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LEGAL OPINION

Pathways to a Euratom Reform
Short legal evaluation and strategy approach for the Green Group in the European Parliament

on behalf of

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created by

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Part 1 Introduction

The following evaluation aims to provide an outline and overview for a coherent reform of the EURATOM Treaty within a liberalised energy market, increasingly supplied with renewable energies and constantly improved by modern balancing and demand side management applications.
The aim of this overview is to provide the Members of the European Parliament and other stakeholders with a pathway towards a structured convention process with its objective to reform the Treaty establishing the European Atomic Energy Community (EURATOM)[1] .
There are various opinions in the public debate on issues such as a phasing out of EURATOM or the introduction of an overall new Energy Treaty in the Union, but such approach is not the objective of this short evaluation. It concentrates on the reform of EURATOM and the key principles.

This study intends to give a legally and politically realistic approach on the reform needed in order to engage with a broader alliance to push for a dedicated EURATOM reform procedure.

Especially if the reform will work toward an energy market- and competition -fairness- driven approach, proposing increased safety standards, full life-cycle responsibility of the industry, the introduction of a modern European liability regime, democratisation of the institutional and decision making process.
This could be supported by a parallel discussion and search for supplementary financing tools under the EU budget to support Member States with the enormous dismantling and safe storage tasks of their nuclear industry when considering nuclear power plants and cycle within the European Union to be integrated in the new EURATOM Treaty.

The work for a new approach under the procedures of a convention process could in fact rely on basic suggestions elaborated during the discussions under the Convention on the Future of Europe in 2002 and 2003.

[1] Bases for the work on the EURATOM treaty text is the „Consolidated version of the Treaty establishing the European Atomic Energy Community- (2010/C 84/01)

Part 2 Background

A. Nuclear energy in the European Member States

A quarter of net electricity, respectively generated in the European Union (EU) comes from nuclear power plants. There are about 128 nuclear power reactors in operation in 14 Member States, with a total capacity of 120 GWe and an average age close to 30 years. New reactors are under construction only in France, Finland and Slovakia. Especially the French project in Flamanville[2] and the Finnish project in Olkiluoto[3] face heavy time- and budget overrun. After the green light from the European Commission[4] on the state aid design for new nuclear build in the United Kingdom, Hinkley Point C, currently under annulment procedure, introduced by Austria and with support of Luxemburg to the European Court[5]. The same approval from the Commission was given for a Rosatom-led Russian reactor project for the state-

[2] See Reuters news report of 23. February 2018: „French nuclear regulator ASN said it has told EDF to improve the running of the construction of the Flamanville nuclear reactor, which is years behind schedule and billions over budget.
The ASN has repeatedly said a schedule to load nuclear fuel at the EPR reactor in Flamanville, which is the same type as EDF is building in Britain's Hinkley Point, by year-end is tight.
ASN said EDF must improve the follow-up of pre-startup test as well as the treatment of any flaws, and to improve the information flow to the regulator.", https://www.reuters.com/article/edf-flamanville/update-1-french-nuclear-watchdog-raps-edf-over-flamanville-failings-idUSL8N1QD2G2 , last accessed 14.06.2018

[3] See Financial Times report of 18th of May 2017:
„Areva, the French reactor manufacturer, began building Olkiluoto in 2005 with a target for completion by 2009 at a cost of €3.2bn. The latest timetable would see it open almost a decade late at the end of 2018 and nearly three times over budget at €8.5bn.
The project is the most extreme example of the delays and cost overruns which have become commonplace in the nuclear industry, plunging reactor companies such as Areva and Toshiba's Westinghouse subsidiary into financial crisis.
Areva's ability to complete Olkiluoto over the next year and learn lessons from the fiasco as it presses ahead with similar projects in France and the UK will go a long way to determining the industry's chances of recovery." https://www.ft.com/content/36bee56a-3a01-11e7-821a-6027b8a20f23 (last accessed 14.06.2018)

[4] State aid case SA.34947, decision of 8th of October 2014

[5] Case T-356/15

owned vertically integrated energy company MVM Group in Hungary, Paks,[6] . It seems, these two projects are probably getting on their way. On the other side, the phase-out programme in Germany will lead to a closure of all remaining German reactors by 2021. The overall capacity is shrinking in Europe. The European Commission paints a more optimistic view on nuclear capacity share in the Union: The Commission foresees a" decline in nuclear generation capacity at EU level up to 2025, taking into account the decisions of some Member States to phase out nuclear energy or to reduce its share in their energy mix11. This trend would be reversed by 2030 as new reactors are predicted to be connected to the grid and the life time extensions of others will be pursued. Nuclear capacity would increase slightly and remain stable at between 95 and 105 GWe by 205012 (Figure 1). Since electricity demand is expected to increase over the same period, the share of nuclear electricity in the EU would fall from its current level of 27% to around 20%."[7] Recent developments make it clear, that without important state aid mechanisms, there cannot be any new nuclear development in the EU. In view of this fact, it is important to underline that the major argument of the Commission in the above state aid decisions was the promotional objective of the EURATOM treaty. This creates for the Commission a common European interest in nuclear industry expansion and the objective to support this. It remains to be seen if the European Court will follow this view, against the dissenting arguments of Austria and Luxemburg. In any case, the most effective way would be, to accept that the European Energy market has developed and that it is time to clarify that there is no European common interest to build new nuclear power plants and with state aid support and to have a special promotional regime for nuclear power. This and the fact, that the EURATOM treaty has further important shortcomings, as will be outlined below, call for a reform of the EURATOM treaty.

B. What is the EURATOM Treaty?

The Treaty establishing the European Atomic Energy Community (EURATOM) originally consisted of 234 articles, organised under six titles and preceded by a pream-

[6] State aid case SA.38454 (2015/C) (ex 2015/N) -
[7] See :, 4.4.2016 COM(2016) 177 final Communication from the Commission, Nuclear Illustrative Programme, presented under Article 40 of the Euratom Treaty for the opinion of the European Economic and Social Committee {SWD(2016) 102 final}, p. 4

ble. The number of articles was shortened to 177 following the signature in December 2007 of the Treaty amending the Treaty on European Union (EU Treaty) and the Treaty establishing the European Community (EC Treaty).

The EURATOM Treaty set several important rules for the promotion of the nuclear industry, outlined under Title I.
EURATOM's objective is prominently established in the EURATOM treaty:
"*Article 1*
By this Treaty the HIGH CONTRACTING PARTIES establish among themselves a EUROPEAN ATOMIC ENERGY COMMUNITY (EURATOM). It shall be the task of the Community to contribute to the raising of the standard of living in the Member States and to the development of relations with the other countries by creating the conditions necessary for the speedy establishment and growth of nuclear industries."

The second title regulates provisions to promote research (promotion of research, dissemination of information, health and safety, investment, joint undertakings, supplies, safeguards, property ownership, the nuclear common market and external relations).

The third title structures the institutions of EURATOM and provides financial provisions. These provisions were again adapted in line with the Treaty amending the EU Treaty and the EC Treaty signed in December 2007.

The fourth title deals with specific financial provisions.

The fifth and sixth titles deal with the structure of the organisation of EURATOM.
EURATOM has five annexes concerning the fields of research, as referred to in Article 4 of the Treaty, the industrial activities referred to in Article 41 of the Treaty, the privileges for joint undertakings under Article 48 of EURATOM, a list of goods and products subject to the provisions of Chapter 9 on the nuclear common market, and the initial research and training programme referred to in Article 215 of the Treaty, an article which was removed in 2007.
Two protocols are also annexed to the Treaty: Protocol on the application of the Treaty establishing the European Atomic Energy Community to the non-European parts of the Kingdom of the Netherlands and the Protocol on the Statute of the Court of Justice of the European Atomic Energy Community.
In short, the main objectives of the EURATOM Treaty were set as follows:

- Promote research on nuclear energy
- Establish uniform safety standards;

- Ensure the regular supply of ores and nuclear fuels;
- Ensure that nuclear materials are not diverted to purposes other than for intended civil use;
- Ensure free movement of capital for investment in nuclear energy and free movement of employment for specialists in the sector.

EURATOM is supported by specific agencies:

- The EURATOM Supplies Agency, which owns and controls the supply of all fissile materials in EURATOM's Member States;
- The Euratom Safeguards Directorate, whose aim is to ensure that nuclear material use is kept in line with non-proliferation.

C. The monolithic stagnation of a Treaty

In view of the EU liberalised energy market principles, the current EURATOM treaty contains to a vast extend outdated provisions, starting with the concept and "Leitmotif" of the promotion of the civil use of nuclear power. Already in view of the end of the European Coal and Steel treaty in recent years,[8] the promotion of nuclear over any other source of energy transformation in parallel to the liberalised energy market creates a constant obstacle to fair and open competition. Singled out nuclear research programmes, separated from the overall energy research budget and programming procedure with restricted right of the European Parliament in deciding on the priorities of research in nuclear adds to the unsound structure. The overall compliance deficit of the EURATOM treaty in relation to the clear accountability and democratic involvement of the European Parliament in co-decision weakens the democratic standing of the European Union.

The EURATOM Treaty "as one of the founding Treaties of the current EU is an anomaly"[9] as it has not been reformed by the any Intergovernmental conferences for

[8] The European Coal and Steel Community (ECSC) was set up set up after World War II to regulate the Members' industrial production in this field under a centralised authority. It was formally established in 1951 by the Treaty of Paris, signed by Belgium, France, West Germany, Italy, the Netherlands and Luxembourg. This treaty had a sunset clause after 50 years and it finally expired on 23 July 2002. The Treaty established a common market for coal and steel among its member states and ended the often conflict- competition between European nations over natural resources, particularly in the area of the Ruhr.

[9] The analysis of the "ossified" state of EURATOM is reflected not only in the nuclear-critical field and research but also accepted in the more pro- nuclear research, see e.g. William Nuttall, Judge Business School, University of Cambridge, in Research Europe, Issue 284, 1 October 2009, reproduced under https://www.energypolicyblog.com/2009/11/20/euratom-reform-has-part-to-play-in-eu%E2%80%99s-energy-policy-plans/ ; last access: 22.02.2018

Treaty reforms of recent decades in the European Community - now the European Union and remains as a stand-alone treaty established more than 0 years ago to support a particular technology only– in this case nuclear power.

Currently, the European Commission is planning to launch a discussion of the future of EURATOM .The Commission is expected to come up with a more specific proposal for the July 2018 European Council of EU27 and a "Communication on the future of EU Energy and Climate Policy, including on the future of the Euratom Treaty"[10]

D. The clash with economy

In order to reach a fair and balanced energy market, Europe should now be required to ensure that there is no longer any specific discriminatory promotion of nuclear power and related budget privileges for research in nuclear power, apart from the overall EU budget for Research and Development. EU funding to Research should only be legacy oriented and concentrate on dismantling of nuclear power plants, waste handling, final storage and safe disposal. No provisions for research are necessary under EURATOM but can all be handled within the provisions under the TFEU.
The Reform process concentrating on critical issues with a unified and progressive European high security and liability standard could correct the legacy of EURATOM creation process which did not at all stem from a strong and unified nuclear community approach, as one might suggest. As C. Max Vassanelli outlined back in 1969:" The Member States, while desiring the benefits of a nuclear community, have not been prepared to discard the political need for certain quantities of independent action and control over the functioning of Euratom".[11]
For the crucial topics concerning non-proliferation, nuclear safety, radiation protection, dismantling, waste management, cross border cooperation in safety and civil protection, the need for a new, strong European liability regime and the responsibility of the Union on the international level with overall high standards will need a

[10] Announced by , Commission President Jean-Claude Juncker on 13 September 2017 in his annual state of the Union speech at a plenary session of the European Parliament, https://ec.europa.eucommission/sites/beta-political/files/roadmap-soteu-factsheet_en.pdf; last access: 22.02.2018

[11] C. Max Vassanelli, Euratom: Critical Review of Selected Regulatory Functions, 52 Marq. L. Rev. 355 (1969).
Available at: http://scholarship.law.marquette.edu/mulr/vol52/iss3/2

strong European approach in legislation and enforcement control. This has to be outlined in a reformed EURATOM Treaty.
Important elements in view of nuclear technology and its use and risks have never been directly introduced into the Treaty. There is no full life-cycle responsibility approach established.
It was the European Court of Justice who "clarified the outreach of the competence and responsibility of EURATOM for nuclear safety and not "only" for radiation protection. The Commission had addressed the Court with an action under Article 146 of the Euratom Treaty for partial annulment of a Council Decision of 7 December 1998 approving the accession of the European Atomic Energy Community to the International Nuclear Safety Convention. The Commission questioned the right of the Council to add an article in its accession decision which excluded the application of some of the Convention's Articles into EURATOM law[12]. The articles referred to were in view of the Council not regulated or would have a related competence provision under the EURATOM Treaty and could therefore not apply to the EURATOM community as such. The articles concerned especially the safety of nuclear installations, safety assessment procedures and risk preparedness.

As much as this decision in principle opened the way to a better security level in the European Union, it further cemented the exclusion of the European Parliament and thus civil society at large to discuss in an involved way and the Parliament to co-decide on directives and regulations for the setting of uniform policies and instruments in the EU, in applying Euratom as legal basis..

E. The crippled democracy

The Euratom Treaty has a clear democratic deficit,[13] as was often underlined especially by the European Parliament.

[12] See, C 29/99, judgment of December 2002: The Commission asked for annulment of the following provision:, concerning the " third paragraph of the declaration (hereinafter 'the declaration') made by the European Atomic Energy Community (hereinafter 'the Community') according to the provisions of Article 30(4)(iii) of the Nuclear Safety Convention, which is attached to the decision, on the ground that, by limiting the scope of that paragraph, the Council sought to establish that the Community's competence in the fields covered by the Convention is limited to Articles 15 and 16(2) thereof and does not extend to the fields covered by Articles 1 to 5, 7, 14, 16(1) and (3) and 17 to 19 of the Convention."

[13] See MEP Ralf Linkohr in his presentation at the time of the 50th anniversary of EURATOM; see MEPs Rebecca Harms, Jo Leinen and Claude Turmes in their manifold expressions against this deficit, as can be seen as a joint summary in one of the key events of the .....

The European Parliament is mentioned in the Treaty, but has according to the text of the EURATOM Treaty no decision rights, not even on the research programme.
Before the conventional process for the Treaty on European Union, signed in Maastricht on 7 February 1992, which lead to slight modifications of the EURATOM Treaty, it was the Social and Economic Committee which needed to be informed regularly, not the Parliament[14].
It has been instead rather more of a "gentleman's agreement" under better governance principles that the Commission informs the Parliament as part of an internal agreement. And the Council and the Commission may take into account the Parliament's opinion.

The European Parliament always acknowledged a certain "dilemma": The Members States are split over nuclear energy. With the UK leaving the Union after its BREXIT decision, Member State which have no nuclear power plants or are phasing out nuclear power might no longer be hindered by a blocking minority in their legislative work.
On the other hand, a mere dissolution of the Treaty would put an end to the remaining cooperation. It would confirm the already predominant national approach without a regulated European agenda for safety and thus it would end the established regime of safeguards.
This is all the more problematic and dangerous from a security point of view, since from the original number of six EURATOM founding Member States several enlargement processes increased the number of its members to the same number as Union members, due not least to the view of the Commission, held since the so-called Merger Treaty that a sovereign state which wanted to become member of the European Union needed to access all treaties.
This created the problematic obligation also on non-nuclear Member States such as especially Austria and Ireland to become members of EURATOM in order to be accepted as member of the Union, respectively the Community as it was called at the time of Austria's accession. The accession of the Central and Eastern European Member States and the unification of Germany added problems with nuclear power plants from the same Soviet-era design as the disastrous NPP in Chernobyl. At least EURATOM and the secondary legislation ensure a certain non-proliferation and radiation protection uniform standard which without EURATOM could not be maintained.

[14] under Chapter 4 of the Treaty-

Part 3 Major secondary legislation

Even though the Euratom Treaty has been modified only slightly during the last 60 years, safety and more uniform rules and standards have been developed partly following clarifying jurisdiction from the European Court which in consequence has led to an effective amendment or broadening of the EURATOM treaty. In parallel to European jurisdiction, Europe developed an important set of secondary legislation and Commission's Communications which need to be safeguarded also in a reform process on EURATOM. In order to analyse and prepare well, a specific "Strength and Weaknesses Analysis" should be carried out, in order to move ahead and forge towards higher standards, integrating more tasks and coordination under the General Treaty and concentrating on key principles for a reformed EURATOM Treaty. A first incomplete outline for an overview on such relevant reform is attached to this study.

The most important current legislation and Communications which needs to be enumerated for the future blue print guideline are also attached to this study.

Part 4 The cleaning process

Before starting towards a reform strategy on EURATOM, a clear discussion and analysis by key stakeholders is necessary as to clarify which parts of the EURATOM treaty need to be kept in a reformed way under EURATOM and which parts can easily be transposed into the European Union Treaty, which parts need to be deleted and whether there is a sector which could now be regulated specifically under EURATOM. The following can only outline the most obvious pathways for change , reflecting first on past attempts for reform and their objectives.

A. Recommendations and lessons gathered from the convention process for a European Constitution

1) The pathway to Lisbon and EURATOM

Since EURATOM was never amended and progress toward Nuclear safety and liability was developed instead through secondary legislation and Court decisions, it

seems to be an efficient pathway to analyse briefly what had been suggested as EURATOM reforms during the convention process for the European Constitution.
In Nice in December 2000, the European Council had adopted a "Declaration on the future of the Union" In this declaration, annexed to the Treaty of Nice, the intergovernmental conference of that time called for a deeper and wider debate on the future of the European Union. The debate was to involve national parliaments and all public opinion as well as the candidate countries and lead to the convening of a new Intergovernmental Conference (IGC) in 2004. [15]

It was followed by the Declaration of Laeken, a year later, which then opened the way for a the Convention process to prepare for the Intergovernmental Conference.

Members of the Convention were representatives from national governments and parliaments in the Member States and candidate countries and representatives from the European Parliament and the Commission. The first reunion of the Convention was held on 28 February 2002 and its work was completed in July 2003, with the draft for a Treaty establishing a European Constitution, presented by its President, Valery Giscard d'Estaing after 17 months of discussions.

The draft Constitution was the foundation for the formal negotiations by the IGC, starting in October 2003. After the political agreement in June 2004, the draft Constitution was forwarded to the Heads of State and Governments, all of whom signed it on 29 October 2004.

The signed constitution needed ratification by all Member States and encountered problems in doing so in key Member States. Finally in order to avoid a wholly frustrated process and outcome, the European Council decided in June 2005 on a reflection phase for the future of Europe and the Union

Finally, the European Council meeting on 21 and 22 June 2007, reached a compromise and agreed to convene an IGC to finalise and adopt, not a Constitution, but a reform treaty for the European Union. The final text of the treaty, drawn up by the IGC, was approved at the informal European Council in Lisbon on 18 and 19 October. The Treaty of Lisbon was signed by the Member States on 13 December 2007.

[15] Declaration 23 to the Treaty of Nice, http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:xy0017&from=EN , last accessed 02.03.2018

2) The EURATOM Treaty and reform suggestions under the Convention Process – working paper for the European Commission

The European Commission at the beginning of the Convention process had asked, on the request of President Prodi in agreement with Mr Barnier and Mr Vitorino, for a working party under the responsibility of François Lamoureux to develop a Working Document as feasibility study "Contribution to a preliminary draft Constitution of the European Union"[16]
In this so-called Penelope Paper from 4. December 2002, the authors came to important suggestions for EURATOM and its chapters:

"4. Euratom Treaty
The Euratom Treaty has been substantially slimmed down by removing a series of provisions which:
– duplicated those already included in the Constitution (and previously in the Treaty establishing the European Community), i.e. the chapters on the promotion of research and dissemination of information, on the institutions and on external relations; or
– were obsolete and had never been applied: this is the case in particular of part of the chapter on supplies, especially the provisions on the right of option on ores and the chapter on property ownership, which has never been applied.
Conversely, the provisions retained are those on the setting of standards (Chapter III on health and safety) with small adjustments to incorporate nuclear safety, Chapter IV on investments (with more explicit authorisation power), Chapter V on joint undertakings and Chapter VII on safeguards.
These chapters, which contain some of the best drafting of the existing treaties, have hardly been changed and are included in an Additional Act.
Parliament is restored to the institutional system, as it is given the power to adopt, with the Council, "Laws" for basic standards whereas at present it is very much outside the decision-making process. There remain only a few cases where the Council would decide on its own, on a proposal from the Commission, for instance where specific rules concerning the non-disclosure of confidential information apply."[17]

[16] Members of this working group were: Marie Lagarrigue, Paolo Stancanelli , Pieter van Nuffel, Alain van Solinge, with the technical assistance of Marguerite Gazze
[17] Penelope Report

It was outlined under the Prodi Commission that the Penelope paper was not a basic working document for the convention process but rather a feasibility study.[18] .

3) The contribution for the Convention for a phase out of EURATOM

From the midst of the Convention members came the publication of a specific EURATOM phase – out contribution, submitted to the Convention secretariat by Ms Marie Nagy, Ms Renée Wagner and Mr Neil MacCormick, alternate members of the Convention: "The Future of the Euratom Treaty in the Framework of the European Constitution"[19]. The guidance by this contribution lead to similar but further deletion of articles and chapters of EURATOM and to a transfer of some parts into the general EU treaty which are an important source for a new reform analysis:
Main points from the Future of the Euratom Treaty in the Framework of the European Constitution:

- Title I, Article 1-3[20] should be deleted.
- Title II, Chapter 1 (Promotion of Research) and Chapter 2 (Dissemination of Information)- (articles 4-29) should be repealed.
- Title II, Chapter 3 (Health and Safety) (art. 30-39) should be subsumed in the new Constitution "to conform with EU environmental and health legislation in line with similar directive for hazardous activities, based on present article 174 (ECT)".
- Title II, Chapter 4 (Investment), art. 40-44) as well as corresponding articles 2 c), 173 and 203 should be repealed.
- Title II, Chapter 5 (Joint undertakings) should be repealed.
- Title II, Chapter 6: all provisions "relating to the safeguards and non-proliferation" should be included in a new article, but all other elements of Chapter 6 should be repealed.

[18] See e.g. House of Commons, (UK), The Convention on the Future of Europe:proposals for a European Constitution referring to presentation of "Constitution of the European Union, Commission Feasibility Study ('Penelope'), President Romano Prodi, with Commissioners Barnier and Vitorino, 4 December 2002., page 55
[19] The European Convention, the Secretariat, Brussels, 18 February 2003, CONV 563/03 CONTRIB 250
[20] Art. 3 was removed from EURATOM

- Stronger safeguards and Non-Proliferation (new): a special article of the Constitution should be established to provide for Nuclear Safeguards and Non-Proliferation.
- Consequently provisions under Title II, Chapter 8 (Property Ownership) (Art. 86-91) should equally be included in a special article on Safeguards and Non-proliferation.
- Title II, Chapter 9 (The Nuclear Common Market) (Art. 92-100[21]) should be repealed.
- Title II, Chapter 10 (External relations) (art. 101-106) should be repealed.[22]

In the end, there was no EURATOM reform. But at least, a joint declaration by Germany, Ireland, Hungary, Austria and Sweden "note that the core provisions of the Treaty establishing the European Atomic Energy Community have not been substantially amended since its entry into force and need to be brought up to date. They therefore support the idea of a Conference of the Representatives of the Governments of the Member States, which should be convened as soon as possible".[23]
This declaration is still valid and was never retired or amended. It is the obvious entrance point for discussions with the Member States.

[21] Art. 94,95 and 100 are removed from EURATOM;
[22] According to the authors of this contribution to the Convention process Chapter 10 "enables the Commission to negotiate directly with third counties on nuclear issues. Such agreements do not require approval of the European Parliament and in some cases can be entered into without the approval of the Council. Such agreements should be included with other external relations issues of a future EU Constitution, and do not require specific articles in the Constitution. They can be dealt with in a similar way to that involved in Energy co-operation agreements with (for example) Russia."
[23] Consolidated versions of the Treaty on the Functioning of the European Union," 54. Declaration by the Federal Republic of Germany, Ireland, the Republic of Hungary, the Republic of Austria and the Kingdom of Sweden", O.J. C 326/358 of 26.10.2012

Part 5 Evaluation in way of a first stock taking analysis

A. Basic pathways towards a renewed convention-driven process for a EURATOM reform

1) The Title of EURATOM and the Preamble

In order to have a swift and pragmatic approach, it would be necessary to first change the Title of EURATOM: Instead of "**Establishing the European Atomic Energy Community**" the title should be in my view more like the "**European Treaty on safeguard from radiation, on nuclear non-proliferation and on liability**" (European Nuclear Safeguard and Liability Treaty).

The whole Preamble text apart from one paragraph needs to be replaced, since it mirrors the essence of the past, no longer in line with current energy policy reality. In a world of a more and more liberalised energy market, incumbent industry such as nuclear cannot hold a ring-fenced existence. The current wording of the preamble is dictating such a special regime for nuclear energy. When concentrating in future on safeguard from radiation, on nuclear non-proliferation and a strict European liability regime, the following paragraphs of the preamble need to be replaced by provisions mirroring the new objectives:

"Recognising that nuclear energy represents an essential resource for the development and invigoration of industry and will permit the advancement of the cause of peace,"

"Convinced that only a joint effort undertaken without delay can offer the prospect of achievements commensurate with the creative capacities of their countries,

"Resolved to create the conditions necessary for the development of a powerful nuclear industry which will provide extensive energy resources, lead to the modernisation of technical processes and contribute, through its many other applications, to the prosperity of their peoples,"

"Desiring to associate other countries with their work and to cooperate with international organisations concerned with the peaceful development of atomic energy,"

"Have decided to create a EUROPEAN ATOMIC ENERGY COMMUNITY (EURATOM) and to this end have designated as their Plenipotentiaries":

The only paragraph which could be integrated in a modernised way under clear inking to the polluter pays principle would be the following:" Anxious to create the conditions of safety necessary to eliminate hazards to the life and health of the public,"

2) Title I (The tasks of the Community) -overhaul

Title I with the Tasks of the Community should be amended in order as to ensure that all promotion or singled-out privileges for Nuclear energy and related research are removed. This means Article 1, and Article 2 a), c), d), f) and g) need to be deleted. The remaining sub paragraphs under Article 2 need to be put under the objective of strictest radiation protection, clear responsibility of the license holders and owners of nuclear power stations for the full life cycle, from purchasing the fissile material up to final and safe storage of waste and responsibility for a coherent and complete dismantling of od nuclear power stations, clear license limits and full environmental impact responsibility and obedience to the ESPOO Convention before any new built or prolongation of expected and licensed life time of nuclear Power stations.

EURATOM needs to have as new and clear objective and purpose to protect life, health, nature and assets against the hazards of nuclear energy and the harmful effects of ionising radiation and to provide compensation for damage caused, to dismantle old nuclear power plants in a controlled manner and to ensure orderly operation up until the date of termination of each power plant and regular review of licenses, starting under normal operation 25 years after first licensing. EURATOM needs to aim for high security standards also to prevent danger to the internal or external security of all Member States from the application of nuclear energy. EURATOM needs to fulfil the EUs international obligations in the field of nuclear energy and radiation protection under full scrutiny of the European Parliament. The introduction of a new, harmonised and progressive European Nuclear liability programme on a high level, surpassing Vienna and Paris Convention would make Europe the leader in strong liability under full polluter pays objectives. .
It is necessary to ensure the role of the European Parliament for full co-decision as guiding principle in EURATOM. Further fine-tuned analysis might reserve some restriction to this full authority in case of serious security questions. This could be clarified directly under Title I.

3) Title II (Provisions for the encouragement of progress in the field of nuclear energy)

This title first of all needs rewording into- for example –"**Provisions for health and safety standards, nuclear liability, lifecycle and sustainable dismantling**".

a) Promotion of Research

Its Chapter 1 on the **promotion of research** can be deleted or at least sunset provisions for a transfer of all research articles under the General EU Treaty could be envisaged. .

Nuclear research is a competence at present shared between EURATOM and its Member States, see Article 4 EURATOM[24]. The Euratom Programme is the EU's main but not the only or singular instrument for the funding of nuclear research in Europe, with a current budget of EUR 1.6 billion for the period 2014-2018. The various current research programmes and objectives are established by Article 3 of the Council Regulation (EURATOM) No. 1314/2013 [25] In view of the single EU energy market a singled-out privilege for nuclear research on top of access to all other energy related research programmes under the general EU budget is not adequate.

At least Chapter 1 (research) should be drastically shortened and a sunset clause for complete transfer of any research related articles should be installed.

A reform process should aim for a new Article 4, outlining, that research in nuclear is limited to research for protection from radiation, dismantling of nuclear power

[24] !1. The Commission shall be responsible for promoting and facilitating nuclear research in the Member States and for complementing it by carrying out a Community research and training programme.
2. The activity of the Commission in this respect shall be carried out within the fields listed in Annex I to this Treaty.
This list may be amended by the Council, acting by a qualified majority on a proposal from the Commission. The latter shall consult the Scientific and Technical Committee established under Article 134."

[25] Council Regulation (EURATOM) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation. OJ L 347 of 20/12/2013, page 948

plants, decontamination, safe transport of waste, waste handling, storage preparation and interim and final storage capacities and safe management.

The new Article 4 should set a sunset clause for 4-8 years after which all nuclear and radiation related research will be organised and steered under the general research and development programmes of the European Union.

The future reformed EURATOM treaty needs to amend Article 4 and to restrict the objectives and obligations of the Commission to research issues such as safe dismantling, final repository search and safest storage and surveillance of waste from nuclear power plants.

Articles 5 to 11 on research and training programmes should be deleted and also be replaced by a step- over provisions, moving all research and funding programmes - related paragraphs and articles under the General Treaty, but concentrating only on the above restricted research activities.

b) Patent rights, dissemination of information

Chapter 2 of Title II under EURATOM with the Articles 12 to 29 covers the various aspects of dissemination of information and is subdivided in the following four sections:

- Section 1 tackles Information over which the Community has power of disposal and regards especially the right of the Commission to issue exclusive licenses under the various alternatives of patents respectively for situations where the Commission holds contractual licenses and provisionally protected patent rights.
- Section 2 regards the dissemination by "amicable agreement" on the communication of information and on the granting of licenses and access and right of use of research results. In its 2nd part this section covers the compulsory communication form the Member States to the Commission in any application for patents or utility models in a Member State in the field of nuclear energy. In its 3rd part this section regulates questions around the grant of licences by arbitration or under compulsory powers.
- Section 3 establishes a security system on questions concerning information acquired by the Community as research results which is liable to harm the defence interests of one or more Member States.

Most of these provisions after a reviewed reform review can certainly be transferred under the relevant legislation under the TFEU. An alignment with the modern principle of access to information and its strict exemption boundaries is essential . Patent rights and application formalities can be handled under the relevant provisions under the TFEU and especially its Art. 118[26]. The European Charter of Fundamental Rights confirms that intellectual property shall be protected, meaning that the EU therefore recognises its responsibility for protecting the IP- rights of its citizens (Art. 17(2) Charter of Fundamental Rights). Moreover,, Art. 207 (1) of the TFEU states that the common commercial policy of the EU is based on uniform principles including, among others, the commercial aspects of intellectual property rights.
It seems thus most probably that the whole Chapter II can be taken out of the EURATOM treaty and specific provisions could be established in secondary legislation under TFEU guidance.

Member States have established legislation on protection of industrial property rights and specific patent offices, which handles all areas of commercial and industrial activities and patent rights. . The reform process needs to review if the role of the European Patent office and its links to the national offices can be improved in view of coherence under long term liability of patented technologies under strict safety issues.

One could foresee to reserve the above Sections 3 (Security provisions) and Section 4 (Special provisions) and to link them –with the new chapter on strengthened Non-

[26] See TFEU, "Title VII Common rules on competition, taxation and approximation of laws

Chapter 3 Approximation of laws

Article 118 TFEU

In the context of the establishment and functioning of the internal market, the European Parliament and the Council, acting in accordance with the ordinary legislative procedure, shall establish measures for the creation of European intellectual property rights to provide uniform protection of intellectual property rights throughout the Union and for the setting up of centralised Union-wide authorisation, coordination and supervision arrangements.

The Council, acting in accordance with a special legislative procedure, shall by means of regulations establish language arrangements for the European intellectual property rights. The Council shall act unanimously after consulting the European Parliament."

Proliferation principles , following the principle of parliamentary scrutiny on EU and national level.

4) Title II, Chapter 3 (Health and Safety)

This should be the most important chapter of the future EURATOM treaty. It must remain, but needs detailed amendments in view of the above principles and new principles for a strong European liability regime.
First objectives for such a reformed chapter can be summarised, but a detailed work and analysis needs certainly to be conducted.
As outlined above, the EURATOM treaty needs provisions of Title II, Chapter 3 and 7, with amendments for the sake of stronger safety and liability rules and life cycle responsibly principles and to ensure strong non-proliferation rules and enforcement..

5) Title II, Chapter 4 on investments

This Chapter should be slimmed down drastically.
The current Article 40 on illustrative programmes (PINC) could be deleted. The Commission may always publish in her working programme or via specific communication investment questions in the nuclear field as concerning other fields of energy.
Article 41 and 42 on communication considering investment projects should remain in the EURATOM treaty. Art. 43 on discussion of the Commission with the industry on investment should be deleted. Article 44 should be amended in that sense, that the Commission shall as a rule always publish any investment projects communicated to it, without the need for any previous consent of the respective Member State.

6) Title II, Chapter 5 on joint undertakings

This Chapter needs to be deleted as well. It seems outdated to keep provisions for the need for joint undertakings under Title II of the EURATOM treaty. If any such necessities might appear later, they can be based on secondary legislation and especially or exclusively linking to Title II, Chapter 3 (Health and Safety) and its objectives

7) Title II, Chapter 6, 7 and 8 on supply, safeguards and property ownership

Title II, Chapters 6 (Special Provisions- e.g. on delivery of material to third countries), Chapter 7 (on safeguards) and Chapter 8 (on Property ownership) need to be reformed in transposing all safety and non –proliferation related articles into a reformed new chapter on health and safety, liability and non-proliferation. The question of ownership of fissile material and proliferation protection needs to be aligned in view of high safety and security standards.

8) Title II, Chapter 9 (The nuclear common market)

This chapter can be deleted, customs and tariff obligations are to be handled under the TFEU. Albeit, its Article 98 needs to be moved into a new chapter on nuclear liability. At present, the article reads as follows
"Member States shall take all necessary measures to facilitate the conclusion of insurance contracts covering atomic risks. Within a period of two years after the date of the entry into force of this Treaty and after the Assembly has been consulted, the Council, acting by means of a qualified majority vote on a proposal of the Commission which shall previously obtain the opinion of the Economic and Social Committee, shall issue directives as to the particulars of application of this Article."

9) Title II, Chapter 10 (External relations)

In principle, this Chapter is no longer needed, as the TFEU provides with all necessary provisions in order to conclude international agreements, see e.g. Article 216 and Art. 217 and 218 TFEU. [27] On the other hand and in view of a reformed EURATOM Treaty with a strong liability regime it might be efficient to keep an adapted Chapter 10 under EURATOM.

[27] Article 216 "1. The Union may conclude an agreement with one or more third countries or international organisations where the Treaties so provide or where the conclusion of an agreement is necessary in order to achieve, within the framework of the Union's policies, one of the objectives referred to in the Treaties, or is provided for in a legally binding Union act or is likely to affect common rules or alter their scope.
2. Agreements concluded by the Union are binding upon the institutions of the Union and on its Member States."

At least, the principle of full participation of the European Parliament needs to be guaranteed. Key points from judgments of the European Court of Justice need to be reflected under this Chapter.

The international role of EURATOM, its set of cooperation agreements and the link to the International Atomic Energy Agency need a careful and detailed screening.

Article 217 (ex Article 310 TEC)
"The Union may conclude with one or more third countries or international organisations agreements establishing an association involving reciprocal rights and obligations, common action and special procedure."
Article 218 (ex Article 300 TEC)
"1. Without prejudice to the specific provisions laid down in Article 207, agreements between the Union and third countries or international organisations shall be negotiated and concluded in accordance with the following procedure.
2. The Council shall authorise the opening of negotiations, adopt negotiating directives, authorise the signing of agreements and conclude them.
3. The Commission, or the High Representative of the Union for Foreign Affairs and Security Policy where the agreement envisaged relates exclusively or principally to the common foreign and security policy, shall submit recommendations to the Council, which shall adopt a decision authorising the opening of negotiations and, depending on the subject of the agreement envisaged, nominating the Union negotiator or the head of the Union's negotiating team.
4. The Council may address directives to the negotiator and designate a special committee in consultation with which the negotiations must be conducted.
5. The Council, on a proposal by the negotiator, shall adopt a decision authorising the signing of the agreement and, if necessary, its provisional application before entry into force.
6. The Council, on a proposal by the negotiator, shall adopt a decision concluding the agreement.
Except where agreements relate exclusively to the common foreign and security policy, the Council shall adopt the decision concluding the agreement:
(a) after obtaining the consent of the European Parliament in the following cases:
(i) association agreements;
(ii) agreement on Union accession to the European Convention for the Protection of Human Rights and Fundamental Freedoms;
(iii) agreements establishing a specific institutional framework by organising cooperation procedures;
(iv) agreements with important budgetary implications for the Union;
(v) agreements covering fields to which either the ordinary legislative procedure applies, or the special legislative procedure where consent by the European Parliament is required.
The European Parliament and the Council may, in an urgent situation, agree upon a time-limit for consent.
(b) after consulting the European Parliament in other cases. The European Parliament shall deliver its opinion within a time-limit which the Council may set depending on the urgency of the matter. In the absence of an opinion within that time-limit, the Council may act."

The importance of the international agreements signed by EURATOM also for the other signatory party might well be reflected from the Agreement on the Peaceful use of Nuclear Energy between the United States of America and Switzerland of October 31, 1997, which entered into force on June 23, 1998.[28] The agreement concerns the transfers of nuclear material, moderator material and equipment for civil use. It underlines that both Parties shall terminate this Agreement not later than the date upon which Switzerland accedes to the European Union. The rights and obligations with respect to nuclear supply arising out of this Agreement were supposed to be then replaced by those of the agreement between the United States of America and the European Atomic Energy Community.
In consequence, the agreement underlined that the rights and obligations with respect to other areas of nuclear cooperation shall be the subject of negotiations between the European Atomic Energy Community, the United States of America, and Switzerland in accordance with the provisions of Article 106 of the Euratom Treaty.
The agreement highlights the work of the European Union in International aspects as follows: "5. in its relations with the wider world, the Union shall uphold and promote its values and interests and contribute to the protection of its citizens. It shall contribute to peace, security, the sustainable development of the Earth, solidarity and mutual respect among peoples, free and fair trade, eradication of poverty and the protection of human rights, in particular the rights of the child, as well as to the strict observance and the development of international law, including respect for the principles of the United Nations Charter."[29]

In view of BREXIT and in view of more than 20 international agreements by EURATOM, it might be advisable to keep a reformed Chapter 10 (External Relations) and integrate a sunset clause into this chapter. This would be especially efficient if the negotiations under BREXIT will come to a status of the United Kingdom towards EURATOM as third country or as associated country. [30]

[28] United States, State Department, Treaties and other International acts, series 12894, agreement between the United States of America and Switzerland. Signed at Berne October 31, 1997, Atomic Energy: Peaceful Uses of Nuclear Energy , https://www.state.gov/documents/organization/106659.pdf (last accessed 10.06.2018)
[29] Ibid.
[30] See for the following also http://bruegel.org/2017/02/brexit-goes-nuclear-the-consequences-of-leaving-euratom/ (last accessed 02.03.2018)

Following Article 101 of the Euratom Treaty the situation of the United Kingdom as third or non-member state would mean that , "The Euratom Community may, within the limits of its powers and jurisdiction, enter into obligations by concluding agreements or contracts with a third state, an international organisation or a national of a third state'."
As third country, the UK would follow countries such as China and Russia, with which EURATOM has established a structured dialogue to identify a common set of research topics of mutual interest in which cooperation can take place on a shared-cost basis.

As associated country, the rules for the United Kingdom would follow Article 206 of the Euratom Treaty, meaning that the "Community may conclude with one or more States or international organisations agreements establishing an association involving reciprocal rights and obligations, common action and special procedures'. It is under this article that Switzerland became in 2014 an Associated Country to EURATOM.

A reform process would need to clarify that third countries or associated countries need to have similar high nuclear safety standards (still to be introduced under EURATOM, as outlined above and below) and adhere to strongest liability regimes and non-proliferation principles, again as to be outlined in the new EURATOM treaty..

An efficient regulation on intergovernmental agreements under a reformed Chapter 10 could also help for harmonised rules for intergovernmental agreements, between EU Member States and third countries. The Commission underlined in the 2016 PINC that Member States are free to decide their energy mix, but that the Energy Union Strategy and the European Energy Security Strategy stressed, that Member States who decide to use nuclear energy in their own energy mix requirements to apply the highest standards of safety, security, waste management and non-proliferation as well as diversifying nuclear fuel supplies.[31] The Commission also presented a recommendation to Member States concerning the application of Article 103 of the EURATOM Treaty. The recommendation requires Member States to have the Commission's opinion on agreements with third countries on nuclear matters (Intergovernmental Agreements) before concluding them: "Article 103 of the Treaty

[31] Communication from the Commission, Nuclear Illustrative Programme presented under Article 40 of the Euratom Treaty for the opinion of the European Economic and Social Committee, COM(2016) 177 final, p. 2

plays a central role in reconciling the need to ensure the unity and primacy of EURATOM law with Member States' freedom of action in conducting their external relations in the nuclear field." [32]
This recommendation aims to make that process more efficient by clarifying the key aspects and requirements that Member States have to take into account when negotiating such agreements, in particular regarding the new directives on nuclear safety and the safe management of spent fuel and radioactive waste. The application of this recommendation should reduce the need for the Commission to object to the conclusion of agreements, and thereby reduce the risk of delay in their conclusion." [33]

B. A new liability regime under EURATOM for the EU – Reform of Title II, Chapter 10

1) Overview on liability agreements

The current EURATOM treaty has only an almost homeopathic approach to nuclear liability which is mentioned only under the current provisions of the Nuclear Common Market and its above-mentioned Art. 98 EURATOM. In the whole EURATOM treaty the word "insurance" figures just once.[34]
Nuclear liability is globally and also at the EU level rather a patchwork design than a unified system with highest standards of responsibility.
Concerning the existing multilateral agreements in nuclear energy on liability and compensation for nuclear damage, the world faces a mix of different conventions:[35]

- Paris Convention on Nuclear Third Party Liability (Paris Convention or PC):

[32] Recommendations, Commission Recommendation (Euratom) 2016/538 of 4 April 2016 on the application of Article 103 of the Euratom Treaty
[33] See: http://ec.europa.eu/euratom/observatory_news2016.html It is noteworthy that in the case of the UK after Brexit the most important element of its nuclear relations with the EU/EURATOM would involve irradiated hospital medical supplies as well as fuel and other security-equipment issues for Hinckley Point C new nuclear build project and further new nuclear build projects
[34] See Art. 98 EURATOM:
"Member States shall take all measures necessary to facilitate the conclusion of insurance contracts covering nuclear risks.
The Council, acting by a qualified majority on a proposal from the Commission, which shall first request the opinion of the Economic and Social Committee, shall, after consulting the European Parliament, issue directives for the application of this Article."
[35] Full legal texts can be found under https://www.oecd-nea.org/law/multilateral-agreements/liability-compensation.html

It sets up a nuclear liability and compensation regime to compensate victims of a nuclear accident. The Paris Convention is open to OECD member countries as of right and non-member countries with the consent of all Convention States.

- Brussels Supplementary Convention on Third Party Liability in the Field of Nuclear Energy (Brussels Supplementary Convention or BSC): It establishes a scheme to provide compensation supplementary to that required by the Paris Convention. The Brussels Supplementary Convention is open only to contracting parties to the Paris Convention.
- Vienna Convention on Civil Liability for Nuclear Damage (Vienna Convention): This convention sets up a nuclear liability and compensation regime similar to that provided for under the Paris Convention. The Vienna Convention is open to any state.
- Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Joint Protocol): The Protocol is designed to serve as link between the Paris and Vienna Conventions, "effectively extending the benefits provided by one convention to victims in countries that have joined the other convention".[36]
- Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (1997 Vienna Protocol): it aims at strengthening the original mechanism by requiring that more money be made available to compensate more victims for a broad range of damages.
- Convention on Supplementary Compensation for Nuclear Damage (CSC): This Conventions establishes a global liability and compensation scheme with the objective to supplement the regimes under the Paris Convention, the Vienna Convention or Annex state legislation as defined by the CSC.
- Protocol to Amend the Paris Convention on Nuclear Third Party Liability (2004 Protocol to the PC) (**not yet in force**): the aim is to Improve again the existing mechanism by requiring that more money be made available to compensate more victims for a broader range of damages.
- Protocol to Amend the Brussels Supplementary Convention on Third Party Liability in the Field of Nuclear Energy (2004 Protocol to the BSC) (**not yet in force**): its objective is to Improve the existing regime by requiring that significantly more compensation be made available to supplement that which is to be provided for under the Paris Convention.

[36] See under https://www.oecd-nea.org/law/multilateral-agreements/liability-compensation.html

2) The European liability patchwork

Most of the EU Member States, who had joined before 2004, are contracting parties to the Paris Convention.
The majority of the "new" EU Member States which joined after 2004, are contracting parties to the 1963 Vienna Convention. Most, but not all of the contracting parties to the Paris Convention are contracting parties to its companion convention, the 1963 Brussels Supplementary Convention (BSC).
Only some of the contracting parties to the Paris Convention are contracting parties to the Joint Protocol relating to the Application of the Vienna Convention and Paris Convention (1988 Joint Protocol), which provides a link between the Paris Convention and the 1963 Vienna Convention On the contrary, all Member States that are contracting parties to the 1963 Vienna Convention are at the same time contracting parties to the 1988 Joint Protocol. Some "new" Member States have joined the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (1997 Vienna Protocol), and only two member states have actually ratified it.
Concerning the Convention under the International Atomic Energy Agency on supplementary compensation for nuclear damage of 12 September 1997, which entered into force only 18 years later, on 15 April 2015, it is noteworthy that from the circle of current Member States, the Czech Republic, Italy and Romania were the few EU Member States which signed this Convention. And only Romania ratified it.

The following overview shows the patchwork of Conventions and Liability caps in the EU 28.

3) Lessons to be learned for a European liability regime

There are lessons to be drawn with the European Union on more progressive liability regimes, such as in Austria and Germany.
In 1998, the Austrian Parliament adopted the Federal Law on Civil Liability for Damages caused by Radioactivity[37]. This law is a game changer concerning principles governing liability for damages caused by ionising radiation. The law covers the operation of nuclear plants, the carriage of radioactive material and the handling of radionuclides, for damages caused after the entry into force in 1999. .
In a nutshell: Liability is unlimited in amount. As a rule, legal channelling is completely taken out. This is a very important change, since, with the specific extended system of legal channelling: Liability for nuclear power plants is often channelled to the operator of the nuclear power plant only. Contractors for example who work at a nuclear power plant do not need an insurance in case an employee causes an accident with third party damages as a consequence.
The new Austrian Act foresees no exclusive jurisdiction, as is provided for by international nuclear liability law. The new law lies down the principle that an Austrian Court has jurisdiction, and that Austrian law is applicable, if nuclear damage occurs in Austria, regardless of the source from where it was caused. The law extended substantially the definition of nuclear damage and established regulations in order to facilitate the proof of causality[38].

Important is that Austria, which so far has not acceded to any international liability regime is open to do so despite its own liability act. This means that all countries with their own more stringent liability regimes - and Luxemburg is at present also pursuing new legislation to this extent- will certainly support pathways to a new European liability regime under the reformed EURATOM treaty.

[37] See Bundesgesetz über die zivilrechtliche Haftung für Schäden durch Radioaktivität [AtomHG 1999] Bundesgesetzblatt Teil I [BGB1 I] No. 170/1998 (Austria), electronic version under https://www.oecd-nea.org/law/legislation/austria/AUSTRIA-AtomicLiabilityAct.pdf (last accessed 15.05.2018)).
[38] See for details and analysis: Hinteregger, Monika, the new Austrian act on third party liability for nuclear damage, Denver Journal for international Law and Policy , 3/10/2008 4:55:11 PM

Part 6 Summary / Conclusion

Overall, this short analysis and outline on main principles for a reform of the EURATOM Treaty can rely to a large extent on initiatives in the past by the European Parliament, by the European Commission and members of the Convention process for a European Constitution. It outlines that EURATOM needs to assume a new face, fully concentrating on nuclear safety, non- proliferation and a new European liability regime. All promotional aspects can be taken out of the Treaty, a democratisation of EURATOM can be enabled by deleting chapters on research, intellectual property and joint undertakings and thus integrating those issued under the TFEU and subsequent secondary legislation. All secondary legislation under EURATOM will need to be reviewed in order to see if amendments and links to the TFEU as legal basis need to be introduced. This is not an easy process but can be managed in a structured way in the usual intergovernmental procedure. BREXIT can be turned into an opportunity of reform ensuring that a possible future treaty between the EU and the United Kingdom can rely on a modernised EURATOM treaty with high safety standard obligations and clear and strong liability rules.

Dr. Dörte Fouquet
Brussels, May 2018

ANNEX I: Important secondary legislation under EURATOM

1) Protection of Drinking water

Council Directive2013/51/EURATOM of 22 October 2013 laying down requirements for the protection of the health of the general public with regard to radioactive substances in water intended for human consumption[39]. ()

Commission Recommendation 2001/928/EURATOM of 20 December 2001 on the protection of the public against exposure to radon in drinking water supplies.[40]

2) Information and Exchange on Nuclear accidents and radiological emergency

Commission Decision 2005/844/EURATOM of 25 November 2005 concerning the accession of the European Atomic Energy Community to the Convention on Early Notification of a Nuclear Accident[41].

Commission Decision 2005/845/EURATOM of 25 November 2005 concerning the accession of the European Atomic Energy Community to the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency[42].

Council Directive 89/618/EURATOM of 27 November 1989 on informing the general public about health protection measures to be applied and steps to be taken in the event of a radiological emergency.[43]

Commission Communication 91/C103/03 on the implementation of Council Directive 89/618/EURATOM.[44]

[39] OJ L-296 of 07/11 2013, page 12
[40] OJ L-344 of 28/12/2001 page 85
[41] OJ L-314 of 30/11/2005 pages 21-22
[42] OJ L-314 of 30/11/2005 pages 27-34
[43] OJ L-357 of 07/12/89 page 31
[44] OJ C-103 of 19/04/91 page 12

Council Decision 87/600/EURATOM of 14 December 1987 on Community arrangements for the early exchange of information in the event of a radiological emergency.[45]

3) Contamination of foodstuffs and feedingstuffs-Post-Chernobyl

Council Regulation No 733/2008 of 15 July 2008 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station (codified version); Council Regulation (EC) No 1048/2009 extends its validity until 31 March 2020.[46]

Council Regulation No 1048/2009 of 23 October 2009 amending Regulation (EC) No 733/2008 on the conditions covering imports of agricultural products originating in third countries following the accident of the Chernobyl nuclear power station. [47]

Commission Regulation No 1635/2006 of 6 November 2006 laying down detailed rules for the application of Council Regulation (EEC) No 737/90 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power-station. [48]

Commission Regulation No 1609/2000/EC of 24 July 2000 establishing a list of products excluded from the application of Council Regulation (EEC) No 737/90 on the conditions governing imports of agricultural products originating in third countries following the accident at the Chernobyl nuclear power station.[49]

Commission Recommendation No 274/2003 of 14 April 2003 on the protection and information of the public with regard to exposure resulting from the continued radioactive caesium contamination of certain wild food products as a consequence of the accident at the Chernobyl nuclear power station.[50]

[45] OJ L-371 of 30/12/87 page 76
[46] OJ L-201 of 30/07/2008, page 1
[47] OJ L-290 of 06/11/2009, page 4)
[48] OJ L-306 of 07/11/2006 page 3
[49] OJ L-185 of 25/07/2000, page 27
[50] OJ L-99 of 17/04/2003 page 55, amended by corrigendum published in OJ L-109 of 01/05/2003 page 27; see also List of Customs Offices in which products listed in Annex I of

4) Future accidents

Council Regulation (Euratom) 2016/52 of 15 January 2016 laying down maximum permitted levels of radioactive contamination of food and feed following a nuclear accident or any other case of radiological emergency, and repealing Regulation (Euratom) No 3954/87 and Commission Regulations (Euratom) No 944/89 and (Euratom) No 770/90. (OJ L-13 of 20/1/2016 page 2)

5) Overview on important Commission recommendations

Commission Recommendation 91/444/EURATOM of 26 July 1991 on the application of the third and fourth paragraphs of Article 33 of the Euratom Treaty.[51]

Commission Recommendation 2010/635/EURATOM of 11 October 2010 on the application of Article 37 of the Euratom Treaty.[52]

Commission Recommendation 2000/473/EURATOM of 8 June 2000 on the application of Article 36 of the Euratom Treaty concerning the monitoring of the levels of radioactivity in the environment for the purpose of assessing the exposure of the population as a whole.[53]

Commission Recommendation 2004/2/EURATOM of 18 December 2003 on standardised information on radioactive airborne and liquid discharges into the environment from nuclear power reactors and reprocessing plants in normal operation. [54]

6) Commission communication – Article 35 EURATOM

Communication concerning: "Verification of environmental radioactivity monitoring facilities under the terms of the EURATOM Treaty. Practical arrangements for the conduct of verification visits in Member States."[55]

Commission Regulation (EC) No 1635/2006 (1) may be declared for free circulation in the European Community (OJ C-262 of 29/09/2010, page 13)

[51] OJ L-238 of 27/08/91 page 31

[52] OJ L-279 of 23/10/10 page 36

[53] OJ L-191 of 27/07/2000 page 37

[54] OJ L-002 of 06/01/2004 page 36

[55] OJ C-155 of 04/07/2006 page 2

ANNEX II: Provisional example for a deeper analysis (SWOT) concerning especially Health and Safety, Liability and non-proliferation.

EURATOM Article (*used as base for secondary legislation*)		Directive/Regulation/etc.	Transparency, Control sanction established	Necessary in Euratom or Transfer under clarification to EU Treaty	Reform needs for EURATOM Treaty	Reform needs for secondary legislation	Sunset provision for reform of secondary legislation
Articles 31 and 32 (Consequence Art. 33 for MS's enforcement and following definitions under Art. 30))		Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations **amended by:** 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		Necessary to remain under EURATOM as inherent part of radiation protection and strong link to non-proliferation	Not fully aligned with ESPOO Aarhus: overlapping to the detriment of clear application of Aarhus and ESPOO. Art. 34 needs clear link to right of neighbouring and third States for involvement	Y	Y

					and respect of ESPOO and Aarhus		
Articles 31 and 32		COUNCIL DIRECTIVE 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom		Necessary to remain under EURATOM			
Art. 31 and 32		COUNCIL DIRECTIVE 2011/70/EURATOM of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste					

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ANNEX II: Third Party Liability- current status

Nuclear operators' third party liability – amounts and financial security limits
Source: OECD-NEA (2017), own research[56]

Country/ Economy	International Liability Convention	Installations/Activities	Operator's Liability Amount	Funds available			Last updated by the NEA
				Financial Security Limit to cover Operator's Liability Amount	Public funds	International funds (established under either the BSC or the CSC)	
Austria	(PC), (BSC)	Nuclear installations	Unlimited	EUR 406 million			November 2016
		Experimental and research reactors and transport activities of nuclear materials		EUR 40.6 million			
		Holder of radionuclide-exceeding 370 gigabecquerel		EUR 4.06 million			

[56]

ACRONYMS (OECD)

BSC: 1963 Brussels Convention Supplementary to the 1960 Paris Convention ("Brussels Supplementary Convention").

CSC: 1997 Convention on Supplementary Compensation for Nuclear Damage.

JP: 1988 Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention.

PC: 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy ("Paris Convention").

RPC: 2004 Protocol to amend the Paris Convention ("Revised Paris Convention"), **not yet in force**.

RSBC: 2004 Protocol to amend the Brussels Supplementary Convention ("Revised Brussels Supplementary Convention"), **not yet in force**.

RVC: 1997 Protocol to Amend the Vienna Convention ("Revised Vienna Convention").

VC: 1963 Vienna Convention on Civil Liability for Nuclear Damage ("Vienna Convention").

( ): When within brackets, it means that the country has signed but not yet ratified the convention.

Belgium	PC, BSC, (RPC), (RBSC), (JP)	Nuclear installations	EUR 1.2 billion	EUR 1.2 billion		SDR 125 million	November 2016
		Transport activities	EUR 80-297 million	EUR 297 million			
		Low risk Installations	EUR 75-297 million	EUR 297 million			
Bulgaria	VC, JP	Nuclear installations and transport activities	BGN 96 million	BGN 96 million			June 2011
Cyprus	none			unlimited			
Czech Republic	VC, (RVC), JP, (CSC)	Nuclear installations used for power generation purposes, storage facilities and repositories of spent fuel assigned to these installations or nuclear materials generated by reprocessing of spent fuel	CZK 8 billion	CZK 2 billion minimum			June 2017
		Other nuclear installations and transport activities	CZK 2 billion	CZK 300 million minimum			
Denmark	PC, BSC, (RPC), (RBSC), JP	Nuclear installations and transport activities	SDR 60 million	SDR 60 million	SDR 115 million	SDR 125 million	June 2014
Estonia	VC, JP	Nuclear installations and transport activities	Unlimited (in the absence of legislation to the contrary)	Unlimited (in the absence of legislation to the contrary)			June 2011
Finland	PC, BSC, (RPC), (RBSC), JP	Nuclear installations	Unlimited liability (for damage suffered within Finland) SDR 600 million (for damage suffered outside Finland)	SDR 600 million		SDR 125 million	November 2016
		Low risk installations and transport activities	SDR 5-600 million				
		Nuclear installations	EUR 700 million	EUR 700 million			

France	PC, BSC, (RPC), (RBSC), JP	Low risk nuclear Installations	EUR 70 million	EUR 70 million	After depletion of the operator's liability amount and up to SDR 175 million	SDR 125 million	December 2017
		Transport activities	EUR 80 million	EUR 80 million			
		Transit across France	EUR 80 millions (if covered by the Paris Convention) Unlimited (if not covered by the Paris Convention)	EUR 80 millions (if covered by the Paris Convention) EUR 700 million (if not covered by the Paris Convention)			
		Nuclear power plants		2.5 billion			
Germany	PC, BSC, (RPC), (RBSC), JP	other nuclear installations	Unlimited	Up to EUR 2.5 billion (maximum depending on thermal capacity (for reactors); on type, amount, activity and nature of radioactive substances (for other installations))	Up to EUR 2.5 billion	SDR 125 million	November 2016
		transport activities		Up to EUR 70 million (maximum depending on type, amount, activity and nature of radioactive substances)			
Greece	PC, JP, (RPC)	Nuclear installations	SDR 15 million	SDR 15 million			November 2016
		Transport activities					
Hungary	VC, (RVC), JP	Nuclear installations	SDR 100 million	SDR 100 million	SDR 200 million		November 2016

		Transport or storage of nuclear fuel	SDR 5 million	SDR 5 million	SDR 295 million		
Ireland	none			unlimited			
Italy	PC, BSC, (RPC), (RBSC), (RVC), JP, (CSC)	Nuclear installations and transport activities	SDR 15 million	SDR 15 million	SDR 160 million	SDR 125 million	November 2016
Latvia		Nuclear installations	LVL 4 million	LVL 4 million	Difference between available insurance and LVL 80 million		
		Other practices (nuclear facilities, radioactive waste disposal / management facilities)	LVL 0.8 million	LVL 0.8 million			
	VC, RVC, JP	Practices involving high doses of radiation sources	LVL 0.4 million	LVL 0.4 million			June 2011
		Practices involving medium doses of radiation sources	LVL 80 000	LVL 80 000			
		Other practices which require a special license	LVL 1 000	LVL 1 000			
Lithuania	VC, (RVC), JP,(CSC)	Nuclear installations and transportation	LTL equivalent of (1963: USD 5 million)	LTL equivalent of (1963: USD 5 million)			June 2011
Luxembourg	(PC), (BSC)	Nuclear installations and transport activities	Unlimited (in absence of legislation to the contrary)	No amount specified			June 2014
Malta	none			unlimited			
Netherlands	PC, BSC, (RPC), (RBSC), JP	Nuclear power plants	EUR 1.2 billion	EUR 1.2 billion	After depletion of the operator's liability amount and up to EUR 2.3 billion		
		Enrichment installations, research reactors, storage installations and closed nuclear power plants	EUR 22.7-100 million	EUR 22.7-100 million	After depletion of the operator's liability amount and up to EUR 1.5 billion	SDR 125 million	November 2016
		Transport activities	EUR 8-22.7 million	EUR 8-22.7 million			

Norway	PC, BSC, RPC, RBSC, JP	Nuclear installations and transport activities	SDR 60 million	SDR 60 million	SDR 115 million	SDR 125 million	June 2014
		Exceptional cases, low risk nuclear installations and transport activities	SDR 5 million minimum	SDR 5 million minimum	SDR 170 million		
Poland	VC, RVC, JP	Nuclear installations	SDR 300 million	SDR 300 million			June 2014
		Research reactors or a nuclear facility where nuclear material originated from it is kept or stored, as well as transportation of nuclear material from such facilities		SDR 0.4-5 million			
		Nuclear material and spent fuel storage and disposal facilities for nuclear materials not originated from research reactors Radioactive waste repositories		SDR 300 million			
Portugal	PC, (RPC), (JP)	Nuclear installations	SDR 15 million	No amount specified			November 2016
		Transport activities					
		Low risk installations					
Romania	VC, RVC, JP, CSC	Nuclear installations	SDR 300 million (can be reduced to SDR 150 million if State provides for the difference up to SDR 300 million)	SDR 300 million (can be reduced to SDR 150 million if State provides for the difference up to SDR 300 million)	After depletion of the operator's liability amount and up to SDR 300 million	SDR 108 million	December 2017
		Research reactors, radioactive waste and spent fuel storage facilities	SDR 30 million (can be reduced to SDR 10 million if State provides for the difference up to SDR 30 million)	SDR 30 million (can be reduced to SDR 10 million if State provides for the difference up to SDR 30 million)	After depletion of the operator's liability amount and up to SDR 30 million		
		Transport of nuclear fuel used in a nuclear reactor	SDR 25 million	SDR 25 million			

		Transport of nuclear materials	SDR 5 million	SDR 5 million			
Slovak Republic	VC, JP	Nuclear installations with nuclear reactor or nuclear reactors serving for energy purposes (during their commissioning and operation)	EUR 300 million	EUR 300 million			November 2016
		Nuclear installations with nuclear reactor or nuclear reactors serving exclusively for scientific, educational or research purposes (during their commissioning and operation), transport of radioactive materials, nuclear materials and spent fuel handling, storage, conditioning and treatment of radioactive waste, any nuclear installations in decommissioning	EUR 185 million	EUR 185 million			
Slovenia	PC, BSC, JP, (RPC), (RBSC)	Nuclear installations	SDR 150 million	SDR 150 million	SDR 25 million	SDR 125 million	November 2016
		Research reactors		SDR 5 million	SDR 170 million		
		Transport activities		SDR 20 million	SDR 155 million		
Spain	PC, BSC, (RPC),RBSC, (VC), (JP)	Nuclear installations	EUR 700 million	EUR 700 million	After depletion of the operator's liability amount and up to SDR 175 million	SDR 125 million	December2017
		Low risk nuclear installations	EUR 30 million minimum	EUR 30 million minimum			
		Transport activities					
Sweden	PC, BSC, JP, (RPC), (RBSC)	Nuclear installations and transport activities	SDR 300 million	SDR 360 million	SEK 900 million	SDR 125 million	June 2017
		Installations for production and storage of un-irradiated uranium and transport activities	SDR 10 million	SDR 12 million			
United Kingdom		Nuclear installations and operator transport activities	GBP 140 million	GBP 140 million	After depletion of the operator's liability amount	SDR 125 million	December 2017

	PC, BSC, (RPC), (RBSC), (VC), (JP)	Low risk installations (e.g. research reactors and nuclear disposal installations)	GBP 10 million	GBP 10 million	and up to SDR 175 million		