

**THE 'GREEN SIDE' OF THE NUCLEAR REGIMES –
ENVIRONMENTAL ASPECTS AND CONCERNS WITHIN THE FIELD
OF NUCLEAR LIABILITY AND THE UTILIZATION OF NUCLEAR
ENERGY**

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I. Introduction

The present study deals with the environmental aspects of the wide-ranging and diverse field of nuclear law. The nuclear regimes (especially nuclear liability law) contain relevant provisions on the potential environmental detrimental effects of the usage of nuclear power.

Otherwise, the environmental legal approach had not entirely been entered into the sphere of nuclear law, since their political recognition and economic impacts as well as importance reached various levels by the countries and interested parties. After the tragic events in Chernobyl and Fukushima, however, the post-disaster approach of the two regulatory regimes became a relevant mutual starting point for the harmonization of the above-mentioned regimes.

But then, it is a yet unsolved question and issue whether today's environmental challenges may be conciliated with the main pillars of nuclear law. It is worth mentioning that the sustainability-focused environmental regulatory methods (even after the 2015 Paris Agreement) could provide a common basis and platform for environmental and nuclear law-making (or the interpretation, application, etc.).

Furthermore, the paper proves that the previously explicit *post-disaster approach* had been replaced – more or less – by the preventive, precautionary and anticipatory approach both in the field of nuclear law and environmental law.

II. Scope of the Article and the Environmental Aspects of the Nuclear Regimes

The present study focuses on the environmentally relevant elements of the international nuclear regime, and analyzes the common roots of their introduction into such regimes with special regard to environmental liability¹ and nuclear liability law² respectively. These regimes are highly exposed to the comparison of risk management, liability and insurance approaches of various low-probability and high-consequence risk industries (e.g. oil/gas, aviation, chemicals, nuclear activities, etc.).

¹ See, 1969 International Convention on Civil Liability for Oil Pollution Damages (replaced in 1992, in force); 1971 Convention Relating to Civil Liability in the Field of Maritime Carriage of Nuclear Materials (in force); 1972 Convention on International Liability for Damage Caused by Space Objects (in force); 1977 International Convention on Civil Liability for Oil Pollution Damage resulting from Exploration and Exploitation of Seabed Mineral Resources (not in force); 1989 Geneva Convention on Civil Liability for Damage Caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (not in force); 1991 Madrid Protocol on Environmental Protection to the Antarctic Environment (in force); 1993 Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (Lugano Convention – not in force); 1999 Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal (not in force); 2003 Protocol on Civil Liability for Damage and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents on Transboundary Waters (not in force).

² See, 1962 Convention on the Liability of Operators of Nuclear Ships (not in force); 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (in force); 1963 Vienna Convention on Civil Liability for Nuclear Damage (in force); 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (in force); the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (in force); the 1997 Convention on Supplementary Compensation for Nuclear Damage (in force); the 2004 Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy (not in force).

The paper means by the term ‘green side’ especially environmental concerns and considerations of nuclear law treaties (e.g. impact assessment) as well as responses towards the prevention (e.g. impact assessment, as well) and compensation of damages to the environment.³ The common denominator between environmental and nuclear law is primarily the domain of nuclear emission-induced environmental damage and the preventive measures as well as recovery of the contaminated areas.

The author perceives that the amendments of the liability treaties in the 1990s and 2000s are real signs of the nuclear regimes „going green”. The extension of the scope of the covered damage with damages and detrimental effects in the environment had been put forward in the Paris-regime and the Vienna-regime respectively.

As Elena Moldodstova stated decades before, „nuclear science has developed two disciplines which are used in developing environmental protection from nuclear hazards: radiation protection and nuclear safety (...) If those standards are adopted internationally, they will serve as a basis for the international regulation of nuclear energy for the purpose of protecting the environment.”⁴

Thus, this study deals with the environmentally relevant provisions of the – first and foremost – liability conventions with special attention to the appearance of nuclear issues in classical environmental (non-nuclear) treaties.

III. Regulation „Trends” of the Environmentally Vulnerable Issues

The *ex ante* (prior to the disasters, stipulated for prevention, precaution and to avoid disasters) and *post facto* (responsive regulation, stipulated to disaster-specific issues as a prompt reaction to disasters) *legislation of municipal law and regulation in international law* are not paradoxical and exclusive solutions on the sides of the law- and policymakers.⁵

It is clear and certain as well as reasonable demand that

- *firstly*, states have a duty to prevent disasters and environmental damage, degradation injury, so thus, to enact *ex ante* anticipatory measures (via laws and the competences of the relevant authorities);

³ Therefore, the author tends to accept Emmerechts’ approach on the growing symbiosis between nuclear law and environmental law. See, Sam Emmerechts: Environmental Law and Nuclear Law: A Growing Symbiosis. *Nuclear Law Bulletin*, Vol. 13 (2009) Issue 2, 91-110. Since, with the wording of Emmerechts, „environmental law and nuclear law share the same objectives: protection against, mitigation of, and compensation for damage to the environment.” Emmerechts: *op. cit.* 92. On the first influential works analyzing the common issues, see Boyle, Alan: Nuclear Energy and International Law: An Environmental Perspective. *British Yearbook of International Law*, Vol. 60 (1990) 257. and 269.

⁴ Moldodstova, Elena: Nuclear Energy and Environmental Protection: Responses of International Law. *Pace Environmental Law Review*, Vol. 12 (1994) No. 1, 190.

⁵ Michael Faure divided the disaster and disaster management into three different phases: prevention and precaution, relief efforts and recovery efforts. Faure, Michael: In the Aftermath of the Disaster: Liability and Compensation Mechanisms as Tools to Reduce Disaster Risks. *Stanford Journal of International Law*, Vol. 52 (2016) No. 1, 99.

- *secondly*, they are also intended to establish *post facto* duties and financial obligation to mitigate any resulting damage and the extent of the harm through posterior measures.⁶

The same holds true for the nuclear activities, as well.

A. Ex Ante Measures

Ex ante regulations are typically i) impact assessment-based or ii) right-based, highlighting societal demands and claims by the states and the population, as well. The latter is rarely adaptable to the nuclear activities; however, *vis-à-vis* the states are concerned, a certain way of notification and “self-evident” information service shall be carried out on the inter-state level.

The classical *impact assessment-based ex ante regulation* aim is attached to the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context, which prescribes the model-like precautionary and preventive measures of environmental impact assessment of some activities (being relevant on environmental basis) at the very early stage of the potential dangerous (or environment-sensitive) activity to be introduced. Furthermore, such model-like measures include (articles 2-7 of the convention) the notification and consultation requirements, confirmation and participation by the affected countries, transmittal of information from the affected country to the country of origin, preparation of environmental impact assessment documentation, post-project analysis, which are all obligatory upon to the text of the convention. According to the Espoo Convention, Article 2, Para. 1 (General Provisions), the Parties shall take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities. These effective measures shall include the necessary legal, administrative or other measures to implement the provisions of the convention, including, with respect to proposed activities listed in Appendix I that are likely to cause significant adverse transboundary impact. The utilization of nuclear energy is relevant under the aegis of the Appendix I, since the list of relevant activities include „*thermal power stations and other combustion installations with a heat output of 300 megawatts or more and nuclear power stations and other nuclear reactors (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load)*” and „*installations solely designed for the production or enrichment of nuclear fuels, for the reprocessing of irradiated nuclear fuels or for the storage, disposal and processing of radioactive waste.*”⁷

Beyond the impact-based 1991 Espoo Convention, the other, thus the *right-based ex ante regulation aim* is significant within the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. The 1998 Aarhus Convention (called the ‘green democracy convention’ with the three main pillars figured out in the title of the convention) provides opportunities to the general public and the potential affected parties to take part in decisions, processes and access to justice which can be considered minimum and efficient safeguards for prevention and precaution.

⁶ Kecskés, Gábor: The Societal Effects of Environmental Disasters in International Environmental Regulation. *Integrating Social Sciences into Legal Research: International Conference of PhD Students and Young Researchers*. Vilnius, Lithuania, 2014. 190-196.

⁷ See Espoo Convention, Appendix I, Para 2-3.

Upon the wording of the convention (Article 6), the contracting parties „shall apply the provisions of this article with respect to decisions on whether to permit proposed activities listed in Annex I.” Annex I includes (from the energy sector) “*nuclear power stations and other nuclear reactors including the dismantling or decommissioning of such power stations or reactors (except research installations for the production and conversion of fissionable and fertile materials whose maximum power does not exceed 1 kW continuous thermal load)*”. Furthermore, the following activities are subject to the public participation duty:

- installations for the reprocessing of irradiated nuclear fuel;
- installations designed;
- production or enrichment of nuclear fuel;
- processing of irradiated nuclear fuel or high-level radioactive waste;
- final disposal of irradiated nuclear fuel;
- final disposal of radioactive waste;
- the storage (planned for more than 10 years) of irradiated nuclear fuels or radioactive waste in a different site than the production site.

In sum, such impact assessment and right-based approaches shall be rated to the *ex ante side* of the regulation concerning disasters, including preventive, precautionary measures and disaster-risk-reduction as well as command-and-control regulation on the basis of the classification of legal-illegal dichotomy of means and measures aiming to avoid the environmental disasters or their injurious effects.⁸

B. Post Facto Regulations

Post facto regulations are linked to the disasters and almost exclusively implement *follow-up measures* designed and framed to the disaster. Therefore, the categorization of such detrimental effects is almost impossible. Due to the fact that each disaster demands separate follow-up measures, such classification as this study outlines above under the aegis of the *ex ante* regulation cannot be drawn.

However, the model-like post-Chernobyl regulations includes the adoption of the 1986 Convention on Early Notification of a Nuclear Accident and the 1986 Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. These regulation steps confirmed the reality and feasibility of the prompt and efficient follow-up measures (in the midst or before the end of the Cold War era) within the field of international law and state-to-state relations. The lack of notification was a crucial point in the handling of the Chernobyl disaster by the Soviet authorities – by keeping the event secret for several days, the emission of dangerous materials via air to the atmosphere of a number of European countries went unchecked.

The 1986 Early Notification Convention set up a specific notification system (*post facto*) on incidents having transboundary nature and radiological character or significance. According to Article 2, the state of origin shall notify, directly or through the International Atomic Energy Agency those States which are or may be physically affected about the nuclear accident, its nature, the time of its occurrence and its exact location where appropriate.

⁸ Kecskés: *op. cit.*

Accordingly, the *post facto* main features of the notification requirement are clearly and aptly seen.

The other post-Chernobyl treaty, the 1986 Assistance Convention established a system, therein the states shall cooperate between themselves and with the International Atomic Energy Agency in accordance with the provisions of the Assistance Convention to facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimize its consequences and to protect life, property and the environment from the effects of radioactive releases (Article 1).

Notwithstanding, Chernobyl disaster (after nuclear incident in Three Mile Island in 1979 and just prior to 1987 Goiânia catastrophe) has unprecedented societal effects regarding the legislation-regulation (see for instance the 1986 conventions above), approval for and support (whether it is governmental or public) of nuclear energy, movements against the nuclear power plants, and the disaster threw new light upon the nuclear issue worldwide. The real connection between environmental disasters and societal impacts (paradigm-shifts) is principally proven by nuclear incidents (Chernobyl and mainly, Fukushima from the previous past).

IV. Environmental Considerations of the Nuclear Regimes

The occurrence of the interest of environment profoundly pervades the nuclear regime (*expressis verbis* just in certain fields, but implicitly in its real entirety); these considerations are at least three-fold (in the order of „profoundness“):

- safety considerations and the environment;
- fuel and radioactive waste management and the environment;
- liability considerations and the environment (environmental damages).

A. Safety Considerations and the Environment

As for the nuclear safety issues, the environmental considerations had been put forward by the 1994 Convention on Nuclear Safety in a very general way.

Article 1 of the Convention emphasized that the objective of the convention is to „*establish and maintain effective defences in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionizing radiation from such installations.*”

On the rules regarding the existing nuclear installations and the siting (designation of the sites), environmental aspects are twofold: *first*, evaluating the likely safety impact of a proposed nuclear installation on individuals, society and the environment is a top priority; and *second*, if the upgrading of the safety of the nuclear installation cannot be achieved, plans should be implemented to shut down the nuclear installation as soon as practically possible, after taking into account the energy context and possible alternatives as well as the social, environmental and economic impacts.⁹

⁹ See Article 6 and 17 of the Convention on Nuclear Safety.

B. Fuel and Radioactive Waste Management and the Environment

Another – and a bit more complexed – environmental layer of the nuclear regimes is the safety of fuel management and waste management. According to the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the objectives of the treaty embrace a traditional and abstract protected subject, as it ensures that „during all stages of spent fuel and radioactive waste management there are effective defenses against potential hazards so that individuals, society and the environment are protected from harmful effects of ionizing radiation;¹⁰ however the wording of the treaty is later inspired by the well-known phenomena, namely the interests of the future generations, by stating that the protection shall be ensured „in such a way that the needs and aspirations of the present generation are met without compromising the ability of future generations to meet their needs and aspirations”.¹¹ The interests (and not right) of the future generations do not occur in many binding treaties (nor in a form of abstract aim of the parties), so thus this relevance has to be, in itself, mentioned. No doubt, the codification process took place in the 1990s, when the emerging and promising principles (such as the interest of the future generations) had been come to the front of the environmental policies worldwide.¹²

Within the same treaty, the general safety requirements,¹³ the assessment of safety of facilities,¹⁴ the siting of the proposed facilities¹⁵ as well as the desing and construction of

¹⁰ Article 1 of the 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management Convention.

¹¹ *Ibid.*

¹² Recently, this trend seems to decline.

¹³ Article 4: Each Contracting Party shall take the appropriate steps to ensure that at all stages of spent fuel management, individuals, society and the environment are adequately protected against radiological hazards.

Article 11: Each Contracting Party shall take the appropriate steps to ensure that at all stages of radioactive waste management individuals, society and the environment are adequately protected against radiological and other hazards.

¹⁴ Article 8: Each Contracting Party shall take the appropriate steps to ensure that: (i) before construction of a spent fuel management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out; ii) before the operation of a spent fuel management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i).

Article 15: Each Contracting Party shall take the appropriate steps to ensure that: (i) before construction of a radioactive waste management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out; (ii) in addition, before construction of a disposal facility, a systematic safety assessment and an environmental assessment for the period following closure shall be carried out and the results evaluated against the criteria established by the regulatory body; (iii) before the operation of a radioactive waste management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i)

¹⁵ Article 6: 1. Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed spent fuel management facility: (i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime; (ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment;

Article 13: 1. Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed radioactive waste management facility: (i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime as well as that of a disposal facility after closure; (ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment, taking into account possible evolution of the site conditions of disposal facilities after closure;

facilities¹⁶ underline the importance of environmental aspects by perceiving the first priority to ensure the adequate protection of the individuals, society and environment against radiological hazards.

C. Liability Considerations and the Environment

On the liability considerations, the nuclear liability (and oil pollution liability) treaties were the forerunners of the latter environment-based liability conventions,¹⁷ therefore the main characteristics and pillars of the regimes are identical. After the adoption of the 1960 Paris Convention and the 1963 Vienna Convention, in the 1970s the International Law Commission (established by the U.N. General Assembly for the „promotion of the progressive development of international law and its codification”, hereinafter: ILC) gave its expression for establishing a new category of liability having denominated its project as International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law.

However, the topic was actually a non-nuclear oriented one but the potential outcome of the ILC’s work could have been touched upon the subject of nuclear activities. The U.N. General Assembly endorsed the conclusion of the Commission in its United Nations General Assembly Res. 32/151 of 19 December 1977 and invited it, at an appropriate time, to commence work on the topic of international liability for injurious consequences arising out of acts not prohibited by international law.¹⁸ Presumably, this distinction had been conducive to the decision on which the ILC further divided the liability topic into two projects in 1997. Subsequently, the first project of the ILC in this issue embodied the work on primary obligations relating to the *prevention of transboundary harm from hazardous activities*, while the second project concentrated on *liability for injurious consequences of acts not prohibited by international law*.

It is worth mentioning that the ILC has adopted drafts with a non-binding nature, since these documents have never entered into force as binding international instruments (however, the documents include some obligatory customary rules). The documents are the following:

- as a result of the prolonged codification work after the “1997 split”, the ILC firstly adopted the text of *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities* (without mentioning the words of “liability” and “responsibility” and “nuclear”, as well) in 2001, and submitted the text to the U.N. General Assembly;
- after three years, in 2004 the ILC adopted the *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities*,¹⁹ dealing with other aspect of the issue, considering the harm arising out of hazardous

¹⁶ Article 7: Each Contracting Party shall take the appropriate steps to ensure that: (i) the design and construction of a spent fuel management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;

Article 14: Each Contracting Party shall take the appropriate steps to ensure that: (i) the design and construction of a radioactive waste management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;

¹⁷ See the treaties listed in footnote 1.

¹⁸ See, Para. 7 of the U.N.G.A. Res. 32/151.

¹⁹ In 2006, the ILC completed the liability aspects by adopting draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities, and recommended to the General Assembly that it should endorse the draft principles by a resolution and urged States to take national and international action for implementing them (so far, no implementation had been concluded).

activities as a distinctive factor with the explicit concept of non-fault liability (see, Principle 4 of the Draft).

Neither the *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities*, nor the *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities* have a binding character due to their status of being adopted by the ILC, irrespective of the fact that these documents had considerably been based upon the mandatory rules of customary international law.

Both drafts are silent on explicit nuclear issues; the ILC was, however, active in the commentary by emphasizing the relevance of the nuclear liability treaties, and called explicitly the experiences and special focus of nuclear activities within the subjects of exchanging information (nuclear waste), emergency preparedness (nuclear reactor accidents) and notification of an emergency (1986 Early Notification Convention).²⁰ In the *Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities*, the ILC frequently cited the definitions of the main nuclear liability conventions.²¹

V. Environmental Damage within the Term of Nuclear Damage

It is worth mentioning that in their original wording neither the 1960 Paris Convention, nor the 1963 Vienna Convention contain explicit rules of accepting the damages in the environment as nuclear damage (a rather traditional personal – injury – and property damages have been included²²). Though, these conventions leaved the whole matter of coverage of damages to the environment to national law, because there is no restriction in Vienna Convention preventing the coverage under the convention regime of damage to the environment, however, the convention would not appear to require such coverage.²³

However, the tragic nuclear disasters (and e.g. their costs of environmental recovery) had clearly shown the real importance and need of revision of the traditional concept of nuclear damage. Therefore, the codification subsequently focused on the inclusion of environmental aspects of the detrimental effects.

²⁰ *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries*. Text adopted by the International Law Commission at its fifty-third session, in 2001, and submitted to the General Assembly as a part of the Commission's report covering the work of that session (A/56/10). The report, which also contains commentaries on the draft articles, appears in the Yearbook of the International Law Commission, 2001, Vol. II, Part Two. http://legal.un.org/ilc/texts/instruments/english/commentaries/9_7_2001.pdf

²¹ *Draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities, with commentaries*. Text adopted by the International Law Commission at its fifty-eighth session, in 2006, and submitted to the General Assembly as a part of the Commission's report covering the work of that session (A/61/10). The report, which also contains commentaries on the draft articles, will appear in Yearbook of the International Law Commission, 2006, Vol. II, Part Two. http://legal.un.org/ilc/texts/instruments/english/commentaries/9_10_2006.pdf

²² It is worth mentioning that the costs of environmental damages may have been claimed under the term traditional 'property damage' based upon national law. See e.g. Emmerechts: *op. cit.* 91.

²³ Lamm, Vanda: Liability for Nuclear Accidents Affecting the Environment. *Acta Juridica Hungarica*, Vol. 35 (1993) No. 1-2, 318-319.

As for the 1960 Paris Convention (amended in 1964 and 1982), the 2004 Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy (not in force) added four new sub-paragraphs to the definition of nuclear damage by covering:

- the costs of measures of reinstatement of impaired environment,
- the loss of income deriving from a direct economic interest in any use or enjoyment of the environment,
- and the costs of preventive measures, and further loss or damage caused by such measures.²⁴

As for the amendments of the 1963 Vienna Convention on Civil Liability for Nuclear Damage, the 1997 Vienna Protocol (in force since 2003) introduced the environmental damage into the Vienna regime. In addition to the traditional form of damages, Article 2 of the Protocol (similarly to the 2004 Protocol to the Paris Convention) extended the definition of nuclear damage by including:

- the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant;
- loss of income deriving from an economic interest in any use or enjoyment of the environment;
- the costs of preventive measures, and further loss or damage caused by such measures;
- 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.²⁵

The free standing²⁶ 1997 Convention on Supplementary Compensation for Nuclear Damage (in force since 2015, hereinafter: CSC) originally contains a wide and all-inclusive definition of nuclear damage with:

- the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant;
- loss of income deriving from an economic interest in any use or enjoyment of the environment;
- the costs of preventive measures, and further loss or damage caused by such measures;
- 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.²⁷

The inclusion of environmental damage including the costs of environmental measures and the costs of such recovery into the subject of nuclear damage is a clear trend in the Paris regime, the Vienna regime as well as the free standing CSC.²⁸ So far, all relevant interstate liability regimes extended their definitions on damage with the environmental aspects since the 1990s, by proving the fact of adaptability of nuclear regimes to the emerging new challenges.

²⁴ 2004 Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982. I., B. vii).

²⁵ 1997 Protocol to Vienna Convention on Civil Liability for Nuclear Damage, Article 2, Para. 2.

²⁶ See McRae, Ben: The Convention on Supplementary Compensation for Nuclear Damage Catalyst for a Global Nuclear Liability Regime. *Nuclear Law Bulletin*, Vol. 2 (2007) Issue 1, 17-35.

²⁷ 1997 Convention on Supplementary Compensation for Nuclear Damage, Article 1, point f).

²⁸ Blanchard, Patrick: Responsibility for Environmental Damage under Nuclear and Environmental Instruments: a Legal Benchmarking. *Journal of Energy & Natural Resources Law*, Vol. 18 (2000) No. 3, 235-238.

VI. Conclusion

The matrix of the contracting parties in the nuclear liability conventions and their amending treaties is quite difficult and complex, even more, some of them have not yet entered into force.²⁹ The same holds true for the environmental liability treaties (see e.g. 1993 Lugano Convention)³⁰ but the trend is clear, sector-specific notions are proliferating and the approaching trend between nuclear and environmental law is unquestionable. Though, it should be admitted that several environmental treaties shall not apply to damage caused by a nuclear substance³¹ (e.g. 1993 Lugano Convention³²) but the liability channelling and other main parameters are the same, their aims are also identical. However, their coverages and legitimate 'regime identity' are intentionally separated and divided, upon the consent of the contracting parties so as to preserve „the exclusive character of the nuclear liability regimes.”³³

Inclusion of environmental concerns into the nuclear regime has taken many forms, e.g. introducing environmental damage, the appearance of Aarhus-based “green rights”³⁴ or being a special aspect for designating sites with regard to safety-security issues, etc.

The “growing symbiosis” between nuclear law and environmental law (as it was thoroughly analyzed by Sam Emmerechts in an influential work) will certainly deepen and such symbiosis favourably engages more and more sectors of each regimes (whether environmental or nuclear), from which both regimes should benefit a lot.

²⁹ See e.g. Horbach, Nathalie: 1997 Nuclear Liability Treaties: Conformities and Deficiencies in some EU Applicant States. *Journal of Energy & Natural Resources Law*, Vol. 18 (2000) No. 4, 378-403. and Handrlica, Jakub: European Nuclear Liability Law: Reflecting the Most Recent Developments. *Common Law Review*, 2012/12, 37-46.

³⁰ The author must agree with Lammers, who put down that only the agreements concerning liability for damage caused by the peaceful uses of nuclear energy or the maritime transport of oil have been widely ratified and entered into force. Lammers, Johan: International Responsibility and Liability for Damage Caused by Environmental Interferences. *Environmental Policy and Law*, Vol. 31 (2001) No. 2, 96. and 105.

³¹ See, Emmerechts: *op. cit.* 93-94. The same holds true for the Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage.

³² On this issue, see for instance, Blanchard: *op. cit.* 243.

³³ *Ibid.*

³⁴ Emmerechts: *op. cit.* 109-110.