THE EURATOM TREATY AS THE FOUNDATION OF A HARMONISED LICENSING FRAMEWORK FOR SMRs IN EUROPE

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Abstract: When the Euratom Community acceded to the Convention on Nuclear Safety, which allowed regional integration organisations to exercise rights and fulfil obligations under it, the extent of the Community's competencies had to be attached in a declaration, the content of which was disputed. The Court of Justice settled the matter in the so-called Nuclear Safety Case (Case C-29/99), crucially ruling that the nuclear safety of installations falls under the Health and Safety provisions of the Euratom Treaty. This landmark decision regarding Article 7 of the Convention on Nuclear Safety, which addresses 'Legislative and Regulatory Frameworks,' concluded that while the Community has the competence to establish a binding licensing framework, issuing licenses remains the responsibility of the Member States. Following this decision, after lengthy negotiations, the Nuclear Safety Directive was adopted. It was built on the principles of the Convention on Nuclear Safety, but unlike the Convention, its provisions were enforceable. Despite the initial proposals and even after being amended following the Fukushima stress tests, which highlighted the importance of harmonised licensing frameworks, the directive failed to implement such an approach. In the nuclear renaissance, where standardised Small Modular Reactors may take a leading role, the need for harmonised licensing frameworks is more pressing than ever. This article aims to address the potential legal basis of a harmonized licensing framework within the Euratom Community, the challenges in achieving it, the reasons of prior failures, potential harmonization pathways under articles 31 and 33 of the Euratom Treaty, the nuclear safety considerations that it should specifically target, the role of the Committees in establishing such framework and its national sovereignty implications. The article argues that it is worth considering harmonising licensing frameworks at the time of standardised nuclear technologies, as such an approach can contribute to making Europe a driver in the development and deployment of these innovative technologies.

Resumé: Když Společenství Euratom přistoupilo k Úmluvě o jaderné bezpečnosti, která umožnila regionálním integračním organizacím vykonávat práva a plnit povinnosti z ní vyplývající, musel být rozsah pravomocí Společenství připojen v prohlášení, jehož obsah byl sporný. Soudní dvůr tuto záležitost vyřešil v tzv. případu jaderné bezpečnosti (věc C-29/99), když zásadně rozhodl, že jaderná bezpečnost zařízení spadá pod ustanovení Smlouvy o Euratomu o zdraví a bezpečnosti. Toto přelomové rozhodnutí týkající se článku 7 Úmluvy o jaderné bezpečnosti, který se zabývá „legislativními a regulačními rámci", dospělo k závěru, že ačkoli má Společenství pravomoc stanovit závazný rámec pro udělování licencí, vydávání licencí zůstává v odpovědnosti členských států. V návaznosti na toto rozhodnutí byla po dlouhých jednáních přijata směrnice o jaderné bezpečnosti. Byla postavena na zásadách Úmluvy o jaderné bezpečnosti, ale na rozdíl od Úmluvy byla její ustanovení vymahatelná. Navzdory původním návrhům a i po změně po zátěžových testech ve Fukušimě, které zdůraznily důležitost harmonizovaných rámců pro udělování licencí, směrnice takový přístup neimplementovala. V době jaderné renesance, kde standardizované malé modulární reaktory mohou převzít vedoucí roli, je potřeba harmonizovaných licenčních rámců naléhavější

než kdy dříve. Tento článek si klade za cíl zabývat se potenciálním právním základem harmonizovaného licenčního rámce v rámci Společenství Euratom, výzvami při jeho dosažení, důvody předchozích neúspěchů, potenciálními cestami harmonizace podle článků 31 a 33 Smlouvy o Euratomu, aspekty jaderné bezpečnosti, na které by se měl konkrétně zaměřit, rolí výborů při vytváření takového rámce a jeho dopady na národní suverenitu. Článek argumentuje, že je vhodné zvážit harmonizaci licenčních rámců v době standardizovaných jaderných technologií, protože takový přístup může přispět k tomu, aby se Evropa stala hybnou silou ve vývoji a zavádění těchto inovativních technologií.

Key words: Euratom Treaty, nuclear safety, licensing, small modular reactors, harmonisation

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1. Introduction

In recent years, the prospect of a nuclear renaissance, which foreshadows the increased deployment of nuclear power plants, has garnered significant attention.[1] However, based on past experiences when heightened discussion did not translate into actual deployments,[2] one should be cautious in drawing far-reaching conclusions merely from this increased interest. It is more worthwhile to examine the reasons underlying these deliberations. In Europe, two main driving forces can be identified as to why nuclear energy is becoming increasingly discussed. First, the climate targets we have set for ourselves necessitate a shift away from fossil sources; however, relying predominantly on renewable sources within the energy mix presents its own set of challenges.[3] While renewable sources are crucial in the energy transition, they have their limitations, including the challenge of providing consistent base-load power. Since nuclear energy possesses the dual capacity to be carbon-neutral and provide base-load power, it has regained interest. This renewed attention was further catalysed by recent disruptions in energy supplies, which highlighted the critical importance of energy security and prompted the expansion of national generating capacities,[4] bringing nuclear energy more into focus. This rational interest has been further amplified by technological advancements in the sector, particularly in relation to Small Modular Reactors (SMRs), which propose to address some of the challenges associated with conventional large-scale plants. However, SMRs present their own set of challenges, among them legal ones. Considering the renewed interest in nuclear energy, it is timely to revisit the Euratom Treaty, which established the European Atomic Energy Community, and explore its potential role in the context of a nuclear renaissance.

1 *Engagements among stakeholders focus on new plants, well represented by events such as the 2024 Nuclear Inter Iura Conference titled: "Nuclear New Build Renaissance – In Search for New Approaches to Legal Challenges and Regulatory Effectiveness."*

2 See PELZER, N. 'Nuclear New Build – New Nuclear Law?' (2009) 84 *Nuclear Law Bulletin* 5.; IACCARINO, F. 'Resurgence of Nuclear Energy in Italy' (2009) 84 *Nuclear Law Bulletin* 65–81.

3 The blackout on the Iberian Peninsula was an important lesson in the challenges of integrating volatile renewable energy sources. See GONZALEZ, M. 'Challenges of Variable Energy Resource Integration and Power System Security: Lessons from the 2025 Iberian System Blackout' (2025) 6(1) *Transactions on Energy Systems and Engineering Applications* 1–6.

4 IEA, *World Energy Outlook 2022* (IAE 2022) 30.

Initially, the Community was intended to promote the development of the nuclear industry. While some may argue that this objective is no longer relevant, current developments suggest a possible turning point where industrial advancement may once again become a goal.

This article seeks to address the dormant harmonising power of the Euratom Community, which could support the deployment of standardised reactors such as SMRs. The analysis will begin by covering the importance of harmonisation, followed by a review of previous unsuccessful attempts. It will then address the legal basis of harmonisation under the Treaty and conclude with proposals on the content of a harmonised licensing framework.

2. The importance of harmonisation

The International Atomic Energy Agency (IAEA) defines SMRs as advanced reactors that produce electricity of up to 300 MW(e) per module.[5] These proposed plants differ from conventional technologies in several key aspects including their smaller size, versatile siting and applications – such as desalination and hydrogen production, – widespread use of passive safety systems that make them inherently safer, innovative construction practices and novel technological solutions related to fuels and cooling, which have collectively resulted in 70 to 80 different proposed designs, marking a significant departure from the limited number of designs seen in case of conventional plants.

While the definition of the IAEA is widely accepted, it doesn't explain why harmonisation is critical for SMR deployment. Particular attention must be given to their modular feature. Modularity, besides the possibility of connecting multiple modules, also refers to standardised factory production. Unlike conventional plants, which are predominantly unique constructions onsite, SMRs propose factory manufacturing, thereby, reducing on-site construction time,[6] improving precision and oversight, increasing experience through repetition, ultimately resulting in enhanced safety.[7] SMRs face significant scepticism particularly regarding their economic viability, since due to their reduced size,[8] the principle of economy of scale[9] does not apply to them, resulting in higher costs per megawatt compared to conventional plants.[10] Proponents argue that their economic rationale lies in the standardised repetitive construction processes and the subsequent deployment of multiple units. A prerequisite for standardised factory construction is that designs are not significantly adapted to meet different national requirements.[11] As highlighted among the legal challenges associated

5 LIOU, J. 'What are Small Modular Reactors (SMRs)?' (IAEA, 13 Sep 2023) available at: www.iaea.org/newscenter/news/what-are-small-modular-reactors-smrs.

6 MORALES PEDRAZA, J. S*mall Modular Reactors for Electricity Generation – An Economic and Technologically Sound Alternative* (Springer 2017) 14–15.

7 MIGNACCA, B. and LOCATELLI, G. 'Economics and finance of Small Modular Reactors: A systematic review and research agenda' (2020) 118 *Renewable and Sustainable Energy Reviews* 5.

8 VAN HEE, N., PEREMANS, H. and NIMMEGEERS, P. 'Economic Potential and Barriers of Small Modular Reactors in Europe' (2024) 203 *Renewable and Sustainable Energy Reviews* 4. Some disagree with this view see LOCATELLI G., MANCINI M. and ENIYA F. 'Generation IV Nuclear Reactors: Current Status and Future Prospects' (2015) 75 *Progress in Nuclear Energy* 76.

9 It means that, for larger plants, fixed costs are spread over a higher output than in case of smaller plants.

10 IK LEE, J. 'Review of Small Modular Reactors: Challenges in Safety and Economy to Success' (2024) 41 *Korean Journal of Chemical Engineering* 2776.

11 LOCATELLI, G., BINGHAM, C. and MANCINI, M. 'Small Modular Reactors: a Comprehensive Overview of their Economics and Strategic Aspects' (2014) 73 *Progress in Nuclear Energy* 78.

with SMR deployment, the complex licensing processes and their varying requirements and approaches across countries pose a significant challenge, necessitating modifications to the design and[12] thereby undermining their economics. A proposed solution to fragmented licensing frameworks is their harmonisation.[13] Harmonisation of licensing primarily entails converging safety standards, as nuclear safety is the central concern in nuclear power plant licensing, along with aligning regulatory approaches on the methods which licensees can use to demonstrate compliance with these standards. Further aspects worth considering for harmonisation are the licensing stages, which currently differ between countries.[14] Harmonisation of these stages would ease the licensee's task of determining which elements of the plant must be presented at each licensing stage, and it would also enable the greater use of previous license applications. It is worth noting that significant progress has already been made in harmonisation through the cooperation of regulators under the auspices of the IAEA, WENRA, and other relevant bodies. However, these efforts were built on experiences with conventional technologies, which may not be fully applicable to SMRs. Furthermore, these efforts focused on harmonising primarily high-level safety principles, in the national applications of which still significant differences exist.[15]

While adapting conventional plant designs to meet country-specific regulatory requirements increased costs, it did not fundamentally undermine their economic rationale, unlike the case of SMRs.[16] In an era of standardised reactors, harmonisation is more pressing than ever. Harmonisation should not only aim to converge regulatory frameworks, but also ensure that they are open to new technologies, capable of reflecting enhanced safety features, and efficient enough to meet these requirements.[17] Harmonisation in other industries, such as the aviation sector, through the Chicago Convention on International Civil Aviation,[18] demonstrated that these efforts can boost sectoral development while also contributing to increased sectoral safety.[19] While it is unrealistic to expect the mutual recognition of licenses in the nuclear sector – akin to the recognition of airworthiness certificates in the aviation sector[20] – nonetheless,

12 SAM R., SAINATI T., HANSON B. and KAY R. 'Licensing small modular reactors: A state-of-the-art review of the challenges and barriers' (2023) 164 *Progress in Nuclear Energy* 5.

13 SAINATI T., LOCATELLI, G. and BROOKES, N. 'Small Modular Reactors: Licensing constraints and the way forward' (2015) 82 *Energy* 1093–1094.

14 For example, see: TELES DA SILVA, D. 'Nuclear Renaissance in France: Legal and Regulatory Challenges' (2025) 38 *Journal of Agricultural and Environmental Law* 157–192.; PENTTINEN, S-L. 'Nuclear Energy in Finland' (2025) 38 *Journal of Agricultural and Environmental Law* 91–121.; SAMEC BERGHAUS, N., FERČIČ, A. and DRNOVŠEK, K. 'Slovenia's Nuclear Energy Pathway: Strategic Expansion, Regulatory Hurdles, and Future Prospects' (2025) 38 *Journal of Agricultural and Environmental Law* 123–155.

15 CARSON, A. and MAYORAL, C. 'A New Paradigm for Reactor Design Licensing' (2025) *International Conference on Topical Issues in Nuclear Installation Safety: Strengthening Safety of Evolutionary and Innovative Reactor Designs* 104.

16 COOK, H. *The Law of Nuclear Energy* (Sweet & Maxwell, 2022), at p. 431.

17 JOSEPHS, R. E., YAP, T., ALAOOTI, M., OMOJIBA, T., BENARBIA, A., TOMOMEWO, O. and OUADI, H. 'Regulation of Small Modular Reactors (SMRs): Innovative Strategies and Economic Insights' (2025) 6(4) *Eng 27–28.*

18 Convention on International Civil Aviation 1944.

19 NEA, 'Harmonising the Nuclear Licensing Process for Emerging Technologies: A Global Path Forward' (OECD NEA 2022) available at: https://www.oecd-nea.org/upload/docs/application/pdf/2022-04/7616_harmonising_licensing_process_2022-04-06_17-14-45_681.pdf at p. 7.

20 In their case standardized products also had to be deployed in different jurisdictions, but their cross-border use further necessitated the harmonisation of authorization procedures.

harmonisation efforts can still advance the deployment of these technologies. To this end, numerous initiatives have been launched,[21] to address regulatory challenges associated with SMRs, including bilateral efforts such as the Memorandum of Cooperation Between U.S. Nuclear Regulatory Commission and the Canadian Nuclear Safety Commission as well as multilateral ones under the auspices of different international organizations such as the IAEA's Nuclear Harmonization and Standardization Initiative. While these efforts are crucial for SMR deployment,[22] their practical relevance in achieving more harmonised SMR-friendly frameworks is challenged by their limitations, such as the limited number of participating countries, varying commitments, or a lack of incentive to participate.

On the other hand, as others have pointed out,[23] Euratom might have answers for these challenges. The Community offers a large enough market, which makes it financially attractive for SMR vendors, and the Treaty can provide an incentive and legal basis for harmonisation. The potential importance of these plants has been recognised in the Community, as reflected by the 'Declaration on EU SMR 2030', which, among other things, highlights the potential benefits of SMRs for Member States that choose to include nuclear power in their energy mix; however, it makes no mention of harmonisation. Additionally, within the framework of Horizon Europe, the Harmonise Project has been launched, representing a significant preliminary step in researching the licensing needs of these technologies, as well as the role of standardisation and harmonisation.

3. Euratom Treaty

Following the establishment of the European Coal and Steel Community (ECSC) and in the wake of the failed European Defence Community, two treaties giving birth to the European Economic Community and the European Atomic Energy Community were signed in 1957.[24] As articulated in the Euratom Treaty and generally accepted among scholars, the Community was established with the objective of fostering the development of the nuclear industry at the supranational level, recognising that fully harnessing the benefits of atomic energy at the national level[25] was not possible for most European states.[26] The Treaty advocated for supranational action in a domain, at that time, largely free from political controversies associated with other areas, such as defence.[27] This objective is closely aligned with the intent

[21] MATHEWS, R., MITTHA, M. and SPAPENS, C., 'Navigating the Evolving Landscape: Safety and Regulation in the Nuclear Industry' (2024) *Nuclear Inter Jura Congress 2024 papers.*

[22] TONHAUSER, W., WETHERALL, A. and THIELE, L., 'International legal framework on nuclear safety: developments, challenges and opportunities' in SEXTON, N. K. and BURNS, S. G. (eds), *Principles and Practice of International Nuclear Law* (OECD NEA, 2022) 158.

[23] GORZKOWSKI, P. 'Legal Barriers to the Deployment of SMR and ANT Reactors in the European Union. Is the Euratom Treaty Sufficient?' (2024) *Nuclear Inter Jura Congress 2024 papers.*

[24] MORAVCSIK, A. *The Choice for Europe: Social Purpose and State Power from Messina to Maastricht* (Cornell University Press, 2005) at p. 80.

[25] NANES, A. 'The Evolution of Euratom' (1957) 13 *International Journal* 12–13.

[26] BARNES, P. M. *Going Forward into the Past: The Resurrection of the EURATOM Treaty* (paper presented at the *European Union Studies Association (EUSA) Tenth Biennial International Conference*, Montreal, Canada, 17–19 May 2007, Panel 07D: Antecedents – New Historical Insights on European Integration, 2007) at p. 8.

[27] HAHN, H. J. 'Control under the Euratom Compact' (1958) 7 *The American Journal of Comparative Law* 23.

of Jean Monnet, who endorsed sectoral integration, as seen in the case of the ECSC, and believed that nuclear energy would address Europe's long-term energy needs.[28]

The vision behind the Community and the role of nuclear power was ambitious; however, the execution quickly revealed a curtailment in both the role of nuclear energy[29] and the scope of the Community's powers. This particularly concerned installation safety, which as originally conceptualized in the Spaak Report would have enabled the Community to prescribe minimum safety standards and oversee installation safety.[30] Nonetheless the idea of harmonizing safety standards continued to be raised by the Commission,[31] and authors – albeit based on different provision of the Treaty then those discussed today,[32] – but as the original industrial development objective of the Treaty gradually started to fade away, owing in part to the impact of nuclear incidents,[33] these ambitions were also sidelined. The Treaty failed to evolve through amendments, and it was said to be incapable of pursuing other objectives beyond industrial development; consequently, some argued that it should be phased out. Yet attempts to abolish it were also unsuccessful.

This 'relic' from the past has survived the test of time, and the principal reason for its endurance lies in the fact that, despite the absence of amendments, the Treaty has been able to evolve, find new rationales, and, as a living instrument,[34] respond to contemporary challenges.[35] The most prominent new rationale finding of the Treaty concerns the field of installation safety, and as such, it has also paved the way for the harmonisation of licensing.

4. The Nuclear Safety Case

As mentioned, the Treaty was not substantively amended, which raises the question: how was it able to acquire a new rationale? The answer lies in its interpretation,[36] entrusted to the Court of Justice of the European Union. The case that gave rise to this new rationale was Case C-29/99, which concerned the declaration of competences of the Community upon its accession to the Convention on Nuclear Safety (CNS).[37] While the Community's accession to the Convention was not in dispute, the Community's scope of competences,[38] to be outlined

[28] WOLF, S. 'Euratom, the European Court of Justice, and the Limits of Nuclear Integration in Europe' (2011) 12(8) *German Law Journal 1637–1638.*

[29] MAYNE, R. 'The Role of Jean Monnet' (1967) 2 *Government and Opposition* 370.; COHEN, K. 'Euratom' (1959) 7(2) *The Journal of Industrial Economics* 80–81.

[30] Rapport des Chefs de Délégations aux Ministres des Affaires Etrangères, Comité Intergouvernemental Créé par la Conférence de Messine, Brussels, 21 April 1956, at pp. 109–110.

[31] Euratom's Future Activities, Supplement to Bulletin No. 6 – 1969 of the European Communities. Secretariat General of the Commission, Brussels, 25 April 1969, at pp. 30–32.

[32] KUHNT, D. 'International Harmonization of Reactor Licensing regulations' (1977) *Nuclear Inter Jura '77.*

[33] BURNS, S. G. 'The impact of the major nuclear power plant accidents on the international legal framework for nuclear power' (2018) 101 *Nuclear Law Bulletin* 7–30.

[34] HANDRLICA, J. 'Euratom and the Use of Nuclear Energy to Power Lunar Basis' (2024) 15 *CYIL* 235.

[35] SÖDERSTEN, A. 'Explaining continuity and change: The case of the Euratom Treaty' (2022) 20(2) *International Journal of Constitutional Law* 788–817.

[36] Evolutive interpretation and its role in finding new rationales see DUPUY, P. M. 'Evolutionary Interpretation of Treaties: Between Memory and Prophecy' in CANNIZZARO, E. (ed.), *The Law of Treaties Beyond the Vienna Convention* (Oxford University Press, 2011) at pp. 123–137.

[37] Convention on Nuclear Safety 1994.

[38] SÖDERSTEN, A. *Euratom at the Crossroads* (Edward Elgar 2018) at p. 177.

in the accompanying declaration, was.[39] According to the Commission, the competencies of the Community were broad, whereas the Council viewed them as somewhat limited. The Court was tasked with assessing whether the Community has competencies in the areas covered by the CNS, one such area being whether the Community can establish a legislative framework regarding the safety of nuclear installations.[40] In view of the Advocate General,[41] and ultimately the Court, radiation protection and the safety of nuclear installations, at the time of the Treaty's drafting, were distinct domains, the latter not expressly being addressed in the Treaty. This meant that the health and safety provisions – traditionally covering radiation protection – of the Treaty had to be interpreted to determine whether they also cover installation safety. In his opinion, the Advocate General invoked the relevance of subsequent practice as a method of interpretation, also enshrined in the Vienna Convention, particularly in a science and technology-dominated area where provisions were drafted long ago but have not been amended.[42] The Court after reciting its earlier case law – where subsequent practice lead to broad interpretation,[43] – considering the Community's obligation under Article 2(b) of the Treaty and in light of the following scientific developments, it stated that "*it is not appropriate, in order to define the Community's competences, to draw an artificial distinction between the protection of the health of the general public and the safety of sources of ionising radiation.*"[44] Furthermore crucially for the idea of a harmonized licensing framework the Court concluded that while the "*Treaty does not grant the Community competences to authorize the construction or operation of a nuclear installations, under Article 30 to 32, of the Euratom Treaty the Community possesses legislative competence to establish, for health protection, an authorisation system which the Member States must apply*."[45] This meant that although the Community cannot issue licenses, as that competence remains strictly with member states, it can still establish harmonised licensing regimes and safety standards applicable in the Member States.

In relation to the Community assuming powers in this domain, some authors argue that when acceding to the CNS, the Community, regarding the declared competencies, undertook an obligation to implement them, including Article 7 of the CNS, which prescribes the establishment of safety requirements and a system of licensing for nuclear installations.[46] So if the Community doesn't adopt such systems, it breaches its obligation arising from the CNS. However, a counterargument holds that licensing procedures and safety requirements are already in place in Member States, and there is no obligation to establish a unified or harmonised framework to ensure they are in place, a requirement reflected in the Nuclear Safety Directive.[47]

[39] The CNS in article 30 requires regional organisations to declare their scope of competencies.

[40] DEHOUSSE, F. *The Nuclear Safety Framework in the European Union After Fukushima* (Academia Press 2014) at p.14

[41] Opinion of Advocate General Jacobs – CASE C-29/99 ECLI:EU:C:2001:680 11257–11264.

[42] Opinion of Advocate General Jacobs – CASE C-29/99 ECLI:EU:C:2001:680, 11263.

[43] CASE C-29/99 Commission v Council ECLI:EU:C:2002:734, paragraphs 79–80.

[44] Ibid, paragraph 82.

[45] Ibid, paragraph 89.

[46] OLAJOS, K. T. 'Towards a Single European System of Nuclear Regulation: Enhancing Regulatory Cooperation in the Nuclear Field' in RAETZKE, C., FELDMANN, U. and FRANK, A. (eds), *Aus der Werkstatt des Nuklearrechts* (Nomos, 2017) at pp. 372–373.

[47] Council Directive 2009/71/ Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, Article 4.

5. The Nuclear Safety Directive

Following this landmark judgement, the Commission began working on adopting secondary legislation concerning installation safety. The first outcome of these efforts was the 2003 package,[48] one proposal of which specifically concerned installation safety. The proposal was ambitious,[49] aiming to establish common safety standards for nuclear installations within the Community, along with mechanisms for their verification. Regarding the common safety standards, the explanatory memorandum noted that although the Community has made efforts towards harmonisation, these efforts relied on non-binding means, leaving persistent discrepancies. Furthermore, after highlighting the importance of installation safety through the example of Chernobyl, the proposal argued that, in light of enlargement towards Central and Eastern European states, a common framework in the field of nuclear safety would be necessary for nuclear installations before their accession.[50] As installation safety has traditionally been a domain where states were reluctant to relinquish their competencies – an approach that remained essentially unchanged even after Chernobyl [51] – this proposal was met with resistance from Member States,[52] particularly concerning the development of binding safety standards under the directive and the Commission's supervisory role.[53] Consequently, in 2004, an amended proposal was introduced, clarifying that responsibility for nuclear safety rests with operators and Member States,[54] and removing the Commission's supervisory function.[55] This amended proposal failed to achieve greater success. Eventually in 2008 a further amended proposal was introduced,[56] reflecting a scaled-down approach to common safety standards,[57] requiring only respect for the IAEA safety fundamentals, and observing the obligations set out in the CNS,[58] additionally for new plants it stated that Member states shall aim to develop additional safety requirements in line with the developments of WENRA and the European High Level Group on Nuclear Safety and Waste Management, which later became ENSREG.[59] The final text of the Directive adopted an even more restrictive

[48] Council (Euratom) Directive Setting out basic obligations and general principles on the safety of nuclear installations and proposal for a Council Directive (Euratom) on the management of spent nuclear fuel and radioactive waste (COM(2003) 32 final — 2003/0021 (CNS) — 2003/0022 (CNS))

[49] KUŞ, S. and EMMERECHTS, S. 'A Legislative Framework for the Safety of Nuclear Installations in the European Union' (2009) 27(2) *NEA updates, NEA News* 20.

[50] Proposal for a COUNCIL (Euratom) DIRECTIVE Setting out basic obligations and general principles on the safety of nuclear installations COM(2003) 32 final, Explanatory memorandum 2–3.

[51] The CNS took a long time to be adopted after the accident, unlike the Assistance and Notification Conventions

[52] POULEUR, Y. and KRS, P. 'The Momentum of the European Directive on Nuclear Safety: From the Complexity of Nuclear Safety to Key Messages Addressed to European Citizens' (2010) 85 *Nuclear Law Bulletin* 7.

[53] SOUSA FERRO, M. 'Directive 2009/71/Euratom: the losing battle against discrimination and protection of sovereignty' (2009) 2(4) *Int. J. Nuclear Law* 297.

[54] Amended proposal for a COUNCIL DIRECTIVE (Euratom) laying down basic obligations and general principles on the safety of nuclear installations COM(2004) 526 final

[55] VAN HECKE, K. 'Nuclear Energy in the European Union' (2007) 60(2) *Studia Diplomatica* 131–155.

[56] Proposal for a Council Directive (Euratom) setting up a Community framework for nuclear safety COM/2008/0790 final

[57] SÖDERSTEN, A. 'The EU and Nuclear Safety: Challenges Old and New' (2012) 10 *European Policy Analysis* 5.

[58] Convention on Nuclear Safety 1994 Article 6.

[59] European Nuclear Safety Regulators Group

approach, merely requiring, in its recitals, consideration of the IAEA Safety Fundamental principles and the WENRA safety reference levels for power reactors.[60]

As can be observed, the initial 2003 proposals – reflecting the mandate of the CJEU – were the most ambitious as they envisioned the development of common safety standards under Title III of the Euratom Treaty. Subsequent proposals reflected a progressively diluted approach to common safety standards, and ultimately, the Directive parted with the idea of the Community taking an active role in developing common safety standards for installations, which could serve as a basis for harmonised licensing. The powers entrusted to the Community remained largely dormant under the Directive, which primarily drew upon the CNS, to which Member States were signatories, and the IAEA Safety Fundamentals, which had generally already been followed. Its added value was limited to areas such as transparency,[61] regulatory independence, and the enforceability of its provisions, leading some to question the necessity and purpose of the Directive.[62]

In March 2011, prior to the implementation deadline for the Directive, the Fukushima Daiichi accident occurred, prompting the European Council to call for a stress test jointly developed by ENSREG and the Commission to evaluate the safety of nuclear plants in the Community.[63] The tests have revealed significant discrepancies among Member States and shortcomings in their national safety regimes, ultimately leading to a call for Community action.[64] In the following years, intense work began on revising the Directive with various proposals emerging from DG Energy, ENSREG,[65] and the Commission.[66] A central element of the discussion was the establishment of a mechanism for developing harmonised nuclear safety guidelines within the Community.[67] The Commission's proposal included an article on nuclear safety guidelines intended to be created through the collaboration of national authorities following peer reviews. Still, it ultimately did not make it into the Directive, along with other critical reforms, the omission of which attracted considerable criticism.[68] While the amended Directive[69] made improvements regarding the independence of regulatory authorities and set a safety objective for nuclear installations, the idea of common safety standards – on which common licensing procedures can be built – remained unrealised.

[60] Council Directive 2009/71/ Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations, recitals 13–14.

[61] SOUSA FERRO, M. 'Directive 2009/71/Euratom: the losing battle against discrimination and protection of sovereignty' (2009) 2(4) *Int. J. Nuclear Law* 299.

[62] Ibid.

[63] ALVAREZ-VERDUGO, M. 'The EU "Stress Tests": The Basis for New Regulatory Framework for Nuclear Safety' (2015) 21(2) *European Law Journal* 171.

[64] DEHOUSSE, F. *The Nuclear Safety Framework in the European Union After Fukushima* (Academia Press 2014) at pp. 28–29.

[65] Their participation in the legislative process is not mandatory.

[66] WOITECKI, A. 'Comments on the Planned Revision of the Euratom Directive on Nuclear Safety' in RAETZKE, C. (ed) *Nuclear Law in the EU and Beyond* (Nomos, 2014) at pp. 53–55.

[67] FAROSS, P. 'Towards an Enhanced EU Regulatory Framework for Nuclear Safety – The Envisaged Commission Proposal for an Amendment of Directive 2009/71/EURATOM Establishing a Community Framework for the Nuclear Safety of Nuclear Installations in RAETZKE, C. (ed) *Nuclear Law in the EU and Beyond* (Nomos, 2014) at p. 45.

[68] PROELSS, A. 'The Nuclear Policy of the EU: From Coordination to Integration?' (2021) 49 *Hitotsubashi Journal of Law and Politics* 92–93.

[69] Council Directive 2014/87/Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations

Looking back at both the original and the amended Directives, a common feature during their negotiation was that their adoption was shaped in response to nuclear accidents, with the setting of safety standard viewed as a tool for achieving a higher level of nuclear safety within the Community,[70] – a goal aligned with the rationale of the Community found during the Nuclear Safety Case.[71]

6. Harmonisation in contemporary times

What might distinguish attempts today towards the harmonisation of licensing is the changing attitude towards nuclear energy. At the time of the negotiations of the original and amended Directive, the legacy of devastating nuclear accidents cast a shadow over nuclear energy, and harmonisation efforts[72] were driven by the desire to prevent such accidents rather than by an ambition to expand the nuclear industry. However, today, this attitude is changing; the number of countries in favour of nuclear energy is growing, and the original rationale of the Treaty – to support the development of the industry – is becoming increasingly realistic and needed. Some may argue that this renewed interest concerns only advanced technologies; however, even if that is the case, supporting a specific segment of the industry by developing common approaches tailored to it would not diminish the potential value of Community action.

A harmonized approach based on the promise of economic development and prosperity, may prove to be a more compelling rationale then one based on improving nuclear safety for accident prevention, which to a degree implies that Member States do not have sufficiently stringent nuclear safety regimes,[73] – an implication they deliberately sought to avoid during the formulation of the proposals – and consequently sparks apprehension among pro-nuclear states that their national measures might be challenged by opponents before the CJEU.[74] Today, it is a careful interplay between the original Treaty intention – namely, industrial development – and the competence recognised in the Nuclear Safety Case, which provides the Community with the possibility to be a relevant tool in advancing the deployment of standardised reactors. The Community has historically demonstrated, in other fields such as radiological protection,[75] its capacity to exceed international standards; yet, this step has not been taken in relation to the nuclear safety of installations, but it is not due to a lack of possibility.

[70] STANIČ, A. 'EU Law on Nuclear Safety' (2010) 28 *Journal of Energy & Natural Resources Law* 151–152.

[71] SÖDERSTEN, A. 'Explaining continuity and change: The case of the Euratom Treaty' (2022) 20(2) *International Journal of Constitutional Law* 805–807.

[72] BARNES, P. M., 'Nuclear Safety for Nuclear Electricity – The Search for a Solid Legal Basis for Nuclear Safety in an Enlarged European Union' (2002) 45 *Managerial Law* 123.

[73] GARRIBBA, M., CHIRTEÚ, A. and NAUDUZAITE, M. 'The Directive Establishing a Community Framework for the Nuclear Safety of Nuclear Installations: The EU Approach to Nuclear Safety' (2009) 84 *Nuclear Law Bulletin* 29.

[74] BERTHÉLEMY, M. and LÉVÊQUE, F. 'Harmonising Nuclear Safety Regulation in the EU: Which Priority?' (2011) 46 *Intereconomics* 133.

[75] SOUSA FERRO, M. 'The future of the regulation of nuclear safety in the EU.' (2008) 2 *International Journal of Nuclear Law* 151.

6.1 How could harmonised licensing be achieved in the Community?

The path, in principle, to achieving harmonised licensing frameworks in the Community would be very similar to that followed in the case of the Nuclear Safety Directive. Article 2 of the Treaty mandates that, to perform its tasks, the Community shall establish uniform safety standards, a requirement further substantiated by Article 30. The definition of basic safety standards in Article 30, at first glance, appears rather restrictive, as it applies only to radiation protection; however, as explained above, this interpretation has been superseded in the Nuclear Safety Case, and it also applies to installation safety.[76]

Article 31 outlines the procedure for adopting these standards. The Commission plays the central role in developing a proposal; however, two other bodies must be consulted. This provision requires the European Economic and Social Committee, which represents the interests of different groups in the Community, to deliver its opinion on the issue's social policy implications.[77] The other is the Scientific and Technical Committee, which, according to the Treaty's wording, appoints scientific experts, particularly from the field of public health, whose opinion has to be obtained. This reference to public health experts reflects the earlier, narrower interpretation of safety standards pertaining to radiation protection. If these standards were to establish harmonised licensing procedures, the composition of experts involved must be reconsidered.[78] Experts to be involved should possess expertise in installation safety, particularly regarding advanced technologies; equally important is the involvement of those familiar with the licensing procedures. Although Article 31 only requires the opinion of these committees, the Commission should also, as it did before, consider the standards developed by the IAEA, as well as the work of ENSREG and WENRA. If a new harmonisation measure were adopted under Article 31, a key question would be how it would relate to the existing Nuclear Safety Directive. Would it be a *lex specialis* directive, amend the current Directive or take a different form? The answer will also largely depend on the scope of the harmonisation effort, outlined in the next chapter.

Even though harmonised licensing could offer economic benefits for proponents of nuclear energy and potentially a more supervisable nuclear safety regime for opponents, there remains a strong possibility that a directive pursuant to Article 31 would not secure sufficient support in the Council. In that case, the Euratom Treaty offers an alternative under Article 33, which allows the Commission to issue recommendations for harmonisation. While such an approach would allow for significant discrepancies to persist, if a critical number of Member States align their national approaches, it can still effectively support the nuclear renaissance.

6.2 Elements of a harmonised licensing framework

Firstly, the scope of a harmonised licensing framework should be carefully assessed. Harmonisation can proceed in two directions: it can either be limited to certain advanced technologies or take a general approach encompassing both conventional and advanced reactors, applying either only to new plants or also to existing ones. Even in the current

[76] GRUNWALD, J. 'From Challenge to Response: Dormant Powers in Euratom Law' in RAETZKE, C. (ed) *Nuclear Law in the EU and Beyond* (Nomos, 2014) at pp. 25–27.

[77] ZELLENTIN, G. 'THE ECONOMIC AND SOCIAL COMMITTEE' (1962) 1 *Journal of Common Market Studies* 26.

[78] GRUNWALD, J. 'From Challenge to Response: Dormant Powers in Euratom Law' in RAETZKE, C. (ed) *Nuclear Law in the EU and Beyond* (Nomos, 2014) at p. 27.

context, where a general harmonised licensing framework applying to all plants appears more politically feasible than before, using new standards for existing plants could prove to be a tremendous challenge, creating legal uncertainty and possibly compromising nuclear safety. Consequently, such an approach may face opposition from both Member States with existing nuclear plants and those opposed to nuclear energy. For states with well-established regulatory frameworks and authorities experienced in applying existing standards to conventional plants, adopting new approaches to them, even if harmonisation can offer benefits, could be perceived as burdensome. While new approaches may be crucial for advanced technologies such as SMRs, they are not essential for conventional plants, and the lack of experience implementing them could even mean a potential step back in nuclear safety. Moreover, the prospect of all licensing procedures becoming challengeable before the CJEU – especially given the lack of experience with these new approaches – may be unwelcome.

There is also the option to adopt a targeted approach, for example, focused on SMRs.[79] In their case, the importance of harmonisation is unquestionable, and specific regulatory approaches appear more adequate than others. Thus, there is a clear incentive to adopt new strategies without compromising existing regulatory experience, which is largely absent for them at present. However, this approach also raises several unresolved questions. For instance, how do you determine which plants are covered? During the negotiation of the Nuclear Safety Directive, even the definition of 'existing plant' proved challenging; this time, the issue is a lot more complex. Additionally, how will this targeted approach be transposed into national legislation? How will it interact with the existing framework? Will it be mandatory for certain plants to follow this path, or will it be left to the licensees' discretion to choose the licensing path?

Additionally, a Community licensing framework – whether with a general or targeted scope –appearing as an alternative path to existing national systems could place significant burdens on regulators, requiring them to familiarise themselves with a parallel regime. However, having multiple licensing pathways is not without precedent, such as in the United States, and the Community approach could adopt specific measures intended to mitigate regulatory burdens.

Since harmonisation is significant for standardised SMRs, which receive the most attention in the current nuclear renaissance, if they become the primary focus of these efforts, some aspects within such a framework are worth considering. The following section outlines some of the regulatory practices that the literature suggests could be appropriate for SMR licensing. However, to fully determine the necessary content of Community action, a comprehensive trans-European study would be required to identify the SMR deployment blocking points in national legislations.[80] Generally, the measures in such a framework should allow for flexibility to reflect the enhanced safety features of SMRs, while also streamlining licensing and maintaining nuclear safety.

[79] Besides SMRs it can also encompass microreactors, but in their case transportability raises further complex legal questions to be answered.

[80] ENSREG, 'European SMR pre-Partnership Reports Workstream 2 – Licensing – Rev 1' (ENSREG, June 2024) available at: https://www.ensreg.eu/sites/default/files/attachments/european_smr_pre-partnership_report-ws2-licencing_rev_june_2024.pdf 21–23.

6.2.1 Technological neutrality

The first element worth considering in a harmonised licensing approach is technological neutrality. Traditionally, licensing frameworks were developed to reflect the specific reactor technology adopted in a given country, typically large-scale pressurised water reactors in Europe, as is the case in Hungary.[81] However, SMRs can differ significantly from these conventional technologies. A technology-specific licensing framework means that any design diverging from the technology adopted in the legislation becomes difficult or impossible to obtain a license for. This limitation can affect other conventional reactor types, such as BWR or CANDU, but applies even more strongly to advanced reactor technologies often used in SMR designs, including high-temperature gas-cooled reactors and molten salt reactors. The proposed solution is to adopt a technology-neutral licensing framework, which doesn't reflect a specific technology and, as such, is inclusive of advanced reactors.[82] The value of such an approach has long been acknowledged by the IAEA, which has issued a proposal on adopting a technology-neutral safety approach.[83]

6.2.2 Performance-based approach

In terms of licensing approaches, two predominant models exist: the prescriptive-based and the performance-based. The former establishes detailed requirements and objectives that must be demonstrated in the license application and throughout operation. The latter, performance-based approach defines general safety objectives that must be met but entrusts the licensee with determining how to achieve them, omitting specific technical methods[84] and thus offering greater flexibility for advanced technological solutions. Generally speaking, even systems which tend to be more performance-based include prescriptive elements. However, moving toward a predominantly goal-setting approach can better accommodate the advanced features of SMRs, such as their enhanced safety systems.[85] Such an approach, by granting greater flexibility in building a safety case, increases the responsibility placed on the licensee while simultaneously raising regulatory burdens with the possible use of divergent and novel methods of demonstrating safety. To address this challenge, the greater involvement of certified inspection organisations can be beneficial. While the responsibility for licensing decisions remains with the regulatory authority when assessing license applications, the opinion of an independent third-party expert body, particularly in relation to lower-risk components, as is the case in Hungary, can be valuable. These organisations could provide a helpful link between projects by leveraging their previous experiences in other countries, provided that their involvement is ensured by the harmonised Community approach, potentially through the mutual recognition of accreditation.

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81 ADROJÁN, F. and RÉTFALVI, E. 'A kisméretű moduláris atomerőművek (SMR), mint a klímavédelem ígéretes eszközei' (2022) 15 *Nukleon* 1–11.

82 TRONEA, M. 'Development of Technology-neutral Safety Requirements for the Regulation of Future Nuclear Power Reactors: Back to Basics' (2011) 241 *Nuclear Engineering and Design* 957–960.

83 IAEA, 'Proposal for a Technology-Neutral Safety Approach for New Reactor Designs' IAEA-TECDOC-1570.

84 SÖDERHOLM, K. Licensing Model Development for Small Modular Reactors (SMRs) – Focusing on the Finnish Regulatory Framework, Doctoral Thesis, Lappeenranta University of Technology, 2013. at pp. 75.

85 SAM, R., SAINATI, T., HANSON, B. and KAY, R. 'Licensing small modular reactors: A state-of-the-art review of the challenges and barriers' (2013) 164 *Progress in Nuclear Energy* 4–5.

6.2.3 Graded approach

A graded approach entails conducting regulatory oversight, including licensing, in a manner where the level of regulatory requirements, documentation, analysis, and measures for ensuring safety and verification are commensurate with the likelihood of hazards and their possible consequences.[86] The graded approach aims to align the regulatory burden proportionally with the hazards.[87] It is essential to emphasise that applying a graded approach does not imply a relaxation of safety requirements. Instead, it involves tailoring them to reflect the characteristics of a facility and its associated risks.[88] In fact, using a graded approach can result in more stringent requirements if the risks involved or the nature of the facility justify it, as determined using risk-informed approaches such as probabilistic risk assessment.[89]

In the case of SMRs, a graded approach could more accurately reflect their enhanced safety features, helping to avoid redundant requirements that were appropriate for reactors with less advanced safety features and higher fuel inventories, which pose inherently higher hazards. However, as highlighted by the SMR Regulators' Forum, discrepancies persist among states in the interpretation and application of this principle. A common understanding and implementation of this concept would enhance its effectiveness.[90] In this regard, the Community could play a leading role by establishing a common interpretation of the graded approach and defining the methodologies for its consistent application among Member States. One critical area where the use of a graded approach could prove particularly beneficial is in determining the size of Emergency Planning Zones (EPZs). [91] Current EPZ sizes reflect the use of large-scale reactors and may restrict SMR siting closer to populated areas, which is particularly relevant for industrial applications.

6.2.4 Design review, design certification and multi-module licensing

From an SMR vendor's perspective, a non-formal, early-stage design review, where the design can still be adjusted, offers insights into regulatory compliance outside the scope of a lengthy and complicated licensing procedure, and is considered very desirable. Adopting such an approach can help reduce investment risk, contribute to design maturity and ultimately accelerate deployment. Such a stage is also beneficial for regulators, as it provides the opportunity to familiarise themselves with the designs early on. Ultimately, this early

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86 STEVANKA, K. and CHVALA, O. 'Deployment of small modular reactors in the European Union [version 1; peer review: 2 approved with reservations]' (2024) *Nucl Sci Technol Open Res* 10.

87 IAEA SMR Regulators' Forum, Working Group on the Licensing Issues– Phase 2 Report, 2021, available at: https://www.iaea.org/sites/default/files/21/06/working_group_on_licensing_issues_phase_2_report.pdf at p. 32.

88 IAEA SMR Regulators' Forum, Pilot Project Report: Considering the Application of a Graded Approach, Defence-in-Depth and Emergency Planning Zone Size for Small Modular Reactors, 2018, available at: https://www.iaea.org/sites/default/files/18/01/smr-rf-report-29012018.pdf at p. 36.

89 HOLMBERG, J. E. and JULIN, A. 'Risk-informed graded approach for regulatory oversight of nuclear facilities', (2024) paper presented at the 17th International Conference on Probabilistic Safety Assessment and Management & Asian Symposium on Risk Assessment and Management (PSAM17 & ASRAM2024).

90 IAEA SMR Regulators' Forum, Pilot Project Report: Considering the Application of a Graded Approach, Defence-in-Depth and Emergency Planning Zone Size for Small Modular Reactors, 2018, available at: https://www.iaea.org/sites/default/files/18/01/smr-rf-report-29012018.pdf at pp. 11–12.

91 IAEA, *Preparedness and Response for a Nuclear or Radiological Emergency GSR Part 7*, (IAEA, 2015), IAEA, *Actions to Protect the Public in an Emergency due to Severe Conditions at a Light Water Reactor*, (IAEA, 2013).

interaction between the regulator and the licensee, facilitated by feedback and experience, can also contribute to enhancing nuclear safety.[92]

In contrast to conventional nuclear power plants, which are typically not deployed at multiple sites within the same country, SMRs, due to their smaller size, can be deployed across multiple sites within the same country for various applications. To capitalise on their standardised design and avoid redundant, costly and lengthy licensing procedures for each subsequent deployment, design certification has been proposed as a solution. From the Community's perspective, this issue could be approached on two levels. First, the Community legislative framework could require the adoption of design certification procedures, whereby a given design is generally approved prior to being licensed for specific applications. This would allow regulators to focus their evaluation on site and application-specific matters and potential design deviations, rather than re-evaluating standardised aspects that have already been approved.[93] However, to take advantage of this approach, designs must be mature enough. Second, although the Community itself cannot certify designs, it could still establish a body to review SMR designs and provide fundamental information for Member States through their assessment. Additionally, such a body could contribute to gathering and sharing national reviews, enabling Member States to access and build upon existing reviews, thereby leveraging previous experiences and increasing the efficiency of review procedures.

An additional challenge for SMRs is how to license multiple modules at a single site. Although these modules are proposed to be identical, many existing licensing frameworks evaluate and issue licenses unit-by-unit, potentially disregarding their standardised features. In a harmonised framework, it would therefore be worth considering including a provision on multi-module licensing. It is a very complex matter,[94] as the appropriate approach depends on several factors such as the plant's configuration, the design's safety systems and whether the units are deployed simultaneously or on different occasions.[95] One discussed solution is the development of a master facility license – a comprehensive permit covering the entire facility, potentially supplemented with sub-unit licenses that focus on the characteristics and implications of the unit. For standardised reactors, such an approach could help reduce unnecessary repetition and thus increase efficiency. The targeted regulatory oversight at both stages would not compromise safety.

7. National sovereignty implications of harmonisation

As mentioned earlier, concerns of nuclear-armed states over national sovereignty have played a significant role in hindering progress towards harmonisation.[96] While it is unclear

[92] BURNS, S. G. ''Reformed and reforming: Adapting the licensing process to meet new challenges' (2017) 99 *Nuclear Law Bulletin* 22–24.

[93] World Nuclear Association, 'Facilitating International Licensing of Small Modular Reactors (SMRs)' (World Nuclear News, 2015) available at: https://world-nuclear.org/images/articles/REPORT_Facilitating_Intl_Licensing_of_SMRs.pdf at p. 9.

[94] IAEA SMR Regulators' Forum, Working Group on the Licensing Issues– Phase 2 Report, 2021, available at: https://www.iaea.org/sites/default/files/21/06/working_group_on_licensing_issues_phase_2_report.pdf at pp. 34–47.

[95] HIDAYATULLAH, H., SUSYADI, S. and HADID SUBKI, M. 'Design and Technology Development for Small Modular Reactors – Safety Expectations, Prospects and Impediments of their Deployment' (2015) 79 *Progress in Nuclear Energy* 132–133.

[96] See AXELROD, R. 'The European Commission and Member States: Conflict Over Nuclear Safety' (2006) 26 *Perspectives. Review of International Affairs* 5.

how such a system would infringe on national sovereignty, given that it would not affect Member States' rights provided under the Treaty on the Functioning of the European Union to choose their energy mix, these concerns still warrant a brief elaboration. First, the aim of harmonisation this time is not in response to inadequate national nuclear safety measures, but rather an effort to harness the economic advantages of certain advanced reactors – an objective better aligned with the interests of nuclearised states. Moreover, as concluded in the Nuclear Safety Case, the Community does not have the competence to license nuclear power plants; this remains strictly a national prerogative. Even under a common licensing framework, Member States will have free choice over their energy mix, and their authorities will retain complete discretion as to whether to license a given plant. Additionally, proposed elements of harmonisation may also mitigate concerns over national sovereignty, such as the use of a performance-based approach, which allows authorities a broad margin of appreciation in evaluating license applications, unlike prescriptive approaches where regulators would mainly focus on verifying compliance with prescribed requirements.

Furthermore, the previous reluctance to change national approaches due to concerns of compromising domestic regulatory experiences may be less relevant if the Community framework is introduced as an alternative licensing pathway, mainly if it is targeted toward SMRs, where no state has established experience to lose. Finally, it is worth mentioning that many existing or former licensing frameworks were initially modelled on the regulatory frameworks of vendor countries,[97] so reluctance towards adopting an 'external' framework to accommodate novel technologies would be disputable.

8. Conclusion

In this article, the author argues that given approaches are needed to advance the deployment of standardised reactors, while also not compromising nuclear safety. The benefits of these approaches can only be fully harnessed if several countries adopt them. Naturally, such a consideration compels an examination of the Euratom Community's potential role. In the Community, harmonisation of licensing for proponents of nuclear energy, in line with the original objective of the Treaty, could lead to the development of the industry and greater competitiveness. If approached correctly, it would not raise sovereignty concerns. For opponents of nuclear energy who may not support industrial development, harmonisation can still be seen as a valuable tool for establishing licensing systems that ensure more thorough safety evaluations and higher overall nuclear safety concerning standardised plants than the prospect of new national solutions driven purely by economic considerations. The author argued that, in the current climate and given the subject of such an initiative, harmonisation efforts in the Community could be more successful than before. While some approaches – such as the performance-based, technical neutrality, or graded approach – already appear crucial to developing an effective and efficient licensing system for standardised rectors, most of the content of such a framework and the manner of its implementation are still to be negotiated. The Community once changed its rationale; in the current climate, it may return to its original rationale of supporting the nuclear industry through harmonisation, to which, interestingly, the latter somewhat contradictory rationale paved the way, by enabling the

[97] Case of Hungary see: MÁDL, M. 'Hungary's Nuclear Legislation in Light of a Nuclear Renaissance' (2025) 38 *Journal of Agricultural and Environmental Law* 52.

Community to legislate in the sphere of installation safety. The latter reasoning formed the Community's toolset to harmonise, but at present, the revived initial rationale would also justify harmonisation efforts. These two rationales can coexist, representing the interests of both proponents and opponents. Consequently, the Community has both the tools and the incentive; the next step is to decide how to proceed.