

## Influences on European Union Nuclear Waste Transport Policy

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### I. Introduction

Policy-making in the European Union (EU) involves a complex amalgamation of technical, institutional and international influences. The case of environmental policy provides an important case study in analyzing policy formation within an international organization, the European Union. In seeking to determine how interaction between opposing advocacy coalitions in the Policy-making process of international organizations influences policy, this paper examines the specific case of European Union (EU) Policy-making since 1957 concerning nuclear and radioactive waste transport as a best case of advocacy coalition dynamics at work during the Policy-making processes. Following a brief overview of the current literature on Policy-making in international organizations and Paul Sabatier's work on advocacy coalitions, this paper outlines the institutional and legislative framework governing Policy-making in the EU before analyzing the evolution of national, regional and international influences on EU nuclear waste transport policy.

This paper identifies the evolution of pro- and anti-nuclear advocacy coalitions to their incorporation of the shipments issue in the late 1980s. The pro-nuclear waste transport advocacy coalition has come to include developed nuclear powers, such as Germany, France, the United Kingdom, the United States, the former Soviet Union, pro-nuclear scientific experts and business entities. In contrast, the anti-nuclear waste transport advocacy coalition originated with a narrow band of support in Denmark and the Community's growing Green parties to include most European nations, the EU Commission, the EU Council, the media and a number of technical and scientific experts.

In addition to the significant roles played by the Commission and the Council, international influences strongly influenced EU Policy-making on the question of nuclear and radioactive waste transport. International actors and movements holding sway over EU policy on this question in the late 1980s and early 1990s include the NGO Greenpeace, the Rio Conference and UNEP, and the international press. The international press also contributed to coalescing public concern and lobbying of EU institutions such as the Commission, the Parliament and the Council as it exposed notorious incidents of environmental contamination.

This paper concludes that, prior to 1992, the European Commission played the major role in setting the agenda for nuclear and radioactive waste policy. However, the Council, with support from

pro-nuclear business entities and developed countries, managed to exclude nuclear issues from the agenda of EU environmental policy including the Basel Convention, various directives and even within OECD discussions. Yet after 1987, the anti-nuclear advocacy coalition made the transport of nuclear and radioactive waste its central rallying cry, expanding its support base and creating a new advocacy coalition. Following a several public nuclear and radioactive waste incidents and the 1992 Rio Conference, the anti-nuclear waste transport advocacy coalition gained considerable strength and finally received legislative attention from the European Council.

## II. Theoretical Framework

### Policy-making in international organizations

Priorities and participating actors within international organizations continuously evolve in response to outside influences. Examples of elements that may have the ability to sway final policy outcomes include political leaders, interest groups, and the scientific community. Any analysis of the complex dynamics governing Policy-making in international organizations exposes several central questions for social scientists. How are different participants in the Policy-making process able to assert themselves? Do outcomes incorporate all aspects of individual policy proponents' initial demands? Can the agendas of those seeking to influence policy change, and if so, why? Do participants in the Policy-making process have an influence upon the agendas of other individuals or groups attempting to sway policy to meet their demands?

Although some authors have addressed the former theoretical considerations,<sup>1</sup> a comprehensive understanding of how the policy process works in the international arena remains an illusive goal. Research has focused largely on narrow issues such as those concerning collective goods, rather than analyzing Policy-making itself as a broader process.<sup>2</sup> Few scholars have researched the formation of international legislation and the intricacies which govern this initial stage of the policy process.

Most theories that seek to explain policy formation accentuate the function of either the:

1. values, beliefs, knowledge, and learning, or
2. power interests and political interactions

held by the participants themselves. The former concentrate on virtually intangible factors such as "ideas, information, problem solving capabilities, the ability to persuade, and ambiguity amelioration, associated with 'learning'" (Brown 1993: 2). The latter grant import to more tangible factors such as economic strength, military power, and organizational legitimacy. This paper argues that a combination of these two perspectives is essential to a full understanding of the policy formation process.<sup>3</sup> One aspect of participants' contributions must not be emphasized to the exclusion of the other if a realistic paradigm for the study of the Policy-making process is to be created.

Keohane (1988) supports integrating the two faces of political interaction theory in order to truly understand the functioning of international institutions. Describing Policy-making as the study of the intentional behavior of relatively small numbers of actors engaged in strategic bargaining, Keohane reveals that not all strategic bargaining occurs in the formal legislative environment. Therefore, to develop a comprehensive understanding of international Policy-making, it is imperative to realize that "neither pure rationalistic theory nor pure criticism (of either of the previously described perspectives of Policy-making) is likely to provide such knowledge" (Keohane 1988: 380).

### Advocacy Coalitions and Epistemic Communities

This paper employs a simplification of "Paul Sabatier's theoretical model to structure the data because it conceptualizes policy output as a consequence of advocacy coalitions' learning and other political interactions" (Brown 1993: 2-3). Sabatier theorized that learning within advocacy coalitions is the key to understanding the Policy-making process. Sabatier's theory utilizes

"advocacy coalitions within policy subsystems as the critical vehicle for understanding the role of policy analysis in policy-oriented learning and the effect, in turn, of such learning on changes in governmental programs" (Sabatier 1988: 129).

Thus, the interactions of advocacy coalitions serve as the basis of the Policy-making process. An advocacy coalition is defined as "a time-limited organization in which there is a convergence of

interest on the part of a number of...individuals and organizations, and an interaction around furthering these common interests" (Dluhy 1990: 10).

An example of an advocacy coalition is an alliance of politicians, business leaders, and interest groups who share the same policy goal. Policy goals are the key differentiating quality of individual advocacy coalitions.

Sabatier's model of a policy subsystem is the theoretical framework in which advocacy coalitions interact to create policy. Policy subsystems are defined as the framework for "the interaction of actors from different institutions interested in a policy area" (Sabatier 1988: 131). Components of policy subsystems are variable based upon the subjects of policy that are their dominions, meaning that different policy subsystems exist for different policy areas. Additionally, innovation in policy requires interaction of advocacy coalitions over long periods of time (Stewart 1991).

The Sabatier model is based, to a large extent, upon the work of Hugh Heclo. In addition to the significance of traditional "macro factors" (Heclo 1974) for understanding the Policy-making process, Sabatier further asserted the importance of "the interaction of specialists within a specific policy area, as they gradually learned more about various aspects of the problem over time and experimented with a variety of means to achieve their policy objectives" (Sabatier 1988: 130). These specialists are members of epistemic communities. An epistemic community is "a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area" (Haas, Intro. 1992: 3 and Adler 1992). According to Sabatier, members of the epistemic community are agents of learning within advocacy coalitions. Learning is defined as "the ability of any political system to invent and carry out fundamentally new policies to meet new conditions... related to its ability to combine items of information into new patterns" (Deutsch 1966: 163). Learning, although intangible, is a significant force within advocacy coalitions and policy subsystems.

Sabatier's model also maintains that "policy brokers" (Sabatier 1988) or "boundary agents" (Organ 1971) serve as sorts of mediating agents between advocacy coalitions and serve to find a reasonable compromise in policy which will assuage conflict. Although there has been some research into the idea of the EU Commission being a policy broker within the EU system, the "policy broker" is not researched within this paper. A modified diagram of Sabatier's Policy Subsystem model, which is the basis of this study, is depicted below (Sabatier 1988: 133):

## POLICY SUBSYSTEM

Policy Broker

Coalition A

Coalition B

a. Policy beliefs

b. Resources

a. Policy beliefs

b. Resources

## POLICY OUTCOMES

A Modified Diagram of the Sabatier Policy Subsystem

In his theory, Sabatier also accentuates the influences of external actors upon advocacy coalitions within the subsystem. For example, actors such as international non-governmental organizations (INGOs) or governmental leaders of other nations may contribute to policy-oriented learning or have an impact upon legislative decisions within the subsystem. Because of the unique interplay of international actors upon EU policy regarding the transport of nuclear waste, this paper will analyze the impact of actors from outside of Sabatier's Policy Subsystem (See Figure 2).

GLOBAL

Multinational Corporations

Non-EU National Business

Global & Regional Political  
Organizations: OECD, UN, etc.

Non-EU National  
Governmental Leaders

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EUROPEAN COMMUNITY

Commission

Parliament

European Business Groups

Council

Other European Interest Groups  
(Including Green)

National Representatives

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NATIONAL (EU MEMBERS)

Governments

Constituents (Green & Non-  
Green)

Parliaments

Nuclear Industry Business  
Organizations

Structure of Influences on EU Policy-making Relevant to Nuclear Waste Transport Policy. Modified from Andersen & Eliassen 1993: 182.

Many nuances characterize the Policy-making process. This paper is an attempt to determine who composed the advocacy coalitions involved in EU nuclear waste transport Policy-making since the creation of Euratom in 1957. Although this paper is not an attempt to measure learning, an intangible

factor, it will apply the theories of Sabatier to EU Policy-making concerning nuclear waste transport. This paper is a test of the basis of Sabatier's theory, that the interaction of advocacy coalitions, and epistemic communities therein, is determinative to the Policy-making process. It is the thesis of this paper that Policy-making in international organizations represents a process whereby advocacy coalitions with issue-specific agendas interact to develop the final product of official policy.

### III. Structure of the EU Relevant to Nuclear Waste Transport Policy

The institutional and legislative structure of the EU relevant to nuclear and radioactive waste transport policy has changed considerably since the creation of Euratom in 1957. The amendments to the Treaty of Rome enacted by the adoption of the Single European Act (1987) have impacted the way in which nuclear waste policy is created. The Single European Act altered the power balance between different segments of the EU waste Policy-making structure. Thus, in order to accurately portray the formation of environmental policy in the European Union, it becomes imperative to understand the relationships between the organizations that formulate EU environmental legislation (the Commission, the Council, the Parliament, and the Court of Justice) and the various legislative tools of the EU (i.e., directives, regulations, and Council decisions).

According to Eurostat, an official EU publication, the Commission of the EU tables proposals; the Council of Ministers makes binding decisions; and the European Parliament plays an increasing role in the dialogue between the two, especially since the enactment of the Single European Act.

The Commission is divided into Directorates General, each headed by a Commissioner. Each Directorate General tables proposals in its own policy area. The Directorate General XI (DG XI) proposes environmental, nuclear safety, and civil protection legislation. DG XI employs approximately 350 people, of which approximately half are contract staff or experts detached from their Member State. DG XI greatly influences EU environmental, nuclear safety, and civil protection policy.

In the Council, which is essentially the executive branch of the EU, voting is by qualified majority. Of a total of 76 members, 54 is considered a qualified majority. Germany, France, Italy, and the United Kingdom each have 10 votes. The Council is composed of representatives of the EU governments, and its Presidency rotates through each Member State every six months (Eurostat 1992: Ch. 2:9).

As the Community's supervisory body, the European Parliament is composed of members (MEPs) directly elected by citizens of the EU, according to the voting rules in their respective nations. MEPs campaign as representatives of EU political parties, rather than nationalities, but it is generally agreed that, once in office, MEPs represent their national interests to a large extent (Moracsvik 1992, Taylor 1983, Wallace, Wallace, and Webbe 1977). The Economic and Social Committee presents opinions to the Council, and the Court of Justice is an independent, neutral judiciary body which hears cases in order to ensure uniform implementation of EU law. The Court of Justice is also beginning to play a larger role in environmental issues. However, while members are obliged to comply with the Court's rulings, the Court does not normally impose sanctions upon members who do not comply with them. In conclusion, the EU is a complex body which encompasses both national and international political processes. According to Eurostat, the EU Policy-making process is composed of three phases: 1. Proposal Initiation Phase, 2. Consultation and Cooperation Phase, and 3. Decisionmaking Phase (See Figure 3). The Commission is active in the Proposal Initiation Phase. After the Commission tables a proposal, it can send the proposal to the European Parliament, the Economic and Social Committee, the Council, or all three. If the Commission sends the proposal to the European Parliament or the Economic and Social Committee, then the proposal enters the Consultation and Cooperation Phase. During the Consultation and Cooperation Phase, the Parliament and the Economic and Social Committee consider the Commission's proposal. If the Parliament or Economic and Social Committee approves the proposal, they then send it to the Council. If the Parliament or Economic and Social Committee do not approve of the proposal, they do one of three things: 1. Reject the proposal, 2. Alter the proposal and send it to the Council, or 3. Return the proposal to the Commission for changes. If a proposal returns to the Commission, the

Commission either reworks the proposal to resend it through the EU Policy-making

Proposal Initiation  
Phase

Commission  
17 Commissioners  
Directorates-General

Consultation &  
Cooperation Phase

Economic & Social Committee  
Sections

European Parliament  
Committees

Decisionmaking  
Phase  
Council  
Committee of Permanent Representatives  
Working Parties

EU Proposal and Policy-making Process

path or terminates the proposal. If a proposal reaches the Decisionmaking Phase, the Council can either reject the proposal, return it to an earlier phase, or adopt the proposal as official EU policy. In summary, to become EU law, a proposal must originate in the Commission and be adopted as official policy by the Council.

The Single European Act

The Single European Act, which amended the Treaty of Rome, greatly affected the previously discussed Policy-making process. Articles 130r, 130s, and 130t of the amended Treaty of Rome "lay down the goals and procedures for the adoption of legislation regarding the environment, generally by unanimity" (Commission of the European Community DG XI 1993: 181). Article 100a regards the establishment of the internal market and allows legislation to be adopted by qualified majority in the Council of Ministers. Thus, Article 130 concerns the environment, while Article 100 encompasses the need to keep the trade-playing field of the EU level. If Article 130 provides the basis for Community directives (the main tool of EU environmental policy) or regulations (which take effect much quicker than directives), the EU can set minimums for environmental practices while still allowing individual member states to exceed the minimum protection regulations. When Article 100 is used, the EU can force members with more stringent environmental legislation to relax their laws, if the laws are determined to be barriers to free trade. Additionally, the amended treaty requires that consideration for the environment must be taken while defining and implementing all Community policies.

The prominent view regarding the Single European Act's adoption is "that institution reform resulted from an elite alliance between EU officials and pan-European business interest groups" (Moravcsik 1992: 20). However, an alternative view is that its adoption "rested on interstate bargains between Britain, France, and Germany" (Moravcsik 1992: 20). According to Moravcsik (1992), Calingaert (1988), Krause (1988), and Ludlow (1988), "three supranational factors consistently recur in accounts of EC reform: pressure from EC institutions, particularly the Parliament and Court; lobbying by transnational business interest groups; and the political entrepreneurship of the Commission, led by President Jacques Delors and Internal Market Commissioner Lord Arthur Cockfield" (Moravcsik 1992: 20).

Advocacy coalitions behind issues would most likely be located within and between the three supranational factors.

#### IV. EU Nuclear Waste Transport Policy

Although the EU has utilized nuclear energy for over thirty years, and EURATOM was established to preserve nuclear plant employees' basic standards of health in 1957, the EU legislated little in the area of nuclear waste transport prior to 1992. Before the UNCED Convention in Rio de Janeiro in June of 1992, the impact of trans-national movement of nuclear waste remained noticeably absent from the EU political agenda. This can be attributed to the lack of a mature anti-nuclear transport epistemic community when European countries first allowed nuclear plants to be built.

During the early period of nuclear energy use in Europe, few people knew much about nuclear energy or its consequences with the exception of those funded by governments to research and develop the technology for nuclear energy production. Therefore, EU policymakers implicitly knew little about neither nuclear energy nor nuclear byproducts during the early stages of nuclear energy utilization. Additionally, all those who developed nuclear energy were, obviously, pro-nuclear. Since European nations overwhelmingly adopted the use of nuclear energy without much controversy, this would seem to indicate that there was only one effective advocacy coalition, which was pro-nuclear, and had the support of the only effective epistemic community.

In the 1970s, the Council implemented no legislation to protect the general public from the potentially damaging effects of nuclear byproducts and accidents. However, the Council implemented directives protecting basic standards of health of nuclear plant workers and in 1976 formally defined nuclear materials. In 1977, the Council also appointed members of the pro-nuclear epistemic community to an advisory committee of the Euratom Supply Agency upon enactment of Council Decision 77/261/Euratom. Thus, in 1977 the pro-nuclear epistemic community became formally entrenched within the EU Policy-making apparatus. In conclusion, during the 1970s, the Council implemented little protective policy regarding nuclear waste and the pro-nuclear epistemic community became a legitimate, recognized body within the EU Policy-making structure.

Yet, by 1979, an anti-nuclear force had emerged. This period witnessed the establishment of green parties in the United Kingdom and Germany. In Germany, the Greens had begun winning seats at the Bundesrat, or state level. Moreover, other Green parties existed outside of the EU, including Sweden, which sought to eliminate the use of nuclear energy in Europe. Concurrently, environmentalism began to take hold internationally and non-governmental organization (NGO) Greenpeace became a visible and influential regional and international actor.

In May of 1979, the Commission promoted the establishment of a group of high-level independent experts in the field of nuclear safety via a legislative decision. The Commission also required that members of the expert group could not have "a direct economic interest in nuclear energy" (1979 OJ/L/141 and 1979 OJ/L/251). Thus, the Commission sought to establish the anti-nuclear, environmentalist epistemic community within DG XI. However, the Council never implemented the decision.

The Council adopted a largely reactive posture in response to the Commission's initiatives regarding nuclear energy, offering several superficial concessions to the anti-nuclear movement. For example, in 1980, the Council set up an 'ad hoc' advisory committee with authority over the reprocessing of spent nuclear fuels. The Council touched upon the issue of nuclear waste transport by implementing a relatively meaningless resolution in February on the creation of a Community plan of

action in the field of radioactive waste. It simply stated that the Member States "should" draw up a "list of techniques available for the processing and conditioning of waste with a view to its possible transportation and storage" (1980 OJ 51). In 1980, the Council decided to adopt the Commission's proposed program on the management and storage of radioactive waste which was to be effective from 1980 to 1984 (80/343/Euratom). However, the transportation of nuclear and radioactive waste was essentially left up to Member States to manage. The Commission had also called for the creation of research and training programs which the Council established within the same year (1980 OJ/L/72, 80/317/EEC, 80/318/Euratom).

Thus, the Commission was the driving force behind these early measures to control the negative effects of nuclear energy. To learn about the negative byproducts of the nuclear industry, the Commission attempted to establish the anti-nuclear epistemic community within the formal EU structure. However, following the oil shocks of the 1970s and several highly publicized international incidents of nuclear damage, the Council would become more aware of the environmental concerns surrounding nuclear energy use. However, the influence of nuclear business lobbies and an unfavorable international environment combined to keep nuclear issues off the EU's environmental agenda.

Several notorious environmental incidents in the early 1980s began to threaten the support of EU policymakers for nuclear energy. An accident at the Three Mile Island nuclear facility in the United States prompted increased lobbying of the Commission by environmental groups. Individual EU policymakers began to question the safety of nuclear energy. Moreover, by 1980, a strong Green Party had been formed in France which was adamantly opposed to the construction of nuclear reactors. Denmark's Green Party was also growing more powerful. Additionally, the Belgian Nationality and Socialist Group of the European Parliament and Commission members began an attempt to place storage and transport of radioactive material on the EU agenda (1980 OJ C 288).

Nevertheless, the Council retained its commitment to nuclear energy. The Council continued to provide funding for the strong business lobby, Schnell-Brueter-Kernkraftwerksgesellschaft mbH, which was to unify and jointly undertake construction of nuclear plants, mostly within the German Democratic Republic<sup>4</sup>. Business interests in the nuclear industry were very strong within Germany, the United Kingdom, and France, where the greatest, most organized, opposition formed in response to them. The opposition concentrated on non-proliferation of nuclear weapons for military purposes and potential dangers to human and environmental health caused by radiation from possible nuclear plant accidents. The non-nuclear epistemic community began to educate not only policymakers, but EU politicians' constituents, who were the grass roots members of the Green parties. These events made an impact upon DG XI members, who are appointed by their elected officials in their respective states. Thus, two organized advocacy coalitions around the nuclear industry formed, one pro- nuclear and the other anti-nuclear. Both advocacy coalitions affected Commission proposals and Council policy.

During the early to mid-1980s, the global political environment was not inclined to act on environmental issues, because of the advent of Reaganism, Thatcherism, continued Japanese expansionism, and the ongoing growth of American and Soviet nuclear military arsenals. Whereas in the 1970s the Council addressed some hazardous waste issues and addressed hazardous waste transport in 1984, the definition of hazardous waste utilized by the EU and the international community continued to exclude nuclear and radioactive waste<sup>5</sup>. Thus, at the same time hazardous waste issues were being scrutinized, EU nuclear waste transport was ignored and nuclear corporate entities became stronger. Additionally, backed by EU Council funding and approval, corporate nuclear entities grew in number

in the mid to late 1980s.<sup>6</sup> An advocacy coalition emerged between the EU Council and nuclear business entities. The pro- nuclear advocacy coalition kept nuclear waste transport off the EU agenda, even while the EU simultaneously deliberated hazardous waste transport.

However, in the mid-1980s, the tide began to change from developed, corporate interests dominating the political process towards renewed consideration for the environment. In 1983, the Green parties of Germany, France, and Denmark were forces within the national governments of their respective states. Furthermore, sympathy towards developing nations began to rise within the developed North, a movement actively promoted by the Greens. The Greens received much press within the EU and brought attention to many environmental issues, such as the transport of hazardous and nuclear waste, both within and out of the EU.



The force of the Greens became stronger in the mid to late 1980s. The Greens continued their attempt to bring nuclear waste transport policy onto the agenda of the EU. The Socialist Group and the Belgian Nationality Party were still prominent forces and gained support from the Luxembourg Nationality Party, the Group of the European People's Party, the Rainbow Group (a truly green force), some members of the Irish Nationality Party, and the Group of the European Democratic Alliance.<sup>7</sup> In March of 1985 the Council adopted the Commission proposal for a research and development program on the management and storage of radioactive waste from 1985 to 1989 (1985 OJ L 83). However, the program was simply an extension of previous legislation. The transport of nuclear and radioactive waste remained excluded from the realm of EU policy.

The Belgian Group and the Rainbow Group of the EU were the most visible actors in bringing nuclear and radioactive waste transport to the agenda of the EU. They previously influenced the Economic and Social Committee to draft a recommendation in May of 1985 concerning the transport of nuclear and radioactive waste. In 1986, the two parties launched a campaign within the Environmental Committee of the European Parliament and DG XI of the Commission to have the Council implement policy governing this very important area. However nothing was enacted by the Council concerning this aspect of nuclear energy until after 1987, and the implementation of the Single European Act.

The devastating nuclear accident which occurred at Chernobyl in the Ukraine in 1986 represented a critical juncture for coalescing two advocacy coalitions around the issue of nuclear waste transport in Europe. Following the Chernobyl incident, Europeans became very concerned with the safety of nuclear energy production and its byproducts. European Green Party support skyrocketed. In 1987, the Greens of West Germany were re-elected to the Bundestag (Conradt in Hancock, et al 1993). The UK Greens became more powerful and received 14.9 percent of the national vote in 1989, a high percentage for an established two party system (Peters in Hancock, et al 1993). Even in Italy environmental issues became commonplace in politics, although an organized Green party did not emerge (Zariski in Hancock, et al 1993). In France, the mainstream parties adopted most of the platform of the Greens who were in the national Parliament in 1983 (Safran in Hancock, et al 1993). After the Chernobyl incident, Europeans and their elected officials supported more green policy.

Chernobyl substantially affected EU policymakers' understanding of the environmental dangers of nuclear energy. The Commission, Council, and Parliament actively formed policy concerning the importation of agricultural products from the areas affected by radiological fallout. Until 1988, nuclear policy had focused on preventing the importation of radiologically contaminated products. Then, attention began to shift to problems stemming from EU activities. The anti-nuclear advocacy coalition was active throughout the two years following the Chernobyl meltdown. The coalition finally evoked a response to the problems of nuclear power production within the EU. Moreover, the international anti-nuclear epistemic community also became very active following the Chernobyl incident and the global press succeeded in drawing world public opinion if not against the production of nuclear energy, then against the transport of nuclear and radioactive waste.

After the Chernobyl accident, the global fear of nuclear reactors, a version of the "NIMBY" ("Not In My Backyard") syndrome, coalesced support for the anti-nuclear waste transport advocacy coalition. Potential sites for nuclear reactors or waste disposal met with protestors proclaiming "Not In My BackYard." In this way, the advocacy coalition against nuclear waste transport actively educated the world, including EU policymakers. Public awareness of nuclear energy's potentially harmful effects dramatically increased, as did policymakers' knowledge. Additionally, the issue of disposal and transportation was extensively debated. Learning occurred and policy concerning these issues began to form. After 1988, the EU anti-nuclear advocacy coalition truly incorporated the transport of nuclear and radioactive materials onto their agenda. The anti-nuclear advocacy coalition's adoption of nuclear waste transport as its central issue broadened its base of support. Thus, an anti-nuclear waste transport advocacy coalition and a pro-nuclear waste transport advocacy coalition were born.

Within the EU, the Single European Act dramatically impacted regional energy production. The Single European Act extended the principles of Article 100, which establishes a common market, into the energy sector of the EU. Nuclear industry leaders were apprehensive regarding the consequences of this action throughout

the EU, but it would not affect the nuclear sector as much as the oil, gas, and coal sectors. Jacques Delors, as president of the EU Commission, had consulted extensively with nuclear business leaders. Nuclear energy plants were widely separated from each other and would not be put into direct competition with each other. This helped the anti-nuclear transport advocacy coalition since its international scope could not be effectively lobbied in the previous EU Policy-making structure, whereby EU leaders largely represented their national interests. The members of the anti-nuclear transport advocacy coalition's epistemic community were not all citizens of the EU. They were located throughout the world. In conclusion, because the European Act would increase the power of EU institutions over Member States, the EU became a more efficient means to influence nuclear waste transport policy.

"The passing of the Single European Act represented a revitalization of the decision-making system in Brussels, making EC common policy-making an important political arena. Before 1987, lobbying of the main EC institutions was mostly done by representatives of national organizations, who often also presented the views of special interests within the country involved. The major channel of influence was through national representation in the Council. More recently, however, we have seen a tendency towards a more 'European' style of EC lobbying" (Andersen and Eliassen 1991: 173-4).

The Single European Act's changes in the EU Policy-making structure opened the door for increased lobbying of EU institutions as a valuable tool for advocacy coalitions seeking to influence EU policy. Thus, the anti-nuclear transport advocacy coalition gained an opportunity equal to that of the pro-nuclear transport advocacy coalition to influence policymakers' behavior.

Previously, the business interests were more effective than the anti-nuclear transport advocacy coalition in influencing policy because of contacts with the Council. The Council neglected to execute policy relating to the transport of nuclear and radioactive waste, despite the attempts of a substantial advocacy coalition in the European Parliament and Commission to get the issue onto the EU agenda. Additionally, according to a study conducted by Andersen and Eliassen (1991), lobbyists can more easily influence technicalities than advocate general principles. This also seems to be supported by the Policy-making of the EU. For example, the Commission set the agenda which contained the problems of nuclear and radioactive wastes. Although the Commission set nuclear energy on the Council's agenda, the Council, influenced by national business interests, kept nuclear waste transport specifically excluded from the agenda<sup>0</sup>. Additionally, after 1987 lobbying by international actors outside of the EU increased. Moreover, cooperation between the EU, the United States, Canada, Japan, and the Soviet Union on nuclear research and technology dramatically increased after 1987.<sup>1</sup> Thus, international entities increasingly attempted to influence EU Policy-making.

In 1988, the international press extensively reported on the international transport of hazardous, radioactive, and nuclear wastes, focusing on the extreme differences in the costs of dumping wastes in the developing nations as contrasted to that of the developed nations. The press vehemently criticized governments for allowing corporations to perform such dumping. Developing nations usually did not have adequate facilities to manage the waste. Specifically censured for their exportation of waste were Germany, France, the United Kingdom, the United States, Japan, and others. Nations accepting the waste were mostly located in Africa, although Italy and the United Kingdom also accepted waste as late as 1988. In 1988, some ships carrying waste could not find a port to accept the waste and remained at sea for as long as two years (O'Sullivan 1988). Europeans reacted very negatively to the newly revealed waste practices and forced EU policymakers to address the issues.

Although the Basel Convention in March of 1988 confronted international chemical waste transport, it failed to address nuclear and radioactive waste issues. The Convention excluded these areas from its jurisdiction, citing the importance of bilateral agreements, such as that between the EU and Australia (1982 OJ L 281), in controlling nuclear and radioactive waste. To restrict the ability of developed nations to export hazardous, nuclear, and radioactive wastes forces industry to comply with waste management laws of their respective nations, which increases their costs.<sup>2</sup> The developed nations of the North provided the basis for an international advocacy coalition to keep the issue of nuclear and radioactive waste transport off the international agenda, so that they would not be addressed at the Basel Convention, or in the OECD arena. Likewise, EU Council leaders kept the issue off the EU agenda.

In 1988, the anti-nuclear transport advocacy coalition within the European Parliament became very active. An alliance of the European People's Party, the Socialist Group, the Communist and Allies Group, and the Liberal and Democratic Reformist Group submitted a Resolution to the Commission, which was forwarded to the Council, concerning the findings of the Committee of Inquiry on the handling and transport of nuclear material. In 1990, the Commission drew together a proposal for a research and technical development program for the European Atomic Energy Community in the field of management and storage of radioactive waste, and the Council supported it (1990 OJ C 55). However, the Council still essentially left decisions concerning the transport of nuclear and radioactive waste to the Member States. In the 1990s, nuclear corporate interests weakened and the influences of the anti-nuclear transport advocacy coalition became stronger.

Perhaps the lowered prestige of the nuclear industry can be attributed to the fact that oil became more plentiful in 1989. Although the Council provided funding for further nuclear research and training within Member States, such as in 89/464/Euratom, nuclear energy research funding dropped considerably during 1989 (Brewin 1989). Moreover, "for the first time the Commissioner for energy declared himself a neutral rather than a proponent of nuclear energy. After twenty years, the Commission is to resume its powers to undertake joint inspections with nuclear states of the environmental impact of their reactors" (Brewin 1989).

Thus, the power of the Commission over the nuclear industry increased.

In 1990, Britain concluded a deal to ship radioactive waste to Japan in the mid-1990s. British Nuclear fuels (BNFL), a major force in the pro-nuclear transport advocacy coalition, publicly announced the deal in November. The agreement had a clause which stated that the waste must be returned to the country of origin, "eventually" (Milne Nov. 1990). "BNFL has been reprocessing spent fuel from Japan and a growing number of European countries since the 1970s at its Sellafield nuclear complex. But to date no radioactive waste has been returned overseas" (Milne Nov. 17, 1990). Because of the process of reprocessing, material must be stored for a number of years to allow it to cool before it can be transformed into a reusable form. Thus, the material remains where it is reprocessed.

Prior to BNFL's announcement in 1990, business by BNFL and most other corporations involved in the transport of radioactive and nuclear substances remained clandestine. BNFL's lobbyists worked behind-the-scenes to ensure that the EU Council would allow BNFL to continue to prosper. BNFL publicly announced its agreement because of the claims of the anti-nuclear transport advocacy coalition that BNFL's latest reprocessing facility, would be an utter failure (Milne Nov. 17, 1990). According to Harold Bolter, director of corporate affairs for BNFL, the claims of the anti-nuclear transport advocacy coalition "would have been laughable if they hadn't been taken seriously by some parts of the media" (Milne Nov. 17, 1990). Bolter's words illustrate the importance of publicity and the spread of knowledge for the anti-nuclear transport advocacy coalition. Controversy over waste also increased in the United States, West Germany, Sweden, France, and Canada (Milne Aug. 18, 1990, Milne June 29, 1991).

Greenpeace actively encouraged the dissemination of information through the press and exposed clandestine activities in the field of nuclear waste. For example, in December of 1990, Greenpeace exposed the French government in a scandal over plutonium contamination at a former nuclear dump near Paris (Hughes Dec. 1990). Greenpeace also exposed an alleged leak from a former French nuclear test site in the South Pacific (New Scientist June 29, 1991). Greenpeace urged the world to reevaluate nuclear power. The OECD even published material entitled, "The Real Costs of Nuclear Power" (Jones 1992). Nuclear power truly lost its prestige of the late 1970s-mid 1980s.

In 1992, with the Rio Convention approaching, the anti-nuclear transport advocacy coalition received its first substantial response from the Council. At this time, the advocacy coalition consisted of not only the Commission and/or Parliament, but also the Economic and Social Committee and a scientific and technical committee set up specifically to study the nuclear transport issue. In February the Council implemented a directive for the supervision and control of shipments of radioactive waste between Member States and between the Community and international entities (92/3/Euratom, OJ L 35). Significantly, the directive stated that a Member State would not be able to refuse acceptance of waste which originated within its borders and had been exported. Further, the directive called on the Commission to create a standard document to be used for documenting all shipments of nuclear and

radioactive materials within, into, and out of the EU and called attention to the practice of illegal transport. The EU began to unify its nuclear waste transport policy.

In addition to the anti-nuclear transport advocacy coalition's push for address of the problem, the international community also demanded attention to the issue. Many nations had substantially increased their use of nuclear power as a percentage of overall energy used. According to the OECD, approximately half of the EU Member States had increased their nuclear usage since 1981.

In 1990, the EU overall had a net increase of 174 percent in nuclear energy production and use since 1981. In contrast, OECD countries only had a net increase of 138 percent in nuclear energy production and consumption during the same time period. Additionally, the EU started 1981 with a much higher consumption rate.<sup>3</sup> Thus, the EU utilized a far greater quantity of nuclear energy than other regions of the OECD. Further, the EU as a whole has an extremely high population density as compared to the OECD countries as a group. Therefore less space exists for nuclear and radioactive waste disposal (See Table 1).

Nation	<sup>3</sup> Nuclear <sup>3</sup> Energy as <sup>3</sup> Mtoe1 <sup>3</sup>	<sup>3</sup> Change in <sup>3</sup> Nuclear <sup>3</sup> Energy Use <sup>3</sup> Since 1981 <sup>3</sup> (in %)	<sup>3</sup> People Per <sup>3</sup> Square <sup>3</sup> Kilometer
Belgium	<sup>3</sup> 11.17	<sup>3</sup> +233.3	<sup>3</sup> 328.0
France	<sup>3</sup> 86.35	<sup>3</sup> +214.6	<sup>3</sup> 103.9
Germany	<sup>3</sup> 38.42	<sup>3</sup> +125.0	<sup>3</sup> 257.0
Italy	<sup>3</sup> 0.00	<sup>3</sup> (-100.0)	<sup>3</sup> 189.6
Spain	<sup>3</sup> 14.48	<sup>3</sup> +480.9	<sup>3</sup> 77.3
United Kingdom	<sup>3</sup> 18.38	<sup>3</sup> + 85.8	<sup>3</sup> 235.5
Japan	<sup>3</sup> 55.00	<sup>3</sup> +143.1	<sup>3</sup> 328.0
United States	<sup>3</sup> 169.25	<sup>3</sup> +124.7	<sup>3</sup> 27.0
EU	<sup>3</sup> 169.68	<sup>3</sup> +174.0	<sup>3</sup> 172.0
OECD	<sup>3</sup> 447.84	<sup>3</sup> +138.0	<sup>3</sup> 117.4

1Million metric tons of oil equivalent.

Statistics for Select OECD Nations. Source: OECD in Figures (1993).

## V. The Current International Environment Concerning Nuclear Waste Transport

From 1957 to 1992 little activity had occurred within the EU concerning nuclear waste transport policy. The year 1992 marked the beginning of the anti-nuclear transport advocacy coalition's efficacy, partially as the world awaited the Rio Convention in June. The Rio Convention called attention to the international ramifications of nuclear waste policy. Since approximately 1988, the general press had reported on the international nuclear waste trade, but the Rio Convention and the creation of Agenda 21 established the first holistic, formal, global arena in which to create policy concerning the movement of nuclear waste. Prior to the Rio Convention, all addresses to the problem remained very issue and area specific, such as the Organisation for Economic Co-Operation and Development's (OECD) Report on the Environment in 1986. In the 1992 EU Commission report to UNCED, the Commission noted that the transport of nuclear materials "will have to be subject to more exacting and more specific regulation" (EC Commission Report 1992: 45.) The UNCED Convention at Rio truly marked a change in the international nuclear and radioactive waste transport policies of the EU. Rio gave developing nations more weight in the realm of the international waste trade. The developed nations were forced to acknowledge the potential harms of dumping nuclear waste in developing nation. The Agenda 21 document which emerged from the Rio Conference began to define the framework between developed and developing countries on nuclear and radioactive waste policies. According to Boutros Boutros-Ghali, Secretary General of the United Nations, "Agenda 21 will remain a key point of reference for the rest of the decade for Governments and international organizations, as well as the non-governmental community and the public at large" (United Nations 1993: v). Agenda 21 states that "developed countries should cooperate with developing countries in establishing or strengthening their radioactive waste management infrastructures, including legislation, organizations, trained manpower and facilities for the handling of wastes generated from nuclear applications" (United Nations 1993: 166).

In summary, the conference called for nations to adopt interactive, integrated approaches for safe management, transportation, storage, and disposal of radioactive wastes to protect human health and the environment.

Little time has elapsed since the Rio Convention, but the international community has clearly impacted the legislation which has emerged from the EU since 1992. Before 1992, most legislation dealing with waste transport concerned only hazardous and toxic waste, but since 1992, the anti-nuclear transport advocacy coalition's demands were acted upon by the Council. The Commission issued a decision on October 1, 1993 "establishing the standard document for the supervision and control of shipments of radioactive waste referred to in Council Directive 92/3/Euratom" (1993 OJ L 268). Then, the Council adopted "Council Regulation (Euratom) No. 1493/93 of 8 June 1993 on shipments of radioactive substances between Member States" (1993 OJ L 148). The regulation noted the need for a uniform policy concerning the transport of radioactive and nuclear waste as a result of the removal of frontier controls in the Community as of January 1, 1993, and adopted the standardization proposed in the Commission decision of October 1, 1993. Since regulations must be adhered to by Member States, this is a meaningful action. However, this regulation expired on January 1, 1994.<sup>4</sup>

## The Future of Nuclear Waste Transport

Jessica Tuchman Matthews, Vice President of the World Resources Institute, reported five trends that will shape nuclear power production in the future at the American Nuclear Society/European Nuclear Society meeting in November of 1993. These trends are "the environmental summit in Rio; with its view that environmental and growth interests must coexist; the effort to internalize all costs; the push to reduce greenhouse gases (which she said will not go away as an issue); the 'sea change' in attitudes toward more cooperation between environmentalists and business; and the ending of the Cold War and the need to control the fissile materials from the former USSR, and the desire by some for a nuclear weapons-free world" (Blake, Payne, et al 1993: 17). While Matthews' remarks seem to point to a future growth in the use of nuclear energy, others question whether growth will continue unless waste problems are first solved. At the same conference, A.C. Robison of the U.S. Department of Energy commented "Whereas the nuclear waste issue is the 'Achilles' heel of the nuclear industry, the

issue of nuclear waste transportation is the 'Achilles' heel of the Achilles' heel'" (Blake, Payne, et al 1993: 23).

The transportation of nuclear waste is a hindrance to the nuclear industry because of its potential to cause widespread disastrous effects. Nuclear waste transport's potential effects cannot be localized to one group, such as the community near the Yucca Mountain disposal site, for example. The movement of nuclear wastes within and between countries poses widespread risks.

The end of the Cold War poses an interesting problem to the world. Since the end of the Cold War and the signing of the Start I and Start II agreements between the former Soviet Union and the United States, "more than 50,000 nuclear weapons may be decommissioned during the next ten years" (Von Hippel, Miller, et al 1993). Currently, approximately 1,000 to 2,000 nuclear warheads are being dismantled in both the United States and Russia per year. The process of transporting thousands of decommissioned missiles to storage and dismantling locations and disposing of weapons grade plutonium and high enriched uranium (HEU) will be an extremely difficult task, especially when one considers Russia's precarious economic situation. In terms of quantity of future nuclear caches, "surplus U.S. warheads contain about 50 tons of plutonium and up to 400 tons of HEU. Surplus Soviet warheads, including the 10,000 that have already been dismantled, contain about 100 tons of plutonium and more than 500 tons of HEU" (Von Hippel, Miller, et al 1993). Moreover, neither the United States nor Russia has the capacity to decommission the missiles at an adequate rate. The United States and the former Soviet Union are researching different ways to dump nuclear and radioactive waste. "Facilities have already been constructed in both countries (U.S. and the former Soviet Union), as well as in France, Britain, and Belgium, to dispose of high-level reprocessing waste by incorporating it into glass that will eventually be placed in deep geologic repositories," a process known as glassification (Von Hippel, Miller, et al 1993). Thus, safe storage of warhead materials is currently the most critical objective for both countries because they are unable to perform all the actions necessary to safely and securely break down the missiles' nuclear contents.

However, an alternative to dumping nuclear waste exists. HEU can be diluted to approximately four percent uranium, a low enriched uranium (LEU), which can be used in standard light-water reactors. The plutonium from nuclear warheads can be utilized to form mixed-oxide fuel (MOX), which can also be used in commercial light-water reactors.

However, the remaining plutonium in the discharged spent fuel could still be used in nuclear bombs of considerable power. Thus, the "Achilles' heel," transportation of nuclear materials, is still an issue.

Some nations have researched how to break down plutonium found in spent fuel from some reactors. Although the current cost of using MOX is considerably higher than the cost of using LEU, partial infrastructure for recycling plutonium from spent reactor fuel has been set up in Japan and some Western European nations. The hearing before the Committee on Governmental Affairs of the United States' Senate on March 9, 1993 concerning the disposing of plutonium in Russia reported that "a realistic price for MOX fuel fabrication and delivery today is \$1,500 per kilogram MOX.... MOX would therefore be about one-third more expensive than LEU fuel, even disregarding the cost of separating the plutonium from spent fuel and the extra security costs for MOX recycling" (101). Further, neither Russia nor the United States has a MOX fabrication plant. Therefore, the thorny transportation issue continues to pose a problem.

The International Atomic Energy Agency (IAEA) is a likely candidate to monitor the storage, use, and/or disposal of the warhead materials. Currently, the IAEA under the auspices of the Code of Practice for International Transboundary Movement of Radioactive Waste only lightly impacts the transport of nuclear and radioactive materials. Specific international safeguards have been established, but transport of nuclear materials is a legal practice with the rules essentially set by individual nations.

## VI. Conclusion

This study confirms Sabatier's theory that policy is a product of interaction between two advocacy coalitions within an issue-specific policy subsystem. Between 1957 and 1993 EU policymakers learned much about the positive and negative aspects of the nuclear industry as a consequence of interaction with members of the epistemic communities. This is not to discredit the impact of business interests upon the EU, however. Further, international players were extremely influential concerning the nuclear and radioactive waste transport issue. The press was perhaps the deciding factor in turning the direction of EU policy towards a more environmentally protective angle. After 1987, the anti-nuclear advocacy coalition incorporated transport of nuclear and radioactive materials into its agenda.

The anti-nuclear advocacy coalition made nuclear waste transport its central unifying cause, thereby broadening its base and creating a new advocacy coalition, the anti-nuclear waste transport advocacy coalition. In response to the newly created advocacy coalition, a new, pro-nuclear waste transport advocacy coalition was formed to counter the opposing coalition's attempts to influence policy within the nuclear waste transport policy subsystem.

Both the pro-nuclear waste transport advocacy coalition and the anti-nuclear waste transport coalition evolved during the Policy-making process. The pro-nuclear transport advocacy coalition's membership base remained consistent, but gained power as the nuclear industry became a larger economic force and the Council funded its ventures.

However, the pro-nuclear waste transport advocacy coalition also lost power as nuclear energy became less prestigious. The pro-nuclear waste transport advocacy coalition consists of developed nuclear powers, including Germany, France, the United Kingdom, the United States, the former Soviet Union, and pro-nuclear experts. The anti-nuclear waste transport advocacy coalition expanded from a small nucleus of Danish and Green elected officials to include most European nations, the EU Commission, the EU Council, the developing world, the media, and a number of technical and scientific experts. Both the business interest advocacy coalition and the environmental advocacy coalition grew considerably following the creation of Euratom.

Concurrently, the adoption of the Single European Act increased contact by members of the two juxtaposed advocacy coalitions outside of formal Policy-making structure with members within the formal EU structure. The level of interaction surmounted the traditional emphasis upon national political chains of command.

An analysis of the EU's Policy-making experiences provides important lessons for the world's efforts to control international nuclear waste transport. The surplus of nuclear material resulting from the decommissioning of American and Russian military missiles poses an interesting problem for the world. Facilities to transform spent nuclear fuel to MOX exist in Japan, Germany, France, and Switzerland, while plans for construction have been established in the United Kingdom, Belgium, and the Soviet Union. Further, the only civilian reprocessing plants in the world exist in France, Belgium, Germany, India, Japan, Russia, the United Kingdom, and the United States.

EU and international nuclear and radioactive waste transport policy will not, in all likelihood, incorporate the same goal as hazardous waste policy, which is to eventually eliminate its trans-national movement. There are simply not enough facilities to handle the world's nuclear and radioactive waste for reprocessing purposes. Presently, the anti-nuclear transport advocacy coalition's central aim is to end the dumping of nuclear and radioactive waste in those developing nations who lack the appropriate managing facilities.

In conclusion, the case of EU Policy-making in the field of nuclear and radioactive waste transport provides empirical evidence to support the theory that policy outcomes are a function of interaction between two advocacy coalitions within a policy subsystem. Nuclear issues created an avenue for input from the epistemic community during all stages of EU policy formation. Thus, the Sabatier model is supported by the Policy-making process within the European Union concerning nuclear waste transport.

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