Environmental Federalism in the European Union and the United States

By David Vogel, Michael Toffel and Diahanna Post

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I. INTRODUCTION

In both the European Union (EU) and the United States (US) responsibility for the making of environmental policy is divided between federal and EU institutions on one hand, and local institutions on the other. The former is comprised of the EU and the American federal government while the latter consist of state and local governments in the US, and member states and sub-national authorities in Europe. (For ease of presentation, we will at times refer to both of the former as central authorities and both of the latter as states.) Historically, environmental

rules and regulations were primarily made at the state or local level on both sides of the Atlantic. However the emergence of the contemporary environmental movement during the late 1960s and early 1970s led to greater centralization of environmental policy-making in both the US and Europe.

In the US, this change occurred relatively rapidly. By the mid 1970s, federal standards had been established for virtually all forms of air and water pollution. By the end of the decade, federal regulations governed the protection of endangered species, drinking water quality, pesticide approval, the disposal of hazardous wastes, surface mining and forest management, among other policy areas. The federalization of American environmental policy was strongly supported by pressures from environmental activists, who believed that federal regulation was more likely to be effective than at the state level.

In Europe, this change occurred more gradually, largely because the Treaty of Rome contained no provision providing for environmental regulation by the European Community (EC). Nonetheless, more than seventy environmental directives were adopted between 1973 and 1983. Following the enactment of the Single European Act (1987), which both provided a clear legal basis for EC environmental policy and eased the procedures for the approval of Community environmental directives, EC environmental policy-making accelerated. Originally primarily motivated by need to prevent divergent national standards from undermining the single market, it became an increasingly important focus of EC/EU policy in its own right. Each successive treaty has strengthened the EU's commitment to and responsibility for improving environmental quality and promoting sustainable development throughout Europe. Thus notwithstanding their different constitutional systems, in both the EU and the US the locus of environmental policy-making has become increasingly centralized over the last three decades.

Nevertheless, state governments continue to play a critical role in environmental regulation in both sides of the Atlantic. Most importantly, states remain an important locus of policy innovation and agenda setting. In many cases, new areas of environmental policy are first addressed at the state level and then subsequently adopted by the central authority. Moreover, many state regulations remain more stringent or comprehensive than those of the central authority; indeed in some policy areas states retain primary responsibility. In other cases, responsibility for environmental policy-making is shared by both levels of government. Not surprisingly, in both federal systems, there are ongoing disputes about the relative competence of central and state authorities to regulate various dimensions of environmental policy.

This paper explores the dynamics of federal environmental policy making in both the United States and the European Union. At what level of government are new standards initiated? Under what circumstances do state regulations become diffused to other states and/or become adopted by the central authority? Under what circumstances can or do states maintain regulations more stringent than those of other states?

We address these questions through a comparative study of the development of American and European regulatory policies in three areas: automobile emissions, packaging waste and global climate change. Each policy area reflects a different stage in the evolution of environmental policy. These cases also demonstrate both the differences and similarities in the pattern of environmental policy-making in the United States and the European Union.

Automobile emissions typify the first generation of environmental regulation. A major source of air pollution, particularly in urban areas, automobiles were among the first targets of environmental regulation during the 1960s and 1970s and they remain an important component of environmental policy in every industrialized country. Packaging typifies the next generation

of environmental regulation. Its emergence on the policy agenda during the 1980s reflected the increased public concern about the scarcity of landfills and the need to conserve natural resources. Unlike automobile regulation, which primarily affects only two industries, albeit critical ones, namely automotive manufactures and the refiners of gasoline, packaging waste regulations affect virtually all manufactures of consumer goods. The increased priority on reducing packaging waste and promoting re-use and recycling symbolizes a shift in the focus of environmental regulation from reducing pollution to promoting eco-efficiency.

Global climate change represents a relatively new dimension of environmental policy. It first surfaced during the mid 1980s, but it has become much more salient over the last decade. This policy area exemplifies the increasingly important international dimension of environmental regulation: global climate change both affects and is affected by the regulatory policies of virtually all countries. It also illustrates the growing economic scope of environmental regulation: few economic activities are likely to be unaffected by policies aimed at reducing the emission of carbon and other greenhouse gases.

These three policy areas provide a useful window on the changing dynamics of the relationship between state and central regulation in both the USA and the EU. Since the mid 1980s, automobile emissions standards have been more centralized in the EU than in the US. The US permits states to adopt more stringent standards while the EU does not. However both the EU and the US have progressively strengthened their regulations governing automotive emissions and fuel composition, though most American federal standards remain more stringent than EU ones. For its part, California, which is permitted its own emission standards, has become a world leader in the effort to encourage the development and marketing of low and zero-emission vehicles.

The dynamics of the regulation of packaging waste regulation differs considerably. In the US, the federal government plays little or no role in setting standards for packaging waste: packaging, recycling and waste disposal are all the responsibility of state or local governments. However, the lack of federal standards has neither prevented nor discouraged many state governments from adopting their own regulations. There has been considerable innovation at the state level: a number of local governments have developed ambitious programs to reduce packaging waste and promote recycling. There has been little pressure for federal standards and the federal government has not attempted to limit state regulations with one important exception: federal courts have repeatedly found state restrictions on "imports" of garbage to violate the interstate commerce clause of the American constitution.[1]

In the EU, the situation is more complex. Member states began to regulate packaging waste during the 1980s while the EU became formally involved in this policy area in 1994. However, in contrast to automotive emissions, the responsibility for packaging regulation remains shared between central and state authorities. There is considerable diversity among state regulations and member states continue to play an important role in policy innovation, often adopting regulations more stringent than those of the EU. State packaging waste regulations have been an ongoing source of conflicts between central and local authorities, with the Commission periodically challenging particular state regulations on the grounds of their incompatibility with the single market. In addition, the central government has imposed maximum as well as minimum standards for waste recovery, though this is likely to change soon.

On balance, European packaging standards are more stringent and comprehensive than those prevailing in the US. Europe's "greener" member states have made more ambitious efforts to reduce packaging waste than their American state counterparts, while the EU's packaging

waste directive provides a centralized floor on state standards which does not exist in the US. Nevertheless, there have been a number of important US state standards.

In the case of climate policy, important initiatives and commitments to reduce emissions of greenhouse gases have taken place in Europe at both the central and state level with each often complementing and reinforcing one another. In the US, by contrast, there are no federal climate change regulations. As in the case of packaging waste policies, there have been a number of state initiatives, but in contrast to packaging waste, the lack of central regulation has become politically salient; the nation's "greener" states have strongly pressured for centralized standards, though their efforts to date have been unsuccessful. In addition, there have conflicts over the legal authority of states to establish policies in this area.

The gap between American and European regulatory policies regarding climate change is more substantial than in the other two policy areas. The EU and each member state has formally ratified the Kyoto Protocol, while the US has not. Since American states cannot enter into international environmental agreements, this means that no American regulatory authority is under any international obligation to regulate carbon emissions. While all EU member states have adopted climate change policies, many American states have not. Moreover, American state regulations tend to be weaker than those adopted or being adopted by the member states of the EU. The EU has established a regulatory regime based on emissions trading and shared targets to facilitate member states' carbon dioxide reduction programs, while in the critical area of vehicle emissions, the American central government has become an obstacle to more stringent state regulations.

II. AUTOMOBILE EMISSIONS

United States

The regulation of automobile emissions in the United States began in 1960 when the state of California enacted the Motor Vehicle Pollution Control Act. This statute established a state board to develop criteria to approve, test, and certify emission control devices.[2] Within two years, the board had certified seven devices that were "bolt-on pollution controls, such as air pumps that improve combustion efficiency"[3] and required their installation by 1965.[4] After opposing emission standards in the mid-1960s, "the automobile industry began to advocate federal emissions standards for automobiles [after] California had adopted state standards, and a number of other states were considering similar legislation."[5] In 1965, Congress enacted the federal *Motor Vehicle Air Pollution Control Act*, which authorized the establishment of auto emission standards. The first federal standards were imposed for 1968 model year vehicles for carbon monoxide and hydrocarbons.

Two years later, in 1967, Congress responded to automobile industry's concerns about the difficulty of complying with different state standards by declaring that federal emission controls would preempt all state emission regulations. However, an exception was made to California provided that the state afforded adequate "lead time to permit development of the necessary technology, given the cost of compliance within that time."[6] The exemption was granted "in recognition of the acute automobile pollution problems in California and the political power of the California delegation in the House of Representatives."[7] One legal scholar notes, "The legislative history of the 1967 waiver provision suggests two distinct rationales for its

enactment: (1) providing California with the authority to address the pressing problem of smog within the state; and (2) the broader intention of enabling California to use its developing expertise in vehicle pollution to develop innovative regulatory programs."[8]

In 1970, President Nixon asked Congress to pass more stringent standards based on the lowest pollution levels attainable using developing technology.[9] Congress responded by enacting the technology-forcing Clean Air Act Amendments of 1970 which required automakers to reduce their emissions of carbon monoxide and hydrocarbons by 90% within five years and their emissions of nitrogen oxides by 90% within six years.[10] These drastic reductions were intended to close the large gap between ambient urban air pollution concentrations and the federal health-based Nationally Uniform Ambient Air Quality Standards (NAAQS) established pursuant to the US Clean Air Act.[11] Once again, California was permitted to retain and/or enact more stringent standards, though these were specified in federal law. [12]

The 1977 and 1990 amendments to the Clean Air Act established more stringent emissions standards for both automobiles and trucks. In addition to again waiving federal preemption for California, they authorized any state that was not meeting NAAQS for automotive pollutants the option of adopting California's standards.[13] To date, Massachusetts, New York, Vermont and Maine have chosen to do so.[14] Thus since 1977, the US has had a nation-wide two-tiered system of automotive emission regulation: one based on federal standards and the other on California's. This regulatory policy "reflects a compromise between two interests: the desire to protect the economies of scale in automobile production and the desire to accelerate the process for attainment of the NAAQS."[15] Thus while automotive emission standards are primarily shaped by federal legislation, the federal government has provided states with the opportunity to chose between two sets of standards.

California continues to play a pioneering role in shaping automotive emissions policy. In 1990, California adopted a program to encourage Low-Emission Vehicles (LEV). This included a Zero Emission Vehicle (ZEV) program meant to jump-start the market for these vehicles. The ZEV program required that such vehicles comprise at least 2% of new car sales by 1998, 5% by 2001, and 10% by 2003. When this requirement was approved, the only feasible technology that met ZEV standards were electric vehicles, whose emissions were over 90% lower than the cleanest gasoline vehicles -- even after including the emissions from the power plants generating the electricity required to recharge them.[16]

Massachusetts and New York subsequently adopted the California LEV plan, but in 1992 New York's decision was challenged in the courts by the automobile manufacturers on the grounds that it was sufficiently distinctive from California's to constitute a" third" automotive emission requirement, which the Clean Air Act explicitly prohibits. Shortly afterward, the manufacturers filed another suit against both states arguing that since their standards were not identical to those of California, they were preempted by the Clean Air Act. As a result, both states were been forced to modify some of their standards.

In 1998, California's Air Resources Board (ARB) identified diesel particulate matter as a toxic air contaminant[17] and subsequently launched a Diesel Risk Reduction Plan in 2000 to reduce diesel particulate emissions by 75% in 2010. It also established new requirements for low-sulfur diesel fuel and particulate standards for new diesel engines and vehicles, and required new filters on existing engines.[18]

More recently, California's automotive emissions standards have become a source of conflict with the federal government, which has not enacted new automotive emission standards since 1990. Two novel California regulations, which the state claims are designed to reduce

automobile emissions, have been challenged by both the automotive industry and the federal government on the grounds that they indirectly regulate fuel efficiency, an area of regulation which Congress has assigned exclusively to the Federal government.[19]

The first case involves a modification California made to its ZEV program in 2001 that allowed automakers to earn ZEV credits for compressed natural gas, gasoline hybrid electric, and methanol fuel cell vehicles.[20] General Motors and DaimlerChrysler sued California's ARB over a provision that that allowed manufacturers the option to earn ZEV credits from technology such as that included in gasoline hybrid-electric vehicles, which were already being sold by rivals Honda and Toyota. Because hybrids still use gasoline, General Motors and DaimlerChrysler argued that California's efforts were effectively regulating fuel economy.[21] The US Justice Department supported the auto manufacturers' claim on the grounds that "[T]he Energy Policy and Conservation Act provides that when a federal fuel economy standard is in effect, a state or a political subdivision of a state may not adopt or enforce a law or regulation related to fuel economy standards."[22]

California responded by claiming that it was acting pursuant to its exemption under the US Clean Air Act to regulate auto emissions. In June 2002, a Federal District Court issued a preliminary injunction prohibiting the Air Resources Board from enforcing its regulation.[23] In response, the ARB modified the ZEV program to provide two alternative routes for automakers to meet ZEV targets.[24] At the same time, California imposed new regulations which required that the auto industry sell increasing numbers of fuel-cell vehicles in the state over the next decade.[25] However in the summer of 2003, both automobile firms dropped their suits against California after its regulatory authorities expanded their credit system for hybrids to encompass a boarder range of vehicles.[26] This will in turn increase the availably of advanced-technology vehicles in states such as New York and Massachusetts which have adopted regulations similar to California's However, as there is no indication that federal standards will be similarly strengthened, tensions between federal and state requirements are likely to persist. (The second dispute deals with climate change and will be discussed below).

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European Union

As in the US, in Europe the regulations of state governments have been an important driver for centralized automotive emission standards, with Germany typically playing the role in Europe that California has played in the US. The EU has progressively strengthened its automotive emission standards both to improve environmental quality and to maintain a single market for vehicles. However, European standards were strengthened at a much slower rate than in the US and they were harmonized much later. Thus in 1989 the EU imposed standards to be implemented in 1992 that were based on US standards implementing legislation enacted in 1970 and 1977, while the EU did not establish uniform automotive emission requirements until 1987, although some fuel content standards were harmonized earlier.

However, unlike the US, which has continued to maintain a two-tiered system – and indeed extended it in 1977 by giving states the option of adopting either federal or California standards -- centralized standards for automobile emissions have existed in Europe since 1987. During the 1970s and 1980s, there was considerably more tension between central and state regulations in Europe than in the US. More recently, the opposite has been the case.

During the 1960s, France and Germany imposed limits on emissions of carbon monoxide and hydrocarbons for a wide range of vehicles, thus forcing the EC to issue its first automotive emission standards in 1970 in order to prevent them from serving as obstacles to internal trade. Shortly afterward, there was substantial public pressure to reduce levels of airborne lead, a significant portion of which came from motor vehicles. The most severe restrictions were imposed by Germany, which in 1972 announced a two-stage reduction: the maximum lead content for gasoline was defined at 0.4 grams per liter in 1972, and .15 in 1976. Britain enacted less severe restrictions. No restrictions were imposed by any other member state.

The resulting disparity in national rules and regulations represented an obstacle to the free movement of both fuel and motor vehicles within the Community. For not only did these divergent national product regulations limit intra-EC trade in gasoline, but even more importantly, since different car engines were designed to run on fuels containing different amounts of lead, they created a barrier to intra-Community trade in motor vehicles themselves. Accordingly, the Community was driven to move toward harmonized standards. After prolonged negotiations, the Community approved a directive establishing both minimum and maximum lead standards. (The latter was identical with Germany's standards.) The EU subsequently enacted legislation urging all member states to reach the most stringent level as quickly as possible and to make at least some unleaded gasoline available for sale.

Unlike the lead standard, for which the German regulations played an important role, the EC's standards for sulfur in fuel did not reflect the policy preferences of any member state. The sulfur standard adopted in 1975 required all countries to reduce their sulfur emissions, including France, Germany, and the United Kingdom.[27] France, for instance, had already adopted standards on sulfur in diesel fuel in 1966, but the more stringent levels in the European-wide standard forced the French standards lower as well. Germany's standard was adopted at the same time and was similar to that of the EC.

In contrast to the fuel standards, the auto emissions standards adopted during the 1970s were not mandatory. In fact, until 1987, member states were permitted to have standards less stringent than the European-wide standards, although they could not refuse to register or sell a vehicle on their territory if it met EC maximum standards. In effect, they were maximum or ceiling requirements. Indeed, these early standards were not developed by the EC, but in fact were based heavily on emission standards from the United Nations Economic Council for Europe (UNECE).

In 1985, the German minister responsible for environmental affairs announced, on his own initiative, that as of 1989 all cars marketed in Germany would be required to meet American automotive emission standards, commonly referred to as "US '83." The adoption of the American standards required the installation of catalytic converters, which could only use unleaded gasoline. This created two problems within Europe. Most importantly, it meant that automobiles produced in France and Italy, whose producers lacked the technology to incorporate the converters into their smaller vehicles, would be denied access to the German market. In addition, it meant that German tourists who drove their cars to southern Europe would be stranded, due to unavailability of unleaded gasoline in Greece and Italy.

It was Germany's insistence on requiring stringent standards for vehicles registered in its country that forced the EU to adopt uniform automobile emission standards. This in turn led to a bitter debate over the content of these standards, pitting the EC's greener member states - namely Germany, Denmark and the Netherlands - against the EC's other major automobile producers, namely Britain, France and Italy who favored more flexible standards. The resulting

Luxembourg Compromise of 1987 established different emission standards for different sizes of vehicles with different time-tables for compliance. It thus represented the first uniform set of automotive emission standards within Europe. These standards have been subsequently strengthened several times, and some of the EU's most recent standards are more stringent than those of the US, which has not tightened them for more than a decade. In 1999, the European Union adopted a labeling plan requiring all cars sold within the European Union to show their fuel efficiency and carbon dioxide emissions in a sticker on the product.

During the 1990s, the politics of automobile emission standards became much less affected by member state differences or tensions between central and state standards. The most important initiative of this period, the Auto-Oil Program, first adopted in 1996, was aimed at bringing together the Commission and the auto and oil industries to work on comprehensive ways to reduce pollution. After a series of negotiations, the program ultimately tightened vehicle emission limits and fuel quality standards for sulfur and diesel, as well as introduced a complete phase-out of leaded gasoline.[28] In 2003, the EU approved a directive requiring that all road vehicle fuels be sulfur free by 2009. With the finalization of Auto-Oil I and II, as the programs are known, the shift from state to centralized automotive emission requirements appears to be complete. The debates and negotiations over proposals to regulate pollution from vehicles now take place between the auto and oil producers and the European Commission and Parliament.

III. PACKAGING WASTE

United States

The regulation of packaging wastes is highly decentralized in the United States. The role of the federal government remains modest and virtually all policy initiatives have taken place at the local level. While the 1976 Resource Conservation and Recovery Act (RCRA) established stringent requirements for the management of hazardous wastes, RCRA also declared that the regulation of landfills accepting municipal solid waste (MSW) was to remain primarily the domain of state and local governments.[29]As a result, there is considerable disparity in the handling of packaging wastes throughout the United States.

On balance American standards tend to be considerably laxer than those in Europe. While many state legislatures have established recycling goals, few have established mandatory targets.[30] The US generates more MSW per capita than any other industrialized country, and 50% more than most European countries.[31] From 1995-1998, the percentage of the MSW generated that has been recovered for recycling remained steady at 44 in the US, while it rose from 55 to 69 in Germany, thanks in part to its Packaging Ordinance.[32]

State and local governments have implemented several policy mechanisms to reduce MSW including packaging waste. Deposit-refund schemes, minimum recycling content requirements, community recycling programs, and disposal bans are among the most common policy mechanisms designed to divert materials to recycling from waste streams destined for landfills or incinerators.

Eleven states have developed deposit-refund schemes to encourage recycling of beverage containers.[33] When Oregon passed the first bottle bill requiring refundable deposits on all beer

and soft drink containers in 1971, its objective was to control litter rather than spur recycling. When the city of Columbia, Missouri passed a bottle bill in 1977, it became the first local container deposit ordinance in the US and remained the only local initiative until it was repealed in 2002.[34] In general, deposit-refund laws require consumers of soft drinks and beer packaged in glass, metal, and plastic containers to pay a deposit that is refundable when the container is returned.[35] These schemes typically do not, however, require that these containers be recycled or reused.[36] California recently expanded its program to include non-carbonated beverages, which added roughly 2 billion containers, nearly 40% of which are plastic. [37]

To reduce the burden on landfills and incinerators, whose construction and expansion are increasingly politically infeasible due to community objections, many states and local governments have developed recycling programs that enable or mandate the recycling of various materials. Such programs remain exclusively the purview of state and local government because "national laws do not allow EPA to establish federal regulations on recycling."[38] Virtually all New Yorkers, 80% of those in Massachusetts, and 70% of Californians have access to curbside recycling.[39] Recycling programs typically include paper as well as metal and glass containers, while some programs also include containers of particular plastic resins

In Oregon, container glass comprises nearly 4% of that state's total solid waste stream, and its deposit-refund and collection schemes resulted in 55% of this material being collected and recycled.[40] 60% of Oregon's recycled container glass comes from its deposit-refund scheme, 25% is collected from residential curbside programs, and the remainder comes from commercial solid waste hauler programs, disposal sites and other private recycling activities.

A few states have sought to facilitate recycling by banning packaging that is particularly difficult to recycle such as aseptic drink boxes, which are made of paper, foil and plastic layers that are difficult to separate. Connecticut banned plastic cans in anticipation of obstacles this product would pose to materials recovery. In 1989, Maine banned aseptic drink boxes because of a concern about their ability to be recycled, though this restriction was subsequently repealed. The Wisconsin Legislature considered imposed a ban on the sale of aseptic drink boxes and bimetal cans (drink cans with aluminum sides and bottom and a steel top). Instead, the state enacted an advisory process permitting it to review a new packaging design if the packaging appeared difficult to recycle.[41] In addition, a few states including Wisconsin and South Dakota have banned the disposal of some recyclable materials to bolster their recycling rates.[42]

A few states require certain types of packaging to contain some minimum amount of recycled material. Oregon's 1991 Recycling Act requires that by 1995, 25 percent of the rigid plastic packaging containers (containing eight ounces to five gallons) sold in that state must either contain at least 25 percent recycled content, be made of a plastic material that is recycled in Oregon at a rate of at least 25 percent, or be a reusable container made to be reused at least five times.[43] This law also requires glass containers to contain 35 percent recycled content by 1995 and 50 percent by 2000.[44]

California requires manufacturers of newsprint, plastic bags, and rigid plastic containers to include minimum levels of recycled content or achieve minimum recycling rates. Plastic trash bag manufacturers are required to include minimum percentages of recycled plastic post-consumer material in trash bags they sell in California.[45] California's Rigid Plastic Packaging Container Act (1991) sought to reduce the amount of plastic being landfilled by requiring that that containers offered for sale in the state meet criteria akin to the Oregon law. These criteria "were designed to encourage reuse and recycling of RPPCs, the use of more postconsumer resin in RPPCs and a reduction in the amount of virgin resin employed RPPCs."[46]

Wisconsin's Act on Recycling & Management of Solid Waste requires that products sold in the state must use a package made from at least 10% recycled or remanufactured material by weight.[47] Industrial scrap as well as pre- and post-consumer materials count towards the 10% requirement.[48] Exemptions are provided for packaging for food, beverages, drugs, cosmetics or medical devices that lack FDA approval. However, according to the President of the Environmental Packaging International, "Wisconsin has done little enforcement of its 10% recycled content law."[49]

Governments at the federal, state, county, and local levels have also promulgated policies mandating government procurement of environmentally preferable products.[50] In 1976, Congress included in RCRA requirements that federal agencies--and state and local agencies that use appropriated federal funds--that spend over a threshold amount on particular items to purchase products with recycled content when their cost, availability, and quality are comparable to virgin products.[51] (RCRA does not authorize any federal agency to enforce this provision.[52])

States requiring government agencies to purchase environmentally preferable products include California, Georgia, Oregon, and Texas.[53] California's State Assistance for Recycling Markets Act of 1989 and Assembly Bill 11 (1993) required government agencies to give purchasing preference to recycled products and mandated that increasing proportions of procurement budgets be spent on products with minimum levels of recycled content. Accordingly, the California Integrated Waste Management Board (CIWMB) developed the State Agency Buy Recycled Campaign requiring that every State department, board, commission, office, agency-level office, and cabinet-level office purchase products that contain recycled materials whenever their price, quality, and availability are comparable to virgin products.

Procurement represents one of the few areas in which there have been federal initiatives. A series of Presidential Executive Orders issued throughout the 1990s sought to stimulate markets for environmentally preferable products and "to reduce the burden on landfills."[54] In 1991, President George Bush issued an Executive Order to increase the level of recycling and procurement of recycled-content products.[55] In 1993, President Bill Clinton issued an Executive Order that required federal agencies to purchase paper products with at least 20% post-consumer fiber and directed the US EPA to list environmentally preferable products such as less cumbersome packaging.[56] Clinton raised this recycled content threshold to 30% in a subsequent Executive Order in 1998.[57]

At the national level, several Congressional attempts to pass a National Bottle Bill between 1989 and 1994 were defeated, thanks in part to successful industry lobbying.[58] According to the non-profit Container Recycling Institute, a key reason why bottle bills have not spread to more states or become national law is "the tremendous influence the well-funded, politically powerful beverage industry lobby wields."[59] Thus packaging waste policies primarily remain the responsibility of state and local governments.

European Union

The EU's efforts to control packaging waste contrast sharply with those of the US on two dimensions. First, with the enactment of the 1994 EU directive on packaging and packaging waste central authorities have come to play a critical role in shaping politics to reduce packaging wastes within Europe. Thus in Europe, in marked contrast to the US, this area of environmental policy is shared between central and state governments. Second, unlike in the US, where federal authorities have generally been indifferent to state policies to promote reduce packaging waste,

in Europe, such policies have frequently been challenged by Brussels on the grounds that they interfere with the single market. In addition, the EU's 1994 packaging directive established maximum as well as minimum recycling targets, while maximums have never existed in the US.. As a result, some member states have been forced by Brussels to limit the scope and severity of their regulations.

Historically, recycling policies were made exclusively by the member states. In 1981 Denmark enacted legislation requiring that manufactures market all beer and soft drinks in reusable containers. Furthermore, all beverage retailers were required to take back all containers, regardless of where they had been purchased. To facilitate this recycling program, only goods in containers that were approved in advance by the Danish environmental protection agency could be sold. Thus a number of beverage containers produced in other member states could not be sold in Denmark. Foreign beverage producers complained to the European Commission that the Danish requirement constituted a "qualitative restriction on trade" prohibited by the Treaty of Rome. The Commission agreed.

When Denmark's modified regulation in 1984 failed to satisfy the Commission, the EC brought a complaint against Denmark to the European Court of Justice (ECJ). In its decision, the ECJ upheld most of the provisions of the Danish statue, noting that the EC itself had no recycling program. The court held that since protecting the environment was "one of the Community's central objectives," environmental protection constituted "a mandatory requirement capable of limiting the application of Article 30 of the Treaty of Rome." [60] This represented the first time the Court had sanctioned an environmental regulation that clearly restricted trade.

The result of the ECJ's ruling was to give a green light to other national recycling initiatives. Irish authorities proceeded with a ban on non-refillable containers for beer and soft drinks while a number of Southern member states promptly restricted the sale of beverages in plastic bottles in order to protect their environment, and, not coincidently, domestic glass producers. The Netherlands, Denmark, France and Italy promptly introduced their own comprehensive recycling plans. The most far reaching effort to reduce recycling waste, however, came from Germany.

The 1991 German packaging law was a bold move toward a "closed loop" economy in which products are reused instead of thrown away. It established very high mandatory targets, requiring that 90% of all glass and metals as well as 80% of paper, board and plastics be recycled. In addition only 28% of beer and soft drinks could be sold in disposable containers. The law also established "take-back" requirements on manufacturers, making them responsible for the ultimate disposal of the packaging in which their products were sold and shipped. A quasi-public system was established to collect and recycle packaging, with the costs shared by participating firms.

In addition to making it more difficult for foreign producers to sell their products in Germany, the so-called Topfer Law distorted the single market in another way. The plan's unexpected success in collecting packaging material strained the capacity of Germany's recycling system, thus forcing Germany to "dump" its excess recycled materials throughout the rest of Europe. This had the effect both of driving down prices for recycled materials throughout Europe as well as leading to the improper disposal of waste in landfills in other countries.[61] Yet the ECJ's decision in the Danish Bottle Case, combined with their fear of being labeled "anti-green," made it difficult for the Commission to file a legal challenge to the German regulation.

Accordingly, the promulgation of waste management policy now moved to the EU level. In 1994, following nearly three years of intense negotiations, a directive on packaging waste was

adopted. Adopted by a qualified majority of member states with opposition from Germany, the Netherlands, Denmark, and Belgium, it required member states to recover at least half their packaging waste and recycle at least one-quarter of it, within five years. Ireland, Greece and Portugal were given slightly lower targets. More controversially, the directive also established maximum standards: nations wishing to recycle more than 65% of their packing waste could do so, but only if they had the facilities to use their recycled products. It was this provision which had provoked opposition from the Netherlands, Denmark and Belgium

The packaging waste directive has played a critical role in strengthening packaging waste regulations and programs throughout much of Europe, particular in Great Britain and the south. As in the case of automobile emission standards, it illustrates the role of the EU in diffusing the relatively stringent state standards of some member states throughout Europe. Moreover, the decrease in some state standards as a result of the 1994 directive was modest.[62]

At the same time, member states continue to innovate in this policy area and these innovations have on occasion sparked controversy within the EU. For example, in 1994 the European Commission began legal proceedings against Germany, claiming that a mandatory German quota that 72% of drink containers be refillable was interfering with efforts to integrate the internal market. Germany has proposed to do away with the quota due to pressure from the EC, but it remains a pending legal issue between Germany and the Commission. In fact, this packaging waste dispute tops the list of key single market disputes identified by the European Commission in 2003, and the outcomes of numerous other cases hinge on its resolution.[63]

In 2001, Germany adopted a policy requiring deposits on non-refillable (one-way) glass and plastic bottles and metal cans in order to encourage the use of refillable containers. This law, which went into effect in 2003, aroused considerable opposition from the German drinks industry, which held it responsible for a dramatic decline in sales of beer and soft drinks and the loss of thousands of jobs. In addition, the European Commission, acting in response to complaints from non-German beverage producers, questioned the legality of the German scheme. The EC agreed that the refusal of major German retailers to sell one-way drink containers had disproportionately affected bottlers of imported drinks- a position which was also voiced by France, Italy and Austria. However after the German government promised to revise its plan to make it compliant with EU law, the Commission decided not to take legal action.

As occurred during the previous decade, the extent to which new member state packaging waste initiatives threaten or are perceived to threaten the single market has put pressure on the EU to adopt harmonized standards. As the European Environmental Bureau noted in response to the Commission's decision to sue Germany over national rules protecting the market share of refillable drinks containers: "national reuse systems will come under pressure if the Commission continues to legally attack them at the same time it fails to act at the European level." [64]

Currently, the Commission and the European Parliament (EP) are in the process of revising the 1994 packaging waste directive by establishing new recycling targets. The EP has attempted to extend the reach of the directive to include for example, a requirement that all packages contain an environmental indicator to show how "green" it is, and to encourage packaging incineration and packaging reuse systems when they are preferable to recycling. But the latest round of negotiations has dropped those proposals and the new directive is now focused on establishing new targets. While a key difference between the Council of Ministers and the EP focuses on the date by which higher packaging recycling and recovery targets should be met, there is a broad consensus both that packaging recycling and recovery targets should

strengthened and that no limits should be placed on national waste recovery. Thus the result of this directive will further strengthen European standards.

IV. CLIMATE CHANGE

United States

In the US, greenhouse gas (GHG) emissions remain largely unregulated by the federal government. In the 1990s, the Clinton administration participated in the United Nations effort to establish a treaty governing GHG emissions. While the US signed the Kyoto Protocol, it was never submitted to the Senate for ratification. Soon after the Bush administration took office it declared it would not support the Kyoto Protocol. Also refusing to propose any regulations for carbon emissions, it instead chose to encourage industry to adopt voluntary targets, through its Global Climate Change Initiative. Legislation to amend the Clean Air Act to encompass carbon emissions has been submitted in Congress, but has yet to be voted upon. The Congress has also persistently voted down proposals to strengthen fuel economy standards.

The lack of federal regulation has created a policy vacuum which a number of states have filled. While "some significant legislation to reduce greenhouse gases was enacted during the late 1990s, such as Oregon's pioneering 1997 law that established CO2 standards for new electrical power plants...[state] efforts to contain involvement on climate change have been supplanted in more recent years with an unprecedented period of activity and innovation". The US EPA has catalogued over 700 state policies to reduce green house gas (GHG) emissions.[65] Two recent reports describe various state-level initiatives that address climate change, either directly or indirectly.[66] "New legislation and executive orders expressly intended to reduce greenhouse gases have been approved in approximately one-third of the states since January 2000, and many new legislative proposals are moving ahead in a large number of states."[67]

New Jersey and California are undertaking measures that directly target climate change. In 1998, the Commissioner of New Jersey's Department of Environmental Protection (DEP) issued an Administrative Order that established a goal for the state to reduce GHG emissions to 3.5% below the 1990 level by 2005, making New Jersey the first state to establish a GHG reduction target.[68] The DEP has received signed covenants from corporations, universities, and government agencies across the state pledging to reduce their GHG emissions, though nearly all are unenforceable. In an unusual case, the state's largest utility signed a covenant that includes a commitment to monetary penalties if it fails to attain its pledged reductions. [69]

In 2002, California passed legislation requiring its Air Resources Board to develop and adopt regulations by 2005 that "achieve the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light duty trucks" starting with vehicles manufactured in the 2009 model year. As *The New York Times* points out, "Though the law applies only to cars sold in California, it will force the manufacturers to develop fuel-efficient technologies that all cars can use. This ripple effect will be even greater if other states follow California's lead, as the Clean Air Act allows them to do."[70] Indeed, a bill was introduced in April 2003 into the New York legislature calling for the adoption of California's automotive greenhouse gas standard, and currently remains pending.[71]

Other states have employed air pollution control regulation and legislation to cap carbon dioxide emissions from large source emitters such as power plants. Massachusetts became the

first state to impose a carbon dioxide emission cap on power plants when Governor Jane Swift established a multi-pollutant cap for six major facilities in 2001 that requires "each plant to achieve specified reduction levels for each of the pollutants, including a ten percent reduction from 1997-1999 CO2 levels by the middle-to-latter stages of the current decade."[72] The New Hampshire Clean Power Act (2002) requires the state's three fossil-fuel power plants to reduce their carbon dioxide emissions to 1990 levels by the end of 2006.[73] Oregon created America's first formal standard for carbon dioxide releases from new electricity generating facilities by requiring any new or expanded power plants to emit no more than 0.675 pounds of carbon dioxide per kilowatt-hour, a rate "17 percent below the most efficient natural gas-fired plant currently in operation in the United States."[74] In 2001, all six New England states pledged to reduce their emissions to 10 percent below 1990 levels by 2020.[75]

Several states are pursuing indirect means to reduce GHG emissions. For example, 16 states have enacted legislation that requires utilities to provide a certain percentage of electricity from renewable energy sources.[76] Wisconsin is seeking to mimic the US EPA Toxic Release Inventory program's success in spurring voluntary emission reductions by requiring plant-level public reporting of toxic releases. In 1993, the Wisconsin Air Contaminant Emission Inventory Reporting regulation began requiring any facility that emits more than 100,000 tons of carbon dioxide to report its emission levels.[77] This initiative also "helped pave the way for the final stages of developing a registry that will allow any Wisconsin firm to report reductions of CO2 or any other greenhouse gas. Such reductions would be registered by the state Department of Natural Resources (DNR) with the intent of obtaining credit for reduction in any future federal or state GHG regulatory program."[78] In 2002, 11 state Attorneys General wrote an open letter to President George W. Bush calling for expanded national efforts to reduce GHG emissions[79] and "indicated a commitment to intensify state efforts if the federal government failed to act".[80]

The marked divergence between state and federal policies in this area has led to two lawsuits, one by automotive manufactures against a state and the other filed by states against the federal government. Announcing its intention to challenge California's GHG standard in federal court, the president of the Alliance of Automobile Manufacturers argued that "[F]ederal law and common sense prohibit each state from developing its own fuel economy standards" while they "work constructively with the federal government to raise fuel economy standards for the whole country and to ensure that all Americans have even more choices of fuel-efficient vehicles."[81]

In June 2003, Attorneys General from Connecticut, Maine and Massachusetts filed a lawsuit against the federal government claiming that the EPA is required by the Clean Air Act to regulate carbon dioxide emissions as an air pollutant because these emissions contribute to global warming.[82] Connecticut Attorney General Richard Blumenthal noted: "The administration's do-nothing policy is simply unacceptable...They have acknowledged how damaging these pollutants are, and yet have failed to classify them under the Clean Air Act."[83] Massachusetts Attorney General Thomas F. Reilly added, "Having recognized the dangers that global warming poses to public health, our environment, and our economy, the federal government not only has a clear responsibility to address the problem, but a legal obligation, as well, under the provisions of the Clean Air Act."[84] If successful, the EPA would be required to classify carbon dioxide as a criteria pollutant and establish standards for permissible atmospheric levels.

Thus in contrast to the area of packaging waste, the lack of a federal regulations for emissions of greenhouse gases has become a political issue in the US. Clearly, the issue of climate change is much more politically salient in the US than is the issue of packaging waste.

Thus proposals to address the former but not the latter frequently come before Congress. Finally, while packaging waste can be seen as a problem which can be effectively addressed at the local or state level, global climate change clearly cannot. Thus even the regulatory efforts of the most ambitious states will have little impact on global climate change in the absence of federal regulations that impose limits on carbon emissions throughout the US.

European Union

By contrast, both the European Union and individual EU member states have been active in developing policies to mitigate climate change. In the early 1990s, several countries including Finland, the Netherlands, Sweden, Denmark and Germany had adopted or were about to adopt taxes on either carbon specifically or energy more generally. Concerned that such taxes would undermine the single market, the EU attempted to establish a European energy tax.[85] The EU's 1992 proposal was for a combined tax on both carbon dioxide emissions and energy, with the goal of reducing overall EU emissions by the year 2000 to their 1990 levels. However this proposal was vehemently opposed by the UK, which was against European-wide tax policies, and to a lesser extent by France, which wanted a pure carbon tax rather than the combined tax. By the end of 1994, the European Council abandoned its effort and instead agreed to establish voluntary guidelines for countries that were interested in energy taxes.[86]

In 1997, the Commission again proposed a directive to harmonize and, over time, increase taxes on energy within the EU; that proposal was finally approved in March 2003. But it contained numerous loopholes for energy intensive industry and transition periods for particular countries and economic sectors.[87] Thus while the EU has had to retreat from its efforts to impose a carbon/energy tax, it has succeeded in establishing the political and legal basis to harmonize such taxes throughout the European Union. Efforts to establish European energy efficiency standards have also been largely stillborn, with the Commission relegating to setting general principles on which member states could base their own programs.[88] There are no centralized targets or timescales.

In March 2002, the Council of Ministers unanimously adopted a legal instrument obliging each state to ratify the Kyoto Protocol, which they have subsequently done. Under the terms of this treaty, overall EU emissions must be reduced by at least 8% of their 1990 levels by 2008 – 2012. The so-called "EU bubble" in Article 4 of the Kyoto Protocol allows countries to band together in voluntary associations to have their emissions considered collectively. However even before Kyoto was formally ratified the EU had begun efforts to implement its provisions. In June 1998 a Burden Sharing Agreement gave each member state an emissions target which collectively was intended to reach the 8% reduction goals target. In the spring of 2000, the EU officially launched the European Climate Change Program which identified more than forty emission reduction measures.

In 2001, the EU proposed a directive for a system on emissions trading and harmonizing domestic arrangements within the EU.[89] The directive, approved by the European Parliament in July 2003, calls for member states to prepare plans for allocating emissions by 2004. Under the directive, governments are given the freedom to allocate permits as they see fit; the European Commission will not place limits on allowances, although governments are asked to keep the number of allowances low.[90] This trading scheme will initially cover four to five thousand large factories, power stations and similar installations which are estimated to emit nearly all of

Europe's carbon dioxide emissions. The first trade, between Shell Oil and Nuon, a power firm, has already been planned for when the directive goes into effect.[91] There are plans to subsequently extend emissions trading to include additional greenhouse gases and economic sectors.

The efforts at the European level have been paralleled by a number of member state policy initiatives. Among the earliest efforts came from Germany in which a government commission established a goal of reducing carbon dioxide emissions by 25% by 2005 and 80% by 2050, though these targets were subsequently relaxed due to concerns about costs. Germany subsequently enacted taxes on energy, electricity, building standards and emissions. The federal government has negotiated voluntary agreements to reduce carbon emissions with virtually every industrial sector.

In 2001, Great Britain launched a comprehensive and pioneering gas emission trading scheme, involving nearly fifty industrial sectors. Participation is voluntary and the government has offered financial incentives to encourage industry participation. However the British government has also levied a tax on energy use with rebates for firms and sectors that have meet their emission reduction targets. Like Germany, the British government has officially endorsed highly ambitious targets for the reduction of carbon emissions. This will require, among other policy changes, that a growing share of electricity be produced from renewable sources. While both Germany and Britain have reduced carbon dioxide emissions in the short-run, their ability to meet the Kyoto targets to which they are now legally obligated remains problematic. Other countries, such as France, Belgium, and the Netherlands have established a complex range of policies, including financial incentives to purchase more fuel efficient vehicles, investments in alternative energy, changes in transportation policies, voluntary agreements with industry and the limited use of energy taxes. In 2002 Denmark approved legislation phasing out three industrial greenhouse gases controlled by Kyoto.

V. ANALYSIS

The dynamics of the relationship between central and state authorities varies considerably across these six case studies. In three cases – automobile emissions in Europe and the US, and packaging waste policies in Europe – state governments have been an important source of policy diffusion. In these cases, state authorities were the first to regulate, and their regulations in turn resulted in the adoption of more stringent regulatory standards by the central government. In the case of climate change policies, both EU and member state regulations have proceeded in tandem, with each reinforcing the other.

But in the two remaining cases, namely packaging waste and climate change, American states have been a source of policy innovation, but not of significant policy diffusion. To date, state initiatives in these policy areas have not prompted an expansion of federal regulation, though some states have adopted the more stringent policies of other states. The earlier American pattern of automotive emission standards, in which California and other states helped ratchet up federal standards, has not applied to either of these policy areas, nor has in recently applied to automobile emissions. By contrast, in Europe relatively stringent state environmental standards continue to drive more stringent central standards. Thus in the EU, the dynamics of the interaction between state and central authorities has become much more significant than in the US. Why is this the case? Three factors are critical: two are structural and one is political.

First, in the EU states play a direct role in the policy-making process through their representation in the Council of Ministers, the EU's primary legislative body. This provides state governments with an important vehicle to shape EU policies. In fact, many European environmental standards originate at the national level; they reflect the successful effort of a member state to transpose its national standards into European ones. In the US, by contrast, state governments are not formally represented in the federal government. While representatives and senators may reflect the policy preferences of the states from which they are elected, the states themselves enjoy no formal representation. Equally importantly, the American separation of powers constitutional system divides law making authority between the legislative and executive branches. This means at the Congress has less power to shape central legislation than does the Council of Ministers. Consequently, for example, the senators and representatives from California enjoy less influence over American national environmental legislation than does Germany's representative in the Council of Ministers.

Secondly, for historical reasons, the European central government appears more sensitive to the impact of divergent standards on its internal market than does the US central government. For example, the US federal government explicitly permits two different standards for automotive emissions, while the EU insists on a uniform one. Likewise, the US federal government appears relatively indifferent to the wide divergence in state packaging waste regulations; only state regulations restricting imports of hazardous wastes and garbage have been challenged by federal authorities.[92] By contrast, distinctive state packaging waste standards have been an important source of legal and political tension within the EU, prompting both efforts to harmonize standards at the European level, as well as legal challenges to various state regulations by the Commission. In fact, there are numerous state standards for packaging waste in the US that would probably prompt a legal challenge by the Commission were they adopted by an EU member state. Significantly, the EU has established maximum state recovery and recycling goals, while the US central government has not.

This means that when faced with divergent state standards, the EU is likely to find itself under more pressure than the US central government to prevent them from interfering with a single market. This means they must either be challenged or harmonized.

The third factor is a political one. During the 1960s and 70s in the US, there was a strong political push in the US for federal environmental standards. For environmentalists and their supporters, federal regulation was essential if the US was to make effective progress on improving environmental quality. And environmentalists were influential enough to secure the enactment of numerous federal standards, which were generally more stringent than those at the state level. Thus the center of gravity of American environmental regulation shifted to Washington. But over the last decade, the national political strength of environmentalists and their supporters has diminished in the US, in part due to the Republican Party's capture of both houses of Congress in 1994 and the election of a Republican president in 2000. As a result, the federal government has become less responsive to pressures for more stringent environmental standards, most notably in the critical area of global climate change.

At the same time, environmentalists and their supporters continue to be relatively influential in a number of American states. Thus in the US a major discontinuity has emerged between the environmental policy preferences of many states and those of the federal government. This in turn has meant that, unlike in the 1960s and 70s, more stringent state standards are much less likely to ratchet-up federal standards. In marked contrast to two decades ago, when the automobile emission standards of California and other states led to the

strengthening of federal standards in this critical area of environmental policy, California's recent policy efforts to use automobile emission standards to reduce greenhouse gases have produced the opposite effect: they have been legally challenged on the grounds that they violate federal fuel economy standards – an area of regulatory policy in which the federal government has exclusive authority but which it has refused to strengthen in any meaningful way for more than two decades. California's standards have been diffused to other states, but not nationally.

In Europe the political dynamics of federal regulation differ markedly. While there are important differences between the environmental preferences of various member states and the EU, they are much less significant than, for example, those that now exist between California or New York, and Washington. There is broad political consensus in Europe about the need for more effective environmental policies in domains which the American central government has left unregulated and in which its regulations are relatively weak. Thus in the policy areas of packaging waste and global climate change, while there is considerable cooperation between central and state authorities in Europe, in America, state regulation has become a frail substitute for federal controls. The EU does of course have the option of challenging more stringent state standards. But the relative political strength of pro-environmental pressures within the EU as a whole has made this increasingly unlikely.

Each of these three dimensions has an historical dimension. The US constitutional system, of course is more than two centuries old. But it was only during the mid 1980s that the EU changed its voting procedures to facilitate the adoption of environmental directives and began a serious effort to limit non-tariff barriers in order to create a single market. The 1990s witnessed both the increased political influence of pro-environmental constituencies within the EU – by the end of this decade green parties had entered the governments of five western European nations – and a decline in the influence of green pressure groups in the American federal government. It is precisely during this period that a number of European environmental policies became more centralized – and stringent – compared to those of the US.[93] While the American federal government is in general much more powerful than the EU, in two of the three cases we have examined, European environmental policy is now *more* centralized than in the US.

VI. CONCLUSION

Our cases can be summarized in the following table:

Policy	**EU**		**US**	
	Chronology	**Status**	**Chronology**	**Status**
Auto emissions	state to central	centralized	state to shared	contested
Packaging waste	state to shared	contested	state	uncontested
Climate change	state to shared	not contested	state	contested

We conclude with two general observations about the dynamics of environmental policy in the federal systems of the US and the EU. On one hand, the continued efforts of both states in the US and member states in the EU to strengthen a broad range of environmental regulations suggest that fears of a regulatory race to the bottom may be misplaced. Clearly, concerns that strong regulations will make domestic producers vulnerable to competition from products

produced in political jurisdictions with less stringent standards have not prevented many states on both sides of the Atlantic from enacting many relatively stringent and ambitious environmental standards. But on the other hand, the impact of such state policies remains limited, in part because not all states will chose to adopt or vigorously enforce relatively stringent standards. Thus in the long run, there is no substitute for centralized standards; they represent the most important mechanism of policy diffusion.

Accordingly, the most important role played by state standards is to prompt more stringent central ones. Unless this dynamic comes into play, the effectiveness of state environmental regulations remains limited. It is not coincidental that the one case we have examined in which both EU and US standards are the most comparable – and relatively stringent - is automobile emissions, in which the American central government plays a critical role in setting national standards. By contrast, the lack of a central government role with respect to both packaging waste and climate change clearly reflects and reinforces the relative laxity of American regulations in these policy areas. And the EU's more centralized policies in both areas reveal the greater vigor of its recent environmental efforts.

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