



# **Environmental Federalism in the European Union and the United States**

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# Environmental Federalism in the European Union and the United States

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## **SUMMARY**

The United States (US) and the European Union (EU) are federal systems in which the responsibility for environmental policy-making is divided or shared between the central government and the (member) states. The attribution of decision-making power has important policy implications. This chapter compares the role of central and local authorities in the US and the EU in formulating environmental regulations in three areas: automotive emissions for health related (criteria) pollutants, packaging waste, and global climate change. Automotive emissions are relatively centralised in both political systems. In the cases of packaging waste and global climate change, regulatory policy-making is shared in the EU, but is primarily the responsibility of local governments in the US. Thus, in some important areas, regulatory policy-making is more centralised in the EU. The most important role local governments play in the regulatory process is to help diffuse stringent local standards through more centralised regulations, a dynamic which has become recently become more important in the EU than in the US.

## **INTRODUCTION**

In the EU and the US, responsibility for the making of environmental policy is divided between EU and federal institutions, on the one hand, and local institutions, on the other. The former is comprised of the EU and the US federal government, while the latter consist of state and local governments in the US, and member states and subnational authorities in the EU.<sup>1</sup> 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 centralisation 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.

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<sup>1</sup> For ease of presentation, we refer at times to both of the former as central authorities and both of the latter as states.

The federalisation of US environmental policy was strongly supported by pressure from environmental activists, who believed that federal regulation was more likely to be effective than regulation 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 70 environmental directives were adopted between 1973 and 1983. Following the enactment of the Single European Act in 1987, which 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 the 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 centralised over the last three decades.

Nevertheless, state governments continue to play a critical role in environmental regulation on 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 subsequently adopted by the central authority. Many state regulations remain more stringent or comprehensive than those of the central authority; 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.

We explore the dynamics of federal environmental policy-making in both the US and the EU. At what level of government are new standards initiated? Under what circumstances are state regulations diffused to other states and/or adopted by the central authority? Under what circumstances can or do

states maintain regulations that are more stringent than those of other states? We focus on the development of US and EU regulatory policies in three areas: automobile emissions for criteria pollutants, packaging waste, and global climate change. Each policy area reflects a different stage in the evolution of environmental policy. These cases also demonstrate the differences and the similarities in the patterns of environmental policy-making in the US and the EU.

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 (automotive manufacturers and the refiners of gasoline), packaging waste regulations affect virtually all manufacturers of consumer goods. The increased priority of reducing packaging waste and promoting re-use and recycling symbolises a shift in the focus of environmental regulation from reducing pollution to promoting eco-efficiency.

Global climate change represents a more recent 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 emissions of carbon dioxide 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 the US and the EU. Since the mid-1980s, automobile emissions standards have been more centralised 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 US federal emission standards remain more stringent than EU ones, with the exception of lead in gasoline (petrol) which has now been phased out on both sides of the Atlantic. For its part, California, which is permitted its own emissions 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 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 primarily 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 programmes 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 US constitution.<sup>2</sup>

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 that are more stringent than those of the EU. State packaging waste regulations have been an ongoing source of conflict between central and local authorities, with the European Commission periodically challenging particular state regulations on the grounds of their incompatibility with the single market. In addition, the EU has imposed maximum as well as minimum standards for waste recovery, though this is likely to change

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<sup>2</sup> Berland, 1992.

soon. On balance, EU packaging standards are more stringent and comprehensive than those in the US. Europe's 'greener' member states have made more ambitious efforts to reduce packaging waste than have their American state counterparts, while the EU's Packaging Waste Directive provides a centralised 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 been undertaken in the EU at both the central and state levels with one often complementing and reinforcing the other. In the US, by contrast, federal regulations restricting greenhouse gases had yet to be implemented as of early 2010. As in the case of packaging waste policies, there have been a number of state initiatives. But in contrast to the regulation of packaging waste, the lack of central regulation of climate policy has become politically salient, even causing conflict over the legal authority of states to establish policies in this area. The gap between US and EU regulatory policies regarding climate change is more substantial than the gaps in the other two policy areas. The EU and each member state have formally ratified the Kyoto Protocol, while the US has not. Since American states cannot enter into international environmental agreements, this means that no US regulatory authority is under any international obligation to regulate carbon dioxide emissions. While all EU member states have adopted climate change policies, many states in the US have not. Moreover, most US state regulations tend to be weaker than those adopted or being adopted by the EU. The EU has established a regulatory regime based on emissions trading and shared targets to facilitate member states' carbon dioxide reduction programmes, while in the critical area of vehicle emissions, the US central government was, until recently, an obstacle to more stringent state regulations.

## **AUTOMOBILE EMISSIONS**

### **United States**

The six common air pollutants are particulate matter, ground-level ozone,<sup>3</sup> carbon monoxide, oxides of sulphur (mainly sulphur dioxide), oxides of nitrogen (mainly nitrogen dioxide), and lead.<sup>4</sup> In US EPA parlance, these are also known as “criteria pollutants,” since their permissible levels are established using two sets of criteria, developed according to scientific guidelines.<sup>5</sup> Mobile sources, which include automobiles, are significant contributors to ground-level ozone and fine particulate matter pollution in many US cities, and also cause carbon monoxide and nitrogen dioxide emissions. Historically, motor vehicles were also the largest source of airborne lead emissions, but the removal of lead from gasoline has dramatically reduced lead emissions from transport. Of the six criteria pollutants, only sulphur dioxide emissions, which are largely the result of fossil fuel combustion by power plants, are not substantially attributable to motor vehicles.<sup>6</sup>

The regulation of air pollutants (emissions) from automobiles in the US 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.<sup>7</sup> Within two years, the board had certified seven devices that were bolt-on pollution controls, such as air pumps that improve combustion efficiency<sup>8</sup> and required their installation by 1965.<sup>9</sup> After opposing emissions 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.<sup>10</sup> In 1965, Congress enacted the federal Motor Vehicle Air Pollution Control Act, which authorised the establishment of auto emissions standards. The first federal standards were imposed for 1968 model year vehicles for carbon monoxide and hydrocarbons.<sup>11</sup>

Two years later, in 1967, Congress responded to the automobile industry’s concerns about the difficulty of complying with different state standards by declaring that federal emission controls

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<sup>3</sup> Ground-level ozone is different from the beneficial ozone that forms a natural layer in the earth’s stratosphere, shielding us from excessive solar radiation.

<sup>4</sup> United States Environmental Protection Agency (from here onwards, US EPA or EPA), 2006.

<sup>5</sup> Primary standards are based on human health criteria, and secondary standards on environmental criteria.

<sup>6</sup> In countries where the use of low-sulphur diesel fuels have not become widespread, yet diesel vehicle use is common, motor vehicles could be a source of sulphur-dioxide emissions. Some fuels used in marine or rail transport also contain high amounts of sulphur.

<sup>7</sup> Percival et al., 1992.

<sup>8</sup> California EPA, 2001.

<sup>9</sup> Percival et al., 1992.

<sup>10</sup> Revesz, 2001: 573.

<sup>11</sup> Hydrocarbons are emissions resulting from the incomplete combustion of fuels and a precursor to ground-level ozone pollution.

would preempt all state emission regulations. However, an exception was made for California, provided that the state afforded adequate lead time to permit development of the necessary technology, given the cost of compliance within that time.<sup>12</sup> 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’.<sup>13</sup> One legal scholar noted, ‘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.’<sup>14</sup>

In 1970, President Nixon asked Congress to pass more stringent standards based on the lowest pollution levels attainable using developing technology.<sup>15</sup> 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 per cent within five years and their emissions of nitrogen oxides by 90 per cent within six years.<sup>16</sup> 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.<sup>17</sup> Once again, California was permitted to retain and/or enact more stringent standards, though these were specified in federal law.<sup>18</sup>

The 1977 amendments to the Clean Air Act established more stringent emissions standards for both automobiles and trucks and once again permitted California to adopt more stringent standards. In 1990, the Clean Air Act was again amended: ‘the California Air Resources Board old tailpipe emissions standards for new cars and light duty trucks sold in that state were adopted by Congress . . .

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<sup>12</sup> US EPA, 1999.

<sup>13</sup> Rehbinder and Stewart, 1985: 114.

<sup>14</sup> Chanin, 2003: 699.

<sup>15</sup> Percival et al., 1992.

<sup>16</sup> Rehbinder and Stewart, 1985.

<sup>17</sup> Congress based its 90 per cent reduction on ‘the simple notion that since air pollution levels in major cities were approximately five times the expected levels of the NAAQSS, emissions would need to be reduced by at least 80 per cent, with an additional 10 per cent necessary to provide for growing vehicle use’ (Percival et al., 1992: 834).

<sup>18</sup> California EPA, 2001.

as the standard to be met by all new vehicles.<sup>19</sup> In addition to again waiving federal preemption for California, the 1990 legislation for the first time authorised any state that was not meeting NAAQS for automotive pollutants to adopt California's standards.<sup>20</sup> As a result, two regimes for automotive emission regulation emerged: one based on federal standards and the other on California's. This regulatory policy reflected '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'.<sup>21</sup> Thus, while automotive emission standards were primarily shaped by federal legislation, the federal government provided states with the opportunity to choose between two sets of standards.

While allowing states to opt for a stricter emissions regime, the Clean Air Act Amendments of 1990 also called for a gradual strengthening of federal automobile emissions standards, to be promulgated by the US EPA. The so-called 'Tier I' standards were implemented between 1994 and 1997. The more stringent 'Tier II' standards were issued by the EPA in February 2000, and phased-in between 2004 and 2009. There were two important components of the Tier II standards. The first was a dramatic reduction in sulphur amounts in gasoline (by 90 per cent), achieved by the strong advocacy of a coalition of environmental and public health organisations, and state and local environmental agencies.<sup>22</sup> The second was a requirement for all light trucks, passenger cars, medium-duty sport utility vehicles and passenger vans to be subject to the same emissions standards by model year 2009.<sup>23</sup>

California has continued to play a pioneering role in shaping automotive emissions policy. In 1990, the state adopted a programme to encourage Low-Emission Vehicles (LEV). This included a Zero-Emission Vehicle (ZEV) programme meant to jump-start the market for these vehicles. The ZEV programme required that such vehicles comprise at least 2 per cent of new car sales by 1998, 5 per

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<sup>19</sup> Bryner, 1993: 150.

<sup>20</sup> Chanin, 2003; Revesz, 2001.

<sup>21</sup> Revesz, 2001: 586.

<sup>22</sup> This group included the Clean Air Trust and the Environmental Defense Fund, the STAPPA/ALAPCO (State and Territorial Air Pollution Program Administrators / Association of Local Air Pollution Control Officials), a nationwide organisation of state and local pollution control officials, and American Lung Association. In fact, the automakers were also in favour of the proposal to reduce sulphur content of gasoline, without which it would have been difficult to deliver the companion Tier 2 emission reductions.

<sup>23</sup> All vehicles up to 8,500 pounds GVWR (gross vehicle weight rating) are subject to Tier 2 standards. Also, these standards are the same whether a vehicle uses gasoline, diesel or any other fuel; in other words, they are "fuel neutral." (US EPA, 2000)

cent by 2001, and 10 per cent by 2003. When this requirement was approved, the only feasible technology that met ZEV standards were electric vehicles, whose emissions were over 90 per cent lower than those of the cleanest gasoline vehicles, even when including the emissions from the power plants generating the electricity required to recharge them.<sup>24</sup> Massachusetts and New York subsequently adopted the California LEV plan. However, in 1992, New York's decision was challenged in the courts by the automobile manufacturers on the grounds that it was sufficiently different from California's to constitute a third automotive emission requirement, which the Clean Air Act explicitly prohibits. Shortly afterwards, the manufacturers filed another suit against both states arguing that, since their standards were not identical with those of California, they were preempted by the Clean Air Act. As a result, both states were forced to modify their standards.<sup>25</sup>

In 1998, California's Air Resources Board (California ARB) identified diesel particulate matter as a toxic air contaminant.<sup>26</sup> The state subsequently launched a Diesel Risk Reduction Plan in 2000 to reduce diesel particulate emissions by 75 per cent within ten years. The plan established requirements for low-sulphur diesel fuel and particulate standards for new diesel engines and vehicles, and new filters for existing engines.<sup>27</sup> In this case, federal and California initiatives moved in tandem. Shortly after California acted, the EPA also announced more stringent standards for new diesel engines and fuels in order to make heavy-duty trucks and buses run cleaner. The EPA adopted a new rule in January 2001 that required a more than 30 times reduction in the sulphur content of diesel fuels (from 500 parts per million to 15 parts per million), which matched the California standard.<sup>28</sup> The resulting fuel, called ultra-low sulphur diesel, has been available across the country starting October 2006. By the end of 2010, all highway diesel fuel sold within the US will be ultra-low sulphur diesel.<sup>29</sup>

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<sup>24</sup> California Air Resources Board, 2001.

<sup>25</sup> In December 1997, the EPA issued regulations for the 'National Low Emission Vehicle' (NLEV) program. This voluntary program was the result of an agreement between nine Northeastern states and the auto manufacturers. It allowed vehicles with more stringent emission standards to be introduced in states that opt for the NLEV program before the Tier 2 regulations came into effect. Vehicles complying with NLEV were made available in the participating states for model year 1999 and nationwide for model year 2001. The standards under the NLEV program were equivalent to the California Low Emission Vehicle program, essentially harmonising the federal and California motor vehicle standards (US EPA, 1998).

<sup>26</sup> California EPA, 2001.

<sup>27</sup> California Air Resources Board, 2001.

<sup>28</sup> The Highway Diesel Rule (US EPA, 2001).

<sup>29</sup> The EPA rule requires that by December 1, 2014 all non-road, locomotive and marine diesel fuel sold in the US to be ultra-low sulphur diesel as well. California's rule accelerates this by three to five years.

More recently, California's automotive emissions standards have become a source of conflict with the federal government. 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.<sup>30</sup>

The first case involves a modification California made to its ZEV programme in 2001 that allowed automakers to earn ZEV credits for manufacturing compressed natural gas, gasoline-electric hybrid, and methanol fuel cell vehicles.<sup>31,32</sup> General Motors and DaimlerChrysler sued California's ARB over a provision that allowed manufacturers to earn ZEV credits by using technology such as that included in gasoline-electric hybrid vehicles, which were already being sold by their rivals Honda and Toyota. Because hybrids still use gasoline, General Motors and DaimlerChrysler argued that California's efforts were effectively regulating fuel economy.<sup>33</sup> The US Justice Department supported the auto manufacturers' claim on the grounds that the 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 regulation related to fuel-economy standards.<sup>34</sup> 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.<sup>35</sup> In response, the ARB modified the ZEV programme to provide two alternative routes for automakers to meet ZEV targets.<sup>36</sup> At the same time, California imposed new regulations which required that the auto industry sell increasing numbers of fuel-cell vehicles in the

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<sup>30</sup> In the Energy Policy and Conservation Act of 1975, Congress established exclusive Federal authority to regulate automotive fuel economy, through the Corporate Average Fuel Economy (CAFE) standards.

<sup>31</sup> At the same time, California extended ZEV market share requirements to range from 10 per cent in 2003 up to 16 per cent in 2018 (California Air Resources Board, 2001).

<sup>32</sup> The second dispute concerns climate change and is discussed below.

<sup>33</sup> Parker, 2003.

<sup>34</sup> Yost, 2002.

<sup>35</sup> California Air Resources Board, 2003.

<sup>36</sup> According to the California Air Resources Board (2003), 'Auto manufacturers can meet their ZEV obligations by meeting standards that are similar to the ZEV rule as it existed in 2001. This means using a formula allowing a vehicle mix of 2 per cent pure ZEVs, 2 per cent AT-PZEVs (vehicles earning advanced technology partial ZEV credits) and 6 per cent PZEVs (extremely clean conventional vehicles). Or manufacturers may choose a new alternative ZEV compliance strategy, meeting part of their ZEV requirement by producing their sales-weighted market share of approximately 250 fuel cell vehicles by 2008. The remainder of their ZEV requirements could be achieved by producing 4 per cent AT-PZEVs and 6 per cent PZEVs. The required number of fuel cell vehicles will increase to 2,500 from 2009-11, 25,000 from 2012-14 and 50,000 from 2015 through 2017. Automakers can substitute battery electric vehicles for up to 50 per cent of their fuel cell vehicle requirements'.

state over the next decade.<sup>37</sup> However, in the summer of 2003, both automobile firms dropped their suits against California after its regulatory authorities agreed to expand their credit system for hybrids to encompass a broader range of vehicles.<sup>38</sup>

### **European Union**

As in the US, in Europe, the regulations of state governments have been an important driver for centralised automotive emissions standards, with Germany typically playing the role in Europe that California has played in the US. The EU has progressively strengthened its automotive emissions 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 were those in the US, and they were harmonised 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 emissions requirements until 1987, although some fuel content standards were harmonised earlier. However, unlike in 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, in Europe, centralised standards for automobile emissions have existed since 1987. During the 1970s and 1980s, there was considerably more tension between central and state regulations in the EU than in the US. 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 emissions standards in 1970 in order to prevent these limits from serving as obstacles to internal trade. Shortly afterwards, there was substantial public pressure to reduce levels of airborne lead, a significant portion of which came from motor vehicles. The first restrictions were imposed by Germany, which in 1972 announced a two-stage reduction: the maximum lead content in gasoline was initially capped at 0.4 grams per litre in 1972, to be further reduced to 0.15 grams per litre in 1976. The United Kingdom

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<sup>37</sup> Hakim, 2003a.

<sup>38</sup> Hakim, 2003b.

(UK) also enacted restrictions on lead in gasoline in 1978, though less severe than Germany (0.45 grams per litre). With no restrictions 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 EC. For not only did these divergent national product regulations limit intra-EC trade in gasoline, but 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 EC introduced a directive in 1978 that imposed a minimum and a maximum limit for lead content in gasoline (0.15 and 0.40 grams per litre, respectively), with both standards to go into effect in 1981. While the minimum requirement effectively allowed member states like Germany to establish the strict national limit they sought, it also prevented any member state from requiring lead-free gasoline and potentially disrupting the single market. In 1985, as a result of continued pressure from both Germany and Britain, the European Council required unleaded gasoline to be available in all member states by October 1989. The maximum lead content in gasoline was also further reduced to 0.15 gram per litre, and member states were encouraged to comply as quickly as possible. Two years later, member states were allowed to ban leaded gasoline, should they chose to. In 1998, all Western European and several central European countries agreed to end the sale of leaded gasoline by 2005.

Unlike the lead standard, in the establishment of which the German regulations played an important role, the EC's standards for sulphur in fuel did not reflect the policy preferences of any member state. The sulphur standard adopted in 1975 required all countries, including France, Germany, and the UK, to reduce their sulphur emissions.<sup>39</sup> France, for instance, had already adopted standards for sulphur 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.

The auto emissions standards adopted in the EC during the 1970s were not mandatory. In fact, until

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<sup>39</sup> Bennett, 1991.

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, these early standards were maximum or ceiling requirements that were not developed not by the EC but instead were based heavily on emissions standards of the United Nations Economic Council for Europe.

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 US automotive emissions standards, commonly referred to as 'US '83'. The adoption of these 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, owing to the unavailability of unleaded gasoline in Greece and Italy. Germany's insistence on requiring stringent standards for vehicles registered in its country forced the EU to adopt uniform automobile emissions standards. This in turn led to a bitter debate over the content of these standards, pitting the EU's greener member states (Germany, Denmark, and the Netherlands) against the EU's (other) major automobile producers (the UK, France, and Italy), who favoured more flexible standards. The resulting Luxembourg Compromise of 1987 established different emissions standards for different sizes of vehicles with different timetables for compliance. It thus represented the first uniform set of automotive emissions standards within Europe. These standards have been subsequently strengthened several times, though on balance they remain less stringent than those of the United States, most notably for diesel emissions, which are regulated less stringently in the EU than in the US.

During the 1990s, the politics of automobile emissions 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 Programme, 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 programme ultimately tightened vehicle emission limits and fuel quality standards for sulphur and diesel, and introduced a complete phase-out of leaded gasoline.<sup>40</sup> In 2003, the EU approved a Directive requiring that all road vehicle fuels be sulphur-free by 2009. With the finalisation of Auto-Oil I and II, as the programmes are known, the shift from state to centralised automotive emission requirements appears to be complete. The debates and negotiations over proposals to regulate pollution from vehicles now take place between the automakers and oil producers on the one hand, and the Commission, the Council, and European Parliament (EP) on the other hand.

## **PACKAGING WASTE**

### **United States**

The regulation of packaging wastes is highly decentralised in the US. 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, the RCRA also declared that the regulation of landfills accepting municipal solid waste (MSW) was to remain primarily the domain of state and local governments.<sup>41</sup> As a result, there is considerable disparity in the handling of packaging wastes throughout the US.

On balance, US standards tend to be considerably laxer than those in the EU. While many state legislatures have established recycling goals, few have prescribed mandatory targets.<sup>42</sup> The US generates more MSW per capita than any other industrialised country, and 50 per cent more than most European countries.<sup>43</sup> From 1995 to 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,

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<sup>40</sup> McCormick, 2001.

<sup>41</sup> US EPA, 2003a, 2003b, 2003c.

<sup>42</sup> American Forest & Paper Association, 2003.

<sup>43</sup> The latest OECD figures report that Americans generate 760 kg per capita, the French 510, the British 560, and Germans 540 (OECD, 2004).

owing in part to Germany's Packaging Ordinance.<sup>44</sup>

State and local governments have implemented several policy mechanisms to reduce MSW, including packaging waste. Deposit-refund schemes, minimum recycling content requirements, community recycling programmes, 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 the recycling of beverage containers.<sup>45</sup> 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 to 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.<sup>46</sup> 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.<sup>47</sup> These schemes typically do not require, however, that these containers be recycled or reused.<sup>48</sup> California recently expanded its programme to include non-carbonated beverages, which added roughly 2 billion containers, nearly 40 per cent of which are plastic.<sup>49</sup>

To reduce the burden on landfills and incinerators, whose construction and expansion are increasingly politically infeasible owing to community objections, many states and local governments have developed recycling programmes that enable or require the recycling of various materials. Such programmes remain exclusively the purview of state and local government because national laws do not allow EPA to establish federal regulations on recycling.<sup>50</sup> Virtually all New Yorkers, 80 per cent of the Massachusetts population, and 70 per cent of Californians have access to curbside recycling.<sup>51</sup> Recycling programmes typically include paper as well as metal and glass containers, while some

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<sup>44</sup> OECD, 2002.

<sup>45</sup> The eleven states with deposit-refund schemes on soft-drink containers are California, Connecticut, Delaware, Hawaii, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont. Hawaii's law takes effect in 2005 (Container Recycling Institute, 2003).

<sup>46</sup> Container Recycling Institute, 2003.

<sup>47</sup> Some deposit refunds are being expanded to include office products, while Maine and Rhode Island have created deposit-refund schemes for lead-acid/automobile batteries (US EPA, 1999).

<sup>48</sup> McCarthy, 1993.

<sup>49</sup> US EPA, 2003a, 2003b, 2003c.

<sup>50</sup> Cotsworth, 2002.

<sup>51</sup> Dietly, 2001.

programmes also include containers of particular plastic resins. In Oregon, container glass comprises nearly 4 per cent of that state's total solid waste stream, and its deposit-refund and collection schemes resulted in 55 per cent of this glass being collected and recycled.<sup>52</sup> Sixty per cent of Oregon's recycled container glass comes from its deposit-refund scheme, 25 per cent is collected from residential curbside programmes, and the remainder comes from commercial solid-waste hauler programmes, 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 imposing a ban on the sale of aseptic drink boxes and bimetal cans (drink cans with aluminium 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 proved difficult to recycle. In addition, a few states, including Wisconsin and South Dakota, have banned the disposal of some recyclable materials to bolster their recycling rates.<sup>53</sup>

Some states require certain types of packaging to contain some minimum amount of recycled material. Oregon's 1991 Recycling Act required that by 1995, 25 per cent of the rigid plastic packaging containers (containing eight ounces to five gallons) sold in that state must contain at least 25 per cent recycled content, be made of a plastic material that is recycled in Oregon at a rate of at least 25 per cent, or be a reusable container made to be reused at least five times.<sup>54</sup> This law also requires glass containers to contain 35 per cent recycled content by 1995 and 50 per cent by 2000.<sup>55</sup> California requires manufacturers of newsprint, plastic bags, and rigid plastic containers to include

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<sup>52</sup> Oregon Department of Environmental Quality, 2003.

<sup>53</sup> Thorman et al., 1996.

<sup>54</sup> All rigid plastic container manufacturers have been in compliance with the law since it entered into force a decade ago, because the aggregate recycling rate for rigid plastic containers has remained between 27-30 per cent since the law took effect (Oregon Department of Environmental Quality, 2003).

<sup>55</sup> Thorman et al., 1996.

minimum levels of recycled content in their products or to achieve minimum recycling rates. Manufacturers of plastic trash bags are required to include minimum percentages of recycled plastic post-consumer material in trash bags they sell in California. California's 1991 Rigid Plastic Packaging Container (RPPC) Act sought to reduce the amount of plastic being landfilled by requiring that containers offered for sale in the state meet criteria akin to those laid down in the Oregon law. These criteria 'were designed to encourage reuse and recycling of RPPCs, the use of more post-consumer resin in RPPCs and a reduction in the amount of virgin resin employed RPPCs'.<sup>56</sup> 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 per cent recycled or remanufactured material by weight.<sup>57</sup> Industrial scrap, as well as pre- and post-consumer materials, counts towards the 10 per cent requirement. Exemptions are provided for packaging for food, beverages, drugs, cosmetics, and medical devices that lack FDA approval. However, according to the President of the Environmental Packaging International, Wisconsin has done little enforcement of its 10 per cent recycled content law.<sup>58</sup>

Governments at the federal, state, county, and local levels have also promulgated policies prescribing government procurement of environmentally preferable products.<sup>59</sup> In 1976, Congress included in RCRA requirements that federal agencies, as well as 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 those of virgin products, though the RCRA does not authorise any federal agency to enforce this provision.<sup>60</sup> States requiring government agencies to purchase environmentally preferable products include California, Georgia, Oregon, and Texas. California's State Assistance for Recycling Markets Act of 1989 and Assembly Bill 11 of 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

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<sup>56</sup> California Integrated Waste Management Board, 2003.

<sup>57</sup> Plastic Shipping Container Institute, 2003.

<sup>58</sup> Bell, 1998.

<sup>59</sup> California Integrated Waste Management Board, 2003; Center for Responsive Law, 2003.

<sup>60</sup> US EPA, 2003a, 2003b, 2003c.

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 they are otherwise similar 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.<sup>61</sup> In 1991, President George Bush issued an Executive Order to increase the level of recycling and procurement of recycled-content products. In 1993, President Bill Clinton issued an Executive Order that required federal agencies to purchase paper products with at least 20 per cent post-consumer fibre and directed the US EPA to list environmentally preferable products, such as those with less cumbersome packaging. Clinton raised this recycled-content threshold to 30 per cent in a subsequent Executive Order in 1998.<sup>62</sup>

At the national level, several Congressional attempts to pass a National Bottle Bill between 1989 and 2007 were defeated. Most recently, a bill was introduced in 2009 as the “Bottle Recycling Climate Protection Act of 2009” (H.R. 2046), but it has yet to be adopted. 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’.<sup>63</sup> Thus, packaging waste policies remain primarily the responsibility of state and local governments.

### **European Union**

The EU’s efforts to control packaging waste contrast sharply with those of the US in two ways. 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 waste within Europe. Thus, in

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<sup>61</sup> Lee, 1993.

<sup>62</sup> Barr, 1998.

<sup>63</sup> Container Recycling Institute, 2003.

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 the reduction of packaging waste, in Europe, such policies have frequently been challenged by Brussels (the Commission) 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 manufacturers 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 programme, 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 statute, noting that the Commission itself had no recycling programme. 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'.<sup>64</sup> This was 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

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<sup>64</sup> Vogel, 1995: 87.

protect the environment, and, not coincidentally, domestic glass producers. The Netherlands, Denmark, France, and Italy promptly introduced their own comprehensive recycling plans. The most far-reaching initiative to reduce recycling waste, however, was undertaken by Germany.

The 1991 German packaging law was a bold move towards a 'closed loop' economy in which products are reused instead of thrown away. It established very high mandatory targets, requiring that 90 per cent of all glass and metals, as well as 80 per cent of paper, board, and plastics be recycled. In addition, only 28 per cent 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 Töpfer 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 of driving down prices for recycled materials in Europe, and led to the improper disposal of waste in landfills in other countries.<sup>65</sup> Yet, the ECJ's decision in the Danish Bottle Case, combined with its fear of being labelled '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 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 of 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 per cent of their packing waste could do so, but only if they had the facilities to

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<sup>65</sup> Comer, 1995.

use their recycled products. It was this provision which provoked opposition. The Packaging Waste Directive has played a critical role in strengthening packaging waste regulations and programmes throughout much of Europe, particularly in Great Britain and the South of Europe. As in the case of automobile emissions standards, it illustrates the role of the EU in diffusing the relatively stringent standards of some member states throughout Europe. Moreover, the decrease in some state standards as a result of the 1994 Directive was modest.<sup>66</sup>

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 German requirement that 72 per cent of drink containers be refillable was interfering with efforts to integrate the internal market. Germany has proposed to do away with the requirement owing to pressure from the Commission, but it remains a pending legal issue. This packaging waste dispute tops the list of key single market disputes identified by the Commission in 2003, and the outcomes of numerous other cases hinge on its resolution.<sup>67</sup>

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 Commission 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 in order 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 packaging waste initiatives by member states threaten or are perceived to threaten the single market has put pressure on the EU to

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<sup>66</sup> Haverland, 1999.

<sup>67</sup> Environment Daily, 2001a, 2003d.

adopt harmonised 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'.<sup>68</sup>

In 2004, the Commission and the EP revised the 1994 Packaging Waste Directive by not only establishing stricter recycling targets, but also differentiating these targets by materials contained in packaging waste (such as glass, metal, plastic and wood).<sup>69</sup> The majority of member states were allowed until the end of 2008 to comply.<sup>70</sup> The Directive asks the Commission to review progress and, if necessary, recommend new recycling targets every five years. In 2006, the Commission recommended that the targets specified in the 2004 amendment should remain in effect for the time being, while new members catch up with these standards.<sup>71</sup>

## **CLIMATE CHANGE**

### **United States**

In the US, greenhouse gas 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 greenhouse gas emissions. While the US signed the Kyoto Protocol, no US President has submitted it to the Senate for ratification. Soon after taking office, the Bush Administration declared it would not support the Kyoto Protocol. Also refusing to propose any regulations for carbon dioxide emissions, it instead chose to encourage industry to adopt voluntary targets, through its Global Climate Change Initiative. The Congress has also not adopted any legislation establishing mandatory reductions in greenhouse gas emissions, though in 2007 it did enact legislation strengthening vehicle fuel economy standards for the first time in more than two decades. In 2009, a climate change bill

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<sup>68</sup> *Environment Daily*, 2001b.

<sup>69</sup> European Parliament and Council, 2004.

<sup>70</sup> With the exception of Greece, Ireland and Portugal, which were allowed until the end of 2011, due to some geographical peculiarities of these countries (presence of numerous islands within their borders and difficult terrain) and low levels of existing use of packaging materials. A subsequent amendment in 2005 allowed new member states additional time for implementation; as late as 2015 in the case of Latvia (European Parliament and Council, 2005).

<sup>71</sup> European Commission, 2006a.

establishing a cap and trade scheme to reduce greenhouse gas emissions passed the US House of Representatives,<sup>72</sup> and the US EPA has acknowledged it could regulate greenhouse gas emissions under the federal Clean Air Act.

Meanwhile, the lack of federal regulation has created a policy vacuum that 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 carbon dioxide 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’.<sup>73</sup> By 2003, the US EPA had catalogued over 700 state policies to reduce greenhouse gas emissions.<sup>74</sup> A 2002 report identified ‘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’.<sup>75</sup>

New Jersey and California were the first states to introduce initiatives 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 greenhouse gas emissions to 3.5 per cent below the 1990 level by 2005, making New Jersey the first state to establish a greenhouse gas reduction target.<sup>76</sup> The DEP has received signed covenants from corporations, universities, and government agencies across the state pledging to reduce their greenhouse gas emissions, though nearly all are unenforceable. In an unusual move, the state’s largest utility signed a covenant that includes a commitment to monetary penalties if it fails to attain its pledged reductions. 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-

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<sup>72</sup> The American Clean Energy and Security Act of 2009 (ACES) in the 111<sup>th</sup> US Congress (H.R.2454), also known as the Waxman-Markey Bill after its authors Representatives Henry A. Waxman (Democrat, California) and Edward J. Markey (Democrat, Massachusetts). The bill proposes a national cap-and-trade program for greenhouse gases to tackle climate change. It was approved by the House of Representatives on June 26, 2009, and has been placed on the Senate calendar.

<sup>73</sup> Rabe, 2002: 7.

<sup>74</sup> US EPA, 2003c.

<sup>75</sup> Rabe, 2002: 7.

<sup>76</sup> New Jersey Department of Environmental Protection, 1999.

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 per cent reduction from 1997-1999 carbon dioxide levels by the middle-to-latter stages of the current decade’.<sup>77</sup> The New Hampshire Clean Power Act of 2002 required the state’s three fossil-fuel power plants to reduce their carbon dioxide emissions to 1990 levels by the end of 2006.<sup>78</sup> Oregon created the first formal standard in the US for carbon dioxide releases from new electricity generating facilities by requiring new or expanded power plants to emit no more than 0.675 pounds of carbon dioxide per kilowatt-hour, a rate that was 17 per cent below that of the most efficient natural-gas-fired plant operating in the US at the time.<sup>79</sup>

In 2001, all six New England states pledged to reduce their carbon dioxide emissions to 10 per cent below 1990 levels by 2020.<sup>80</sup> By 2007, this joint commitment evolved into a ten-state, mandatory cap-and-trade program called the Regional Greenhouse Gas Initiative (RGGI).<sup>81</sup> As of early 2010, the initiative only encompassed fossil-fuel fired electric power plants operating in these states with capacity greater than 25 megawatts.<sup>82</sup> During the first two compliance periods (running from 2009 through 2014), the goal of RGGI is to stabilize carbon dioxide emission levels. After that, the emissions cap will be reduced by an additional 2.5 percent each year through 2018. As a result, the emissions budget in 2018 will be 10 per cent below the starting budget in 2009.<sup>83</sup> Under the program, participating states conduct quarterly auctions to distribute allowances, which can then be traded in a secondary market. Recent auction clearing prices have generally remained under four dollars per (short) ton.<sup>84</sup> The prices of allowances exchanged in the secondary market were even lower.<sup>85</sup>

Another regional market-based program, called the Western Climate Initiative (WCI), is under

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<sup>77</sup> Rabe, 2002: 16.

<sup>78</sup> New Hampshire Department of Environmental Services, 2002.

<sup>79</sup> Rabe, 2002.

<sup>80</sup> New England Governors/Eastern Canadian Premiers, 2001.

<sup>81</sup> The member states of RGGI are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. Pennsylvania is an observer.

<sup>82</sup> RGGI, 2009a.

<sup>83</sup> The initial regional emissions cap is set at 188 million short tons of carbon dioxide per year. This amount is about 4 per cent above annual average regional emissions measured during 2000-2004 (RGGI, 2007).

<sup>84</sup> RGGI, 2009b.

<sup>85</sup> RGGI, 2009c.

development. This program targets the western states and provinces of the US and Canada.<sup>86</sup> The goal of WCI is a 15 per cent reduction in greenhouse gas emissions from 2005 levels by 2020. Similar to the RGGI, the WCI will be a cap-and-trade program and have three-year compliance periods. But unlike the RGGI, it will not be limited to carbon dioxide emissions or solely target the electric power sector. When fully implemented in 2015, the WCI is expected to cover nearly 90 per cent of greenhouse gas emissions in participating jurisdictions. Also, WCI members are required to auction off only a portion of total allowances (10 per cent at the outset, increasing to at least 25 per cent by 2020) and may choose to allocate the remainder to participating installations free of charge.<sup>87</sup>

A third regional program is under development, based on the Midwestern Greenhouse Gas Reduction Accord (Accord)<sup>88</sup> signed in November 2007 by the governors of several US Midwestern states<sup>89</sup> and the Canadian province of Manitoba. The Accord also calls for the creation of a cap-and-trade program similar to those of RGGI and the WCI, to be operational by 2012. Proposed design features mostly resemble the WCI (for instance, allocating allowances through a combination of auctions as well as free distribution, the inclusion of all greenhouse gases, and coverage of multiple industries). On the other hand, it has some specific features for the protection of industrial interests of the region, such as the exclusion of carbon dioxide emissions from burning of biofuels (like ethanol and biodiesel) from the program. If implemented, contingent on the possible development of a federal cap-and-trade program, the goal of the Accord is to achieve a 20 per cent reduction in greenhouse gas emissions from 2005 levels by 2020.<sup>90</sup>

In addition to these three multi-state initiatives, several states have been pursuing indirect means to reduce greenhouse gas emissions.<sup>91</sup> For example, more than half the US states have enacted legislation that requires utilities to provide a certain percentage of electricity generated from

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<sup>86</sup> As of January 2010, members of WCI are the US states of Arizona, California, Montana, New Mexico, Oregon, Utah and Washington, and the Canadian provinces of British Columbia, Manitoba, Ontario, and Quebec. Several other Western states and the province of Alberta are observers.

<sup>87</sup> WCI, 2009.

<sup>88</sup> Midwestern Greenhouse Gas Reduction Accord, 2007.

<sup>89</sup> These are Illinois, Iowa, Kansas, Michigan, Minnesota and Wisconsin. The observing states are Indiana, Ohio and South Dakota.

<sup>90</sup> Midwestern Greenhouse Gas Reduction Accord, 2009.

<sup>91</sup> Rabe, 2002.

renewable energy sources.<sup>92</sup> By early 2010, nearly 20 states had already implemented, or were currently implementing, mandatory greenhouse gas emissions reporting rules.<sup>93</sup> Such programs attempt to mimic the US EPA Toxic Release Inventory Program's success in spurring voluntary emission reductions by requiring public reporting of toxic releases by power plants. In 2002, 11 state Attorneys General wrote an open letter to President George W. Bush calling for expanded national efforts to reduce greenhouse gas emissions<sup>94</sup> and indicated their commitment to intensify state efforts if the federal government failed to act.

In 2002, California passed legislation requiring its California Air Resources Board to develop and adopt greenhouse gas emission-reduction regulations by 2005 for passenger vehicles and light duty trucks, starting with vehicles manufactured in the 2009 model year. This made California the first legislative body in the US to enact legislation aimed at curbing global warming emissions from vehicles. As *The New York Times* pointed 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.'<sup>95</sup> Indeed, bills have been introduced in almost twenty other state assemblies since then, calling for the adoption of California's automotive greenhouse gas standard. A diverse group of states (14 in total that include Arizona, Oregon, New Mexico, New York, Pennsylvania, Massachusetts, Virginia and Florida) ultimately passed legislation adopting the California standard.<sup>96</sup>

During the Bush Administration, the marked divergence between state and federal policies in this area led to a flurry of lawsuits. Two of these are worth noting. The first was brought by automotive manufacturers against the state of California. Stating its intention to challenge California's GHG standard in federal court, the president of the Alliance of Automobile Manufacturers argued that

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<sup>92</sup> As of January 2010, 29 states and the District of Columbia have enacted laws imposing these "renewable portfolio standards" (Database of State Incentives for Renewables and Efficiency, 2010).

<sup>93</sup> As of September 2009, the following states had already developed, or were in the process of developing, mandatory greenhouse gas reporting rules: California, Colorado, Connecticut, Delaware, Hawaii, Iowa, Maine, Maryland, Massachusetts, New Jersey, New Mexico, North Carolina, Oregon, Virginia, Washington, West Virginia, and Wisconsin (US EPA, 2009a).

<sup>94</sup> The states are Alaska, New Jersey, New York, California, Maryland, and all six New England states (Sterngold, 2002).

<sup>95</sup> *The New York Times*, 2002.

<sup>96</sup> The complete list is as follows: Washington, Oregon, Arizona, New Mexico, Florida, Virginia, Maryland, Pennsylvania, New Jersey, New York, Connecticut, Rhode Island, Massachusetts, New Hampshire and Maine. In addition, as of January 2010, three other states have proposals to adopt the California standard: Montana, Utah and Colorado (Pew Center on Global Climate Change, 2010).

‘[F]ederal law and common sense prohibit each state from developing its own fuel-economy standards’.<sup>97</sup> The suit, filed by auto manufacturers against California Air Resource Board in 2004, was dismissed in 2007.<sup>98</sup>

The second suit was brought against the federal government by several states, mainly as a challenge to the EPA’s position that it lacked the authority to regulate carbon dioxide emissions under the Clean Air Act. In 2003, upon the EPA’s denial of a petition to regulate tailpipe emissions of greenhouse gases, several states 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.<sup>99</sup> Initially the case was dismissed, but the petitioners, which included 12 states, several cities and US territories as well as environmental groups, asked for a Supreme Court review. The resulting landmark case *Massachusetts v. EPA* was decided in favour of the petitioners in 2007.<sup>100</sup> In its decision, the Supreme Court found that “[b]ecause greenhouse gases fit well within the [Clean Air] Act’s capacious definition of ‘air pollutant,’ EPA has statutory authority to regulate emission of such gases from new motor vehicles.”<sup>101</sup> Two years later, the EPA officially acknowledged that it had both legal and scientific grounds to regulate greenhouse gas emissions.<sup>102</sup>

On a parallel tack, California had requested a so-called ‘Clean Air Act waiver’ from the EPA in order to implement its 2002 statute.<sup>103</sup> After waiting for several years for a response from the EPA, California sued to compel the agency to make a decision. The EPA denied California’s waiver request in December 2007. However, the waiver denial elicited a second lawsuit by California in 2008, and which was later joined by fifteen other states and five environmental organizations. Ultimately, the Obama Administration asked the EPA to review its decision, after which California was granted the waiver in June 2009.<sup>104</sup>

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<sup>97</sup> Keating, 2002.

<sup>98</sup> Pew Center on Global Climate Change, 2008.

<sup>99</sup> Johnson, 2003.

<sup>100</sup> Meltz, 2007.

<sup>101</sup> *Massachusetts v. E.P.A.*, 127 S.Ct. 1438 (2007), p. 4.

<sup>102</sup> US EPA, 2009b.

<sup>103</sup> According to the Clean Air Act, states have the right to implement stricter standards on air pollutants, but the EPA must grant them a waiver to do so.

<sup>104</sup> US EPA, 2009c.

The waiver decision has signalled a warming of relations between states and the federal government on the issue of climate change. In return for granting the waiver, the federal government secured the commitment of California,<sup>105</sup> along with of a broad set of stakeholders including auto manufacturers, to adopt uniform federal vehicle fuel economy standards (known as CAFE, short for Corporate Average Fuel Economy, standards) and to regulate greenhouse gas emissions from transport, whose implementation the Obama Administration accelerated by executive order.

An update to the CAFE standards—the first such proposal in several decades—was passed as part of the Energy Independence and Security Act of 2007, during the Bush Administration. However, implementation of the Act’s CAFE provision required a subsequent rulemaking by the US Department of Transportation (US DOT), which was never made. In January 2009, the US DOT announced that it would defer any rulemaking on the new CAFE standards to the incoming administration.<sup>106</sup> That rulemaking was promptly issued in March 2009, though only for the model year 2011, since the Obama Administration ordered the US DOT to study the feasibility of even more stringent standards for later years. (Even the standards for model year 2011 are approximately one mile per gallon stricter than the recommendation of the previous administration.)<sup>107</sup>

In September 2009, the US EPA and US DOT issued a draft joint rulemaking that proposed national standards to regulate vehicle fuel economy, and, for the first time in US history, greenhouse gas emissions from transport (National Program).<sup>108</sup> Under the original proposals of the Energy Independence and Security Act, the average nationwide fuel economy would have reached 35 miles per gallon by 2020, compared to about 25 miles per gallon in 2009. The National Program mandates a nationwide average of 35.5 miles per gallon by 2016, and once finalized, it would bring the rest of the country up to California’s current standards.

Another draft rulemaking by the EPA, also issued in September 2009, would require any large stationary emitters of greenhouse gases such as power plants and industrial facilities, whether new or

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<sup>105</sup> US EPA, 2009d.

<sup>106</sup> US DOT, 2009a.

<sup>107</sup> US DOT, 2009b.

<sup>108</sup> US EPA, 2009e.

undergoing modifications, to obtain operating permits from the agency. The rule would cover facilities with more than 25,000 tons of greenhouse gas emissions per year and the permits would be issued based on a facility's ability to utilize best practices to control such emissions.<sup>109</sup> This proposal has so far been interpreted as a strategic move by the Obama Administration to compel the Congress to pass more comprehensive legislation dealing with climate change.

As of early 2010, the draft National Program rulemaking was in the process of becoming finalized. But it remained unclear whether the EPA would pursue the draft rulemaking on the permitting of large emitters, or defer to the Congress.

Thus, in contrast to developments in the area of packaging waste, the lack of federal regulations for greenhouse gas emissions 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. 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 dioxide emissions throughout the US.

### **European Union**

By contrast, both the EU 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 dioxide specifically or energy more generally. Concerned that such taxes would undermine the single market, the EU attempted to establish a European energy tax.<sup>110</sup> 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

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<sup>109</sup> US EPA, 2009f.

<sup>110</sup> Zito, 2000.

was against European-wide tax policies, and to a lesser extent by France, which wanted a tax on carbon dioxide only rather than the combined tax. By the end of 1994, the European Council abandoned its efforts and agreed to establish voluntary guidelines for countries that were interested in energy taxes.<sup>111</sup> In 1997, the Commission again proposed a directive to harmonise and, over time, increase taxes on energy within the EU; that proposal was finally approved in March 2003. It contained numerous loopholes for energy-intensive industry and transition periods for particular countries and economic sectors.<sup>112</sup> 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 harmonise such taxes throughout the EU.

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 per cent 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 per cent reduction target. In the spring of 2000, the EU officially launched the European Climate Change Program, which identified more than 40 emission-reduction measures.

One of the fundamental emission reduction measures put forth by the EU has been emissions trading. The EU proposed a Directive for a system of emissions trading and harmonising domestic arrangements within the Community in 2001.<sup>113</sup> The Directive entered into force on October 25, 2003, creating the first international emissions trading system in the world, the EU Emissions Trading System (ETS). 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 the member states are

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<sup>111</sup> Collier, 1996.

<sup>112</sup> *Environment Daily*, 1997, 2003b.

<sup>113</sup> Smith and Chaumeil, 2002.

asked to keep the number of allowances low and in line with their Kyoto commitment.<sup>114</sup> The first trading (or compliance) period was 2005 through 2007. During the second compliance period, which runs from 2008 through 2012, the EU ETS will encompass as many as 10,000 industrial and energy installations, which are estimated to emit nearly half of Europe's carbon dioxide emissions.<sup>115</sup>

In 2007, the EU officially committed to reduce the Community's aggregate greenhouse gas emissions by at least 20 per cent below the 1990 levels by the year 2020. Consistent with this commitment and in anticipation of a new international accord to succeed the Kyoto Protocol, the European Parliament amended the EU ETS directive in 2009.<sup>116</sup> This amendment puts forth some important changes to take effect in the third compliance period of the EU ETS, starting 2013. First, the majority of the emission allowances, which have so far been allocated by the member governments free-of-charge, would instead be sold via auction. Moreover, measures governing the EU ETS, including the determination of total allowances and the auction process, use of credits, and the monitoring, reporting and verification of emissions would be centralised under the Commission's authority.

The EU ETS is gradually being extended to include additional economic sectors. For example, emissions from international aviation will be subject to the EU ETS starting January 1, 2012.<sup>117</sup> As of early 2010, it was anticipated that international maritime emissions would be included next.<sup>118</sup>

The efforts at the European level have been paralleled by a number of member-state policy initiatives. Among the earliest efforts was an initiative by Germany in which a government commission established the goal of reducing carbon dioxide emissions by 25 per cent by 2005 and 80 per cent by 2050, though these targets were subsequently relaxed owing to concerns about costs. Germany subsequently enacted taxes on energy, electricity, building standards, and emissions. The German federal government has negotiated voluntary agreements to reduce carbon dioxide emissions with virtually every industrial sector. From 2002 to 2006, the UK operated a voluntary greenhouse

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<sup>114</sup> *Environment Daily*, 2003c, 2003e.

<sup>115</sup> European Commission, 2006b.

<sup>116</sup> European Parliament and Council, 2009a.

<sup>117</sup> Kanter, 2008.

<sup>118</sup> Reuters, 2007 and UN Conference on Trade and Development, 2009.

gas-emissions trading scheme, involving nearly fifty industrial sectors, which served as a pilot for the current EU ETS. The British government simultaneously levied a tax on energy use (the so-called climate change levy) with reduced rates for firms and sectors that have met their emission-reduction targets. Like its German counterpart, the British government has officially endorsed very ambitious targets for the reduction of carbon dioxide emissions. This requires, among other policy changes, that a growing share of electricity be produced using renewable sources. While both Germany and the UK have reduced carbon dioxide emissions in the short run, their ability to meet the Kyoto targets to which they are now legally committed 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.

In order to utilize demand-side management and energy efficiency measures for environmental protection, including greenhouse gas emissions reduction, the EU also issued a directive specifically addressing energy efficiency in 2006.<sup>119</sup> This directive calls for five-year action plans to be developed by the Commission towards achieving the EU's goal of 20 per cent reduction in consumption of primary energy by 2020,<sup>120</sup> and has established an indicative energy savings target of 9 per cent to be reached within nine years (i.e., 1 per cent annually), starting in 2008. The directive allows each member to develop its own national action plan to achieve this target (or better). However, as this directive is not legally binding, participation and adherence by member states remain uneven.

One of the novel energy savings mechanisms supported by the directive involves the use of *tradable white certificates*. This is a market-based mechanism whereby energy savings are certified and transformed into the so-called tradable white certificates that can then be traded in a secondary market, similar to allowances in an emissions trading system. A few EU member states (such as

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<sup>119</sup> European Parliament and Council, 2006.

<sup>120</sup> Europa: Summaries of EU legislation, 2008, 2009.

France, Italy and the UK) have experimented with white certificate markets, but the voluntary nature of energy efficiency targets across the EU, fragmented action plans of member states towards achieving energy savings and challenges involving the market interactions between tradable white certificates, green certificates (or renewable energy certificates<sup>121</sup>) and greenhouse gas allowances have so far limited market development.<sup>122</sup>

Another example of centralised EU regulation in climate change involves carbon dioxide emissions from passenger vehicles. Starting in 1999, the EU has required all new cars sold within the EU to display labels indicating their fuel efficiency and carbon dioxide emissions. Most recently, a regulation enacted in 2009 requires auto manufactures to limit their fleet-wide average carbon dioxide emissions or pay an ‘emissions premium’ (penalty).<sup>123</sup> The emission limits and penalties will gradually be strengthened during the adjustment period of 2012 through 2018. In 2012, only 65 per cent of each manufacturer’s passenger car fleet will be required meet the baseline of 130 grams of carbon dioxide per kilometre. By 2020, a manufacturer’s entire fleet must have average carbon dioxide emissions 95 grams per kilometre or less. The penalty will be incremental during the adjustment period, starting from € for the first gram per kilometre of emissions over the limit, and rising up to €5 for additional grams per kilometre. By 2019, it will be fixed at €5 for each gram per kilometre.

## **ANALYSIS**

The dynamics of the relationship between central and state authorities varies considerably across these six case studies. In three cases (automobile emissions in the EU and the US, and packaging waste policies in the EU), state governments have been an important source of policy innovation and diffusion. In these cases, state authorities were the first to regulate, and their regulations resulted in

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<sup>121</sup> Renewable energy certificates represents a similar concept to tradable white certificates and emissions allowances. In case of renewable energy certificates, energy generated from approved renewable energy resources is certified and traded in a secondary market, and can be applied as offsets towards reducing the greenhouse gas emission burden of an installation.

<sup>122</sup> Mundaca and Neij, 2007 and Labanca and Perrels, 2008.

<sup>123</sup> European Parliament and Council, 2009.

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 one reinforcing the other.

In the two remaining cases (packaging waste and climate change in the US), 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 state regulations have diffused to other states. The earlier US pattern of automotive emissions standards, in which California and other states helped ratchet up federal standards, has so far not applied to either of these policy areas. However, over the years, the issue of climate change has become more politically significant than packaging waste, and the extended pressure by the states may generate some form federal action on climate under the Obama Administration. Moreover, as climate change gains prominence as the broader environmental threat, automotive emissions are increasingly evaluated in the same context. As a result, this potential federal action on climate change may be two-pronged. As of early 2010, even stricter automobile fuel economy and emissions standards—proposed to be on par with those of California—were already on the drawing board. In fact, the associated draft rulemaking, which sets national standards for vehicle greenhouse gas emissions for the first time, was the result of an agreement between the federal government and California. This action on motor vehicle greenhouse gas emissions may then be followed by legislative or regulatory action directed at other sources of greenhouse gas emissions.<sup>124</sup>

On the other hand, in Europe, relatively stringent state environmental standards continue to drive or parallel more closely the adoption of 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 has this occurred? 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

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<sup>124</sup> Legislative action could consist of the Congress passing a climate change bill that might call for a nationwide cap-and-trade scheme in greenhouse gases. Regulatory action could involve the US EPA issuing a rulemaking to establish carbon dioxide regulation, as mentioned earlier. The agency could perhaps even establish a cap-and-trade market similar to the existing markets for nitrogen oxides and sulphur dioxide. The regulatory path has the potential to be more contentious than the legislative path.

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 convert 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, unlike in the EU where they are represented on the Council of Ministers. Consequently, for example, the senators and representatives from California enjoy less influence over US national environmental legislation than does Germany's representative in the Council of Ministers.

Second, the single market is more recent and more politically fragile in the EU than in the US. The federal government's legal supremacy over interstate commerce dates from the adoption of the US constitution, while the EU's constitutional authority and political commitment to create and maintain a single market is less than two decades old. Accordingly, 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.<sup>125</sup>

By contrast, distinctive state packaging waste standards have been an important source of legal and political tension within the EU, prompting efforts to harmonise standards at the European level, as well as legal challenges to various state regulations by the Commission. 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

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<sup>125</sup> Stone, 1990.

that when faced with divergent state standards, particularly with respect to products, the EU is likely to find itself under more pressure than the US central government to prevent them from interfering with the single market. Accordingly, they must be either challenged or harmonised.

In principle, harmonisation need not result in more stringent standards. In fact, the EU's Packaging Directive imposes both a ceiling and a floor. But for the most part, coalitions of the EU's greener member states have been successful in pressuring the EU to adopt directives that generally strengthen European environmental standards. The political influence of these states has been further strengthened by the role of the European Commission, which has made an institutional and political commitment to improving European environmental quality; consequently, the Commission typically prefers to use its authority to force states to raise their standards rather than lower them. In addition, the increasingly influential role of the EP, in which green constituencies have been relatively strongly represented, has also contributed to strengthening EU environmental standards.

The third factor is a political one. During the 1960s and 1970s, there was a strong political push in the US for federal environmental standards. According to environmentalists and their supporters, federal regulation was essential if the US was to make effective progress in 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 centre of gravity of US environmental regulation shifted to Washington. After the Republican Party's capture of both chambers of Congress in 1994, followed by the two-term Republican presidency starting in 2000, relatively few more-stringent environmental standards were adopted. During this period, the national political strength of environmentalists and their supporters diminished.

Nevertheless, environmentalists and their supporters continued to be relatively influential in a number of American states. In part, this outburst of state activity has been a response to their declining influence in Washington. By 2008, a major discontinuity had emerged between the environmental policies of many US states and those of the federal government. This has meant that, unlike in the 1960s and 1970s, more stringent state standards have had much less impact on the

strengthening federal standards. Indeed, in marked contrast to two decades ago, when the automobile emissions standards of California and other states led to the progressive strengthening of federal standards in this critical area of environmental policy, California's recent policy efforts to regulate automobiles as part of a broader effort to reduce greenhouse gas emissions were initially challenged by the federal government on the grounds that they violated federal fuel-economy standards, an area of regulatory policy in which the federal government has exclusive authority but which it did not strengthen for more than two decades. The Obama Administration has sought to reinvigorate the federal government's environmental policy role, most notably in the critical area of global climate change. It has also reduced some of the friction between states and the federal government in the critical area of greenhouse gas emissions from motor vehicles.

In the EU, the political dynamics of environmental regulation differ markedly. The 1990s witnessed both the increased political influence of pro-environmental constituencies within the EU – by the end of that decade, green parties had entered the governments of five Western European nations – and a decline in the influence of green pressure groups in the US federal government. During this period, a number of EU environmental policies became more centralised and stringent than those of the US.<sup>126</sup> Paradoxically, while the US federal government exercises far more extensive authority than the EU, in each of three cases we examined, EU environmental policy is now more centralised than that in the US.

## **CONCLUSION**

The focal cases are summarised in Table 9.1. We conclude with 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 states in the US and member states of 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

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<sup>126</sup> Vogel, 2003.

from producers 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. On the other hand, the impact of such state policies remains limited, in part because not all states choose to adopt or vigorously enforce relatively stringent standards. Thus, in the long run, there is no substitute for centralised standards; they represent the most important mechanism of policy diffusion.

*Table 9.1 Comparison of environmental regulations*

Policy area	EU chronology	Status	US chronology	Status
Auto emissions	State to central	Centralised	State to central	Shared
Packaging waste	State to shared	Contested	State	Uncontested
Climate change	Shared	Uncontested	State	Contested

Accordingly, the most important role played by state standards is to prompt more stringent central ones. But unless this dynamic comes into play, the effectiveness of state environmental regulations will remain limited. In the areas of both global climate change and packaging waste, virtually all state regulations of the US are less stringent than those of the EU. It is not coincidental that the case we examined in which EU and US standards are the most comparable – and relatively stringent – is automobile emissions, in which the US central government plays a critical role. By contrast, the lack of central regulations for both packaging waste and climate change clearly reflects and reinforces the relative laxity of US regulations in these policy areas. The EU’s more centralised policies in both areas reflect the greater vigour of its recent environmental efforts.

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