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"Going forward into the past:

the resurrection of the EURATOM Treaty"

Pamela M. Barnes.

Author contact details

Pamela M. Barnes,
Principal Lecturer,
Jean Monnet Chair in European Political Integration,
School of Law,
Faculty of Business and Law,
University of Lincoln,
Brayford Pool,
Lincoln.
LN 6 7 TS

Tel 01522 886218 (direct line)
Fax 01522 886032 (Faculty office)
Email pbarnes@lincoln.ac.uk

List of abbreviations used

CT	**Consitutional Treaty**
DG TREN	**Directorate General of the European Commission with responsibility for Transport and Energy**
EAEC	**European Atomic Energy Community**
ECSC	**European Coal and Steel Community**
EEC	**European Economic Community**
ECJ	**European Court of Justice**
EP	**European Parliament**
EPE	**Energy Policy for Europe**
EPR	**European Pressurized Water Reactor**
EREF	**European Renewable Energies Federation**
ESA	**EURATOM Supplies Agency**
ESO	**EURATOM Safeguards Office**
EU	**European Union**
EU 6	**Six founding signatory states**
EU15	**EU Member States (1995 accession)**
EU25	**EU Member States (2004 accession)**
EU27	**EU Member States (2007 accession)**
FP7	**Seventh Framework Programme for Research and Technology Development**
IAEA	**International Atomic Energy Agency**
IGC	**Inter-governmental Conference**
ITER	**International Thermonuclear Reactor**
NATO	**North Atlantic Treaty Organization**
PWR	**Pressurized Water Reactor**
QMV	**Qualified Majority Voting**
RBMK	**Graphite Moderated Light Water Reactor**
RTD	**Research and Technology Development Programmes**
STC	**Scientific and Technical Committee**
TEC	**Treaty of the European Community**
TEU	**Treaty on European Union**

Key words

Commission of the European Communities (European Commission)
Convention on the Future of Europe
Council of Ministers
Electronuclear industry
Enlargement
EURATOM Treaty
European Atomic Energy Community
European Parliament
EU Energy Policy

Table of Contents

Going forward into the past:

the resurrection of the EURATOM Treaty

Abstract

Unless they are timed out, there is a tendency for treaties and the organisations that are associated with them to be recycled and rejuvenated to fit with a contemporary problem. This is because there is so much political effort involved in creating the 'new' that the 'old' continues to appear attractive. In March 2007 the Member States of the EU adopted a new Energy Policy for Europe (EPE). The objective of this strategy is to achieve a secure, competitive, and sustainable and carbon free energy supply for the EU27 – an increasingly urgent objective in the light of high levels of EU dependency on imported energy resources and the impact of energy use on climate change. Energy Commissioner Andris Piebalgs had stated in spring 2006 that the nuclear energy industry should participate in the debate about shaping the new sustainable EPE.

This paper argues that if the EU is to achieve the policy coherence that is a requirement of the development of sustainable and secure energy policy there is an urgent need for reform of the Treaty which created the European Atomic Energy Community (EURATOM) in 1957. In an ideal world the EURATOM Treaty should be repealed. However, the failure to take the opportunity to do so during the Convention on the Future of Europe and the subsequent problems associated with the ratification of the Constitutional Treaty suggest that such radical reform is unlikely for the foreseeable future. The EU's Member States have neither the capacity nor the political will to take the appropriate steps to deal with a Treaty which is based on a traditional statist policy paradigm in contrast to that of market functionality now characterising EU energy policy. Therefore the anomalous EURATOM Treaty will live on and be adapted to meet the regulatory requirements of the nuclear industry in the new millennium.

Going forward into the past:

the resurrection of the EURATOM Treaty

Introduction

In 1957 the European Atomic Energy Community (EAEC) was established on the basis of a Treaty (EURATOM) negotiated between the signatory states which had established the European Coal and Steel Community (ECSC) in 1951 (France, Germany, Italy, Belgium, the Netherlands and Luxemburg). These signatory states also were involved in a more extensive European integration project to establish the European Economic Community (EEC) at the same time as the EAEC. The EAEC had a limited focus. It was established to provide the conditions for the development of nuclear energy in Europe by sharing the resources (financial and technical) required, to provide protection of the workers in the industry and the general public and to enable agreements to be developed with third parties and international organizations on issues relating to supply and peaceful use of the technology. Despite criticisms of the electro-nuclear industry[1] and the relevance of the Treaty which supports it, this 'alien' in the liberalized European energy market celebrated its fiftieth anniversary on March 25th 2007. A rational approach to support the development of a coherent, secure, competitive, sustainable EU energy policy[2] would be to repeal the Treaty but recent events and evidence support the view that this will not happen.

This paper is posing the question - what is it about this Treaty which makes it so durable? Three sub questions underlie the discussion – is the Treaty needed, does the EU have the capacity to repeal the Treaty and does the EU have the political willingness to repeal the Treaty. Whilst the answers to the first two of the questions are somewhat equivocal, the answer to the third question is quite apparent. The EU does not have the political willingness to repeal the Treaty. It may be simply a form of political 'inertia' – this is such an inconsequential issue that it will take too much political effort in return for what will be gained by repealing this Treaty. Or it may be in creating the EURATOM's mechanisms for sharing the competence for action in the electronuclear industry the EU has created a structure which does not intrude on differing national interests. As such it does not pose a 'threat' to national policies which has to be addressed. Additionally as the evidence from some recent developments reviewed in this paper suggests, despite the marked differences in national views about the industry, the Treaty does provide a base which may be used by national governments with highly divergent national nuclear energy policies to develop integrated action. Thus the argument is that the current 'status quo' with regard to the EURATOM Treaty, with a 'separate legal personality' within the European Union, will remain for some considerable time into the future.

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[1] For example that EURATOM is considered to be an undemocratic and outdated Treaty by the European Parliament and an 'alien' based as it is on a paradigm of state intervention in the liberalized energy market by the European Renewable Energy Federation and a 'dinosaur' by members of the German Parliament.

[2] Commission of the European Communities (CEC) (2006)"*Green Paper – A European Strategy for Sustainable, Competitive and Secure Energy"* COM (2006) 105 final, 08.03.2006, Brussels
and CEC (2007) "*An Energy Policy for Europe"* COM (2007) 1 final, 10.01.2007, Brussels.

The paper begins by reviewing the origins of the development of the Treaty before moving to commenting on the discussion of the position of EURATOM as one of the founding treaties of the EU during the Convention on the Future of Europe. The final section of the paper will concentrate on what appears to be the 'value added' to the EU of this Treaty in the twenty first century. The overall conclusion is that this Treaty does not make a significant contribution to the search by the EU for a coherent EU energy policy. It does however provide a legal framework for a group of countries with very divergent views on the electronuclear industry to co-operate on a number of issues considered to be of relevance for integrated action.

European Atomic Energy Community – a difficult 'birth'.

In the early 1950s the European states urgently needed such an access to reliable energy resources in order for the massive reconstruction required in their war torn economies. The desire for peaceful co-operation with their neighbours also dominated the policy agendas of the countries of Western Europe. Coal was the primary energy source in Europe at the time and a major component in the manufacture of steel so committing to policy co-operation in coal and steel production was an obvious mechanism for concrete action in limited areas which would "…substitute for historic rivalries the merger of their essential interests and lay the foundations of a broader and deeper community among peoples long divided by bloody conflicts"[3] But in turning to progress European integration post 1952 a number of controversies were generated as the vested national interests of the individual states proved difficult to reconcile.

The strategy for increased policy integration amongst the signatory states of the ECSC was undermined when the proposals for a European Defense Community were rejected in 1954. On the other hand the ECSC had shown that successful policy integration was possible in two areas – trade and energy co-operation. So a view developed that if national defense policies could not become integrated attention was to be turned to other possibilities. In the resolution following the Messina Conference in 1955 the Ministers of Foreign Affairs of the ECSC Member States had declared that more and cheaper energy policy was fundamental to the economic progress of the European economies. Further adding that, "Before long, the development of nuclear energy for peaceful purposes will open up prospects of a new industrial revolution far beyond anything achieved during the past one hundred years." [4]

The civilian use of the nuclear technologies appeared to be an exciting new development offering an opportunity to re-energize the enthusiasm and impetus for further policy integration and stimulate economic growth. The view held by Monnet, drafting a plan for a Treaty incorporating these ideas, was that the nuclear energy sector was de-politicized. As such it would be open to political integration and the possibilities of supranational

[3] Preamble to the Treaty of Paris, 1951, establishing the European Coal and Steel Community, ECSC.
[4] Resolution adopted by the Ministers of Foreign Affairs of the ECSC Member States at their meeting at Messina on June 1/2nd 1955 paragraph 3.

action. The vision of Monnet and the other proponents of this view was however flawed. Support for the nuclear sector and the EURATOM Treaty in 1957 was born, not from the rational plan for integration which was proposed by Jean Monnet in 1956 [5], but from political compromises brokered during the negotiations of the following year. The national nuclear energy programmes of the time were admittedly haphazard but they were being developed in response to narrow national interests and commercial pressures. The governments were not prepared to pool decision making about national energy policy resources and the choices being made about the energy resources 'mix'. The French government supported the growing electronuclear industry in which France had important business interests. The German and Italian governments on the other hand were looking to forge agreements with the United States to obtain cheap supplies of enriched uranium and US built reactors. In Belgium too strong national preferences for national developments were expressed. Thus supranational action was constrained as the signatory states were not prepared to open their national industry to the possibility of 'interference'.

The Preamble to the Treaty did indeed point to wider objectives and its contribution to European integration by "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". But the outcome of the 1956/7 negotiations was that the main terms of the Treaty founding the European Atomic Energy Community were limited. The specific objective of the European Atomic Energy Community was clarified as raising the standards of living in its member states "….by creating the conditions for speedy establishment and growth of nuclear industries". To achieve growth in the nuclear sector would be costly as it was new technology and would need a great deal of investment. It was not investment which the individual member states of the EAEC could afford to make on their own. But if all the states worked together to integrate their nuclear energy policies and shared the costs, all would benefit from the "…prospect of achievements commensurate with the creative capacities of their countries." (Article 1, EURATOM). Promotion of the electronuclear industry was to be accomplished through the promotion of research and the dissemination of the information gained as a result. Competence for the management of some aspects of resource supply and some safety related issues was also to be transferred to the Community. The safety of the nuclear installations themselves was to remain within the competences of the national government.

Overall the Treaty conformed to a traditional statist model of intergovernmental agreement for action in a limited sectoral policy area. It was much narrower in focus than the European Economic Community Treaty (EEC), also signed at the same time. Moravscik going so far as to describe the Treaty as "… a 'smokescreen' for the more controversial customs union" [6]. The role for the General Assembly [7] of the EAEC was minimal. As a consequence of no substantial changes being made to the Treaty since

[5] Report to the Committee established under the chairmanship of Paul-Henri Spaak to 'relaunch' the European Project following the failure of the European Defence Community.
[6] Moravscik A (1998:120) "*The Choice for Europe"* Cornell University Press.
[7] As a result of the Merger Treaty in 1967 the institutions of the three 1950s communities were merged, including the General Assembly of the EAEC, with those of the ECSC and the EEC, becoming the European Parliament

1957, the European Parliament continues to have a minimal role. Furthermore, the objective of promotion of nuclear energy appeared to be contradictory to the objective of promotion of use of coal supported in the ECSC Treaty. The terms of the Treaty were to facilitate investment in the nuclear industry. As the electricity utilities were predominantly state owned in the 1950s this was in effect to agree to a considerable degree of state aid going to the developing industry.

The EURATOM Treaty conferred on the EAEC the sole rights of option and ownership of all fissile material being used for civilian purposes creating a nuclear common market for trade in nuclear ores and materials within the EU so that sufficient supplies would be available for Community users (Chapter IV EURATOM). [8] The provisions of the Treaty brought international agreements and co-operation to the European Commission's competence as a necessary element of the common supply of the raw materials for the industry. The EURATOM Treaty also provided the basis for the free movement of the staff, capital and services required in the nuclear sector. The supranational action was limited and exclusive Community competence for action focused on eight main areas which were outlined in Article 2 with prominence being given to safety of the workers in the industry and the public in the areas surrounding the nuclear power plants.[9] A notable omission from Article 2 were measures to ensure safety of the nuclear installations themselves. These remained within the competences of the national governments and

[8] The EURATOM Supplies Agency (ESA) was established on June 1st 1960 to ensure the equitable and regular supplies of nuclear ores and fuels for the EU's nuclear utilities (Chapter IV EURATOM Treaty). The Agency is a common supply agency for ores, source materials and special fissile materials and under the supervision of the European Commission. Currently this is within DG TREN. However "The Supplies Agency exists, but is a mere shadow of what was intended" (European Parliament (2002:xiii) "*The EP and the EURATOM Treaty: past, present and future*", Energy and Research Paper ENER 114, European Parliament. In 2006 the ESA had merely 10 employees. As the EU is highly dependent on imported uranium supplies then the ESA arguably has a role to play in the future in monitoring imports.

9 Article 2 EURATOM In order to perform its task, the Community shall, as provided in this Treaty:

a. promote research and ensure the dissemination of technical information;

b. establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied;

c. facilitate investment and ensure, particularly by encouraging ventures on the part of undertakings, the establishment of the basic installations necessary for the development of nuclear energy in the Community;

d. ensure that all users in the Community receive a regular and equitable supply of ores and nuclear fuels;

e. make certain, by appropriate supervision, that nuclear materials are not diverted to purposes other than those for which they are intended;

f. exercise the right of ownership conferred upon it with respect to special fissile materials;

g. ensure wide commercial outlets and access to the best technical facilities by the creation of a common market in specialised materials and equipment, by the free movement of capital for investment in the field of nuclear energy and by freedom of employment for specialists within the Community;

h. establish with other countries and international organizations such relations as will foster progress in the peaceful uses of nuclear energy'.

authorities. But the European Commission was given considerable power and autonomy in the implementation of the action identified for supranational competence.

The creation of the European Atomic Energy Community was not a commitment by the national governments of the six signatory states to any form of co-operation on the military use of nuclear technology. The underlying political philosophy for the creation of the EAEC was a search for peaceful co-operation not collaboration so that weapons of war could be developed. The underlying political realities of the 1950s were dominated by reluctance of national governments to proceed with strategic and military integration in a context other than North Atlantic Treaty Organization combined with on-going military actions involving national forces outside the European region. The EURATOM Treaty therefore contained measures to ensure that the fissile materials being used in the nuclear power plants of the EAEC were being used for peaceful purposes. The EURATOM Safeguards Office (ESO) was established to deal with measures to ensure all EU states do not divert or acquire materials away from their intended and declared uses (Chapter VII EURATOM). The ESO is now based under the supervision of the European Commission (DG TREN)[10] with more robust mechanisms in place and a much clearer role and mandate than the ESA now has.[11]

A range of safeguards have since been developed within the framework of the EURATOM Treaty, monitored by the ESO, to ensure that materials being used in the electronuclear industry are not diverted for military purposes. They include measures which are applied to power stations, fuel fabrication and re-processing plants. The type of safeguard measures applied will vary, depending on the nature of the nuclear facility but they include audits of material use, analysis of the use of materials, surveillance and on-site inspections. For example a power station where there is on-site spent fuel storage will be subject to audits of materials, containment and surveillance measures, including closed circuit TV monitoring, and random re-verification procedures to ensure that the identified stocks of materials are still present on site.

The electronuclear industry is also subject to action based on the articles of the European Economic Community (EEC) Treaty. Electricity is a product which may be moved within the integrated market, irrespective of how it is generated. During the 1990s and early 2000s legislation has been adopted to liberalize national markets in electricity and thus reduce prices for domestic, commercial and industrial users by enabling competition to take place. Although trade in electricity within the EU remains relatively limited, these

[10] DG TREN was formed in 1999 by a merger of the former DG VII (Transport) with DG XVII (Energy) and the unit for Nuclear Safety of DG XI (Environment, Nuclear Safety and Civil Protection). In the European Commission 2004-2009 two Commissioners held the portfolios for Transport, Jacques Barrot, and Energy Andris Piebalgs. (Two directorates responsible for nuclear policy, nuclear safeguards and radiation protection within DG TREN are not based in Brusssels but in Luxemburg).

[11] In 2002 a High Level Expert Group was established to report on the effectiveness of the ESO as the terms of the EURATOM Treaty had not been revised since 1957. The findings of the Group were that the ESO should remain the focus of EU wide controls for both practical and legal reasons. "The EURATOM Treaty being a "…remarkable document that expresses the essential commitments of the parties in a flexible and forward-looking language" (CEC 2002:7) *High Level Expert Group Review of the EURATOM Safeguards Office.*

developments have increased the pressures to ensure interoperability of national transmission networks. As a consequence a number of issues not referred to in the EURATOM Treaty such as safe management and disposal of radioactive waste are gaining in prominence on the policy agenda of the EU. The results of public opinion surveys conducted by the European Commission show that 53% of the Europeans perceive nuclear power as more of a risk than an advantage with lack of confidence in the safe disposal of radioactive waste, the protection of radioactive materials against misuse and fear of terrorist attacks on nuclear facilities featuring amongst a high proportion of respondents concerns.[12]

The resilient 'alien'

The EURATOM Treaty has shown remarkable resilience to remain substantially unchanged throughout the history of the EU.[13] This is despite radical changes to the other Treaties founding the European Economic Community and the European Coal and Steel Community In addition from the 1970s, and following the impact on the European economy of the global oil price crisis, the EU has adopted an energy policy which is increasingly based on the underlying paradigm of market functionality. A Treaty based as it is on a high level of state support for an energy sector appears to be no longer relevant in such a scenario. But no significant proposals to repeal or amend the Treaty have been made.

There was a lack of confidence in the effectiveness of the Treaty's mechanisms in the late 1980s during a period of doubt about the industry and its safety (most notably raised by the Chernobyl disaster of 1986). Although some discussion of the continued usefulness of the Treaty did take place then no moves were made to abolish or amend the EURATOM Treaty. It may have been because it appeared to be of little consequence for most Member States, apart from France, and would have taken too much political effort to change for little gain in most instances. Or it may have been that the mechanisms for sharing the competence for action in the electronuclear industry the EU had created a structure which did not intrude on the national interests. As such it did not pose a 'threat' to national policies which had to be addressed. Certainly the Treaty, and the action taken by the EU states within the context of international agreements on safety standards, had provided the basis for a comprehensive safety regime in the reactors in Western Europe which was not present in those of Soviet design and control such as those used at the Chernobyl nuclear power plant.

Responding to public concerns, licensing of the construction of reactors declined and closures of some units were initiated during the 1990s. The economics of the industry had altered and it appeared that the electronuclear industry was no longer viable because of

[12] CEC (2007) "*Europeans and Nuclear Safety*" Special Eurobarometer Report 271, February 2007.
[13] The Merger Treaty of 1967 merged the institutional structures of the ECSC, the EEC Treaty and the EURATOM Treaty but did not change the provisions of any of the Treaties. In contrast the ECSC Treaty expired in 2002 and the EEC Treaty has been subject to successive changes (the Single European Act, 1987, the Treaty on European Union (TEU), 1993, and the amendments of the Treaty of Amsterdam, 1999, and Nice, 2003).

the heavy investment costs required in the construction of the nuclear power plants. For some opposing the nuclear sector it appeared that the market was operating and would ensure the 'death' of the industry. However despite reactor closures, newer technology developments in those which remained increased the efficiency levels of the operating reactors. The result was that by the early 2000s the electronuclear industry was able to provide one-third of the electricity being used within the EU15, with the EU 25 being by 2005 the world's largest nuclear electricity generating region. [14]

In 2002 the European Parliament had concluded that the Treaty was out-dated, undemocratic and biased towards the electronuclear industry and proposed that the Treaty should be phased out at the same time as the ECSC Treaty was due to expire. More recently the objectives of EURATOM Treaty have been castigated as it "…carries the stigma of an undemocratic, outdated alien in the world of the liberalized market". [15] These criticisms of lack of democracy come from a number of aspects of the Treaty provisions. They primarily relate to the unchanged nature of the Treaty which dates from the period prior to the introduction of direct elections to the EP in 1979. As a consequence of this there is no requirement for the Council of Ministers to do anything more than formally consult the EP on substantive issues. Under the provisions of the EURATOM Treaty the unelected European Economic and Social Committee (EESC) and the Scientific and Technical Committee (with a membership nominated by national governments) have similar formal rights of consultation as the European Parliament. Article 101 EURATOM excludes the EP from involvement in international agreements based on its terms. Yet the EP is co-budgetary authority for all the expenditure which is based on the Treaty.

EURATOM legislation is subject to vote by qualified majority (QMV) in the Council of Ministers, but not to the co-decision procedures. In other areas of action covered by the provisions of the Economic Community (TEC) there have been substantial changes made to the role of the EP which now has the power to act as co-legislator with the Council on a considerable number of market related issues which have an impact on the electro-nuclear industry. As there are a number of safety related issues considered of importance to the public the EP view is that "(I)t can be plausibly argued that it is precisely in these areas …..relating to safety that the public most feels the need for rigorous democratic scrutiny, control and accountability" [16] and thus supporting more opportunity for the EP to perform an active role in the EAEC decision making process.

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[14] CEC (2006:3) "*Nuclear Illustrative Programme*" COM (2006) 844 final, Brussels.
[15] Fouquet D (2005) *"The Legal Perspective: the EURATOM Treaty and the new Constitution"* presentation to Energy Intelligence for Europe conference, 23 September, Copenhagen 2003, http://www.energyintelligence for Europe.dk
[15] EP (2002:2)
[16] European Parliament (EP) (2002:2*) The EP and the EURATOM Treaty; past, present and future*. Energy and Research Paper ENER 114, European Parliament.

The Convention on the Future of Europe and EURATOM

The most recent debate about the founding [17] Treaties of the EU was that of the Convention on the Future of Europe in 2002 and 2003. The Convention was an innovative format for the discussion of Treaty changes. Legally the outcome of the Convention would require the convening of an Intergovernmental Conference of the Heads of Government of the EU States to decide on any proposals for change. But the Heads of Government of the EU Member States "…had through an ingenious blend of ambition and ambiguity left the objective of the Convention entirely open-ended. If the Convention wished to do so, it could change the face of the Union, or create the impression that it has changed or perhaps merely tinkered at the edges."[18] Given the timetable which the Convention was required to work towards, merely 18 months, it is both surprising how much was accomplished and unsurprising that Valery Giscard d-Estaing, as Convention President, and Jean-Luc Dehaene and Guiliano Amato, as his deputies, should have directed the deliberations in the way in which they appear to have done.

Although identified as one of the four founding Treaties, little attention was paid to the EURATOM Treaty during the Convention. Certainly it appeared to have little time devoted to deliberations about its articles. The approach which was initially favoured by Giscard d-Estaing was to make only minor technical adjustments to the Treaty and 'import' its the articles wholesale into the Constitutional Treaty. This however prompted disagreement from a number of Convention delegates and environmental groups. The major objection to the inclusion of the EURATOM Treaty in the Constitutional Treaty centred on a view that by including it in body of the Treaty, supranational action by the Union would be extended to areas over which national governments would not want interference (ie the choice of energy resources). It would also seem to introduce an obligation for all Member States of the EU to introduce nuclear power plants and reactors.

Despite not devoting much time to the EURATOM Treaty the Convention did consider a number of alternative scenarios for the EURATOM Treaty some of the main ones being discussed below. They included repeal of the Treaty, additions to the Treaty and/or simplification of its terms. Convention Working Group III considering the EU's Legal Personality, was charged with the responsibility to determine what the consequences would be of explicit recognition of the legal personality of the EU and of a fusion of the legal personalities of the EU and the European Community. The Working Group concluded in their Final Report that merging the EURATOM Treaty with the TEU was subject to the same rationale as that being adopted for the merging of the pillars of the TEC and the TEU and would allow provisions of the Treaty which were similar to articles of the TEC to be deleted. However as there were certain specific problems

[17] These were identified as the European Coal and Steel Community Treaty, the European Community Treaty, the EURATOM Treaty and the Treaty on European Union

[18] Milton G and Keller-Noellet J (2005:30) "*The European Constitution – its origins, negotiation and meaning*", John Harper Publishing

relating to the EURATOM Treaty it was felt that the implications of the merger of the Treaty should be investigated in more detail. [19]

Amongst the more controversial of the objectives of the EURATOM Treaty is that of support for the electronuclear industry. State aid to industry is carefully monitored and controlled by the TEC yet it is actively encouraged for the industry through the terms of the EURATOM Treaty. Merging the EURATOM Treaty had the potential to resolve some of the criticisms made of the contradictions of maintaining a Treaty supporting a particular sector of the energy industry in an increasingly liberalized energy market. The essential thrust of another proposal which came from an alternate group of Convention members (the 'Nagy' proposal), was for repeal of the Treaty which had as its main objective the maintenance of a 'special economic zone' for nuclear power [20]. It was proposed by the 'Nagy' group that the timetable which the EP had outlined in 2000 to phase out the Treaty by 2007 (ie giving it a lifespan of 50 years as the ECSC Treaty) should be followed. As this timetable would also coincide with the beginning of the EU's Seventh Framework Programme of Research and Technology Development (FP7) (2007-2013) it would enable changes to be made to the allocation of funding for nuclear technology research. However this group did also propose that the nine key functions remaining of the Treaty (including health and safety, safeguards and investment) should be transferred to Part III of the Constitution dealing with the Policies and Functioning of the Union.

The group considered that the lack of consensus amongst the Member States of the EU with regard to nuclear energy made it politically unacceptable to maintain the Treaty. This was based on the view that there had been consensus on the nuclear sector in 1957, and that as the consensus was no longer apparent in the 2000s the Treaty should be repealed. Given the difficulties surrounding the agreement on the terms of the Treaty in 1957 it is difficult to accept this as a credible view and therefore as a rationale for repeal of the Treaty. National self interest in 1957 had created a difficult policy environment and consensus was difficult to achieve on anything more than limited action. The divergence of views of the EU's Member States towards this energy source appears to be the broad in 2007 – ergo it would be difficult to agree to supranational action on such a controversial aspect of national energy policies.

The 'sunset' clause was one favoured by some of the Convention members, some Member States (notably Austria and Ireland) and some of the non-governmental organizations [21] which had campaigned during the Convention in support of the repeal of the Treaty. The 'sunset' clause was based on the 2002 proposal of the European Parliament for the EURATOM Treaty to expire after 50 years (ie in 2007), using the model adopted for the ECSC Treaty. This proposal differed from the 'Nagy' proposal

[19] Secretariat of the European Convention (2003), *Suggested Approach for the EURATOM Treaty*, CONV 621/03 Brussels, 14th March

[20] Secretariat of the European Convention (2003) Contribution made by Ms Marie Nagy, Ms Renee Wagner and Mr Neil McCormick "*The Future of the EURATOM Treaty in the framework of the European Constitution*" CONTRIB 250, CONV 563/03, Brussels. 18th February.

[21] Greenpeace activists going so far as to leave 15 barrels of fake radioactive waste at the doors of the EP building in Brussels during the final session of the Convention, 9th July 2003.

which also advocated using the EP's timetable as it's basis was for the Convention to recognize that the EURATOM Treaty was out of date but to leave the work of deciding what should be done instead to a subsequent intergovernmental conference.

In the proposal which came from Convention member Klaus Hansch a number of options for the future of the EURATOM Treaty were considered which ranged from a 'spring clean' of the Treaty, additions to the Treaty and repeal of the Treaty [22] Amongst the options also considered by Hansch was that of the conversion of the EA into an energy treaty with the addition of articles relating to renewable energy resources to provide the EU with the legitimacy to deal with climate change policy. It would also give the EURATOM Treaty "…with its at times old-world air, a new modernity and purposefulness" [23]. A note of caution was however sounded about the repeal of the Treaty in that this might result in a re-nationalization of nuclear energy policy and make co-ordination between Member States on waste disposal or safety issues more difficult.

A task force, convened by Francois Lamoureux, the Director General of DG TREN, presented a proposal for an Additional Act to be added to the Constitution on the Peaceful Use of Atomic Energy (this proposal was known as the 'Penelope Paper'). The proposal was based on a view that a European Constitution could be developed without the EURATOM Treaty included in its provisions. The Penelope paper presented an "Additional Act to the Constitutional Treaty on the peaceful use of Atomic Energy". The objective of the Penelope paper was to make the Treaty more compatible with the EU's electricity market. The main thrust was to simplify the Treaty by identifying and removing those provisions which duplicated those in the Treaty of Economic Community particularly those relating to promotion of research, dissemination of information and on the institutions and external relations. It was also proposed to remove certain provisions on right of option on uranium ores and property ownership which were and continue to be considered to be obsolete as "…the internal market for uranium is a completely dead chapter…" Commeau-Yannoussis N (2005) [24]

The Penelope Paper proposals also sought to address the inconsistency of the role of the EP between the EURATOM Treaty and the TEC and supported the extension of QMV and co-decision to nuclear energy policy proposing that "…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". [25] This continues to be the view of the European Commission "…the first and the most important in many ways would be to give the EP a greater role rather than just a consultative one. Make more decisions, co-decisions with a qualified majority voting for more issues". [26]

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[22] Secretariat of the European Convention (2002) Contribution made by Mr Klaus Hansch "*The Future of the EURATOM Treaty*" CONTRIB 121 , CONV 344/02, Brussels. 14th October.
[23] CONV 344/02:4
[24] Commeau-Yannoussis N (2005) Speech presented at "*The EURATOM Treaty and future energy options*" Conference organised by NOAH, Friends of the Earth, Denmark, held at the Danish Parliament building, Christiansborg, Denmark 23rd September 2005.
[25] The "Penelope Paper" first premlinary draft submitted to the Convention on the Future of Europe, prepared by task force led by Francois Lamoureux, Director-General DG TREN
[26] Official of DG TRENin correspondence with the author, July 2005

Some of the Treaty provisions which were identified by DG TREN as still of value included those on the setting of safety standards for health and safety (but bringing in the safety of nuclear installations) [27], the provisions on investment in , joint undertakings and the safeguards measures to ensure that nuclear materials in the EU states were not diverted from their intended uses as declared by the users. These measures were to remain subject to supranational action and the established role of the European Commission to monitor and report and in some cases approve of national measures. The proposals on the simplification of the Treaty and the attempts to ensure that there were no overlapping areas with the TEC were realistic and pragmatic in nature. However in other areas particularly as the supranational authority to take the lead on matters of security and safety the autonomy of the European Commission remained unaltered in this proposal.

Of the alternative proposals for the EURATOM Treaty the option proposed by Klaus Hansch to repeal the Treaty and subsume its articles into an Energy Treaty or Treaty chapter is the one which would make the most effective way contribution to the EU's goal of a competitive and sustainable EU Energy Policy. Whilst climate change continues to generate debate amongst many groups about its impact and the speed at which it is taking place two realities are evident – one is that climate change is taking place and the second is that energy resources and their use play a significant part in producing those gases which appear to be damaging to the environment. Energy Policy has a key role to play in any strategy to achieve the objectives of sustainable development and economic growth to which the EU is committed.

However it was not considered appropriate to substantially amend the Treaty or to change its nature from that of primary legislation[28] during the Convention. The EURATOM Treaty was regarded by the Praesidium of the Convention as a distinct, complex and technical subject which it was not appropriate for the Convention to consider. This view went unchallenged by most members of the Convention. As Andrew Duff, a Convention member, concluded "Given the essentially controversial nature of nuclear power but also because of lack of time the Convention was unable to reach consensus on whether to repeal, assimilate or amend the EURATOM Treaty." [29]

Instead it was decided to incorporate any changes which were required for the EURATOM Treaty into a Protocol annexed to the Constitutional Treaty.[30] The changes were quite small and related mainly to the adaptation of the Treaty to the new rules for institutional and financial arrangements. The Treaty's legal 'personality' remained unchanged. The limited role of the EP in the decision making process was also unchanged. In addition to the Protocol to amend the Treaty a Declaration was also

[27] "Each Member State shall lay down the appropriate provisions ….to ensure compliance with the basic standards which have been established. The Commission shall make appropriate recommendations …..including those regarding the safety of installations" Article 3 Additional Act to the Constitution No " Peaceful Use of Atomic Energy – the 'Penelope Paper'.
[28] Secretariat of the European Convention (2003:paras 2,5b (ii), *Suggested Approach for the EURATOM Treaty.* CONV 621/03, Brussels, March 14th.
[29] Duff A (2006:167), *The Struggle for Europe's Constitution,* Federal Trust.
[30] Protocol amending the EURATOM Treaty CONV 850/03:236

appended to the Constitutional Treaty. This Declaration on behalf of the States of Germany, Ireland, Hungary, Austria and Sweden noted that the EURATOM provisions had not been altered since 1957 and supporting the idea of an inter-governmental conference to review it as soon a possible [31]. But not all the Member States with criticisms of the EURATOM Treaty signed the Declaration, Denmark being a notable exception. (Denmark is a state with a strong anti-nuclear policy where there has been significant investment in the development of alternative renewable sources of electricity generation particularly in wind power development). During the IGC which followed under the Italian and Irish presidencies it was evident that deliberations about the EA would not be included in the discussions. In the Irish White Paper on the European Constitution published in June 2005, following the IGC it was concluded that "….At the IGC, while Ireland and some other Member States proposed a more extensive debate on EURATOM it was clear that there was no consensus in support of this" [32]

This outcome for the EURATOM Treaty was not unexpected from the Convention or the IGC. The EURATOM Treaty was framed as a traditional statist model Treaty based on intergovernmental action. Divergent national interests and policies remained at the heart of the debate in the Convention. The Treaty was not part of the pillar structure of the Treaty on European Union which was under scrutiny by the working groups of the Convention. It could not be used to identify the core values of the Union which the citizens of the EU could appreciate. It is addressing issues in a narrow field of economic activity. The Convention on the Future of Europe was not an intergovernmental conference of the type convened in the past by the national governments of the EU to amend the Treaties. Instead, it "….was a conscious effort to encourage a debate with all sections of society. It is difficult to conclude that the content of this debate had any major influence on its outcome. But it had a symbolic impact in that it demonstrated the determination of Europe's leaders to break with the past, there was to be no more secret diplomacy; instead the people were being consulted not just at the end of the process but throughout". [33] But the EURATOM Treaty is dealing with a particular sector of industry which is reluctant to engage in open debate and so unwilling to engage with the approach being advocated in the Convention format.

The evidence from the debate during the Convention and the lack of willingness of the Member States of the EU to deliberate changes or repeal of the Treaty demonstrates how difficult it would be to negotiate an alternative. The electronuclear industry is a divisive issue on which it is difficult to reach agreement amongst the Member States. Support for the continued existence of the Treaty is also split amongst the EU's Member States. Competence for the EU and the EU's institutions in energy policy is the subject of difficult and highly political debate. In turn this has created a difficult and crowded policy environment in which to develop an EU nuclear energy policy. The variables of the energy policy environment of the 2000s do differ from those of 1957 but the outcome is the same – divergent national policies which are difficult to reconcile.

[31] Declaration 44 annexed to the Constitutional Treaty
[32] Irish Government (2005:92) *The European Constitution – White Paper*, Dept of Foreign Affairs, June
[33] (Milton G and Keller-Noellet, 2005:26).

The new Energy Policy for Europe and the nuclear 'option'.

The energy system of the European Union is reliant on fossil fuels which because of the intensity of their usage have had major detrimental impacts on the environment. The European Union is heavily dependent on imported supplies of the fossil fuels needed to meet its growing energy demand. An increasing element of this demand is being met by the use of renewable sources of energy which have the advantages of being indigenous and less damaging to the environment. However the evidence would suggest that the renewable technologies are not able to match the growing demand for energy – a demand which is not solely within the EU but is global as more than 2 billion people remain unable to access a secure supply of electricity with all the attendant problems which this brings. Increased global demand for energy will impact on the resources which the EU and the developing world are increasingly competing for. It is in this context that governments and the EU in recent years have looked with more interest at the benefits of the nuclear option.

In March 2006 the European Commission launched the debate about how the European Union was to achieve the competitive, sustainable and secure energy policy which is required for the future. During the debate which ensued between March 2006 and March 2007 it was evident that the national governments of the EU continue to 'jealously' guard their competence to choose their national energy policies, particularly their rights to choose the mix of energy resources which they use.[34]. There is determined opposition to the nuclear sector from states such as Austria, opposition which has continued since the 1980s. In other EU states nuclear electricity is the most cost effective (Slovakia), widely used (France) and provider of 50% of electricity needs (Belgium, Sweden).

Inability to meet demand with alternative sources was a major factor in the decision of French and Finnish governments in the period 2005-2007 to commission new reactors and for the Lithuanian, Latvian, Estonian and Polish governments to enter into discussion for a joint project to build a new reactor at the Ignalina site in Lithuania. Bulgaria and Romania, acceding to the EU in January 2007 have a high level of dependency on the electronuclear industry and so support its continuance. Italy which phased out its nuclear power plants following a referendum in 1987, is in a somewhat ambivalent position with regard to the electronuclear industry. The country is the world's largest importer of electricity from a variety of sources, including from nuclear generation. The Italian state-owned utility ENEL has a 12.5% stake in a new reactor being constructed in France and its subsidiary Slovenske Elektrame operates nuclear reactors in Slovakia. (see also Annex 1)

During the Brussels European Council, March 8th/ 9th 2007 the European Commission presented an Action Plan for an Energy Policy for Europe which would achieve the aims of increasing the security of energy supply, ensuring the competitiveness of European economies and the availability of energy and at the same time promoting environmental sustainability and combating climate change. This Action Plan was accepted by the

[34] CEC (2006) " *Green Paper – A European Strategy for Sustainable, Competitive and Secure Energy*" COM (2006) 105 final 08.03.2006, Brussels.

European Council and accompanied by some ambitious targets to achieve curbs in greenhouse gas emissions the European Council "…emphasizes that the EU is committed to transforming Europe into a highly energy-efficient and low greenhouse gas emitting economy"[35].

Whilst it is acknowledged in the Energy Policy for Europe Action Plan [36] that no single element of policy provides all the answers and that energy policy must be addressed by many different policy areas there appears to be growing support for the use of nuclear energy. "It is for each Member to decide whether or not to rely on nuclear electricity…in the event that the level of nuclear energy reduces …it is essential that this reduction is phased in with the introduction of other supplementary, low-carbon energy sources….otherwise the objective of cutting GHG emissions and improving security of energy supply will not be met….In the current energy context, the IEA expects the world-wide use of nuclear power to increase" [37]. In addition the industry representatives have identified "A new spirit of realism has forced governments to acknowledge that nuclear energy offers the best chance of combating climate change and ensuring the secure supply of electricity that the world craves." [38]

In this context the economic benefit of maintaining and developing the EU's technological lead in this field is also highlighted in the EPE. At EU level a role is identified "….to develop further, in conformity with Community law, the most advanced framework for nuclear energy in those Member States that choose nuclear power, meeting the highest standards of safety, security and non-proliferation as required by the EURATOM Treaty…."[39]. Further "Recalling that the EPE will fully respect Member States' choice of energy mix the European Council notes the Commission's assessment of the contribution of nuclear energy in meeting the growing concerns about safety of energy supply and CO2 emissions reductions while ensuring that nuclear safety and security are paramount in the decision-making process, confirms that it is for each and every Member State to decide whether to rely on nuclear energy and stresses that this has to be done while further improving nuclear safety and the management of radioactive waste…." [40]. Views which were endorsed by the European Parliament which "Considers it vital that the European energy strategy should be based on maximum subsidiarity and that decisions concerning the energy mix should remain the prerogative of the EU member states". [41] But "Urges the Commission to investigate the development of nuclear energy in Member States, taking account of both the benefits of that technology (low volatility of production costs and no CO2 emissions) and the risks linked to the existence of nuclear power stations (failures and waste disposal)"[42].

As these statements are also coupled with proposals to establish an EU High Level Group on Nuclear Safety and Security and enhanced co-operation with the International Atomic

[35] Council of the European Union (2007:para 32) Presidency Conclusions, Brussels European Council 8/9th March 2007
[36] CEC (2007:18) "*An Energy Policy for Europe*" COM (2007) 1 final, Brussels, 10.01.20
[37] Ibid CEC (2007:18)
[38] European Nuclear Society (2006) , "e-News" , Issue no.12, April http://www.euronuclear.org/e-news
[39] Ibid CEC (2007:18)
[40] Brussels European Council (2007: para 11) 8/9th March, Presidency Conclusions
[41] European Parliament (2006;para 31) *Report on a European strategy for sustainable, competitive and secure energy – Green Paper* Committee ITRE raporteur, Eluned Morgan. Final A6-0426/2006.
[42] European Parliament (2006;para 50)

Energy Agency (IAEA)[43] on issues such as non proliferation and nuclear safety and security it would appear that support is continuing for the nuclear industry and the EURATOM Treaty within the EU.

Value 'added' of the Treaty?

So to return to the question - why has EURATOM Treaty, an undemocratic and outdated alien in the liberalized energy market of the European Union proved to be so durable. Is it because the EU's national governments lack the political willingness to repeal the Treaty? Yes undoubtedly, but this seemingly simple answer encompasses a number of motivations including those of other actors in the political process in particular the European Commission and the electronuclear industry itself. It is also based on significant controversies within the national energy policies of the EU's Member States which would be as difficult to resolve in 2007 if a Treaty on supranational action on nuclear energy policy was broached as it was in 1957. But the urgency to meet the challenges facing the EU in developing a secure, competitive and sustainable energy policy are greater in 2007 as the EU is operating in a very different geo-political and geo-economic world.

The EURATOM Treaty forms part of the 'energy acquis' of the EU which all states accept on their accession. It would be legally possible for a Member State to withdraw from the European Atomic Energy Community as it continues to have a separate legal personality from that of the European Union. However in practical terms this may prove to be difficult. The Merger Treaty in 1967 brought together into a single set of institutions the work of the three Communities and thus gave the European Commission a considerable element of autonomy of action in the area of nuclear safety and protection of health. This has been developed into what is considered by the IAEA to represent a high level of safety which does not require duplication of effort in order to monitor what is done within the EU's Member States. In order to meet their international obligations in the absence of the mechanisms of the EURATOM Treaty the EU's Member States would be required to initiate alternative mechanisms.

There is no provision made in the EURATOM Treaty for the withdrawal of a Member State from the EAEC. If a Member State wished to do so this could only be achieved with through a re-negotiation and ratification of the Treaty by all its signatories. The events surrounding the Convention debates and the interest amongst some Member States of the EU in preserving the nuclear 'option' in their national energy policies demonstrates how difficult re-negotiation of this Treaty would be. The EURATOM Treaty does provide a legal framework for action in areas where these differences may make it impossible to establish co-operation both within the EU's Member States and with the broader international community where many concerns about the nuclear sector are also evident. There thus appears to be 'value added' for the European Union from the continued existence of the EURATOM Treaty. In the light of the lack of political willingness to

[43] The International Atomic Energy Agency (IAEA) is an independent international organization reporting to the General Assembly and the Security Council of the United Nations on issues surrounding the compliance of states with their obligations with regard to nuclear safeguards. It was established in 1957.

make changes it is perhaps better to have this Treaty with all its flaws than no Treaty at all.

A number of categories of 'risk' have been identified in association with the nuclear sector which are discussed below. They include the cost of the technology and in particular de-commissioning of the large number of now-ageing European reactors, safety (including safe operation of reactors, prevention of accidents, safety in the context of terrorism attack at nuclear power plants), waste disposal, in particular long term management of waste and the possibilities of nuclear weapons proliferation if the use of nuclear technology is increased.

a) No technology is the cheapest in all situations

To turn to the issue of costs first, it is evident is that none of the most commonly used technologies is the cheapest in all situations – there is both room and need for coal, gas and nuclear to be utilized [44] The economics of the electro-nuclear industry, long considered to be the major obstacle to its development, appears more favourable in 2007 in comparison with the increasing costs of other energy sources. (c.f Annex 2). The cost of generation of electricity depends on a number of factors including the location of the plant, the price of the fuel used (apart from that for some renewables), the costs of labour in the industry and the costs of borrowing to pay for the construction of the required power plant. Unlike other major producers of electricity, coal and natural gas, nuclear prices are not determined by fluctuations in price of the basic raw materials. The price of nuclear electricity is mainly from the capital costs needed for the nuclear power plants. An advantage of the electronuclear electricity for the consumer is the stability of price and availability which may be assured. In combination these factors have led to a significant growth in support for the nuclear sector which is further enhanced by concerns about the rising price for oil and natural gas.

The EURATOM Treaty is based on the paradigm of a high level of state support for the development of the new technologies because of the high costs entailed. As such the Treaty supports what is an out-dated concept in EU energy policy where the paradigm of market functionality appears to have replaced it. The argument of this paper is not that it is desirable to maintain this support for the electro-nuclear industry. Rather the argument is that in the light of a number of practical issues with regard to the provision of alternative sources of energy a pragmatic decision has to be taken about the use of the technology. The costs of the renewable and other alternative sources of low carbon energy remain high, the nuclear option is therefore considered by many national governments as the way forward to meet their national energy demands (c.f Annex 1).

Whilst there is strong support for the completion of the internal markets for gas and electricity through the adoption of market opening Directives and Regulations the accompanying measures needed to ensure that this happens appear also to require high levels of state funding. This is particularly the case with regard to measures to increase interconnectivity of the infrastructures needed to transfer energy within the integrated

[44] NEA/IEA (2005:81) *Projected costs of generating electricity – 2005 update*, Joint report, OECD Paris.

European energy market. There is also strong support for what is considered to be an 'ambitious' programme of energy efficiency measures at local, regional, national and EU levels [45] as outlined in the Commission Action Plan of 19th October 2006. [46] A great deal of state aid is required in order to advance the renewable technology and energy efficiency developments. It appears somewhat contradictory to castigate, in the interests of the market, support to the electro-nuclear industry and not to these other aspects of energy policy developments.

b) Safety related issues

Safety issues surrounding the nuclear sector became particularly prominent on the EU's policy agenda in the early 1990s as the prospect of enlargement to states of the former Soviet Union in Central and Eastern Europe became more realistic. Many of the reactors at the nuclear power plants in the candidate states were based on similar, graphite moderated light water reactors (RBMK) to those the nuclear power plant in Chernobyl. The Chernobyl explosion in 1986 had been the result of a combination of 7 examples of human error. However other problems were evident in the Chernobyl type reactors as the safety standards appeared to have been sacrificed to the needs of building reactors which would serve dual purposes and have the potential to meet both military and civilian needs. In addition to this the political structures in the former Soviet Union left great concerns about the failures of staff in the nuclear power plants to have developed an overall safety culture.

Once the formal application and accession process was begun the prospective new member states were the subject of intensive review by the EU's institutions of all areas of their economic and political development to determine if they fulfilled the core requirements and conditions of membership. Amongst these was the overall objective of bringing the nuclear reactors operating in the candidate states to the same standards of safe operation as those operating in the existing member states. A mandate was given to the Commission, and in particular the personnel of DG TREN, which enabled them to play a unique lead role in the investigation, analysis and monitoring of the various reactors in the candidate states.

The mandate for the Commission was possible because of the powers given in the terms of the EURATOM Treaty. Working with the International Atomic Energy Agency and supported by the acceptance in the candidate states of the legal 'acquis' of the EURATOM Treaty, the Commission was involved in making recommendations which have led to closure of some reactors or the introduction of radical measures to improve safety in others. These closures have been the subject of much heated controversy amongst and between all the EU's member states, old and new, those in which there is support for the industry and those where there is opposition to its use. However closure programmes have been carried out, supported by EU funding.

[45] CEC (2007:11) "*An Energy Policy for Europe*", COM (2007) 1 final, Brussels.
[46] CEC (2006) "*Action Plan for Energy Efficiency, realising the Potential*" COM (2006) 545, Brussels.

There is a high dependency on nuclear electricity in the new Member States with little prospect of quickly and easily finding alternatives and commitment to further developments. [47] Whilst it was generally acknowledged that the EU has a comprehensive nuclear safety regime based on international standards there was nevertheless significant concern that as a result of the accession of the new states the measures might become less stringent. "It is no longer desirable to consider nuclear safety in a purely national perspective. Only a common approach can guarantee the maintenance of a high level of nuclear safety in an enlarged EU…"[48]. In 2002 the European Commission introduced a Nuclear Safety Strategy including a series of legislative measures targeting safety at nuclear installations and also national arrangements for funding to de-commission reactors. The view of the Commission was that this legislation should be in place before the New Member States acceded in 2004.[49]

The objective of the proposed legislation was to change aspects of the 'non-binding' acquis [50] of voluntary harmonisation of national safety practices. The national regulatory authorities were to retain responsibility for safety at the national installations but with increased competence for the EU in the monitoring of the national provisions. An important element of the proposed legislation was a definition of nuclear installations to be any civilian facility and its associated land, buildings or equipment used throughout the nuclear fuel cycle until the facility was cleared of any radiological restrictions placed on its use. This includes the processing, use, handling, storage and disposal (temporarily or permanently) of radioactive materials and would bring into the competence of the EU aspects of the safe management of high level radioactive waste which is a major problem for the industry.

The legal basis for these proposals came from several articles of the EURATOM Treaty. Article 2b) stipulates that the Community should establish uniform safety standards to protect the health of workers and the general public and ensure that they are applied. Article 30 gives greater clarity and definition of what the expression 'standards' means. Article 31 provides for the scrutiny of the legislation by a group of scientific experts appointed by the Member States and consultation of the European Parliament. Article 32 provides for revision of the basis safety standards. Although these articles do not include the safety of the installations, a ruling by the European Court of Justice in December 2002 [51] had confirmed that the technical competence of national authorities to deal with the safety of nuclear installations did not preclude the EU from legislating on the issue. In

[47] For example in 2006 the governments of Latvia, Estonia, Lithuania and Poland signed an agreement for the construction of a new reactor at the Ignalina power plant.
[48] CEC (2002:11) "*Nuclear Safety in the EU*", COM (2002) 605 final, Brussels 6th November.
[49] The nuclear 'package', proposed 06/11/2003 by the Commission comprised :-
-Framework Dir. on safety of nuclear installations, (not adopted at time of writing)
-Dir on radioactive waste, (not adopted)
-Decision authorising the Commission to negotiate an agreement with Russia on trade in nuclear materials (adopted European Council, 06/11/2002)
[50] This so-called 'non-binding' acquis is based on Council Resolution, 22nd July 1975 (77/C 181/1) which referred to the desirability of aligning safety requirements in the context of a harmonised approach which would draw on collaboration between the national governments.
[51] ECJ (2002) Case C-29/99, December 10th.

the opinion of the ECJ, it was not appropriate for the safety of the workers and the public to be seen in some way as separate to the issue of safety of the installations themselves.

Under the terms of the EURATOM Treaty there is no requirement for the Council of Ministers to do anything more than formally consult the EP on proposed measures. In practice the European Commission does take the concerns of the EP into account and there is much co-operation between the two institutions[52]. This co-operation was demonstrated during the discussions about these legislative proposals. More than 100 amendments to the proposed legislation were identified by the European Parliament during 2003. Many of these proposals were focused on the provisions dealing with the national financing arrangements for de-commissioning. The European Commission view was that the EP's expectations on financing were too high and would not be acceptable to the Council of Ministers. EP amendments which were adopted were those relating to public information dissemination and research and technology development.

In November 2003 there was deadlock in the Council of Ministers as the Swedish, Finnish and British governments proposed a non-legally binding alternative to the proposed directives. The commitment of the European Commission for the proposals remained unaltered. "A Community intervention is indispensable to guarantee the maintenance of a high level of nuclear safety within the enlarged European Union….The absence of Community legislation would be prejudicial to Community citizens and to the interest of the enlarged EU." [53] Amendments were introduced but the proposals were still un-adopted in spring 2007 as a result of the strength of the national interests which had opposed it.

Of all the concerns which are currently affecting the electronuclear industry this is the most difficult to address. It encompasses a number of areas amongst which are safe disposal of the radioactive waste, safe de-commissioning of nuclear plants at the end of their operational lives in addition to concerns about the possible use by terrorists of attack of nuclear installations or the use of materials intended for civilian purposes for weapons manufacture. Lack of accurate information often plays a factor in public disquiet about forms of technology developments. The media plays an important role in the safety debate. The Chernobyl accident received media attention and it was the publicity of horrific injuries to those who were amongst the first to tackle the fires in the reactor which have become associated by many people with the whole industry.

[52] This relationship between the European Parliament and the European Commission is more than informal willingness to co-operate it is supported also by the Framework Agreement on relations between the two institutions which was signed in 2000 and renewed in 2005. This agreement covers areas of dialogue and political co-operation between the two institutions, political responsibility, the flow of information and organisation of parliamentary proceedings. These points are expanded in annexes to the agreements pointing to the involvement of the EP in international relations and the transmission of confidential information.

[53] CEC (2004:4) Amended proposal for Council Directive (EURATOM) laying down basic obligations and general principles on the safety of nuclear installations and amended proposal for Council Directive (EURATOM) on the safe management of spent nuclear fuels and radioactive waste, COM (2004) 526 final, Brussels, 23.09

With the passage of time people's concerns about Chernobyl have been quietened particularly as the plant is now closed and assurances about the nature of similar technology used elsewhere have been made. Instead "Public opinion surveys conducted by the European Commission show that while they know little about radioactive waste….(they are) concerned about it and have very little trust in the nuclear industry" and "….ninety percent of respondents thought that the lack of a decision on how to dispose of high level waste had a negative effect on the image of nuclear energy" [54]. It would therefore appear that for many people the safe disposal of the radioactive waste is the major concern and if that was resolved then there would be more popular support for the nuclear option.

Setting aside new nuclear plant construction which may come from the pressure of the pro-nuclear environmental lobby, about one third of the EU's electricity needs are currently met by nuclear generation. It is unlikely that this will alter to any major extent in the foreseeable future. Waste has been generated already and it will continue to be produced. As EU states de-commission older reactors or respond to the concerns of their populations for phase out of the nuclear capacity appropriate management of spent nuclear fuels and other forms of radioactive waste has become of vital importance. Low level waste is disposed of in shallow burial sites and facilities, some waste is stored in ponds in order to reduce its temperature before storage. How to deal with the long term management of the most dangerous, albeit relatively small, amounts of high level and long lived intermediate waste have still to be addressed. After fifty years of operation of the nuclear industry there is a considerable amount of these materials in intermediate storage facilities to be dealt with.

Despite media speculation early in 2004 [55] that the UK government was considering shooting high level waste at the sun, the scientific evidence favours the more earthbound concept of deep geological disposal. Discussion of the development of regional facilities which may be used by more than one member state has begun. While there appear to be no technical difficulties to geological disposal the identification of appropriate sites has not yet been made. In the proposed 2002 legislation objectives to promote the development of common standards and good practice with regard to spent nuclear fuel and radioactive waste management, requirements for the EU member states to establish clearly defined programmes for waste management, to encourage more co-ordination of the research into waste disposal across the EU and to encourage greater public involvement and transparency within the sector were made. The legislation has not yet been adopted but the measures took their legality from the EURATOM Treaty and have raised the issues for debate amongst the EU's 27 Member States.

Whilst the UK remains one of the EU states which does not support these legislative proposals, in 2006 the UK House of Lords Select Committee on the EU concluded that an important role did exist for the EU to take a lead in safe management and disposal of radioactive waste because of "…..grave concerns that Member States are failing to educate

[54] Taylor D.M. (2005) "*The Management of Radioactive waste in the EU- opinions, situation and proposals for changes"* in "Practice Periodical of Hazardous, Toxic and Radioactive Waste Management", January

[55] Brown P (2004:3) "*Shoot it at the sun*" The Guardian, April 14th.

citizens about the use of nuclear power, how the safety of nuclear installations is maintained and of the action taken and options available to Member States to manage the radioactive waste produced"[56] The EURATOM Treaty gives the opportunity to establish a legal framework to support the exhortation to ensure that the general public in all Member States is encouraged to become involved in these decisions through open and transparent public debates.

The consequence of the failures of technology, poorly informed technical staff and poorly constructed technology at Chernobyl had resulted in a view from the industry itself that negligence is the 'devil' of the sector. The trans-national impact of the radioactive fallout from the Chernobyl reactor was still apparent across Europe in April 2007. Pressure has therefore been maintained within the EU member states and from the European Commission as well to ensure that a very stringent system of regulation of the industry is in place.

c) Nuclear non-proliferation and the EURATOM Treaty

This paper is concerned with the peaceful use of the technology to generate electricity but of major concern are a number of security matters which have the potential to be exacerbated as a result of the growth of interest in nuclear generated electricity. They include global disquiet about the access to weapons of mass destruction in some politically unstable states and the possibility, in the post 9/11 world, of terrorist groups gaining access to nuclear materials. Similar types of advanced technologies are involved in both civilian and military use of the nuclear materials to the extent that the description of 'Siamese twins' of nuclear power has been applied – the military atom and the civilian atom [57]. In the EU's 2000 Green Paper on security of energy supply this aspect of the technology was indeed highlighted as nuclear energy was categorised under the heading of "a less than perfect energy option…(one of the) undesirables…..a source of energy in doubt…tainted by the original sin of dual usage – civil and military"[58]. Indeed the UK and France, as holders of nuclear weapons in the EU, had developed their military capabilities before they began to use nuclear technology to generate electricity in the 1950s.

Pressure on the availability of high grade ore [59] for both types of developments will lead to more emphasis on recovery and re-processing in turn leading to expansion of capabilities in developments in the technologies in those states globally which are users of nuclear electricity. As a result levels of concern about security and nuclear weapons proliferation are increasing with these global developments in the civilian use of the technology (cf Annex ? for numbers of reactors operating and planned globally).

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[56] House of Lords (2006:para.110*)" Managing nuclear safety and waste: the role of the EU*" EU Committee 37th Report 2005-2006, July 6th.

[57] Hannes Alven, Swedish Noble Prize winning nuclear physicist cited in Barnaby F and Kemp J (2007:10) "Secure Energy civil nuclear power, security and global warming" Briefing Paper, March, Oxford Research Group, www.oxfordresearchgroup.org.uk.

[58] (CEC) (2000:31-32), *Towards a European Strategy for the security of energy supply – Green Paper* COM (2000) 769 final, Brussels, November

[59] The price of uranium ore tripled in May 2007 as a result of increased demand

Nuclear non proliferation represents a major plank of the European Union's Security and Defense policy (ESDP). But the variations which exist amongst the EUs' Member States on questions relating to nuclear weapons strategy add to the difficulties of adopting a coherent approach to the ESDP. Furthermore it is difficult to envisage a situation where the governments of either the UK or France (the only states of the EU with nuclear weapons) would accept any European action which might impinge on their national nuclear weapons policies.

Two treaties have an impact on the approach to nuclear non proliferation which the EU may adopt – the Nuclear Non-Proliferation Treaty (1st July 1968) (NPT) [60] and its statues on safeguards of materials and the EURATOM Treaty. India, Pakistan and Israel are known to have nuclear weapons and have not signed the NPT and North Korea is now withdrawn. France and the UK of the 188 signatory states of the NPT are declared Nuclear Weapons States (the others being the USA, Russia and China). Some NATO countries, the EU Member States of Germany, the Netherlands, Belgium, Italy, Greece and the applicant state Turkey, have forces which are trained to use US nuclear weapons. All the NPT signatory states (those which are nuclear weapons states and those which have agreed to exclusively peaceful uses of the technology) have voluntary agreements and protocols with the IAEA for inspection to ensure that nucleqr materials are not being diverted to military use.

There is overlap in the work of the IAEA and the European Commission on nuclear safeguards. The safety regime which has been adopted within the EU is based on the 25 safety principles of the IAEA which are also the basis of the International Convention on Nuclear Safety. In instances of duplication of effort the IAEA procedures are invoked to verify that those of the EURATOM Treaty have been adhered to. The advantage of the EURATOM Treaty and its monitoring of nuclear materials is that of the range of safeguards which have been introduced. For the IAEA and its monitoring through inspection of what is happening in nuclear power plants issues of non-compliance with the terms of the NPT are harder to determine. Through the European Safeguards Agency the EU states have in place a more comprehensive and effectively monitored system.

d) Something for everyone?

The primary objective of the EURATOM Treaty is to support the development of the nuclear industry and provision for funding for research and technology developments was included in the Treaty in 1957 (Article 7 EURATOM). The TEC on the other hand had no such provision for research and technology funding it its original provisions. However, since the 1980s, the EU's has developed a successive series of Research and Technology Development (RTD) programmes, which now include the EURATOM programmes. In the Seventh Framework RTD programme (FP7) proposed by the European Commission (2007-2013) the proposals for funding of the EURATOM Research Programme were also identified. But FP7 is a multi-annual programme to run

[60] The Nuclear Non-Proliferation Treaty has 188 signatory states and is the major international Treaty dealing with use of nuclear weapons. However the states of Israel, Pakistan and India where nuclear weapons have been developed since the 1970s are not signatory states.

for seven years, and the EURATOM regulations are for a multi-annual programme for five years. The possibility of an extension of the EURATOM funding is included for 2011-2013 to bring the funding for both areas into line and enable more effective management of the transfer of the funds to the national level. The EURATOM budget was not forwarded for scrutiny to the European Parliament with the other elements of the FP7 Budget, as this is not a requirement under the terms of the Treaty.

Agreement on the budget for the EURATOM Research Programme 2007-2011 was difficult to achieve because of the divergent views of the national governments about further developments in nuclear fission technology. The Austrian government exercised its prerogative of veto with regard to funding for nuclear fission [61] technology, other than that associated with decommissioning reactors and safe disposal of radioactive waste. Agreement was eventually reached in the Council of Ministers on July 24th 2006 with the bulk of available funding being directed to new fusion [62] technology developments. The resolution of the controversy on this funding showed the versatility of the EURATOM Treaty to respond to the concerns of those who are not in favour of the continued use of nuclear technology as well as those Member States which are.

Of the total budget for EURATOM research of 2.7 billion euros, 2.1 billion are to be allocated to fusion research and in particular the development of the International Thermonuclear Experimental Reactor (ITER) which is under the auspices of the International Atomic Energy Agency (IAEA). The agreement for the ITER development in Cadarache , France, was signed in June 2006 and will include input from partners in Japan, China, India, Russia, South Korea and the United States. The ITER development is regarded by many as having the potential to make a major contribution to sustainable and secure energy supplies in Europe but is unlikely to be at the stage of commercial production before 2050 because of the difficulties of achieving and maintaining the high temperatures needed for the reaction to take place.

Conclusions

There are many problems to be overcome by the European Union in the search for a sustainable and secure energy policy and the EURATOM Treaty adds to the complexities involved in this search. Yet there appears to be little political willingness to take step to repeal the Treaty. Although considered to be one of the 'founding' Treaties of the EU the EURATOM Treaty is dealing with a limited aspect of policy development contributing to the +energy sector. It is based on inter-governmental action between the signatory states of the European Atomic Energy Community. The argument of this paper has been that the national differences which created a Treaty focusing on a limited sector of economic policy in 1957 were those of a crowded national energy policy environment which made

[61] Nuclear fission – is the process of splitting molecules of uranium-235 in order to produce energy and is the basis of the nuclear technology currently used.

[62] Nuclear fusion – is the process of fusing two hydrogen atoms to form a single atom of helium. One gramme of the fuel produced can develop the same energy as 45 barrels of oil. However the process requires extremely high temperatures which it is not yet possible to achieve in a reactor.

consensus difficult. There may be some changes in the national nuclear energy policies in 2007 but national differences and lack of consensus are as deeply entrenched as they were in 1957. It was difficult to achieve agreement on its terms in 1957. The national governments continue to be deeply divided about the use of nuclear technology half a century later and so negotiations on integrated action would be as difficult to accomplish in 2007.

As a sector specific Treaty there is no opportunity or willingness for policy bargaining amongst the national governments to produce an alternative. The national governments of the EU continue to 'jealously' guard their competence to choose their national energy policies, particularly their rights to choose the mix of energy resources which they use. The question of 'political willingness' to make changes to the EURATOM Treaty is more than the willingness of the Member States to tackle the controversial issues which surround the use of nuclear electricity. National governments are indeed reluctant to open this sector to supranational action but the role of the European Commission is also a factor which has to be considered.

In the two areas of liberalisation in the development of the single energy market and safety and security in the nuclear sector a considerable degree of control has been passed to the European Commission as the supranational authority with the competence to deal with the issues. The Treaty conferred competences on the European Commission and its officials have developed a considerable expertise in dealing with nuclear safeguard controls in EU nuclear installations and the monitoring of levels of radioactive materials in the environment including radioactive waste. The terms of the EURATOM Treaty gave the Commission a role as a de-politicised and 'benevolent' technocracy based on a model outlined and supported by Monnet. As the Treaty has remained substantially unaltered since its ratification 50 years ago this is the approach and model which continues to define the role of the European Commission in the area of nuclear safety and security.

Overall there was little consensus for an extensive debate on the European Atomic Energy Community and the repeal of the EURATOM Treaty shown during the deliberations of the Convention on the Future of Europe (2002/2003) and the Intergovernmental Conference which followed (2004). Few proposals made post 2005 have included discussion of the EURATOM Treaty. As the deliberations have continued through the German presidency of 2007 about the Constitutional Treaty and the future architecture of the European Union there appears to be little likelihood that the outcome will be a 'grand design' focusing on all aspects of the EU's activities. It is more likely that the outcome will be a limited number of easily demonstrable reforms with an extension of the period of reflection into 2008 to deal with other issues. The outcome for the EURATOM Treaty appears to be the current status quo – ie a Treaty with a separate legal personality, outdated, undemocratic, an alien dinosaur in the liberalized energy market of the EU, but one which has the capacity to deal with some issues which the Member States of the EU would rather not spend time negotiating on in other forums.

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Annex 1 Number of reactors by Member and Candidate State (to August 2006)

	% of national electricity produced by the nuclear sector	**Number of operable reactors**	**Reactors under construction**	**Reactors planned and proposed**
Belgium	55	7		
UK	19	23		
Finland	26	4	1	
France	78	59		2
Netherlands	4	1		
Spain	23	9		
Sweden	52	10		
Germany	32	17		
Czech Rep	41	6		2
Hungary	34	4		
Lithuania(1)	72	1		1*
Slovakia	55	6		2
Slovenia(2)	39	1		
Bulgaria	44	4		2
Romania	8	1	1	3
Croatia		(with Slovenia)		
Turkey(3)		0		3/5
EU 27 + candidates		**152**	**2**	**11**
World		**442**	**28**	**204 (4)**

Source: various European Commission and IAEA.

Notes

(1)Lithuania, planned new nuclear power plant with Latvia, Estonia and Poland

(2)Croatia, No nuclear power plant of its own but Croatian national electricity company has co-ownership of plant at Krsko in Slovenia

(3)Turkey, accession to the EU estimated by 2020

(4) 68 of the global total of planned reactors are in China

Annex 2 Comparison of costs of selected sources of electricity production

	Coal	Gas	Nuclear	Wind	Hydro	Solar
Construction times in years	4	2-3	4-5	1-2	Na (3)	Na
Lifetime of use in years	45	25	30-60	Na	Na	Na
Cost (2005) in euros/MWh (1)	30-50	35-75	40-45	35-175	25-95	140-430
Projected cost (2030) Euros/MWh with 20-30 euros/t(CO2)	45-70	40-85	40-45	28-170	25-90	55-260
Investment costs as % of total costs	30	15	50	Na	Na	Na
GHG emissions (kg CO2 eq/MWh)	750-800	400-440	15	10-30	5-20	100
EU 27 Import dependency						
2005	39%	57%	Almost 100% for uranium ores (2)	Nil	Nil	Nil
2030	59%	82%				
Proven reserves/Annual Production	155 years	64 years	85 years of reasonable reserves	Renewable	Renewable	Renewable
Operation and maintenance costs as % of total costs	20	10	30	13	Na	Na
Efficiency	40-48%	40-50%	33%	95-98%	95-98%	Na
Fuel costs % of total costs	45	80-90	20	Na	Na	Na
Fuel price sensitivity	**Medium**	**Very high**	**Low**	**Nil**	**Nil**	Nil

Source Various – IEA and Commission

Notes

(1) Dependent on the technology used

(2) Uranium is however available from a wide range of sources including reprocessing. Also in the opinion of the Nuclear Industry Association " ….it would be possible to purchase the entire lifetime supply for a reactor and stockpile it next to the reactor if it was considered that there was any danger to supplies" House of Lords (2006:83*)" Managing nuclear safety and waste: the role of the EU*" EU Committee 37th Report 2005-2006, July 6th.

(3) Na Comparable figures not available