 (hereafter: 1963 Vienna Convention) was to have a worldwide acceptance, but only few states having nuclear installations on their territory adhered to this convention.[10]

Two conventions, which apply to damage caused by a nuclear incident in nuclear installations and during transport of nuclear material thereto and therefrom, are based on the same basic principles:

1. the liability is channelled onto the operator of nuclear installation, meaning that the operator is exclusively liable for nuclear damage, regardless of fault of other persons;[11]

2. the operator of a nuclear installation is absolutely liable for damage caused by an accident occurring in his installation or involving nuclear material coming from or originating in his nuclear installation, i.e. the operator is liable for nuclear damage regardless of his fault;[12]

3. the liability is limited in amount;[13]

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[5] Between 26 September 1986 (opening for signature) and 7 October 1987 these conventions were signed by 58 and 57 States respectively. The Early Notification Convention entered into force on 27 October 1986 and the Assistance Convention on 26 February 1987.

[6] IAEA, Doc. INFCIRC/449.

[7] IAEA, Doc. RWSC/DC1.

[8] See Vanda Lamm, Liability for Nuclear Accidents Affecting the Environment, Acta Juridica Hungarica, 1993, Vol. 35, No. 1–2, 314.

[9] The following fourteen European states are at present parties to the Paris Convention: Belgium, Danmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Turkey and the United Kingdom.

[10] The following twenty-six states are at present parties to the 1963 Vienna Convention: Argentina, Armenia, Bolivia, Brazil, Bulgaria, Cameroon, Chile, Colombia, Croatia, Cuba, Czech Republic, Egypt, Estonia, Hungary, Lithuania, Mexico, Niger, Peru, Philippines, Poland, Romania, Slovak Republic, Slovenia, the former Yugoslav Republic of Macedonia, Trinidad & Tobago and Yugoslavia.

[11] Art. II, Par. 5 of the 1963 Vienna Convention and Art. 6 a) and b) of the Paris Convention.

[12] Art. IV, Par. 1 of the 1963 Vienna Convention and Art. 3 a) and 4 b) of the Paris Convention.

[13] Art. V, Par. 1 of the 1963 Vienna Convention defines as minimum liability US $ 5 million, taking into account that US dollar in this Convention denotes a unit of account equivalent to the value of the United States dollar in terms of gold on 29 April 1963, that is to say US $ 35 per one troy ounce of fine gold (Article V, Par. 3). Art. 7 of the Paris Convention provides as minimum liability 5.000.000 Special Drawing Rights (SDRs).

4. the liability of the operator is also limited in time;[14]

5. the operator is obliged to maintain insurance or other financial security covering his liability;[15]

6. jurisdiction over actions for compensation of nuclear damage lies exclusively with the courts of the Contracting Party on the territory of which the nuclear incident occurred; in a case where a nuclear incident occurred outside of the territory of any Contracting Party of conventions, the exclusive jurisdiction lies with the courts of the Contracting Party on the territory of which the nuclear installation of the operator liable is situated;[16]

7. any discrimination with respect to victims of a nuclear incident, based on nationality, domicile or residence, is forbidden.[17]

In spite of the similarity of the two conventions, there was no legal link between them. The Contracting Parties of one convention were considered as non-Contracting States by the Contracting Parties of the other. The result was that each convention applied only if both the incident and the damage occured within the territory of two or more states which are parties to that convention. The absence of link between the two conventions was overcome by the adoption of the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention,[18] adopted in 1988 and entered into force on 27 April 1992. The Joint Protocol extended the geographical application of the Vienna and Paris Conventions stipulating that the operator of a nuclear installation situated in the territory of a party of the Joint Protocol and one of the conventions shall be liable in accordance with that convention also for nuclear damage suffered in the territory of a Contracting Party to both Joint Protocol and the other convention.[19]

However, the underlying difference between the two conventional regimes is based on the fact that the Paris Convention regime includes also the Brussels Convention, which established the system of mutual financial assistance among Contracting Parties, providing compensation for nuclear damage beyond the amount covered by the liability of the operator.[20]

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[14] Both conventions provide that action for compensation must be brought within ten years from the date of the nuclear incident (Art. VI, Par. 1 of the 1963 Vienna Convention and Art. 8 a) of the Paris Convention). The Paris Convention prescribes also that national legislation may establish a period of not less than two years for the extinction of the right either from the date at which the person suffering damage has knowledge or from the date at which he ought to have known of both damage and the operator liable, provided that period does not exceed a period of ten years from the date of the nuclear incident (Art. 8 c)). The 1963 Vienna Convention contains the same solution, with the difference that such a period may not exceed three years (Art. VI, Par. 3).

[15] Art. VII, Par. 1 of the 1963 Vienna Convention and Art. 10. a) of the Paris Convention.

[16] Art. XI, Par. 1 and 2 of the 1963 Vienna Convention and Art. 13 a) and b) of the Paris Convention.

[17] Art. XIII of the 1963 Vienna Convention and Art. 14 a) of the Paris Convention.

[18] IAEA, Doc. INFCIRC/402.

[19] Art. II of the Joint Protocol.

[20] Convention of 31 January 1963 Supplementary to the Paris Convention of 29 July 1960. The Convention was amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982. If the damage is of an extent that cannot be compensated by the operator's

The most obvious problem with the 1963 Vienna Convention is the disparity between the minimum level of liability and the estimated cost of a catastrophic nuclear accident as was experienced in the Chernobyl accident. Namely, the 1963 Vienna Convention provides as minimum liability of the operator US $ 5 million.[21] This became an even more urgent problem having in mind that the Joint Protocol, which intended to improve the position of victims, expanded the geographical scope of the 1963 Vienna Convention and increased the potential number of victims entitled for compensation which would, in case of accident, share the same amount of money. This fact made the attractiveness of the Joint Protocol debatable.

The experience of the Chernobyl accident called for the establishment of a global and efficient international nuclear liability regime. As the 1963 Vienna Convention initially aimed at becoming a worldwide system, it was normal to concentrate efforts to modernize this Convention.

2. Approach to Modernization of the 1963 Vienna Convention

In view of the far-reaching consequences of the Chernobyl accident, it became clear that in the case of a nuclear incident state participation would be inevitable for the full compensation of victims. At its special session held in December 1986, the Board of Governors of the International Atomic Energy Agency (hereafter: IAEA) initiated a search of relevant treaty law and other international instruments, international case law and authoritative writings on the question of international liability for nuclear damage. At its session in February 1987, the Board of Governors, having considered the material contained in a document prepared by the IAEA Secretariat, requested the latter to "consider whether it was necessary to devise a new instrument on State liability for nuclear damage", with full account of the work being done by the International Law Commission.[22] The Secretariat of the IAEA responded by an additional study and suggestion to entrust the study to an open-ended working group of governmental experts.[23]

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insurance, the state where the nuclear installation is located provides per incident compensation out of public funds up to the amount of 175 million SDR. If further compensation is needed, this will be made available, up to the amount of 300 million SDR, on a collective basis from public funds of all Contracting Parties to the Brussels Convention, according to the formula for contributions set up by this Convention.

[21] See note 13.

[22] The Board of Governors issued a document which underlined that existing international conventions on liability for nuclear damage regulate exclusively questions of the civil liability of operators of nuclear installations. It points out the necessity of establishing "... principles of international liability for nuclear damage under the law of state responsibility concerning international claims against states" (IAEA, Doc. GOV/INF/509). The Board of Governors also pointed to the possibility of utilizing in this process the codification work of the ILC on questions of international liability of state for injurious consequences arising out of acts not prohibited by international law (IAEA, Doc. GOV/INF/2306).

[23] See: IAEA-International Liability of States, Nuclear Law Bulletin, 1988, No. 41, 39.

During the Diplomatic Conference in view of adopting the Joint Protocol, several states emphasised the relationship between a civil nuclear liability and a system of state liability. This resulted in a Resolution of the IAEA General Conference which stated that "further strengthening of the liability regime for nuclear damage is essential to the development and use of nuclear energy for peaceful purposes".[24] In a draft of the Resolution the Board of Governors was asked, as a matter of priority, to continue the work on the question of "international liability" and, to this purpose, to convene an open-ended working group of governmental experts. As delegates were reluctant toward such formulation, having in mind that focusing on the question of state liability might detract the interest of states to strengthen the civil liability system,[25] the Resolution in its final version requested the IAEA Board of Governors to continue the work on "the question of liability for damage arising from a nuclear accident". The Working Group was established in February 1989 and at the end of its second session, the Group submitted a Report[26] recommending to revise the mandate of the Standing Committee on Civil Liability for Nuclear Damage (hereafter: Standing Committee), by entrusting it to study both international civil and state nuclear liability issues. In February 1990 the Standing Committee was established with a mandate to:

1. consider international liability for nuclear damage, including international civil liability, international state liability, and the relationship between international civil and state liability;

2. keep under review problems related to the Vienna Convention on Civil Liability and advise the Contracting Parties to that Convention on any such problems; and

3. make the necessary substantive preparations and administrative arrangements for a revision conference to be convened in accordance with Article XXVI of the 1963 Vienna Convention.

The mandate of the Standing Committee reflected the common opinion that the 1963 Vienna Convention may not serve as an appropriate instrument for indemnification of nuclear damage which would result from large-scale disaster. The reason behind such thinking was based not only on the fact that the minimum level of the operator's liability was too low, but also there were numerous other reasons deriving from the fact that the 1963 Vienna Convention was adopted at a time when the practical experience of the operation and risk of the nuclear industry was lacking.

After several years of negotiations within the Standing Committee, the IAEA Board of Governors at its meeting on 11 June 1997 authorized the Director Gen-

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[24] IAEA, Doc. GC(XXXII)/RES/491, Resolution "Liability for Nuclear Damage". The Resolution had been sponsored by six states: Austria, Egypt, the GDR, Hungary, Italy and Poland, and Argentina, Canada and Tunisia adhered as co-sponsors.

[25] See Frank Horn, Recent International Developments in the Law of Nuclear Liability, Kansai-noikeus Ius Gentium, 1988, Vol. 5, No. 3–4, 218.

[26] Report of the Second Session of the Working Group on Liability for Nuclear Damage (IAEA, Doc. NL/2/4/, 15 November 1989).

eral to convene a Diplomatic Conference in order to adopt two conventions: the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage and the Convention on Supplementary Compensation for Nuclear Damage. The Diplomatic Conference, held on 8–12 September 1997 in Vienna, based its work on the drafts of the mentioned conventions prepared by the Standing Committee.[27] On 12 September 1997 both conventions were adopted.

3. Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage

The negotiations within the Standing Committee on the revision of the 1963 Vienna Convention accompanied by the drafting of a supplementary compensation for nuclear damage convention lasted seven years. They were characterized by the complexity of issues and different positions of states on how to improve the existing regime. From the very beginning it was clear that the revision of the 1963 Vienna Convention would not undermine its basic principles, but the innovations emerged in the text of the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (hereafter: Protocol), adopted at the Diplomatic Conference, made it substantially different from the solutions contained in the 1963 Vienna Convention.

3.1. Key innovations contained in the revised Vienna Convention

The differences of states with respect to the degree of their economic development, development in application of nuclear technology as a source of energy as well as available sources of financial security covering the liability of the operator determined their different approaches to the majority of controversial issues. The solutions contained in the Protocol are the result of a compromise achieved after long and patient efforts to harmonize different interests of states with nuclear installations on their territory and those which do not use nuclear source of energy as well as between developed and developing countries.

3.1.1. Definitions of "nuclear damage" and "nuclear incident"

One of the most significant features of the 1963 Vienna Convention is that it contains a relatively narrow definition of "nuclear damage". More precisely, the 1963 Vienna Convention defines "nuclear damage" as "loss of life, any personal injury or any loss of, or damage to, property...", but also "any other loss or damage ... to the extent that the law of the competent court so provides".[28] The question whether the 1963 Vienna Convention encompasses also damage to the environment is disputable within doctrine. It has been argued that the civil liabil-

[27] IAEA Doc. NL/DC/3 and Doc. NL/DC/4.

[28] Art. I, Par. 1(k)(i) and II of the 1963 Vienna Convention.

ity regime established by the convention which does not explicitly refer to the environmental damage, may not apply to goods such as water, soil or air which belong to *res communis omnium*.[29]

Having in mind the experience of the Three Mile Island and the Chernobyl accidents, which demonstrated that the costs of preventive measures, damage to the environment and economic loss may constitute prevailing portions of the total damage following nuclear incident, from the outset of negotiations in the Standing Committee it was very clear that the question of definition of nuclear damage has paramount importance for the development of nuclear civil liability regime. The inclusion of environmental damage was a sensitive question as the coverage of such damage would have a significant impact on the amount of funds available for compensation relating to personal injury, death and damage or loss of property. Opponents underlined that such damage cannot be assessed in monetary terms as the environment does not have a market value. Also the impairment of environment is not a precise enough term as there are neither generally applicable international norms nor guidelines on specific maximum permissible contamination. Moreover, the problem was intensified by the uncertainty on insurability of such damage.[30] On the other hand, the definition of nuclear damage was considered also in the context of a significant progress which has been achieved in other conventions which regulate compensation for damage.[31]

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[29] See Norbert Pelzer, Compensation for Nuclear Damage Caused to the Environment in Relation to the Paris and Vienna Conventions, Working Paper presented at the Informal Meeting of Experts Concerning the Relationship Between the Paris and Vienna Conventions, Vienna 1986, 7.

[30] The European Insurance Committee expressed in the Standing Committee serious reservations on the inclusion of environmental damage, preventive measures and pure economic loss. Particular concern was expressed on the insurability of preventive measures taken by other person than the competent authorities. For such situations the insurance industry requested a presence of the order of the competent authorities. According to the explanation, if measures where not ordered, there is the risk of speculative claims from people who might take any manner of action (including going to holiday) on the grounds that their action was reasonable" (IAEA, Doc. SCNL/12/1, 2).

[31] The Protocol of 1992 to Amend the International Convention on Civil Liability for Oil Pollution Damage, 1969, appeared as a possible model for a new definition of nuclear damage. This Protocol broadened civil liability in its definition of "pollution damage" which encompasses the environmental damage, ... provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to the cost of reasonable measures of reinstatement actually undertaken or to be undertaken, and "the cost of preventive measures and further loss or damage caused by preventive measures" (see Art. 2, Par. 1). An almost identical definition was adopted in the 1993 Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (see Art. 2, Par. 7; ILM 1993, 1228). The Convention does not apply to damage caused by a nuclear substance, which is covered by Paris and Vienna Conventions or if liability is regulated by "specific internal law, provided that such law is as favourable, with regard to compensation for damage" as the two cited conventions (Art. 4, Par. 2). It is worth to mention that the Convention of International Liability for Damage Caused by Space Objects, which applies among states and does not establish an international regime of civil liability, also covers the environmental harm (ILM 1971, 965). See also Philippe Sands, Observations on International Nuclear Law Ten Years after Chernobyl, Review of European Community & International Environmental Law, 1996, Vol. 5, No. 3, 199.

The result of grave disagreement in the discussions within the Standing Committee is the compromise solution adopted at the Diplomatic Conference. Article 2, Par. 2 of the Protocol defines "nuclear damage" as "loss of life or personal injury and loss of or damage to property" *(damnum emergens)* resulting from the nuclear incident. The definition also includes, but only to the extent determined by the law of the competent court:

1. economic loss arising from death, personal injury or damage to property (if incurred by a person entitled to claim in respect of such loss or damage);

2. the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant, if such measures are actually taken or to be taken;[32]

3. loss of income deriving from an economic interest in any use or enjoyment of the environment, incurred as a result of significant impairment of the environment;[33]

4. the cost of preventive measures and further loss or damage caused by such measures;[34] and

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[32] The Council of Europe Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment defines "environment" as: – natural resources both abiotic and biotic, such as air, water, soil, fauna and flora and the interaction between the same factors; – property which forms part of the cultural heritage; – the characteristic aspects of the landscape (Art. 2, Par. 10). The Protocol does not contain a definition of the "damage of environment". In the doctrine it is defined as "... every kind of decrease of the quality of life which is caused by a certain occurrence or a series of occurrences, and which affects the whole population in a certain region". See Pelzer (note 29), 4–7. See also Tadeusz Gadkowski, International Liability of State for Nuclear Damage, Adam Mickiewicz University Press – Poznan, Eburon – Delft, 1989, 56.

[33] A recognition of the loss of income which is result of significant impairment of the environment, under condition of the existence of economic interest in use or enjoyment of environment, surpasses the solutions adopted in the Protocol of 1992 to Amend the International Convention on Civil Liability for Oil Pollution Damage and the 1993 Council of Europe Convention on Civil Liability for Damage Resulting From Activities Dangerous to the Environment. In the mentioned conventions it was accepted that apart from economic loss or loss of profit, compensation should be limited to the costs of reasonable measures of restoration undertaken or to be undertaken. Recently, however, the approach towards allowing the compensation for damage to the environment itself prevailed, even when the restoration is impossible. See Louise de La Fayette, Towards a New Regime of State Responsibility for Nuclear Activities, Nuclear Law Bulletin, 1992, No. 50, 13.

[34] "Preventive measures" means reasonable measures taken after a nuclear incident has occurred to prevent or minimize nuclear damage. Such measures can be taken by any person but is subject to the approval of the competent authorities of the state where the measures are taken (Art. 2, Par. 4 of the Protocol). At the Diplomatic Conference the delegation of Australia proposed a solution which secures the authority of a competent court to decide on the acceptability of measures undertaken, by inserting, at the beginning of the definition, the words: "measures which are found by the competent court to be appropriate and proportionate" (IAEA, Doc. NL/DC/L.10 and Doc. NL/DC/L.29). However, the majority of delegations deemed that such a solution anyhow results from the existing text. Certainly, the inclusion of further loss or damage caused by such measures may be considered as an experience derived from the Chernobyl accident when the SSSR stated that damages abroad resulted mainly from action taken by authorities overanxious to protect their populations against the overestimated long-term risk of radiation exposure, claiming that such damages could not be considered as compensable. See Günter Handl, Transboundary Nuclear Accidents: The Post-Chernobyl Multilateral Legislative Agenda, Ecology Law Quarterly, 1988, Vol. 15, No. 2, 242–243.

5. any other economic loss, other than any caused by the impairment of the environment, if permitted by the general law on civil liability of the competent court.[35]

All mentioned losses or damages, except those which result from the costs of preventive measures, must emerge or result from ionizing radiation emitted by any source of radiation inside a nuclear installation, or emitted from nuclear fuel or radioactive products or waste in, or of nuclear material coming from, originating in, or sent to a nuclear installation whether so arising from the radioactive properties of such matter or from a combination of radioactive properties with toxic, explosive or other hazardous properties of such matter.

It should be underlined that the law of the competent court is applicable also to the standard of contamination which should trigger claims for damage and for determining whether they are justified.[36] As such standards reflect social and health priorities of the state, they will constitute an additional element that will prevent uniform application of the Protocol.

The new definition of nuclear damage led to the new concept of the "nuclear incident". It is defined as "any occurrence or series of occurrences having the same origin which causes nuclear damage or, but only with respect to preventive measures, creates a grave and imminent threat of causing such damage".[37]

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[35] The concept of economic loss *(lucrum cessans)* differs in civil and in common law systems. In civil law countries economic loss comprises both losses resulting from physical damage to property and those not resulting from physical damage. In common law there is a differentiation between economic loss which is a consequence of physical loss or damage to property ("consequential damage") and loss of profit or earning sustained otherwise than as a result of physical loss or damage to property ("pure economic loss"). For a comparison between the criteria used in two systems, see A.M. Honoré, Causation and Remoteness of Damage, International Encyclopedia of Comparative Law, Vol. XI: Torts, Chapter 7, 1–154. See also William Tetley, Damages and Economic Loss in Marine Collision: Controlling the Floodgates, Journal of Maritime Law and Commerce 1991, Vol. 22, No. 4, 539 et seq.). After Three Miles Island US courts compensated economic losses where the applicant could prove physical or property damage, e.c. only consequential damage. See Antonia Layard, Nuclear Liability Damage Reform After Chernobyl, Review of European Community & International Environmental Law, 1996, Vol. 5, No. 3, 220.

[36] On this point, an interesting proposal was submitted during the negotiations in the Standing Committee by the delegation of Israel. The proposal suggested that a definition of "nuclear incident" should not cover "emission from a nuclear installation of ionizing radiation, in the course of ordinary operation of such an installation, when the quantity of emission to the environment does not exceed the dose limit to the environment, as recommended by the IAEA" (IAEA, Doc. SCNL/12/2).

[37] Art. 2, Par. 3. of the Protocol. The delegation of Israel submitted at the Diplomatic Conference a proposal which defines the "nuclear incident" as "any non-routine occurrence or series of occurrences..., arguing that normal activities, operations or maintenance of a nuclear installation should not be covered by the definition (IAEA, Doc. NL/DC/L.17). The proposal was submitted to take into account concerns raised by the Ukraine delegation, but in conjunction with the definition of "preventive measures". Namely, the proposal of the Ukraine suggested that the definition of "preventive measures" should not include situations which result from, "routine maintenance activities taken to ensure normal conditions of operation of a nuclear installation" (IAEA, Doc. NL/DC/L.4).

3.1.2. Geographical scope of application

The 1963 Vienna Convention contains no provision regarding the geographical scope of its application, and the benefit of its provisions is not extended to claimants who suffer damage in the territory of a non-Contracting State.[38] Such interpretation was declared in 1964 by the Standing Committee of the IAEA. It stated that the provisions of the Vienna Convention apply to nuclear damage occurring in the territory of Contracting Parties and on or over the high seas wherever the nuclear incident occurs, but do not apply to nuclear damage in the territory of a non-Contracting State. Although this statement is not formally binding for Contracting Parties to the 1963 Vienna Convention, it reflects a general rule that an international treaty applies only to its parties.[39]

Besides the problem of inconsistency with the general principles of international law, the major argument against allowing non-Contracting State claims is that such an extension does not encourage states to ratify the Convention.[40] Also, the limited amount of the operator's liability prevents the acceptability of such a solution because more claimants would reduce the available share in compensation funds for claimants from Contracting Parties, without reciprocal benefits.[41]

On the other hand, following the experience which evidenced possible consequences of a catastrophic nuclear incident, the limitation of the geographical scope of application to victims who suffered damage only on the territory of Contracting Parties was considered as an unjust solution and one of the major drawbacks of the 1963 Vienna Convention.[42] Such differentiation of victims was considered unnecessary,[43] particularly in light of the strong determination to increase substantially the minimum liability of the operator in the revised Vienna Convention.

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[38] The Paris Convention also does not apply to nuclear incidents occurring in the territory of non-Contracting States or to the damage suffered in such territory, but leaves to the Contracting Parties the discretion to apply their national law to such damages (Art. 2).

[39] According to the Art. 34 of the 1963 Vienna Convention on the Law of Treaties of 23 May 1969, an international treaty may not impose obligations or confer rights on third parties without their consent.

[40] See Pierre Strohl, The Originality of Nuclear Law and Its Future, Nuclear Inter Jura "97", (14–19 September 1997, Tours-France), Report for the closing session of September 18 in Tours, 12.

[41] See Alan E. Boyle, Nuclear Energy and International Law: An Environmental Perspective, The British Yearbook of International Law, 1989, 309.

[42] Some states adopted an approach that allows non-party claims to be made. For example, according to the German Atomic Energy Act of 1985 (Germany is party to the Paris Convention), an operator of a nuclear installation is liable within the territorial limitations provided for in Article 2 of the Paris Convention (Art. 25, Par. 4). See Franz-Josef Feldmann, Reciprocity Within the Framework of the Nuclear Civil Liability Law, in: Status, Prospect and Possibilities of International Harmonization in the Field of Nuclear Energy Law, (ed. Norbert Pelzer), Proceedings of the Seventh International Conference NUCLEAR INTER JURA '85 of the INLA, Konstanz/Bodensee, Germany, September 29 to October 2 1985, Nomos, Baden-Baden, 314.

[43] The 1963 Vienna Convention proclaims as a basic principle its application without any discrimination based upon nationality, domicile or residence (Art. XIII). However, under the system of 1963 Vienna Convention, a ban on such discrimination is accepted only if reciprocity is ensured conventionally.

Therefore, the Protocol amended the 1963 Vienna Convention by extending its application to the nuclear damage wherever suffered. The Installation State may exclude from application the damage suffered in the territory of a non-Contracting State including its maritime zones but such exclusion may apply only in respect of a non-Contracting State which at the time of the accident has a nuclear installation in its territory or in any maritime zones established in accordance with the international law of the sea, and does not afford equivalent reciprocal benefits.[44]

3.1.3. Minimum liability limit

Apart from other deficiencies of the 1963 Vienna Convention, the primary aim of its revision was to increase the minimum amount of the operator's liability. Namely, the scheme of the 1963 Vienna Convention, based partly on the example of the United States Price-Anderson Act of 1957,[45] was intended to encourage the development of the nuclear power industry by limiting of the amount of liability of the operator but imposing, at the same time, absolute liability on the operator.

The principle of absolute liability reflects the general understanding that nuclear activity creates a more or less permanent risk and was primarily introduced to "relieve courts of the difficulty of setting appropriate standards of reasonable care, and plaintiffs of the difficulty of proving breach of those standards, in a relatively new, complex and highly technical industrial process".[46] The limitation of liability of the operator constitutes a certain counterbalance to the application of absolute liability principle. Such established system was considered as a kind of equilibrium between the interest of the nuclear industry and the interest of potential victims.[47] Also, the limitation of the amount of liability was intended to make it possible for operators to obtain insurance, as otherwise insurers would be reluctant to cover immeasurably enormous risks, or to do so fully.[48]

However, such equilibrium was distorted from the very beginning by adoption of a rather low minimum level of liability. The 1963 Vienna Convention established that the liability of the operator may be limited by the Installation State to not less than US $ 5 million for any one nuclear incident.[49]

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[44] Art. 3 of the Protocol.

[45] Atomic Energy Damages Act, 1957, 42 U.S.C. 2011–2284, as amended by the Price Anderson Amendments Act of 1988 (Pub. L. No. 100–408, 102 Stat. 1066, 20 August 1988).

[46] See Boyle (note 41), 302.

[47] See Lamm (note 8), 316.

[48] See Boyle (note 41), 305. In that sense, the possibility to adopt the "unlimited" liability of the operator is no practical solution as the insurance cover is strictly limited, both in amount and in time. See also de La Fayette (note 33), 14.

[49] Art. V, Par. 1. (See the definition of the US dollar contained in the 1963 Vienna Convention, Art. V, Par. 3; see also *supra*, in note 13). A limitation of liability does not include any interest or costs awarded by a court in actions for compensation of a nuclear damage (Art. V, Par. 2 of the 1963 Vienna Convention). The "Installation State" is defined, in respect to a nuclear installation as those Contracting Party within whose territory that installation is situated or, if it is not situated within the territory of any State, the Contracting Party by which or under the authority of which the nuclear installation is operated (Art. I, Par. 1(d) of the 1963 Vienna Convention).

The non-existence of proper balance between nuclear industry protection and compensation of victims, demonstrated by Three Mile Island and Chernobyl, is contrary to the main concern of governments in protection of the public and prevention of an incident. Surely, the nuclear liability regime serves also as a tool to ensure efficiency of the nuclear safety system and to maintain confidence among the general public.[50] Moreover, at the time of adoption of the 1963 Vienna Convention the insurance companies were certainly not able to cover these enormous risks,[51] but subsequently the possibilities of insurance cover offered by the market were considerably increased.

Having in mind that the credibility of a conventional nuclear liability regime depends primarily on the assets provided for compensation, the Protocol substantially increased the minimum level of operator's liability. The liability of the operator may be limited by the Installation State to not less than 300 million SDRs.[52] Nevertheless, the Installation State may establish a limitation of the operator's liability to not less than 150 million SDRs, provided that in excess of that amount and up to at least 300 million SDRs is made available by that state out of the public funds.[53]

For those Contracting Parties which may face difficulties in immediate application of the above-mentioned amount of liability because the insurance market is not able or ready to provide insurance, or because of other reasons, the Protocol made a so called "phasing-in" mechanism in a provision which enables states, for a maximum of 15 years from the date of entry into force of the Protocol,[54] to adopt a transitional amount of liability but not less than 100 million SDRs in respect of a nuclear incident occurring within that period.[55] Also, an amount

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[50] See M.C. Boehler, Reflections on Liability and Radiological on Nuclear Accidents: The Accidents at Goiania, Forbach, Three Mile Island and Chernobyl, Nuclear Law Bulletin, 1997, No. 59, 13. However, some opposite views where expressed during negotiations in the Standing Committee. The delegate of Bulgaria pointed out that allocation of large funds for liability might become a restrictive factor in upgrading safety in countries having economic difficulties, and suggested as a generally acceptable amount of the operator's liability 15 million SDR (IAEA, Doc. SCNL/9/1). See Report of the Standing Committee, Ninth Session (February 1994, IAEA, SCNL/9/INF.5, 3).

[51] See Thomas Gehring/Markus Jachtenfuchs, Liability for Transboundary Environmental Damage Towards a General Liability Regime?, European Journal of International Law, 1993, Vol. 4, No. 1, 100.

[52] The amounts of liability of the operator established by the Installation State applies wherever the nuclear incident occurs (Art. 7, Par. 3 of the Protocol).

[53] Art. 7, Par. 1 (a) and (b) of the Protocol.

[54] The Draft Protocol contained a solution which established the date of the opening for signature of the Protocol as starting date of the 15 years period. The date of entry into force was accepted on the proposal of the delegation of Brazil (IAEA, Doc. NL/DC/L.11).

[55] The delegation of Bulgaria proposed at the Diplomatic Conference the establishment of a period of 20 years instead of 15 years, and a transitional amount of liability of the operator of 50 million SDR. According to the proposal, the transitional period should, for each Contracting Party, start from the date of the ratification of the Protocol by the respective state (IAEA, Doc. NL/DC/L.19). The delegation of India proposed a possibility for developing countries to limit the liability of the operator to 50% of all amounts established in this Article (IAEA, Doc. NL/DC/L.21). However, apart from the fact that the term "developing country" was generally deemed as insufficiently precise, the majority of delegations considered that an acceptance of such proposal would diminish the entire result attained during the negotiations on the minimum amount of liability.

lower than 100 million SDRs may be established, provided that public funds are made available up to the difference.[56]

The Protocol also enables Contracting Parties to establish a lower amount of liability for nuclear installation which, due to their nature, or having regard to nuclear substances involved in their operation and the likelihood of consequences of an incident originating therefrom, involve lower risks. The lower amount of liability of an operator may not be less than 5 million SDRs, but if the actual damage exceeds such a diminished amount of liability, the Installation State ensures the availability of public funds up to the general liability amount, i.e. at least 300 million SDRs.[57]

In case that the national legislation of the Contracting Party provides unlimited liability of the operator, the limit of the financial security of the operator liable may not be lower than 300 million SDRs. The Installation State ensures the payment of claims for compensation for nuclear damage which have been established against the operator to the extent that the yield of the financial security is inadequate to satisfy such claims, but not in excess of the amount of 300 million SDRs.[58]

3.1.4. Change in prescription periods

One of the basic principles of the 1963 Vienna Convention is that the liability of the operator is limited not only in amount but also in time. The action for compensation must be brought within ten years from the date of a nuclear incident. The national legislation may establish a period of not less than three years for the extinction of the right from the date when the person suffering damage has knowledge of or from the date at which he ought reasonably to have known of both damage and the operator liable, provided that this period does not exceed the period of ten years from the date of the nuclear incident.[59]

The fact that the damage which results in loss of life or personal injury may be revealed a long time after the nuclear incident occurs, urged for extending the time limit for the bringing of a claim. On the other hand, it was argued that such a solution prevents insurers from estimating the total amount of their obligation within reasonable time, and that it would intensify the problem of proving a causal link between the nuclear incident and the damage in cases of personal damage.[60] There is no doubt that causality is the basic element of the law of tort, but in cases of delayed damage resulting from exposure to relatively low levels of

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[56] Art. 7, Par. 1 (c) of the Protocol.

[57] Art. 7, Par. 2 of the Protocol.

[58] Art. 9 of the Protocol. This provision came as a result of the Joint proposal by the delegations of Germany, Japan, the Republic of Korea and Switzerland at the Fourteenth Session of the Standing Committee (IAEA, Doc. SCNL/14/12).

[59] Art. VI, Par. 3 of the 1963 Vienna Convention.

[60] Opinion of the European Insurance Committee expressed in the Standing Committee (IAEA, Doc. SCNL/12/1, 3).

ionizing radiation the complete proof of damage may appear as practically impossible. Many years after the incident it may be difficult not only to establish whether the person in question was exposed to radiation, but also to distinguish between nuclear damage and damage caused by other sources, as similar injuries can be caused by non-nuclear causes or from medical treatment radiation.[61] It has to be underlined that the 1963 Vienna Convention contains no guidance on the issue of causality and therefore leaves the standard of proof of causal link between the nuclear incident and damage to the law of the competent court.

In spite of the mentioned uncertainties, the Protocol amended the 1963 Vienna Convention prescribing that claims with respect to loss of life and personal injury may be brought within a thirty-year period from the date of the nuclear incident. For all other claims the period of extinction is ten years from the date of the nuclear incident.[62] Also, actions must be brought within three years from the date on which the person suffering damage had knowledge or ought reasonably to have had the knowledge of the damage and of the operator liable for the damage.[63]

3.1.5. Priorities in settlement of claims

In cases where the available funds are insufficient to cover the total damage resulting from the nuclear incident, all legitimate claims would be compensated proportionally. However, the Protocol contains a provision intended to provide additional protection to the victims of a nuclear accident. In cases "where in respect of claims brought against the operator the damage to be compensated under" the Protocol "exceeds or is likely to exceed the established amount of liability of the operator, priority in the distribution of the compensation" is to be given to claims "in respect of loss of life or personal injury".[64] The application of such a solution, motivated primarily by ethical reasons, may appear extremely difficult, particularly in connection with a provision which extends the prescription period. Namely, this provision does not ensure the availability of funds for claims that may be submitted many years after the occurrence of a nuclear incident.[65]

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[61] See Bagley (note 2), 376. Personal damage may appear a very long time after the accident. Also, it may affect only the next generation, appearing in different forms of disease, having no specific features that could be connected to radiation. The particularly difficult aspect of the problem is that the probability of causation is not directly proportional to the amount of the dose. See P. Stahlberg, Causation and the Problem of Evidence in Cases on Nuclear Damage, Nuclear Law Bulletin, 1994, No. 53, 23.

[62] Art. 8, Par. 1 of the Protocol.

[63] Art. 8, Par. 3 of the Protocol. This solution is more precise than those contained in the 1963 Vienna Convention which left the establishment of such a period to the national legislation, prescribing only that it may not exceed three years.

[64] Art. 10, Par. 2 of the Protocol.

[65] For this reason, it was proposed during the negotiations in the Standing Committee to submit such claims to the regime of unlimited liability of state (proposal of Poland, IAEA, Doc. SCNL/8/5). See also the comment on this proposal in: Layard (note 35), 220.

3.1.6. Other important amendments of the 1963 Vienna Convention

The Protocol explicitly excludes from its scope of application the nuclear installations used for non-peaceful purposes.[66] During the negotiation within the Standing Committee representatives of many states advocated inclusion of military installations in the regime of the revised Vienna Convention, because the damage resulting from an incident in military installations may be as severe as that caused by civil installations.[67] Nevertheless, military installations were not included for two reasons. First it would raise the conceptual problem that results from covering an important part of the public sector by the private law liability regime, and second, the prevailing view in the Standing Committee and the Diplomatic Conference that such inclusion would discourage ratification of the Protocol by those states that possess such nuclear installations.

The 1963 Vienna Convention provides for a few specific exceptions to the application of the principle of absolute liability. Namely, an operator may not be held liable in cases where the occurrence of the nuclear incident is directly due to an act of armed conflict, hostilities, civil war or insurrection.[68] Besides that, unless the Installation State provides otherwise, the operator may not be held liable for nuclear damage caused by a nuclear incident directly due to a grave natural disaster of an exceptional character.[69] The Protocol removed the last exoneration as it was considered that technological progress enables construction of such nuclear installations which should withstand earthquakes.[70] That particularly concerns the construction of nuclear installations in those parts of the world where the earthquakes are frequent, and for that reason may not be considered as disasters of an exceptional character.

The Protocol provides that compensation for nuclear damage to the means of transport upon which the nuclear material involved was at the time of the nuclear incident, may not have the effect of reducing the liability of the operator in respect of other damage to an amount less than either 150 million SDRs, or any higher amount established by the legislation of a Contracting Party, or an amount established in conformity with so-called phasing-in provision.[71]

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[66] Art. 3 (which adds Art. I A and I B to the 1963 Vienna Convention) of the Protocol.

[67] At the Diplomatic Conference Egypt submitted a proposal for the inclusion under the scope of the Protocol of "all nuclear installations, whether used for peaceful purposes or not" (IAEA, Doc. NL/DC/L.6). Under this proposal "a Contracting Party may declare that" the revised Vienna convention "does not apply to installations used for non-peaceful purposes which it operates, provided that this Contracting Party" ensures "that nuclear damage caused by a nuclear incident at this installation or involving nuclear material coming from or originating in this installation is compensated at a level" provided by the Protocol. A similar suggestion was expressed by a joint proposal of France and Egypt during the negotiations in the Standing Committee (IAEA, Doc. SCNL/6/8/Add.1).

[68] Art. IV, Par. 3(a) of the 1963 Vienna Convention.

[69] Art. IV, Par. 3(b) of the 1963 Vienna Convention.

[70] Art. 6, Par. 1 of the Protocol.

[71] Art. 6, Par. 3 of the Protocol. The 1963 Vienna Convention excludes from the coverage of the operator's liability a damage to the means of transport unless the Installation State provides otherwise. In any case, the liability of the operator in respect of nuclear damage other than means of transport may not be reduced to less than US $ 5 million for any one nuclear incident (Art. IV, Par. 5(b) and 6 of the 1963 Vienna Convention).

The general rule regarding jurisdiction remains unchanged. Jurisdiction over actions for compensation of nuclear damage lies only with the courts of the Contracting Party on the territory of whom the nuclear incident occurred. Where the nuclear incident occurred outside the territory of any Contracting Party, or where its place could not be determined with certainty, jurisdiction over such actions lies with the courts of the Installation State of the operator liable.[72] The Protocol contains an addition to these rules. Namely, where a nuclear incident occurs within the area of the exclusive economic zone of a Contracting Party or, if such a zone has not been established, in an area not exceeding the limits of an exclusive economic zone, were one to be established, jurisdiction over actions concerning nuclear damage lies only with the courts of that Contracting Party.[73]

3.2. International state liability and its relationship with civil liability

The important experience of the Chernobyl accident is that the rules of international law are ineffective to secure victims in other states by compensation from the state where the nuclear installation is located. On the other hand, the facts that states have a specific interest in promoting the nuclear industry and that the development of nuclear industry necessarily includes participation of public sector in planning, locating, licensing, financing and supervising of nuclear installation, provoked the debate on the liability of state and its relationship with the civil liability system.[74]

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[72] Art. XI, Par. 1 and 2 of the 1963 Vienna Convention.

[73] Art. 12, Par. 1 of the Protocol. The issue of jurisdiction over nuclear incidents occurring within a particular state's exclusive economic zone was subject of lengthy debate. During negotiations in the Standing Committee an important factor of this debate was connected with the new definition of nuclear damage, particularly environmental damage. Delegates of many states expressed concern that non-nuclear coastal states having international shipping routes in their exclusive economic zone might wish to ensure their jurisdiction over claims resulting from nuclear incidents in such zones as a protection against a narrow definition of nuclear damage that may be applied by the law of the Installation State. See: International Nuclear Law Association, Report of Working Group I: Nuclear Liability and Insurance, The Modernisation of the International Third Party Liability Regime, Nuclear Inter Jura "97", 14–19 September 1997 (Tours-France), 6. In the Draft Protocol submitted to the Diplomatic Conference reference was made to an "exclusive economic zone..." established "in accordance with the international law of the sea, including the United Nations Convention on the Law of the Sea". At the Diplomatic Conference the Turkish delegation, referring to the principle of sovereignty of states, proposed a deletion of the specific reference to the UN Convention on the Law of the Sea, arguing that states "are free to become parties of an international convention or not" (IAEA, Doc. NL/DC/L.20). The reference to an area not exceeding the limits of an exclusive economic zone (EEZ) when such zone has not been established resulted from the proposal of the United Kingdom. The proposal which intended to cover the position of states which have not declared the EEZ officially, was motivated by bringing the Protocol into line with the International Maritime Organisation 1969 Convention on Civil Liability for Oil Pollution Damage and the 1992 Protocol to Its Amendment and the 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (IAEA, Doc. NL/DC/L.2 and Doc. NL/DC/L.2/Rev.1).

[74] See Horn (note 25), 219.

The 1963 Vienna Convention adopted the principle of independence of civil claims from those based on the general principles of international law. The Article XVIII states that "this Convention shall not be construed as affecting the rights, if any, of a Contracting Party under the general rules of public international law in respect of nuclear damage". The Protocol slightly changed this article establishing that this Convention shall not affect the "rights and obligations" of Contracting Parties under the general rules of public international law.[75]

The consideration of the problem of state responsibility started in 1953 when the UN General Assembly adopted a Resolution which mandated the International Law Commission (hereafter: ILC) to take steps toward codification of state responsibility questions.[76] Continuing industrialization and increasing risks of transboundary environmental damage which may result from industrial activities gave rise to the need to establish precise and effective rules on state liability. The concept of state responsibility includes breach of international obligation, and does not foresee any duty to compensate for damage due to activities which are not prohibited by international law.[77]

The fundamental legal concept guiding relations between states is the sovereignty of states, which implies both the right of an independent exploitation of existing natural resources and the right to inviolability of the national territory. Numerous theories have developed from decisions of international tribunals[78] and the work of international organizations.[79] However, none of them resulted in the wide recognition of the source of international liability of state for nuclear damage which may serve as a legal ground for potential claims for compensation.

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[75] Art. 16 of the Protocol.

[76] Resolution 799/VIII of 7th December 1953.

[77] See Gehring/Jachtenfuchs (note 51), 93.

[78] The most famous two cases, although completely different with regard to the nature of the subject of dispute, are *Trail Smelter* (*U.S.* v. *Canada*) 3 R.I.A.A. 1905 (1949) and *Corfu Channel* (*U.K.* v. *Albania*), 1949 I.C.J. 4. The *Trail Smelter* arbitration case, often discussed in literature, concerned a dispute between the US and Canada during the 1920's when fumes from a smelter in Trail, British Columbia, caused damage to the state of Washington. The principle emerged from this case has become the basis for international environmental law. It prohibits a state from using its territory in such a way as to cause damage to the territory of another state. The arbitration court said: "(n)o State has the right to use or permit to use of its territory in such a manner as to cause injury by fumes in or to the territory of another ... when the case is of serious consequence and the injury is established by clear and convincing evidence". Significant elements of territorial sovereignty were also spelled out in the judgment of the International Court of Justice in the *Corfu Channel* Case, where the Court proclaimed: "... every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other states".

[79] The Stockholm Declaration of the U.N. Conference on the Human Environment (see the Final Report of the Conference U.N. Doc. A/Conf. 48/14/Corr. 1 (1972), reprinted in: ILM 1972, 1416). The Principle 21 of the Declaration holds that states have "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction". See also, the U.N. General Assembly Resolution 37/137 Regarding Protection Against Products Harmful to Health and Environment (December, 1982).

Since 1980 the ILC has been actively engaged in drafting a comprehensive convention on liability for damage arising out of an act not prohibited by international law, focusing in its work on transboundary environmental damage. The work of the ILC on the codification of principles of international liability of state was conducted in connection with its study of the state responsibility problem, but both items were studied separately because of their fundamentally different legal basis, nature, content and form.[80]

The work of the ILC was based on the assumption that states would accept risks created by activities in other states if a mutually acceptable preventive and compensatory legal regime could be agreed upon.[81] Such an approach removed a clear dividing line between the two projects of the ILC on international responsibility for wrongful acts and international liability for consequences of acts not prohibited by international law and focused on solving the practical problem of assuring compensation for the victims of transboundary environmental damage.[82]

Certainly, transboundary environmental pollution resulting from a nuclear accident, although connected with lawful activities, constitutes a breach of interests of the affected states. However, the mere infringement of state territory as a result of environmental pollution does not create a solid legal basis of liability of the polluting state.[83] Such an assessment may be evidenced by the slow progress made by the ILC on the draft articles concerning international liability of states for injurious consequences arising out of acts not prohibited by international law. Another evidence is the fact that none of the governments of the states affected by the Chernobyl accident had lodged an international legal claim for damages

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[80] See Gadkowski (note 32), 18. The ILC Special Rapporteur Quentin-Baxter attempted to solve the terminological distinction emphasizing that the term international liability refers exclusively to the international liability of the state for injurious consequences arising out of acts not prohibited by international law, whereas the term state responsibility refers exclusively to the state responsibility for wrongful acts or omissions (Quentin-Baxter's Preliminary and Second Report, A/CN:4/334, 19–25 and 51; and A/CN.4./364, 13 and 15–21). Differentiation between the question of the State responsibility and the international liability was based on the differences between primary and secondary rules, often emphasized by the ILC, and on the differences between state obligation in the areas of prevention and reparation (see Yearbook of the International Law Commission 1983, Vol. II, Part 1, 201).

[81] Gehring/Jachtenfuchs (note 51), 94. Establishing such approach, the ILC succeeded to insert in its concept Principles 21 and 22 of the 1972 Stockholm Declaration of the U.N. Conference on the Human Environment. The Principle 21 establishes the relationship between state sovereignty and state responsibility: "States have in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or to areas beyond the limits of national jurisdiction." The Principle 22 places a burden upon states to develop laws relating to the liability and compensation for transboundary pollution: "States shall cooperate to develop further the international law regarding liability and compensation for victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction".

[82] Ibid., 94–95.

[83] See Judith A. Perritano, International Liability for Nuclear Pollution, Suffolk Transnational Law Journal, 1987, Vol. 11, No. 75, 93.

against the former Soviet Union. It implies that at least some of them considered that there is no international legal basis for securing damages from the "polluting state". Thus, "Chernobyl also serves as a convenient guide in reviewing international law's generic deficiencies" in providing compensation for transboundary nuclear damage.[84]

Deficiencies of international law are based also on the fact that the rules of international law neither contain a single, general definition of damage, nor is there a general agreement on this question.[85] In addition, it is not undisputable that the principle of strict liability applies to liability of states for nuclear damage on the basis of general principles of international law.[86] Moreover, when state liability is concerned, there are no legal or conceptual reasons to adhere to the principle of channelling the liability exclusively to the state on the territory of which the nuclear installation causing damage is located. Since the entities of nuclear exporting and nuclear importing countries participate in the design, construction and operation of the nuclear installation, it is possible to suggest that states which support and provide long-standing encouragement for manufacture and export of nuclear facilities and components, as well as technology, should also take their share of liability in case of the nuclear accident.[87] In addition, international law has not yet set a precise enough objective threshold which would "trigger compensation claims" considered as justified.[88]

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[84] See Handl (note 34), 223.

[85] Gadkowski (note 32), 52.

[86] See the opinion of Handl that the principle of the strict liability of state may be derived from "general principles of law" within the meaning of article 18, paragraph I(c) of the statute of the International Court of Justice as part of the corpus of existing international law", Handl (note 34), 239. See also the opinion that the strict liability applies when the activity in question is of a significant transnational risk, Perritano (note 83), 94–95. Another approach underlines that the liability of state for acts not prohibited by international law "results only from conventional law, has no basis in customary law or general principles and, since it deals with exceptions rather than general rules, cannot be extended to fields not covered by specific instruments". See E. Jimenez de Arechaga, International Law in the Past Third Century, Collected Courses of the Hague Academy of International Law 159, 1978, Vol. I, 273. The strict liability of state for nuclear damage may not be based on other conventions regulating state liability for damage and an analogy with the 1972 Convention on International Liability for Damage Caused by Space Objects is not convincing because it relates to the liability for damage resulting from the activity of state, Lamm (note 8), 317. Moreover, nuclear law conventions such as the Early Notification Convention, the Convention on Mutual Assistance and the Nuclear Safety Convention, created significant obligations of state, but they do not constitute a formal conventional basis upon which may be formulated a claim for compensation for nuclear damage, and consequently, they cannot serve as a basis for establishing a strict liability of state. Also, state practice provides little support for the establishment of the standard of liability and demonstrates the lack of international consensus on this point. See Layard (note 35), 222.

[87] See Bagley (note 2), 507 and 553–554.

[88] See Boyle (note 41), 277. The determination of the limits beyond transboundary effects of pollution that may become legally relevant under international law is usually defined in international conventions by the terms "significant", "substantial" or "appreciable", which are used in some cases synonymously and distinguished in others. Moreover, to the same expression are given sometimes different meanings. See K. Sachariew, The Definition of Thresholds of Tolerance for Transboundary Environmental Injury Under International Law: Development and Present Status, Netherlands International Law Review, 1991, Vol. XXXVII, No. 1, 193–194. The legal standard emerging from the

Besides the question of the basis and concept of the state liability, during the negotiations in the Standing Committee for revision of the 1963 Vienna Convention, the majority of states which use nuclear technology as a source of energy clearly opposed the idea of international liability of state for nuclear damage. On the other hand, some non-nuclear states were in favour of introducing state liability but their influence on discussions was limited by the absence of clear concept how to transfer classical institutions of civil liability to the grounds of international liability.[89] The interrelationship between state liability and civil liability in a single convention would be hardly possible to establish because of some major differences in the nature of liability as well as many other aspects which reflect public international law obligations and civil law liability.[90]

For all these reasons it became evident that the introduction of state liability in the context of the revision of the 1963 Vienna Civil Liability Convention is not an approach which may contribute to realize viable solutions accepted by the majority of states. The problem of state liability was constantly present at the Standing Committee agenda, but never discussed in such a way as to find a conceptual approach which could fit the civil liability system. Evidently, the establishment of the state liability for nuclear damage requires an entirely new convention. However, its adoption in the foreseeable future is highly unlikely.

4. Convention on Supplementary Compensation for Nuclear Damage

The experience of the Three Mile Island and the Chernobyl accidents demonstrated that the scale of potential damage caused by a nuclear accident is likely to be well beyond the liability of the operator, even with a substantially increased liability limit under the revised 1963 Vienna Convention.[91] Therefore, the question

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decision in the *Trail Smelter* arbitration was expressed by the term "significant": "..., no State has the right to use or permit the use of its territory of another ... when the case is of serious consequence and the injury is established by clear and convincing evidence" (UNRIAA, Vol. III, 1965). An example of an instrument establishing a "significant" threshold for civil liability of the operator is the 1988 Antarctic Mineral Convention (ILM 1988, 868).

[89] An attempt to insert some elements of state liability was contained in the Polish proposal during negotiations in the Standing Committee, which suggested an acceptance of unlimited liability of the operator for claims for loss of life or personal injury, instead of provisions that regulate priorities in the settlement of claims. According to the proposal, a certain percentage of funds for compensation provided by the operator would have to be appropriated exclusively for the coverage of such claims, supplying money available for urgent cases. Once this amount is exhausted, funds would be provided by the Installation State (IAEA, Doc. SCNL/8/5).

[90] It was recognized also in the Standing Committee, in the paper presented by Poland on the basic assumptions and principles of the international system of compensation for nuclear damage based on private law regime supplemented by international state liability regime (IAEA, Doc. SCNL/11/3). The intention of the suggestion was to introduce a clear distinction between the private and public law regimes. However, the proposal went in the direction of state intervention system rather than the establishment of a conventional basis for state liability. See also Gadkowski (note 32), 60.

[91] The Three Mile Island accident, which caused no off-site releases of radioactivity, is thought to have cost US $ 1 billion (US $ 52 million was paid out by insurers) and the Chernobyl accident may have caused damage in the USSR totalling US $ 3 billion. See Boyle (note 41), 304–305.

of finding some mechanism to provide additional funds for compensation, such as the 1963 Brussels Convention which supplements the Paris Convention, was included at the beginning of the negotiations in the Standing Committee. The negotiations were based on general assumptions that such a mechanism should take the form of a new convention supplementary to the Vienna and Paris conventions linked by the Joint Protocol.

The need to provide an increased amount of compensation for nuclear damage became more evident because the negotiations on the revision of the 1963 Vienna Convention pointed very early to the need for an extension of the geographical scope of the Convention, more elaborate scope of nuclear damage and a longer period of extinction.

Early negotiations in the Standing Committee dealt with a proposal that the new supplementary compensation mechanism should be based on compulsory contributions of nuclear industry. Namely, in case of a nuclear incident beyond the amounts provided by the liable operator and public funds made available by the Installation State, all operators of nuclear installations in Contracting Parties would be obliged to pay a "levy" as a contribution for compensation of nuclear damage ("levy" draft). The opponents of this proposal pointed out that the national safety standards vary greatly and that it would be unjust that operators who are obliged by national law to observe high safety standards should be forced to contribute to the payment of damages for which an operator of an "unsafe" installation in another country is liable.

Another suggestion was based on a scheme which establishes a considerably higher amount of liability of the operator, who would be expected to cover such liability through insurance, membership in a risk-pool and other forms of financial security ("pool" draft). Amounts beyond liability of the operator would be provided by the Installation State and, as a third tier, out of public funds made available by all Contracting Parties according to a specified formula.

These two proposals were followed by numerous other draft texts presented and negotiated in the Standing Committee as a possible basis for a worldwide supplementary compensation regime. Several years of negotiations brought no agreement on the broad basis on which contributions of nuclear industry should be made and it became evident that the system of supplementary compensation should rely solely on contributions of state public funds.

The main efforts in these negotiations consisted in finding a scheme based on such a distribution of risk and economic burden that would reflect the "polluter pays" principle and which would serve as an additional impulse for states and operators to run their nuclear installations according to the highest nuclear safety standards. Namely, it was argued that the transfer of risk for nuclear damage to funds based exclusively on Contracting Parties contributions could lead to a careless attitude on the part of operators running the nuclear installation.

The final text proposed by the Standing Committee and adopted at the Diplomatic Conference established a system of two-tier state funding system which ensures compensation primarily by the intervention of the Installation State

and, as a second tier necessary in cases of extensive damage, by intervention of all Contracting Parties.

The concept of "state intervention" is different from the concept of international state liability, as it does not imply any obligation of the state to provide full compensation for damage in case of a nuclear incident. Nevertheless, the primary obligation of the Installation State to bear economic burden is introduced as a preferable one for two reasons. At first, the Installation State has primary obligation to undertake all measures to prevent occurrence of nuclear incident and to minimize the consequences that may derive from such an incident. Secondly, even in case of a nuclear incident with wide transboundary consequences, the Installation State is expected to be the most victimized state.

The second tier which involves intervention of all Contracting Parties reflects the introduction of the element of international solidarity of states in mitigating the consequences of nuclear damage and is completely in line with the aim to provide to the victims of a nuclear incident a full compensation.

Such an established funding system for providing compensation represents a departure from the "polluter pays" principle and a recognition of the state's environmental interdependency. However, differences between states in their contribution to the creation of risk of transboundary nuclear damage demanded patient efforts during the negotiations in the Standing Committee to find a satisfactory compromise for all.

4.1. Main features of the Convention on Supplementary Compensation for Nuclear Damage

The Convention on Supplementary Compensation for Nuclear Damage (hereafter: CSCND) is a free-standing instrument aimed at "establishing a worldwide liability regime to supplement and enhance" measures provided in the Vienna and Paris Convention "as well as in the national legislation on compensation for the nuclear damage consistent with the principles of these Conventions".[92]

The CSCND may be adhered to by all states parties to the Vienna or Paris conventions, but also states whose national legislation complies with the provisions of the Annex of the CSCND which are based on the same principles as those conventions.[93]

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[92] See the Preamble of the CSCND Convention. Besides that, the Preamble underlines as the main aims of the CSCND the encouragement of "regional and global co-operation" and the promotion of "a higher level of nuclear safety in accordance with the principles of international partnership and solidarity".

[93] See Art. II, Par. 1 of the CSCND. However, the Chapeau of the Annex declares that a Contracting Party is not forced to enact legislation which is consistent with the provisions of the Annex. It is sufficient to declare the provisions of the Annex directly applicable. Such a solution was initiated at the Diplomatic Conference by the delegation of the United States of America, which proposed in an addition to the Chapeau of the Annex of the CSCND that the provisions of the Annex "shall be self-executing to the extent necessary to allow a Contracting Party to give effect to the Convention" (IAEA, Doc. NL/DC/L.30).

More precisely, the Annex, which is an integral part of the CSCND, declares that national legislation is deemed to be in conformity with its provisions if it contained on 1 January 1995 and continues to contain provisions that provide strict liability for substantial nuclear damage off the site of the nuclear installation where the incident occurs, require indemnification of any person other than the operator liable for nuclear damage to the extent that person is legally liable to provide compensation (economic channelling) and ensure availability of at least 1000 million SDRs in respect of civil nuclear power plant and at least 300 million SDRs in respect of other civil nuclear installations for such indemnification.[94]

The CSCND applies to the nuclear damage, defined in the same way as under the revised Vienna Convention, for which an operator of a nuclear installation used for peaceful purposes situated in the territory of a Contracting Party is liable under either of the two basic conventions or under the national law which complies with the provisions of the Annex.[95]

4.1.1. Undertakings of Contracting Parties to provide funds and their allocation

Supplementary compensation in respect of the nuclear damage is provided by contribution of Contracting Parties, divided into two tiers. The first tier of compensation, in amount not less than 300 million SDRs, is to be provided by the Installation State.[96] This amount is to be distributed equitably without discrimination on the basis of nationality, domicile or residence, but the Installation State may exclude by its legislation nuclear damage suffered in a non-Contracting State.[97]

The second tier of compensation, e.g. the amount beyond those made available under the first tier is to be ensured by all Contracting Parties according to a specified formula. Such funds provided for compensation are to be distributed also without discrimination on the basis of nationality, domicile or residence, but only for the damage suffered in the territory of Contracting Parties.[98]

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[94] Art. 2, Par. 1 of the Annex CSCND. The requirement which relates to economic channelling was subject to long debate in a negotiation in the Standing Committee. The so-called "grandfather clause" was intended to enable the United States to become a State Party of the CSCND, as its legislation provides for economic rather than legal channelling of the liability of the operator. This solution, which tried to secure participation in the CSCND of the state with the largest installed nuclear capacity, demonstrates that the negotiation efforts were inspired more by political realities than concern for legal coherence of the system.

[95] Art. II, Par. 2 of the CSCND.

[96] Art. III, Par. 1(a)(i) of the CSCND. A Contracting Party may establish, for the maximum of 10 years from the date of opening for signature of the CSCND, a transitional amount of at least 150 million SDR in respect of a nuclear incident occurring within that period (Art. III, Par. 1(a)(ii) of the CSCND).

[97] Art. III, Par. 2(a) of the CSCND. That means that a distribution of the amount provided by the Installation State is to be distributed applying the same criteria for domestic and transboundary damage, e.g. in the same way as compensation provided by the amended 1963 Vienna Convention.

[98] Art. III, Par. 2(b) and Art. V, Par. 1 of the CSCND.

In addition, the funds contributed by the Contracting Parties are to be distributed in such a way that 50% of the funds are devoted to compensation of claims suffered in or outside the Installation State, and the other 50% are allocated for the compensation of claims suffered exclusively outside the territory of the Installation State (transboundary damage), but to the extent that such claims are uncompensated by the first half of fund.[99] Namely, in case of an nuclear incident it is presumed that the major damage would be suffered within the territory of the Installation State. Therefore, this solution was motivated by an endeavour to avoid that the total amount which Contracting Parties contribute on the basis of the principle of international solidarity is consumed exclusively for compensation of damage suffered on the territory of the Installation State. This solution is particularly important for states which have no nuclear installation situated on their territory, but which are obliged to contribute a certain amount according to a specific formula of contributions. However, this division of funds does not apply to cases where a Contracting Party ensures the availability of amount not less than 600 million SDRs under the first tier for compensation on a non-discriminatory basis for damage suffered in and outside of the Installation State.[100]

4.1.2. Geographical scope

The CSCND contains a detailed provision on its geographical scope. The provision on the geographical scope relates to the second tier of funds provided by all Contracting Parties of the CSCND. However, it may apply also to the first tier of funds which are provided by the Installation State in cases where the national legislation of this state excludes compensation of damage suffered in a non-Contracting State.[101]

The funds provided for by all Contracting Parties of the CSCND are devoted to the compensation of nuclear damage which is suffered:

(a) in the territory of a Contracting Party; or

(b) in or above maritime areas beyond the territorial sea of a Contracting Party

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[99] Art. XI, Par. 1(a) and (b) of the CSCND. In the event and to the extent that the national compensation amount of the Installation State is less than 300 million SDR, the amount for compensation of both domestic and transboundary damage have to be reduced proportionally and the other part of the supplementary funds have to be increased accordingly (Art. XI, Par. 1(c) of the CSCND). On the Diplomatic Conference the Belgian delegation opposed to any allocation of funds, and proposed a text that removes all discrimination based on the place where the damage is suffered between the victims of the same nuclear accident (IAEA, Doc. NL/DC/L.16).

[100] Art. XI, Par. 2 of the CSCND.

[101] The provision on the geographical scope does not express explicitly its application to the funds provided by the Installation State, but it may be concluded from the provision contained in Art. III Par. 2(a). Namely, the CSCND presumes that national legislation applies to the damage wherever suffered. On the other hand, it recognizes that a state may, because of obligations of that state under other conventions on nuclear liability, exclude nuclear damage suffered in a non-Contracting State. Certainly, such an approach came as a consequence of the extended geographical scope of the revised 1963 Vienna Convention (Art. 3 of the Protocol).

(i) on board or by a ship flying the flag of a Contracting Party, or on board or by an aircraft registered in the territory of a Contracting Party, or on or by an artificial island, installation or structure under the jurisdiction of a Contracting Party; or

(ii) by a national of a Contracting Party, excluding damage suffered in or above the territorial sea of a State not Party to the CSCND; or

(c) in or above the exclusive economic zone of a Contracting Party or on the continental shelf of a Contracting Party in connection with the exploitation or the exploration of the natural resources of that exclusive economic zone or continental shelf. The above is subject to the requirement that the courts of a Contracting Party have jurisdiction pursuant to Article XIII of the CSCND.[102]

4.1.3. Calculation of contributions

As distinct from the first tier of compensation which is determined in a fixed amount of 300 million SDRs, the second tier of compensation which is to be ensured by the contributions of all Contracting Parties is made dependent on the result of calculation made by application of a specified formula. This formula implies a combination of two factors: the installed nuclear capacity and the United Nations rate of assessment of Contracting Parties to the Convention.

The amount of the contribution of each Contracting Party is established as a sum of the amount which is the product of the installed nuclear capacity of that Contracting Party multiplied by 300 SDRs per unit of installed capacity[103] and the amount determined by applying the ratio between the United Nations rate of assessment for that Contracting Party and the total of such rates for all Contracting Parties to 10% of the sum of the amounts calculated for all Contracting Parties under the first factor.[104]

The application of such a formula ensures that the main economic burden of providing of funds to the second tier is shared by states having nuclear installation on their territory, depending on the rate of installed nuclear capacity.

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[102] Art. V, Par. 1 of the CSCND.

[103] The formula for establishing installed nuclear capacity of nuclear reactors situated in the territory of the Contracting Party is, for each nuclear reactor, 1 unit for each MW of thermal power (Art. IV, Par. 2 of the CSCND).

[104] Art. IV, Par.1 (a) and (b) of the CSCND. The same Article provides that Contracting Parties on the minimum United Nations rate of assessment with no nuclear reactors are not required to make any contribution. At the Diplomatic Conference the delegation of New Zealand proposed a different solution. According to the submitted proposal, "States with no nuclear reactors shall not be required to make contributions" (IAEA, Doc. NL/DC/L.9). Such an approach was advocated on the basis of full adherence and respect to the "polluter pays" principle. All states which have nuclear installations and which create potential risks for others, should bear the consequences of a nuclear incident occurring in the territory of one Contracting Party. However, the proposal was not accepted because of the prevailing view that the underlying feature of the CSCND primarily reflects the "principle of solidarity", which requires participation by contribution of all Contracting Parties. Nevertheless, states which do not have on their territory nuclear installations participate only in the second tier of calculation.

The second factor in calculation constitutes only 10% of the first factor and it is shared by all Contracting Parties, nuclear and non-nuclear states.

In order to find the appropriate balance and to avoid a situation where the Contracting Party having a large nuclear power capacity would have to contribute a too large amount, especially during the initial period with a small number of Contracting Parties, a percentage limitation for the contribution of an individual Contracting Party has been introduced. The maximum contribution which may be charged per nuclear incident to any Contracting Party, other than the Installation State, may not exceed a certain percentage of total contributions of all Contracting Parties.[105] For a particular Contracting Party such percentage corresponds to its United Nations rate of assessment expressed as a percentage plus eight percentage points (specified percentage). However, this percentage shall be increased by one percentage point when the total installed capacity by the Contracting Parties exceeds a level of 625,000 units and shall be increased by one additional percentage point with each further increment of 70,000 units.[106]

4.1.4. Jurisdiction

The CSCND regulates the jurisdiction over actions for compensation of nuclear damage in the same manner as it is regulated by the revised Vienna Convention.

The difference resulted from the establishment of the jurisdiction over actions for compensation in a case where the nuclear incident occurred within the area of the exclusive economic zone of a Contracting Party or, if such a zone has not been established, in an area not exceeding the limits of an exclusive economic zone were it to be established by that party.[107] Namely, in cases where the exercise of such jurisdiction in the framework of the CSCND would be inconsistent with the obligation of that Contracting Party under the system of Vienna or Paris Conventions in relation to the state which is not party to the CSCND, the obligations within the framework of the Vienna or Paris Convention shall prevail.[108]

4.1.5. Organization of supplementary funding

In case of a nuclear incident causing damage which exceeds the amount of limited liability of the operator and the amount which is to be provided by the

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[105] The exclusion of the Installation State from the benefit of this Article came as result of the proposal submitted at the Diplomatic Conference by the delegations of Belgium, Ireland, Lithuania, Luxembourg and Portugal, (IAEA, Doc. NL/CD/L.22). The proposal was based on the assumption that the limitation ("cap") should not be applied to state where the incident occurs, and which is supposed to have the most benefit from the CSCND system of contribution of all Contracting Parties.

[106] Art. IV, Par. 1(c) of the CSCND.

[107] The reference to an area not exceeding the limits of an exclusive economic zone when such zone has not been established resulted from the proposal of the United Kingdom (IAEA, Doc. NL/DC/L.2 and Doc. NL/DC/L.2/Rev.1). Those proposals related to the amendment of provisions of both Protocol and the CSCND. See *supra* note 73.

[108] Art. XIII, Par. 2 of the CSCND.

Installation State, the Contracting Party whose courts have jurisdiction informs the other Contracting Parties on the nuclear damage and requests them to make available public funds required under the provisions of the CSCND. However, the funds are to be made available to the extent and at the time when the funds are actually required.[109]

In order to make possible a precise determination of the contribution, each Contracting Party, at the time when it deposits its instrument of ratification, must communicate to the Depositary the complete listing of all nuclear installations situated on its territory containing all necessary particulars relevant for the calculation of contributions. The Depositary has an obligation to maintain, update and communicate such a list of nuclear installations to all Contracting Parties.[110]

The system of disbursements and apportionment of the funds is governed exclusively by the law of the Contracting Party whose courts have jurisdiction over the claims for compensation. Also, Contracting Parties are obliged to ensure that persons suffering damage may enforce their rights to compensation without having to bring separate proceedings according to the origin of the funds provided for such compensation and that other Contracting Parties may intervene in the proceedings against the operator liable.[111]

4.1.6. Entry into force

The CSCND enters into force on the ninetieth day following the date on which at least five states with a minimum of 400,000 units of the installed nuclear capacity have deposited an instrument of ratification, acceptance or approval.[112] However, the mentioned instruments may be accepted only from states which are parties to either the Vienna or the Paris Convention or a state which declares that its national law complies with the provision of the Annex of the Convention. In addition, the CSCND underlines the importance of the safety aspect of the established nuclear liability and the state intervention system. Therefore, those states which have on their territory a nuclear installation as defined in the

[109] Art. VI and VII of the CSCND.

[110] Art. VII of the CSCND.

[111] Art. X of the CSCND.

[112] Art. XX of the CSCND. With respect to the entry into force of the CSCND, there were two proposals of the German delegation at the diplomatic conference. According to first proposal the CSCND shall come into force when "at least 5 states with at least 10.000 units of installed nuclear capacity each in their territory" adhered to the Convention (IAEA, Doc. NL/DC/L.3). Another proposal of the German delegation required the participation of 5 states which have at least 10.000 units of installed nuclear capacity each, and which together have total of at least 400.000 units of installed nuclear capacity (IAEA, Doc. NL/DC/L.3 Rev. 1). Both proposals require the participation of 5 major nuclear states, and were motivated by the wish to ensure the global character and the global importance of the CSCND. The proposals emphasised that the global character of the CSCND should be secured not only by participation of a high number of states, but primarily by the participation of major nuclear states.

Convention on Nuclear Safety of 17 June 1994, should also be parties to this Convention.[113]

5. Conclusion

The nuclear incident on the Three Mile Island and the even more convincing experience of the Chernobyl incident contributed to the formation of particularly sensitive public opinion towards the use of nuclear energy and created a climate in which the modernization of the international regime which regulates various aspects of nuclear energy became unavoidable. The revision of the 1963 Vienna Convention and the adoption of the CSCND with the aim to ensure the availability of a higher amount of compensation for nuclear damage represent an important part of the entire result achieved after 1986.

The solutions contained in the Protocol to amend the 1963 Vienna Convention may be considered as an important improvement, but at the same time they do not represent dramatic change in the approach to regulate liability for nuclear damage. The Protocol provides more clarity and legal certainty for victims but also reconfirms the basic principles on which the 1963 Vienna Convention as well as the Paris Convention are based, such as absolute liability, channelling and limited liability.

The extension of the geographical scope of the revised Vienna Convention reveals a considerable moral dimension of the nuclear liability law and the problem of environmental interdependence of states. The substantial increase of the amount of minimum liability of the operator and the introduction of the state intervention in the system of liability not only provides more appropriate compensation for victims but also strengthens the preventive function of liability stimulating the state and the operator to use the best endeavour to eliminate the sources of possible damage and undertake maximally effective measures of nuclear safety.

On the other hand, the negotiations and the adoption of the CSCND came as result of an early comprehension that the efforts to introduce the elements of state liability in the civil liability regime may not lead to viable results, not only for reasons of conceptual inadequacies of such an approach but also because of clear and strong opposition of many states to accept such liability. However, the results of the CSCND are not to be neglected. The solutions contained in this Convention are based on the principle of solidarity of states, but also on the principle that the main economic burden which arises as a consequence of a nuclear incident should be borne by the Installation State. Such an established scheme of contribution does not respect to the full extent the "polluter pays" principle, but in the light of uncertainties of international law which has not established a clear basis for liability of the state for nuclear damage, may be considered as an appropriate approach in achieving the most important aim of compensating victims in cases where the

[113] Art. XVIII, Par. 1 of the CSCND.

available financial sources provided by the operator are insufficient to cover the entire amount of nuclear damage.

Therefore, both instruments restore some confidence that the harmful consequences might be reduced and significantly strengthen the international nuclear liability regime. However, to what extent the new conventions will attract adherence of existing parties of the Vienna and Paris Conventions and other states which today do not belong to any of the existing international conventions on nuclear liability remains to be seen. Particularly when the CSCND is in question, without widespread adherence to the Convention of parties with the most developed nuclear industry, the system may not become efficient enough. In other words, the adoption of two conventions created a basis for the establishment of the improved international legal regime for compensation of nuclear damage but the true improvement depends primarily on the perception of the major nuclear countries on the attractiveness of the offered instruments. More conventional adherents would contribute to the better protection of the public and would facilitate further development of the nuclear industry world-wide. Certainly, the future will test the viability of the final result attained after several years of negotiations.