

Germany's Efforts to Reduce Carbon Dioxide Emissions From Cars: Anticipating a New Regulatory Framework and Its Significance for Environmental Policy

by Kerry E. Rodgers

Editors' Summary: In this Article, Kerry E. Rodgers presents an overview of Germany's current efforts to reduce carbon dioxide (CO₂) emissions from cars, including discussions of the proposed European Union legislation to set binding CO₂ emissions targets for cars and supporting measures. She identifies several factors that appear to be driving Germany's efforts: (1) ambitious national commitments to reduce CO₂ emissions; (2) the desire to show global leadership on climate protection; (3) recent events that have drawn public attention to climate protection and "clean cars"; and (4) traditions in German environmental policy such as a political and scientific consensus on the need for climate protection, the tradition of viewing environmental regulation as a way to competitive advantage, and public experience with taxes as an environmental policy tool. She also identifies perceived challenges for change, including the car industry, consumer behavior, and features of governance structures, and argues that the debate in Germany over CO₂ emissions from cars merits watching because of its potential significance for three areas of environmental policy: (1) the future of voluntary, self-regulatory agreements in Europe; (2) the value of an international legal and political framework in developing national environmental policy; and (3) the interrelatedness of environmental policies toward cars with broader energy and transport policies and climate protection initiatives.

I. Introduction

Climate protection ranks high on the national agenda in Germany. In 2007, Germany highlighted climate protection, "clean mobility," and increased use of biofuels as priorities for Germany's presidency of the Council of the European Union (EU).¹ German Chancellor Angela Merkel described climate change as "one of the central challenges facing hu-

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1. FEDERAL MINISTRY FOR THE ENVIRONMENT, NATURE CONSERVATION & NUCLEAR SAFETY (BMU), ENVIRONMENT—INNOVATION—EMPLOYMENT: PRIORITIES OF THE EU PRESIDENCY 10, 12-13 (2006) [hereinafter PRIORITIES OF THE EU PRESIDENCY].

manity today" in a September speech before the United Nations (U.N.) General Assembly,² as Germany prepared for December 2007 meetings in Bali, Indonesia, to discuss an international agreement to succeed the Kyoto Protocol to the U.N. Framework Convention on Climate Change (UNFCCC), whose commitments extend only to 2012.³ In addition to calling attention to climate change at the international level, Germany has reduced carbon dioxide (CO₂) emissions from many sectors and is on track to meet its Kyoto commitments.⁴

Despite the prominence of climate protection, Germany has not adopted any specific policies to require reductions in CO₂ emissions from passenger cars. Instead, Germany has relied primarily on voluntary commitments by the car indus-

2. Chancellor Angela Merkel, Speech at the U.N. General Assembly (Sept. 25, 2007) (transcript available at <http://www.germany.info/relaunch/politics/speeches/092507.html>) [hereinafter Merkel Speech].

3. U.N. Doc. FCCC/CP/1997/7/Add.2 (Dec. 10, 1997), reprinted in 37 I.L.M. 22 (1998).

4. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT & INTERNATIONAL ENERGY AGENCY (OECD & IEA), ENERGY POLICIES OF IEA COUNTRIES: GERMANY 2007 REVIEW 28 (2007).

try to deliver such reductions. The German Association of the Automotive Industry (Verband der Automobilindustrie or VDA) agreed in 1995 to reduce average CO₂ emissions from new German passenger cars by 25% between 1990 and 2005, and the German car manufacturers came close to meeting that goal.⁵ In 1998, the European Automobile Manufacturers Association (ACEA) agreed to achieve an average CO₂ emissions target of 140 grams per kilometer (g/km)—approximately 39-44 miles per gallon (mpg)—for new cars sold in the EU beginning in 2008. The Japanese and Korean car manufacturers agreed to achieve similar reductions by 2009.⁶ (I refer to these agreements collectively as the 1998 Agreement or the ACEA Agreement.) In addition, Germany has created incentives to encourage reductions in CO₂ emissions from cars by implementing the ecological tax reform, which raised fuel taxes, and the EU fuel economy labeling directive,⁷ which made information about new cars' fuel consumption and CO₂ emissions available to consumers.

Yet, after nearly a decade, the voluntary approach is not expected to deliver the promised results. In 2006, the average CO₂ emissions of new cars in the EU25 Member States (excluding Malta) were 160 g/km, and the average CO₂ emissions for new cars in Germany were 171 g/km.⁸ Early in 2007, the European Commission abandoned the 1998 Agreement and announced its intent to draft proposed legislation to establish the first binding CO₂ emissions targets for new cars sold in the EU.⁹ Among politicians, regulators, automakers, nongovernmental organizations (NGOs) active in the environmental and transport fields, and others in Brussels and throughout the EU, the announcement intensified debate over how the anticipated CO₂ targets should be designed and enforced, when the targets should become effective, and who should bear responsibility for meeting them, according to NGO experts familiar with the discussions. The European Commission issued its proposed legislation, a draft regulation that would set EU-wide requirements, in December 2007.¹⁰ Debate continues as the Euro-

pean Council and Parliament, which would need to approve any regulation for it to become law,¹¹ consider it.

Germany, known for producing powerful cars and for advocating climate protection, stands in a unique position to influence the debate at the European level over reducing CO₂ emissions from cars. First, Germany is committed to achieving ambitious reductions in its own CO₂ emissions and to persuading other world leaders to follow its example by reducing their own countries' emissions. Under the Kyoto Protocol and Germany's 2000 National Climate Protection Programme, Germany has agreed to reduce greenhouse gas (GHG) emissions by 21% by the period 2008-2012, and Germany has nearly achieved that goal.¹² Germany's 2005 National Climate Protection Programme states a goal of reducing CO₂ emissions from the transport sector by 171 million tons in the same period.¹³ Cars (and their drivers) are responsible for a significant percentage of CO₂ emissions from the transport sector, which itself accounts for roughly one-fifth of CO₂ emissions in Germany.¹⁴ Experts agree that achieving further emissions reductions from cars will be important in meeting Germany's overall CO₂ reduction commitments. Having held the dual presidency of the Council of the EU and the Group of Eight (G8) in 2007, Germany also seeks to assume a leading role in negotiations over a post-2012 international climate agreement, and exercising leadership on CO₂ emissions from cars at home and in Brussels could strengthen Germany's ability to shape the discussions in the international arena.

Second, Germany has experienced growth in vehicle size, transport volume, and road transport of goods, and such growth counteracts efforts to make vehicles more fuel efficient. While total CO₂ emissions from the transport sector in Germany have decreased since 2000,¹⁵ the German government found that "[considering] total emissions by passenger cars it is evident that the reductions in emissions

1965&format=HTML&aged=0&language=EN&guiLanguage=en (last visited Feb. 5, 2008) [hereinafter Press Release, Commission Proposal to Limit the CO₂ Emissions].

5. DANIEL BONGARDT & KRISTINA KEBECK, EVALUATION OF THE ACEA AGREEMENT WITHIN THE FRAMEWORK OF THE AID-EE PROJECT 12-13 (2006).
6. See ACEA, *FAQs* (Apr. 27, 2007), <http://www.acea.be/index.php/faq/>; FENG AN & AMANDA SAUER, COMPARISON OF PASSENGER VEHICLE FUEL ECONOMY AND GHG EMISSION STANDARDS AROUND THE WORLD 24 (2004) (report prepared for the Pew Center on Global Climate Change comparing standards based on adjustments to account for different European and U.S. driving test cycles).
7. Directive 1999/94/EC of the European Parliament and of the Council of 13 December 1999 Relating to the Availability of Consumer Information on Fuel Economy and CO₂ Emissions in Respect of the Marketing of New Passenger Cars, 2000 OJ (L 12/16) (EC) [hereinafter EU Labeling Directive].
8. KERSTIN MEYER & AAT PETERSE, EUROPEAN FEDERATION FOR TRANSPORT AND ENVIRONMENT (T&E), REDUCING CO₂ EMISSIONS FROM NEW CARS: 2006 PROGRESS REPORT ON THE CAR INDUSTRY'S VOLUNTARY COMMITMENT 6, tbl. 2 (2007), available at http://www.transportenvironment.org/docs/Publications/2007/2007-09_progress_voluntary_commitment_2006.pdf
9. *Communication From the Commission to the Council and the European Parliament: Results of the Review of the Community Strategy to Reduce CO₂ Emissions From Passenger Cars and Light-Commercial Vehicles*, at 8, COM (2007) 19 final (Feb. 7, 2007) [hereinafter February 2007 Commission Communication].
10. Press Release, Commission Proposal to Limit the CO₂ Emissions From Cars to Help Fight Climate Change, Reduce Fuel Costs and Increase European Competitiveness (Dec. 19, 2007), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/>
11. See Press Release, Questions and Answers on the Proposed Regulation to Reduce CO₂ Emissions From Cars 3 (Dec. 19, 2007), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/07/597&format=HTML&aged=0&language=EN&guiLanguage=en> (last visited Feb. 5, 2008) [hereinafter Press Release, Questions and Answers].
12. FOURTH NATIONAL REPORT BY THE GOVERNMENT OF THE FEDERAL REPUBLIC OF GERMANY (4th NATIONAL COMMUNICATION) UNDER THE KYOTO PROTOCOL TO THE UNFCCC (2006), available at <http://unfccc.int/resource/docs/natc/gernc4.pdf> [hereinafter 4th NATIONAL COMMUNICATION]; see Miranda A. Schreurs, *The Climate Change Divide: The European Union, the United States, and the Future of the Kyoto Protocol*, in GREEN GIANTS? ENVIRONMENTAL POLICIES OF THE UNITED STATES AND THE EUROPEAN UNION 207, 226-27 (Norman J. Vig & Michael G. Faure eds., 2004) (noting that Germany reduced its GHG emissions by more than 19% from 1990 to 2000).
13. FEDERAL MINISTRY FOR THE ENVIRONMENT, NATURE CONSERVATION & NUCLEAR SAFETY (BMU), THE NATIONAL CLIMATE PROTECTION PROGRAMME 2005—SUMMARY 2-3 (2005), available at http://www.bmu.de/files/english/climate/downloads/application/pdf/klimaschutzprogramm_2005_en.pdf [hereinafter FEDERAL MINISTRY FOR THE ENVIRONMENT, THE NATIONAL CLIMATE PROTECTION PROGRAMME].
14. GERMAN ADVISORY COUNCIL ON THE ENVIRONMENT (SRU), ENVIRONMENT AND ROAD TRANSPORT: HIGH MOBILITY—ENVIRONMENTALLY SOUND TRAFFIC; SPECIAL REPORT KEY FINDINGS 4 (2005).
15. FEDERAL MINISTRY FOR THE ENVIRONMENT, THE NATIONAL CLIMATE PROTECTION PROGRAMME, *supra* note 13, at 1.

per passenger kilometre resulting from technical improvements have been almost completely cancelled out, in the case of CO₂, . . . by a general increase in the transport volume.”¹⁶ Passenger traffic in Germany grew by more than 6% between 1994 and 2003, and the number of cars increased by 22% from 1991 to 2004.¹⁷ Traffic congestion is a problem not only in cities but also in rural areas, according to one NGO expert. Germany also has experienced tremendous growth in the road transport of goods and associated fuel consumption.¹⁸

Third, German cars are economically, culturally, and politically important, and the German government will feel pressure to ensure that any European legislation has the flexibility to accommodate the German car manufacturers. The German car industry is central to the national economy, highly competitive, and a political force.¹⁹ Many in Germany consider cars essential for personal mobility and value them as a status symbol. Cars also carry immeasurable emotional excitement. The German car market traditionally has favored larger, more powerful cars than other European markets, and in 2006, the average CO₂ emissions of Germany’s new cars were higher than the average CO₂ emissions of new cars in three-quarters of the EU25 Member States (excluding Malta).²⁰ Thus, German car manufacturers may face greater challenges than some European competitors in order to adapt to tighter emissions limits and potentially increasing buyer demand for “cleaner” cars.²¹

This Article examines Germany’s current efforts to reduce CO₂ emissions from cars. Germany is heavily invested in the discussions of the proposed EU legislation in

Brussels. Germany also is considering adopting or modifying its own supporting measures to address CO₂ emissions from cars, some of which parallel EU initiatives. Germany is sponsoring research to promote alternative fuels and vehicles as well.

Part II of this Article outlines the anticipated shortcomings of the car industry’s voluntary agreements, the ongoing debate concerning the proposed EU legislation, and the supporting measures that Germany is considering. Part III identifies several factors that appear to be driving Germany’s efforts: (1) ambitious national commitments to reduce CO₂ emissions; (2) the desire to show global leadership on climate protection; (3) recent events that have drawn public attention to climate protection and cleaner cars; and (4) traditions in German environmental policy such as a long-standing scientific and political consensus on the need for climate protection, viewing environmental regulation as a way to competitive advantage, and general public acceptance of taxes as an environmental policy tool. Part IV identifies potential challenges for improving cars’ CO₂ emissions in Germany.

In the conclusion, I argue that it is important to follow the debate over CO₂ emissions from cars in Germany and in Brussels, not only to learn what the anticipated CO₂ targets will mean for German cars, but because of its potential significance for environmental policy. In particular, the debate may signal a shift away from reliance on voluntary agreements in Germany and elsewhere in Europe. The debate also highlights the value of an international legal and political framework in addressing a problem such as CO₂ emissions from cars at the national level. It illustrates the extent to which national policies toward vehicle emissions are interwoven with broader energy, transport, and climate policies and all of the opportunities and obstacles they present. I suggest that progress in reducing CO₂ emissions from cars in Germany is likely to emerge in several different areas, though measures and results may not be seamlessly integrated and tensions between competing technologies and strategies are likely to persist. Finally, I note potential areas for further research.²²

II. The Current Debate in the EU and in Germany

The current debate in Germany over reducing CO₂ emissions from cars encompasses discussions about the European Commission’s legislative proposal to establish mandatory CO₂ emissions targets for cars and discussions about possible supporting measures.

A. The Car Manufacturers’ Voluntary Agreements

Since the mid-1990s, car manufacturers in Germany and throughout the EU have pursued CO₂ emissions reductions from cars through voluntary, self-regulatory agreements. In 1995, the VDA agreed to reduce cars’ average CO₂ emissions by 25% between 1990 and 2005.²³ Then in 1998, the

16. FEDERAL INSTITUTE FOR GEOSCIENCES & NATURAL RESOURCES ET AL., ENVIRONMENTAL DATA FOR GERMANY: PRACTICING SUSTAINABILITY—PROTECTING NATURAL RESOURCES AND THE ENVIRONMENT 66 (2007) [hereinafter ENVIRONMENTAL DATA FOR GERMANY]; see also 4th NATIONAL COMMUNICATION, *supra* note 12, at 41 (noting a “trend towards bigger and more powerful vehicles” since 1999). These trends have occurred throughout the EU. See February 2007 Commission Communication, *supra* note 9, at 2 (noting that fuel consumed by passenger cars generates “about 12% of the overall EU emissions of [CO₂],” and that “significant improvements in vehicle technology—in particular in fuel efficiency” have not “been enough to neutralise the effect of increased traffic and car size”).

17. 4th NATIONAL COMMUNICATION, *supra* note 12, at 39-40.

18. ENVIRONMENTAL DATA FOR GERMANY, *supra* note 16, at 64 (stating that “the fuel consumption by the road freight sector rose by 38.2% between 1991 and 2005, a consequence of a considerable increase in the volume of transport, which more than outweighed any technical improvements in fuel consumption. Freight transport’s share of the amount of fuel used on the roads grew from 22% in 1991 to 28% in 2005”).

19. FACTS ABOUT GERMANY: THE MOST IMPORTANT ECONOMIC SECTORS (2007), available at <http://www.tatsachen-ueber-deutschland.de/en/economy/main-content-06/the-most-important-economic-sectors.html> (listing car-making first among the most important industries in Germany, with sales of euro 227 billion and 777,000 employees); Briefing: *Germany’s Car Industry—The Big-Car Problem*, THE ECONOMIST, Feb. 24, 2007, at 81 (stating that the car industry, Germany’s biggest, “employs one in seven of the country’s manufacturing workforce”).

20. MEYER & PETERSE, *supra* note 8, at 6, tbl. 2.

21. Briefing: *Germany’s Car Industry—The Big-Car Problem*, *supra* note 19, at 81 (reporting that nearly one-third of the cars sold in Germany are premium models); see Mark Landler, *Carmakers Complicate CO₂ Issue for Merkel*, INT’L HERALD TRIB., Mar. 8, 2007, available at <http://www.ihf.com/bin/print.php?id=4840780> (noting that the Italian automaker Fiat and the French automakers Renault and PSA Peugeot Citroen, which tend to make smaller cars, are closer to the proposed 120 g/km CO₂ target than the German automakers).

22. I conducted interviews for this Article in Germany during September and October 2007. I also attended the 62d International Motor Show—Cars (Internationale Automobil-Ausstellung or IAA) in Frankfurt in September 2007, visited the city of Bremen to observe its integrated transport system, and toured five car museums. See IAA, *Homepage*, <http://www.iaa.de/archiv/2007/index.php?id=home2007&L=1> (last visited Jan. 14, 2008).

23. BONGARDT & KEBECK, *supra* note 5, at 12-13.

European car manufacturers agreed to achieve an average CO₂ emissions target of 140 g/km for new cars sold in the EU beginning in 2008. (This translates to a fuel consumption of 6.0 litres/100 km (about 39 mpg) for petrol cars and 5.3 litres/100 km (about 44.4 mpg) for diesel cars.) The Japanese and Korean car manufacturers made a similar commitment by 2009.²⁴ In the ACEA Agreement, the car manufacturers also agreed to introduce some models that emit 120 g/km CO₂ or less by 2000, to meet an intermediate CO₂ emissions target by 2003, and to establish a joint monitoring process with the European Commission.²⁵ The ACEA Agreement was a collective one; none of the manufacturers agreed publicly to achieve any specific emissions reductions in its fleet. In return, the commission indicated that it would not pursue additional measures.²⁶

The original agreement between the German government and the automobile industry was factored into the plans for the subsequent European agreement, and Germany played a major role in the early negotiations leading up to the ACEA Agreement, according to an expert with a public authority who is familiar with those negotiations. The German automakers themselves played a forceful role in persuading other European car manufacturers to agree to the 140 g/km CO₂ emissions target, the expert added.²⁷

The car manufacturers' voluntary agreements comprise one of three pillars on which the European Commission based its strategy for reducing CO₂ emissions from cars and improving fuel economy. Unlike the voluntary agreements, which address the supply of new cars sold in the EU, the other pillars address demand for cars and involve the following: (1) consumer information provided pursuant to the Labeling Directive (Directive 1999/94/EC); and (2) taxation to promote fuel-efficient cars.²⁸ (Part II.C. describes these measures.)

Evaluating the implementation of the three-pillars strategy in February 2007, the European Commission made three significant findings:

- Emissions from the average new car sold declined 12.4% from 1995 to 2004, from 186 g/km CO₂ to 163 g/km CO₂, while new cars sold in the EU became “significantly bigger and more powerful.”
- Thus far, “improvements in car technology have delivered the bulk of the reductions,” as opposed to

“the limited measures adopted so far by Member States on the demand side.”

- Without additional measures, the voluntary agreement will not meet the objective of 120 g/km CO₂ by 2012.²⁹

Recognizing that “the voluntary agreement did not succeed,” the Commission deemed it “necessary to resort to a legislative approach” to achieve that goal.³⁰

B. Crafting a New Legislative Framework

1. The European Commission's February 2007 Communication and the Parliament's Initial Response

The European Commission presented its findings in a February 2007 Communication issued as “the basis for exchanges with other European Institutions and all interested parties on implementing a next stage in the Community strategy to reduce CO₂ emissions and improve fuel efficiency from light-duty vehicles. . . .”³¹ The commission indicated that it would propose a legislative framework for an “integrated approach” to achieve 120 g/km CO₂ by 2012, seeking mandatory reductions of CO₂ emissions to a level of 130 g/km CO₂ for the average new car fleet through improvements in vehicle motor technology and additional reductions of 10 g/km CO₂, “or equivalent if technically necessary, by other technological improvements and by an increased use of biofuels.”³²

To achieve the additional reductions totaling 10 g/km CO₂, the commission identified the following measures: minimum efficiency standards for air conditioning systems; tire pressure monitoring systems; maximum tire rolling resistance limits for passenger cars and light-duty commercial vehicles; the use of gear shift indicators; fuel efficiency improvements in light-duty commercial vehicles (vans) with the objective of reaching 175 g/km CO₂ by 2012 and 160 g/km CO₂ by 2015; and increased use of biofuels.³³ The commission emphasized that these “will be measurable, monitorable, accountable and non double-counting the reductions of CO₂.”³⁴ However, the European driving cycle normally does not measure these changes, and the European Commission will need to come up with a way to measure the last 10 grams of CO₂ reductions, an NGO expert said, to ensure accountability.³⁵

Acting on its own initiative, the Environment Committee of the European Parliament reinforced the European Commission's conclusion that the car industry's voluntary

24. See ACEA, *supra* note 6; EUROPEAN FEDERATION FOR TRANSPORT & ENVIRONMENT (T&E), BACKGROUND BRIEFING, “REGULATING CO₂ EMISSIONS OF NEW CARS” (updated Oct. 2007), available at http://www.transportenvironment.org/docs/Publication/2007/2007-10_background_briefing_cars_co2_regulation.pdf.

25. *Id.*

26. The 1998 agreement is memorialized in two documents issued by the ACEA and the European Commission, respectively: (1) a self-commitment published by the ACEA; and (2) a communication (1999/125/EC) in which the commission stated that it accepted the targets and that it would not pursue any further measures. Daniel Bongardt & Kristina Kebeck, *New Governance or Symbolic Policy?—Evaluation and Recommendations for the Agreement Between the European Commission and the Automobile Industry*, ECEEE 2007 SUMMER STUDY: SAVING ENERGY—JUST DO IT!, 1611, 1612 n.1 (2007).

27. See IEA & OECD, THE ROAD FROM KYOTO: CURRENT CO₂ AND TRANSPORT POLICIES IN THE IEA 54 (2000) (noting that the German federal government supported the European Commission in negotiating an EU-wide agreement and that “[t]he German agreement played an important role in paving the way for the broader EU-wide agreement”) [hereinafter THE ROAD FROM KYOTO].

28. February 2007 Commission Communication, *supra* note 9, at 5.

29. *Id.* at 6.

30. *Id.* at 3, 6.

31. *Id.* at 3.

32. *Id.* at 7-8.

33. *Id.* at 8.

34. *Id.*

35. An annual monitoring report used to monitor the car manufacturers' compliance with the ACEA Agreement may provide a useful template for monitoring new measures, the expert added. Under a monitoring scheme established in 2000 by the European Parliament and the European Council (Decision No. 1753/2000/EC), Member States collect emissions information on cars registered for the first time and report it annually to the commission. See *CO₂ Emissions From New Passenger Cars: Monitoring* (June 26, 2007), <http://europa.eu/scadplus/leg/en/lvb/l28055.htm> (last visited Jan. 14, 2008).

agreement has not succeeded and that it is necessary to develop EU legislation to establish a binding CO₂ emissions target of 120 g/km CO₂ on average for new cars sold in the EU beginning in 2012.³⁶ The Members of the European Parliament endorsed the commission's initiative in fall 2007, but proposed a less stringent target of 125 g/km CO₂ by 2015.³⁷

2. The Structure of a New Target

Throughout 2007, discussions at the European level focused on the structure, enforcement, and timing of a mandatory CO₂ emissions target that would apply to all new cars sold in the EU.³⁸ While it is clear that all car manufacturers will have to make efforts to meet a new target, experts say that the structure of the target will be particularly important to specialized manufacturers such as Porsche whose product lines fall at the high-emitting end of the new car market. Manufacturers such as Volkswagen that produce cars along the whole spectrum of the market will be better positioned to meet a new target no matter how it is structured, experts note. Germany has been an active player, but Germany's position reflects a certain ambivalence. As one expert with a public authority described it, Germany appears committed to a target of 130 g/km CO₂ from vehicle engine technology and Germany is willing to demand some action from the car industry; however, Germany will insist that any legislative measure allow Mercedes-Benz, Porsche, and other manufacturers to survive.

With respect to the structure of the target, the debate has included whether to set a target for individual cars or a fleet average target and whether to create classes of cars and set a target for each class. One concern with creating broad classes of cars is that such classes create incentives for car manufacturers and consumers to move to the next higher class with a higher emissions target. Accordingly, the German position has sought to avoid creating such incentives by setting an emissions target or curve using a parameter that would indicate larger cars, according to experts who are familiar with the government's position. The average would go to the 120 g/km CO₂ target.

Discussions have centered on two options for a correlation parameter that would link CO₂ emissions to individual cars, according to one NGO expert who is familiar with the discussions. Green NGOs advocate using the "footprint" or the "shadow"—essentially, a measure of area—of the vehicle, e.g., CO₂ emissions per square meter, because these parameters would create an incentive for consumers to buy cars tailored to their driving needs. In addition, area is harder to manipulate than volume, one expert with a public authority explains. By contrast, car

manufacturers advocate using vehicle weight as the correlation parameter, e.g., CO₂ emissions per kilogram of vehicle weight. Green NGOs criticize this option because it would enable car manufacturers to make larger class cars subject to higher emission limits. In fact, as one expert with a public authority noted, a possible unwanted effect of the proposed CO₂ legislation is that cars could become bigger and bigger.

3. Enforcement

Enforcement of any mandatory CO₂ targets is another important issue. According to one NGO expert familiar with the discussions in Brussels, a penalty-based enforcement mechanism was one option under consideration. This expert prefers a penalty-based enforcement mechanism based on a vehicle's footprint or shadow. For each car that exceeded the mandatory target, a penalty would be assessed. Car manufacturers would pass penalty costs on to consumers, and higher polluting cars would become more expensive. Of course, penalties for the most expensive and highest polluting cars likely would not have much impact on consumers who buy high-end cars. Another option, experts familiar with the recent discussions say, would allow CO₂ emissions trading between car manufacturers; however, they do not consider it likely that this option will be adopted.

The Environment Committee of the European Parliament proposed somewhat different approaches for assisting car manufacturers in complying with the 120 g/km CO₂ emissions target. To assist specialist manufacturers, the committee emphasized the importance of allowing individual vehicles to exceed emissions limits. The committee further proposed authorizing each manufacturer "to exclude 500 identified vehicles annually from inclusion in the data used to determine average emissions."³⁹ In addition, the committee proposed a carbon trading system to begin in 2011 through which a car manufacturer could offset penalties it owed for exceeding the emissions target by credits awarded to newly registered cars it manufactured with emissions below the target.⁴⁰

4. Timing

As for timing, the first issue is when a new, binding target should become effective. According to one expert familiar with the discussions in Brussels, car manufacturers say that the proposed target is not feasible by 2012, and they advocate a deadline of 2015 instead.⁴¹ The Members of the European Parliament nodded to the industry's position, suggesting a target of 125 g/km CO₂ by 2015 rather than 120 g/km CO₂ by 2012.⁴²

36. Press Release, Committee on the Environment, Public Health & Food Safety, European Parliament, Cap Cars' CO₂ Emissions at 120 g/km, Says Environment Committee (Sept. 12, 2007), available at http://www.europarl.europa.eu/news/expert/infopress_page/064-10234-254-09-37-911-20070910IPR10218-11-09-2007-2007-false/default_en.htm.

37. *Media Slam Compulsory CO₂ Advertising for Cars* (Oct. 25, 2007), http://www.euractiv.com/en/transport/media-slam-compulsory-co2-advertising-cars-article-167909?_print (last visited Jan. 14, 2008).

38. According to an NGO expert, sport utility vehicles (SUVs) in Germany are regulated as passenger cars and would be subject to the proposed 130 g/km CO₂ emissions target.

39. Press Release, Committee on the Environment, Public Health & Food Safety, European Parliament, *supra* note 36.

40. *Id.*

41. See Press Release, ACEA, European Passenger Car CEOs Jointly Express Resolve to Further Cut Carbon Emissions From Cars (Sept. 12, 2007), available at http://www.acea.be/index.php/news/news_detail/european_passenger_car_ceos_jointly_express_resolve_to_further_cut_carbon_e/ (claiming that the European car manufacturers need extra "lead time" to accommodate the long development and production cycles in the car industry) [hereinafter ACEA Press Release, Sept. 12, 2007].

42. *Media Slam Compulsory CO₂ Advertising for Cars*, *supra* note 37.

There also has been some discussion of appropriate emissions targets for new cars to meet by 2020. In its February 2007 Communication, the European Commission expressed its support for “research efforts towards . . . ‘[i]mprovements in vehicle efficiency [that] will deliver as much as a 40% reduction in CO₂ emissions for passenger cars for the new vehicle fleet in 2020,’ [which] would correspond to a new car fleet average of 95 [g/km CO₂].”⁴³ The European Commission recently reaffirmed support for such research.⁴⁴ The German Advisory Council on Global Change (Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen or WBGU) recommended a binding target of 80 g/km CO₂ by 2020,⁴⁵ and green NGOs are asking for the same target, according to one expert familiar with the recent discussions in Brussels.⁴⁶ However, the commission’s February 2007 Communication suggests that the commission will not propose standards for 2020 soon. That document states that in 2010, the commission will review the implementation of measures that result from the present review and will consider the potential for additional measures beyond the current objective of 120 g CO₂/km by 2012.⁴⁷ The Environment Committee of the European Parliament has stated that the EU should set long-term targets no later than 2016 and has called for targets of average emissions of 95 g/km CO₂ by 2020 and possibly 70 g/km CO₂ by 2025.⁴⁸

Experts disagree as to how important it is to set future standards in conjunction with the expected targets for 2012. One NGO expert believes it is very important to set a second standard for 2020 so that car manufacturers have a long lead time to reach the new targets.⁴⁹ Another NGO expert believes that it is too soon to know what technological developments will emerge by 2020 and that setting a standard for 2020 now would carry the risk of defining a target that is either too costly or too easy to achieve. Rather than addressing 2020, this expert believes, it is important for the EU to stick with its targets of 130 g/km CO₂ plus 10 g/km CO₂ by 2012, because anything less would be a failure. Experts also acknowledge that once legislation is in place, it will be easier to define a new target, as there will be opportunities to learn; they draw analogies to the implementation of the EU Emissions Trading Scheme (ETS) in which the first phase faced significant obstacles but the later phases will allow for pushing for greater achievements.

43. February 2007 Commission Communication, *supra* note 9, at 10.

44. Press Release, Questions and Answers, *supra* note 11, at 1.

45. GERMAN ADVISORY COUNCIL ON GLOBAL CHANGE (WBGU), NEW IMPETUS FOR CLIMATE POLICY: MAKING THE MOST OF GERMANY’S DUAL PRESIDENCY—POLICY PAPER 5, at 16 (2007), available at http://www.wbgu.de/wbgu_pp2007_engl.pdf (framing this recommendation for the implementation of the European Commission’s 2006 Energy Efficiency Action Plan and including “for new cars . . . binding European rules on further emissions reductions (120g CO₂ per km by 2012, 100g CO₂ per km by 2015 . . .)”).

46. See, e.g., MEYER & PETERSE, *supra* note 8, at 4.

47. February 2007 Commission Communication, *supra* note 9, at 11.

48. Press Release, Committee on the Environment, Public Health & Food Safety, European Parliament, *supra* note 36.

49. See also EUROPEAN FEDERATION FOR TRANSPORT AND ENVIRONMENT, BACKGROUND BRIEFING, REGULATING FUEL EFFICIENCY OF NEW CARS (2007) (stating that in addition to a legally binding regulation for 2012, “[f]uture targets beyond the existing 120 target should also be put in place”).

5. Responsibility for CO₂ Emissions Reductions

Another important issue that the European Commission has addressed but that presumably remains fair game for discussion is what proportion of the CO₂ reductions necessary to achieve a 120 g/km CO₂ (or other) target should come from improvements in vehicle engine technology—for which car manufacturers are responsible—and what proportion should come from other measures such as tire pressure monitors and gear shift indicators. The February 2007 Communication proposed that vehicle engine technology should yield emissions of 130 g/km CO₂ and other measures should yield an additional 10 g/km CO₂ of reductions, and the commission’s December 2007 draft regulation maintains this approach.⁵⁰ The commission previously had discussed a target of 120 g/km CO₂ by 2012, to be achieved through engine technology alone, but pressure from Germany reportedly contributed to the weakening of the commission’s position.⁵¹

Despite initially opposing the European Commission’s proposal to set mandatory CO₂ emissions targets for cars,⁵² the car industry fairly consistently has advocated the adoption of an “integrated approach” to reducing CO₂ emissions. An integrated approach is shorthand for a suite of measures that include changes in vehicle engine technology and other measures such as more efficient driving, CO₂-related taxation, and increased use of biofuels that would ensure that the oil industry, public authorities, and the driving public also take responsibility for emissions reductions.⁵³ Last year, the “CARS 21 High-Level Group” convened by the European Commission’s Enterprise and Industry Directorate-General recommended a similar “comprehensive strategy to tackle CO₂ emissions from motor vehicles involving all relevant stakeholders.”⁵⁴ The VDA also has advocated a wide range of measures for some time.⁵⁵

While many government and NGO experts agree that both supply- and demand-side measures to reduce CO₂

50. Press Release, Commission Proposal to Limit the CO₂ Emissions, *supra* note 10, at 1.

51. Dan Bilefsky, *Europe Proposes to Reduce New Cars’ Carbon Dioxide*, N.Y. TIMES, Feb. 8, 2007, available at http://www.nytimes.com/2007/02/08/business/worldbusiness/08emissions.html?_r=1&pagewanted=print&oref=slogin (reporting that the EU proposal is “less ambitious than those initially envisioned by the [EU] environment commissioner, Stravros Dimas, who compromised under pressure from Germany that included Chancellor Angela Merkel’s concern that the rules could unfairly penalize industry”).

52. *Id.* (reporting that the European Car Manufacturers Association initially reacted strongly against the proposed legislation, claiming that it would lead to higher car prices, job cuts in Europe, and shifts in production away from the EU).

53. ACEA Press Release, Sept. 12, 2007, *supra* note 41 (stating ACEA’s support for reducing cars’ CO₂ emissions to 120 g/km through measures including “improved car technology, infrastructure changes, a more efficient driving cycle, CO₂-related taxation and the greater use of biofuels”).

54. ENTERPRISE & INDUSTRY DIRECTORATE-GENERAL, EUROPEAN COMMISSION, CARS 21: A COMPETITIVE AUTOMOTIVE REGULATORY SYSTEM FOR THE 21ST CENTURY—FINAL REPORT 25 (2006), available at http://www.abgs.gov.tr/tamara/tamara_files/20/20TT_Annotated.htm [hereinafter CARS 21 REPORT]. The CARS 21 High-Level Group was tasked with making short-, medium-, and long-term recommendations for policy and regulation for the European automotive industry “that enhances global competitiveness and employment while sustaining further progress in safety and environmental performance at a price affordable to the consumer.” *Id.* at 3.

55. See, e.g., VDA, MOBILITY AND CLIMATE PROTECTION 20-29 (2001).

emissions from cars are needed (in addition to measures to reduce car use, promote environmentally friendly modes of transportation, and shift goods transport off of the roads), they generally differ with the car industry in their belief that clear, firm targets for CO₂ reductions from vehicle engine technology are essential to progress. One NGO expert emphasized that the most important measure is a clearly defined CO₂ target that is not influenced by softer measures. By promoting an “integrated approach,” the expert continued, the industry tries to divide responsibility for the target so that the industry’s role is unclear. An expert with a public authority said that the integrated approach detracts attention and resources away from the proposal for CO₂ limits and essentially wins 10 g/km CO₂ for the car industry. The European Commission’s February 2007 finding that improvements in vehicle engine technology are responsible for the bulk of reductions in CO₂ emissions from cars achieved to date strengthens the view that new standards should be based on further improvements in vehicle technology, because they have proven to be the most reliable. However, supporting measures are important as well.

6. The European Commission’s December 2007 Proposal and Next Steps

The European Commission issued its legislative proposal to set CO₂ emissions targets for new cars on December 19, 2007. Consistent with the commission’s February 2007 Communication, the proposal would require average CO₂ emissions from new passenger cars sold in the EU to reach 130 g/km CO₂ in 2012.⁵⁶ The proposal, in the form of a draft regulation that would be directly applicable in the Member States if it becomes law, addresses the issues that have been subject to much debate over the past year. However, the debate is likely to continue as the European Parliament and European Council consider the commission’s proposal.

The structure of the proposed targets is a curve, using vehicle weight (mass) as a parameter, which is designed to limit CO₂ emissions to a fleet average for new cars of 130 g/km CO₂ beginning in 2012. The commission explains that

a manufacturer will be required to ensure that the average emissions of all new cars which it manufactures and which are registered in the [European] Community are below the average of the permitted emissions for those cars as given by the curve. That curve is set in such a way that heavier cars will have to improve more than lighter cars compared to today, but that manufacturers will still be able to make cars with emissions above the limit value curve provided these are balanced by cars which are below the curve.⁵⁷

The proposal relies on a penalty-based enforcement mechanism. Beginning in 2012, it would impose an “excess emissions premium” on manufacturers if their average emissions levels exceed the curve. The premium would re-

flect the amount of CO₂ (in g/km) by which an average vehicle the manufacturer sold exceeded the curve, multiplied by the number of vehicles the manufacturer sold. The premium would increase from 20 euros per g/km in 2012 to 95 euros in 2015 and later years.⁵⁸ The proposal also outlines monitoring requirements under which Member States would collect new car registration data and report car manufacturers’ performance to the European Commission for publication.⁵⁹

The proposal offers two flexible compliance mechanisms. Car manufacturers may form pools to jointly comply with the emissions targets, provided that they comply with competition law and only exchange information relating to their compliance with the emissions targets. Alternatively, manufacturers that sell fewer than 10,000 vehicles per year and that do not join a pool may apply to the commission for an individual target.⁶⁰

Like the commission’s February 2007 Communication, the December 2007 proposal embraces an integrated approach. If adopted, the proposal would require CO₂ emissions reductions through improvements in vehicle motor technology, and particularly fuel efficiency. However, while the proposal relies on “complementary measures” such as efficiency improvements to tires and air conditioning and reductions in the carbon content of fuels to achieve the EU’s overall target of 120 g/km CO₂ by 2012, the proposal would not require any such measures.⁶¹ The commission relies in part on other legislative proposals to contribute to the additional 10 g/km CO₂ emissions reductions.⁶²

In light of the debate throughout 2007, the European Commission’s December 2007 proposal has attracted predictably mixed reviews. While the weight-based curve was a concession to the German car industry, the underlying formula reportedly does not go as far as the German car manufacturers hoped, and the European car manufacturers claim that the penalties are too high.⁶³ The VDA and even the German Federal Environment Minister have complained that the commission’s proposal favors the French car industry (known for smaller cars) and is not competition-neutral.⁶⁴ In a recent nonbinding report, the European Parliament reiterated its view that an average target of 125 g/km CO₂ by 2015 is more appropriate than the commission’s proposal.⁶⁵

58. *Id.* at 2.

59. See December 2007 Commission Proposal, *supra* note 56, Annex II (“Monitoring and Reporting Emissions”).

60. Press Release, Questions and Answers, *supra* note 11, at 2.

61. For instance, the commission plans to count the CO₂ emissions reductions achieved by proposed revisions to a fuel quality directive toward the additional 10 g/km. *Id.*

62. *Id.*

63. Katharina Bart & Stephen Power, *EU Vehicle-Emissions Plan Could Stir Industry Fight*, WALL ST. J., Dec. 20, 2007, http://online.wsj.com/public/article_print/SB119811749771641371.htm (last visited Feb. 3, 2008).

64. See Press Release, VDA, VDA President Sees “Herculean Political Task” for the European Council and European Parliament—Level of Penalty Payments Criticized (Jan. 29, 2008), [available at http://www.vda.de/cgi-bin/dps/dps-query.cgi?inclfile=2008012903&ini=/dps-query-EN.ini](http://www.vda.de/cgi-bin/dps/dps-query.cgi?inclfile=2008012903&ini=/dps-query-EN.ini) (last visited Feb. 3, 2008); Federal Environment Minister Sigmar Gabriel, Speech at the Bundestag, Berlin, on the “Outcome of the Bali Climate Change Conference” 2-3 (Jan. 17, 2008) (transcript available at <http://www.bmu.de/english/speeches/doc/40748.php>) (last visited Feb. 3, 2008).

65. Marcin Grajewski & Huw Jones, *EU Lawmakers Seek More Time for Car CO₂ Cuts*, Jan. 15, 2008, [available at http://www.reuters.com](http://www.reuters.com).

56. Press Release, Commission Proposal to Limit the CO₂ Emissions, *supra* note 10, at 1; see *Proposal for a Regulation of the European Parliament and of the Council: Setting Emission Performance Standards for New Passenger Cars as Part of the Community’s Integrated Approach to Reduce CO₂ Emissions From Light-Duty Vehicles*, COM(2007) 856 final (Dec. 19, 2007) [hereinafter December 2007 Commission Proposal], [available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007PC0856:EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007PC0856:EN:NOT) (last visited Feb. 7, 2008).

57. Press Release, Questions and Answers, *supra* note 11, at 1.

Meanwhile, environmental NGOs have criticized the commission's proposal for its retreat from the stricter 120 g/km CO₂ that Germany first proposed in the mid-1990s and for not including stiffer penalties for noncompliance.⁶⁶

C. Developing Supporting Measures

In addition to the anticipated EU legislation setting CO₂ emissions targets for new cars, policymakers in Brussels and Germany are considering a host of supporting measures to address both the supply and the demand sides of the problem. Such measures include: (1) EU legislation on tires and lubricant oils; (2) a German car circulation tax that more closely reflects CO₂ emissions; (3) new labeling, marketing, and eco-driving measures; (4) increasing the use of biofuels in cars; and (5) speed limits on the autobahn. Including the transport sector in the EU ETS has also been discussed.⁶⁷

1. Directives on Tires and Lubricant Oils

According to one NGO expert who is familiar with the discussions in Brussels, the European Commission is considering two other directives that would be important to the car stock: (1) a tire directive that would define rolling resistance in order to reduce rolling resistance (and thereby improve fuel economy); and (2) a directive on lubricant oils.⁶⁸ Given the length of the legislative process leading to the issuance of a directive (generally at least a year and sometimes years), it will be some time before these measures are implemented even if they move forward at the EU level.

2. CO₂-Based Car Circulation Tax

Over the past four or five years, Germany has discussed a new, national level annual circulation tax applicable to cars that would be based on CO₂ emissions, according to an NGO expert. The German government stated that it would meet with the federal states, or *Länder*, in 2007 to draft revisions to the present tax law that would link the tax on new road vehicles to their CO₂ emissions.⁶⁹ The German government recently adopted elements of a proposal for the *Länder* and announced plans to amend the vehicle tax in May 2008.⁷⁰ However, complicated issues of federalism associ-

ated with such a tax lead experts to question whether Germany will adopt it in the near future. Currently, the *Länder* collect an annual circulation tax on each car based on the volume of its motor, or cylinder.⁷¹ The *Länder* seek to ensure that they would not lose tax revenue if the current tax is changed, and with CO₂ emissions expected to decline, a CO₂-based tax would threaten current revenue levels. Moreover, car fleets vary across the *Länder*, e.g., some have relatively older fleets and others relatively newer fleets, and a CO₂-based tax may lead to disparities in the circulation tax revenue collected by the *Länder*, as one NGO expert explained. Further complicating matters is the fact that the German public finance system is on the agenda known as "Federalism Reform II" following a decision last year that reformed the federal-*Länder* division of responsibility; this means that constitutional and distributional questions are at issue, in addition to the question of how to design an effective instrument to address climate change, according to an expert with a public authority.

To address these problems, one NGO expert suggested that the German federal government could persuade the *Länder* governments to agree on the design of a CO₂-based annual circulation tax that would be equitable from their perspective. Alternatively, the federal government could make the circulation tax a national level tax to be collected by the federal government, and the federal government could provide for the *Länder* to receive an equivalent amount of revenue from other taxes. Yet, finding a solution will take time. One NGO expert anticipates that a CO₂-based circulation tax, on which the Finance Ministry (Bundesministerium der Finanzen) holds lead responsibility, will be adopted in a year or two; another expert with a public authority sounds less optimistic about this time frame.

In addition, the European Commission proposed a Council Directive on passenger car taxation, COM(2005) 261 that is pending before the European Council and the Parliament.⁷² The commission's February 2007 Communication and December 2007 draft regulation urge Member States to adopt that proposal and to adjust their car taxation policies to promote the use of fuel efficient cars.⁷³ According to an expert with a public authority, Germany would prefer an EU-wide directive even though Germany could establish a CO₂-based circulation tax even without EU legislation; EU legislation would create a level playing field and economies of scale for the German car industry, which exports to all markets. However, experts agree that EU-wide CO₂-based taxation of cars is unlikely, because fiscal measures at the European level require unanimity voting, and a unanimous vote is difficult to achieve. According to NGO experts, CO₂-based taxation of cars attracts two camps in opposition: the United Kingdom and Ireland, which are strongly against EU directives on taxation, and Member States such as Denmark that have high car registration taxes.

[com/articlePrint?articleId=USL1524123820080115](http://www.eli.org/articlePrint?articleId=USL1524123820080115) (last visited Feb. 3, 2008).

66. See Press Release, T&E, Europe Stalls on Cars and Climate Change (Dec. 31, 2007), available at <http://www.transportenvironment.org/News/2007/12/Europe-stalls-on-cars-and-climate-change> (last visited Feb. 3, 2008).

67. For background on these and other measures, see generally GERMAN ADVISORY COUNCIL ON THE ENVIRONMENT, REDUCING CO₂ EMISSIONS FROM CARS—SECTION FROM THE SPECIAL REPORT ENVIRONMENT AND ROAD TRANSPORT (2005), available at http://www.umweltrat.de/english/edownload/specrepo/Reducing_CO2_Emissions_from_Cars.pdf; UMWELTBUNDESAMT (UBA), REDUCING CO₂ EMISSIONS IN THE TRANSPORT SECTOR (2003), available at <http://www.umweltdaten.de/publikationen/fpdf-l/2607.pdf>.

68. February 2007 Commission Communication, *supra* note 9, at 8.

69. FEDERAL ENVIRONMENT MINISTRY, CLIMATE AGENDA 2020: RESTRUCTURING INDUSTRIAL SOCIETY (2007), available at http://www.bmu.de/files/pdfs/allgemein/application/pdf/climate_agenda_2020.pdf.

70. FEDERAL ENVIRONMENT MINISTRY, THE INTEGRATED ENERGY AND CLIMATE PROGRAMME OF THE GERMAN GOVERNMENT 5-6 (2007), available at <http://www.bmu.de/files/pdfs/allgemein/>

[application/pdf/hintergrund_meseberg_en.pdf](http://www.eli.org/application/pdf/hintergrund_meseberg_en.pdf) (last visited Feb. 3, 2008).

71. Unlike some other Member States, Germany does not impose car registration taxes, which are very steep in some countries that do not have a car industry.

72. Proposal for a Council Directive on Passenger Car-Related Taxes, COM (2005) 261 final (July 5, 2005).

73. February 2007 Commission Communication, *supra* note 9, at 9.

3. Labeling, Advertising, and Eco-Driving

Efforts to improve the information that car buyers and drivers receive about fuel consumption, CO₂ emissions, and efficient driving styles are under discussion. One effort involves plans to improve the labeling requirements for new cars sold in Germany. According to an expert who is familiar with the discussions of the labeling directive in Germany, the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit or BMU, known as the Federal Environment Ministry) is pressing the Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie or BMWi), which is responsible for implementing the EU Labeling Directive, to work on improvements. The German government recently announced agreement on amendments to Germany's labeling requirements "to strengthen incentives to buy fuel-efficient, low-CO₂ passenger cars" through "consumer friendly and clear label[ing]."⁷⁴

The EU Labeling Directive (Directive 1999/94/EC) requires that information on fuel consumption and specific CO₂ emissions be displayed on new cars in showrooms and other points of sale, and it also requires that some other information be made available to consumers.⁷⁵ Its premise is that fuel economy and emissions information may influence consumers to buy more fuel-efficient, lower emitting cars and, in turn, encourage car manufacturers to reduce the fuel consumption of their models.⁷⁶ Yet, the Labeling Directive arrived too late and has not been implemented effectively in Germany, according to NGO experts. For instance, whereas some countries such as the Netherlands have comparative labeling of emissions from new cars, Germany only requires that fuel consumption and CO₂ emissions information be made available. Comparative labeling, which Germany requires for household appliances (ranked according to classes of energy efficiency) would be an improvement, the expert maintains.

Improvements to the EU Labeling Directive itself also are under consideration. The European Commission announced plans to adopt in 2007 an amended proposal to improve the directive, in part by extending it to light-duty commercial vehicles, harmonizing the label design, and introducing energy efficiency classes.⁷⁷ Still, any changes will take time. One NGO expert expects that the EU's harmonization directive will not be in place until 2010 or 2011 and noted that it will become more difficult to harmonize labeling requirements the longer the EU waits, because many Member States are independently moving forward to strengthen their own labeling measures.

In Brussels, the European Commission and the European Parliament also favor better advertising and marketing of new cars, though they have recommended different ap-

proaches. The commission's February 2007 Communication invited car manufacturers to agree, by mid-2007, to a voluntary EU-wide code of good practice concerning car marketing and advertising to promote sustainable consumption.⁷⁸ The European Parliament has suggested a controversial requirement that at least 20% of new car advertising and other promotional literature address fuel consumption and CO₂ emissions.⁷⁹ In Germany, other efforts to promote informed consumer choices about cars are already underway. For instance, since 1989, the German Auto Club (Verkehrsklub Deutschland or VCD) has published an annual list that evaluates cars' environmental performance, including different models' CO₂ emissions.⁸⁰

It is also possible to encourage reductions in CO₂ emissions by promoting economical driving styles, or eco-driving, which one study suggests can generate fuel savings of up to 25% per vehicle.⁸¹ According to one NGO expert, eco-driving has potential, but it is difficult to monitor CO₂ emissions reductions achieved in g/km, and the German government currently does not favor it (or other measures like gear shift indicators and proper tire pressure that are difficult to monitor). The European Commission supports eco-driving but acknowledges that its potential for reducing CO₂ emissions is highly uncertain,⁸² and according to one NGO expert, there are no plans for a directive on fuel-efficient driving cycles. There are national campaigns to promote fuel-efficient driving, but in the expert's view, they are not very effective.

4. Increasing the Use of Biofuels in Cars

Consistent with the EU's agreement that renewable energy should make up at least 10% of fuel consumption in Europe by 2020,⁸³ Germany has quite ambitious targets for the use of biofuels for transport. Germany's Biofuel Quota Act of 2006 contemplates an increase in the share of biofuels in Germany to 8% of consumption by 2015, and the Federal Environment Ministry anticipates that a proportion of 17% will be feasible by 2020, considering "second-generation" biofuels, e.g., biogas and biomass to liquid (BTL).⁸⁴ While biofuels do not have zero carbon emissions due to the emissions associated with their production, biofuels (along with energy efficiency improvements and modal shifts from road to train transport) are essential for Germany to reduce transport sector CO₂ emissions by 30-40%, according to one NGO expert. Some German car manufacturers feature biofuels in their research activities.⁸⁵

However, biofuels are controversial because of the energy and production methods that may be used to produce

74. THE INTEGRATED ENERGY AND CLIMATE PROGRAMME OF THE GERMAN GOVERNMENT, *supra* note 70, at 6. *See id.* at 5-7.

75. EU Labeling Directive, *supra* note 7.

76. *Id.* cl. 5 ("Whereas").

77. February 2007 Commission Communication, *supra* note 9, at 9. A late October 2007 stakeholder meeting was planned to discuss the commission's proposal. REVISION OF DIRECTIVE 1999/94/EC RELATING TO THE AVAILABILITY OF CONSUMER INFORMATION ON FUEL ECONOMY AND CO₂ EMISSIONS IN RESPECT OF THE MARKETING OF NEW PASSENGER CARS, available at http://ec.europa.eu/environment/co2/co2_cars_labelling.htm.

78. *Id.* at 9.

79. *Media Slam Compulsory CO₂ Advertising for Cars*, *supra* note 37.

80. *See* http://www.vcd.org/vcd_auto_umweltliste.html (last visited Feb. 1, 2008).

81. UBA, *supra* note 67, at 42.

82. *Id.* at 10.

83. Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the Promotion of the Use of Biofuels or Other Renewable Fuels for Transport, 2003 OJ (L 123/42) (EC).

84. FEDERAL ENVIRONMENT MINISTRY, *supra* note 69.

85. *See* THE FEDERAL GOVERNMENT, PROGRESS REPORT 2004, PERSPECTIVES FOR GERMANY: OUR STRATEGY FOR SUSTAINABLE DEVELOPMENT 171 (2004) (highlighting some German car companies' strategies with respect to alternative fuels).

them on a large scale. NGO experts said that depending on how biofuels are produced, their impacts might be worse than those of traditional fuels. For instance, the fuels required to operate machinery during their production and the use of fertilizers could have damaging environmental impacts, and the production could have negative cultural impacts as well. In addition, some environmental NGOs also have concerns about biofuels because their production will require land that is needed to produce food, particularly in parts of the world that are threatened by hunger. A political cartoon in the *Berliner Zeitung* newspaper depicts this concern: the driver of a tractor hauling bags of grain weighs two images in his mind, a container of biodiesel and a starving figure next to the caption “Brot für die Welt” (Bread for the World).⁸⁶ On the other hand, one expert with a public authority stated that biofuels production may alleviate unemployment in some rural areas, creating a “double dividend.” In light of these concerns, it is important to set sustainability standards governing the production of biofuels, according to one NGO expert. Without such standards, the expert added, biofuels will not be accepted.

5. Including Transport in the EU ETS

The European Commission considered including the road transport sector in the EU ETS, but the commission has tabled the possibility for now because doing so would not allow time to achieve the target of 120 g/km CO₂ by 2012; except for including aviation, any changes to the EU ETS could only take effect beginning in 2013. The commission has indicated that it will consider including the road transport sector in the EU ETS for the third period allocation that will begin in 2013.⁸⁷ Yet, one expert with a public authority suggested that trade involving the road transport sector probably will not be pursued, because once a new regulatory framework such as the proposed legislation establishing CO₂ emissions targets is adopted, it will define the regulatory landscape for the foreseeable future although it likely will require some adjustments.

6. Speed Limits on the Autobahns

From time to time, an official or a report proposes imposing speed limits on the German autobahns in order to improve fuel economy and reduce CO₂ emissions from cars.⁸⁸ However, this measure is perennially controversial. One political scientist wrote that while “the consensual party system . . . has to some extent depoliticized many aspects of the environmental policy debate” in Germany, “the debate over speed limits . . . is characterised by high levels of polarization along party-political lines, with the bourgeois parties tending to mobilize against any such speed limits in quite a populist manner.”⁸⁹ An NGO expert simply said that it is not

possible to introduce speed limits in Germany because cars are such an emotional issue. Public attitudes may be changing somewhat due to environmental concerns,⁹⁰ but speed limits are not widely discussed as a means of reducing CO₂ emissions from cars.

D. Related Initiatives

Several related initiatives are underway in Germany, including research and demonstration projects to advance the use of alternative energy sources such as hydrogen and biofuels for transport, a tax on lorries that transport goods by road, and local efforts to promote sustainable transport. While a comprehensive discussion is beyond the scope of this Article, a list of examples of these initiatives is provided to illustrate the diversity of efforts to reduce CO₂ emissions associated with transport aside from the regulatory efforts at the EU and German federal levels.

Many German car manufacturers, other companies, and public authorities are participating in research and demonstration projects geared toward the use of hydrogen for transport, including to power passenger cars. The German National Innovation Programme, developed in coordination with the European Hydrogen and Fuel Cell Technology Platform (HFP), plans significant funding to speed the development of markets for hydrogen and fuel cell technology.⁹¹ One major collaborative effort is the Clean Energy Partnership (CEP), a consortium of companies that maintains the world’s largest demonstration project for future hydrogen technology in Berlin to gather information about the use of hydrogen vehicles in everyday driving.⁹² Another major initiative is the HyLights project, a European Commission-funded initiative focused on promoting the development of markets for hydrogen and fuel cells for transport by assisting in the planning for large-scale demonstration projects.⁹³

While hydrogen fans are enthusiastic, critical NGO experts point out that hydrogen has been discussed for 10 or 20 years. They question whether it ever will be a viable option for cars, given the cost and ongoing improvements in con-

SEMISOVEREIGN STATE REVISITED 212, 229-30 (Simon Green & William E. Paterson eds., 2005).

90. Bilefsky, *supra* note 51 (reporting that one poll published in February 2007 found that 60% of Germans favor limits on the autobahns due to environmental concerns).

91. STRATEGIERAT WASSERSTOFF BRENNSTOFFZELLEN, NATIONAL DEVELOPMENT PLAN VERSION 2.1, HYDROGEN AND FUEL CELL TECHNOLOGY INNOVATION PROGRAMME 1 (2007) (noting planned spending of an additional 500 million Euros to promote this technology over the next 10 years).

92. CEP members include Aral, BMW, Berliner Verkehrsbetriebe (BVG), DaimlerChrysler, Ford, GM/Opel, Hydro, Linde, TOTAL, Vattenfall Europe, and Volkswagen AG, which will run through December 2007. The German federal government also supports the CEP as part of its national sustainability strategy. The CEP’s hydrogen infrastructure includes two hydrogen filling stations, a vehicle fleet, a hydrogen information center, and a service station for hydrogen vehicles; it uses three hydrogen production methods and three hydrogen propulsion systems. See *Clean Energy Partnership*, http://www.cep-berlin.de/index_more.html (last visited Jan. 18, 2008).

93. HyLights consists of 21 partners, including 4 institutes, including the German Energy Agency (Deutsche Energie-Agentur GmbH or dena) and a number of industry partners from the automotive, oil, utility, and technical gas sectors, including several German car manufacturers and Linde Gas. See *HyLights, Homepage*, <http://www.hylights.eu> (last visited Jan. 18, 2008).

86. Berndt A. Skott, *Karikatur*, BERLINER ZEITUNG, Sept. 26, 2007 (copy on file with the author).

87. *February 2007 Commission Communication*, *supra* note 9, at 4.

88. Derek Scally, *Germany Puts Its Foot Down on Autobahn Speed Limits*, IRISH TIMES, Mar. 21, 2007, at 1 (reporting that a suggestion by the European Environment Commissioner Stavros Dimas that general speed limits on the autobahn could benefit the climate was “immediately run off the road” in Germany).

89. Charles Lees, *Environmental Policy: The Law of Diminishing Returns?*, in GOVERNANCE IN CONTEMPORARY GERMANY: THE

ventional engines and hybrid and diesel technology. Such criticism hints at an underlying tension in German government and policy circles as to whether planning for sustainable mobility in the future should emphasize so-called breakthrough technologies like hydrogen or more mundane efforts to make more efficient cars powered by conventional internal combustion engines.⁹⁴

Meanwhile, a heavy vehicle charge that Germany introduced in 2005 has had a dramatic impact on transport sector emissions of CO₂, and it is possible that the government will consider extending the charge to all cars, experts say. In Germany, lorries weighing more than 12 tons must pay a per-kilometer charge classified according to emissions and vehicle weight in order to travel on a German motorway. Satellites track the distance traveled using on-board indicators and assess appropriate charges. The heavy vehicle charge therefore creates incentives for goods transport companies to shift road transport to railways, optimize logistics systems, and buy cleaner lorries. The charge has brought about a shift of goods transport, with the share of lorries decreasing and that of railways increasing in market share for the first time this year.⁹⁵

Furthermore, several local initiatives in Germany have the potential to help reduce CO₂ emissions from cars by influencing individual behavior. For instance, the city of Bremen has adopted an integrated strategy for mobility and urban development that includes measures ranging from environmentally friendly transport, e.g., trams, bicycles, and taxis linked through multi-modal hubs, to car-sharing.⁹⁶ Many cities observed European Mobility Week in September 2007, using the theme “Streets for People” to call attention to sustainable, ecological transportation and to encourage residents to be mobile without cars. In Dessau, where the Dessau-based Federal Environment Agency (Umweltbundesamt or UBA) co-sponsored the campaign with the town of Dessau-Roblau and the city’s public transport provider,⁹⁷ a mural in the train station featured a green design consistent with the campaign’s motto: “Grün statt grau in Dessau-Roblau” (“Green instead of gray in Dessau-Roblau”). Finally, cities such as Berlin and Hamburg are considering establishing zones within their jurisdictions with strict emissions limits for cars, and such zones would support the development of hydrogen technology for cars, according to an industry expert familiar with the cities’ plans. Such cities also are participating in the German National Innovation Programme, according to the expert. These efforts illustrate how local governments are applying

principles of sustainable transport to include and reach beyond cars.

III. Factors Driving Germany’s Efforts to Reduce CO₂ Emissions From Cars

Several factors appear to be driving the current discussions on how best to reduce CO₂ emissions from cars in Germany. The factors are: (1) Germany’s public commitments to reduce CO₂ emissions; (2) the desire to show leadership on climate protection on the part of both Germany and the EU; (3) recent events such as reports underscoring the urgency of climate change, the “green” international auto show in Frankfurt, and high energy prices; and (4) key traditions in German environmental policy.

A. Ambitious Commitments to Reduce CO₂ Emissions

Germany is committed to ambitious CO₂ emissions reductions. Germany has agreed to reduce GHG emissions by 21% by the period 2008-2012 under the Kyoto Protocol and the 2000 National Climate Protection Programme.⁹⁸ Germany’s 2005 National Climate Protection Programme not only reaffirmed those commitments but also stated a “medium-term target of a 40 per cent reduction by 2020 as against 1990 levels, provided the rest of the EU Member States achieve a 30 per cent reduction in the same period.”⁹⁹ The 2005 program further indicated Germany’s commitment to the European Council’s decision providing that industrialized countries are to reduce GHG emissions by 15-30% by 2020 and by 60-80% by 2050, compared to 1990 baseline levels, and that global temperatures should not rise more than 2 degrees Celsius (°C) above pre-industrial levels.¹⁰⁰

During Germany’s EU presidency in 2007, the European Council agreed to “an integrated approach to climate and energy policy,” reaffirming these targets and articulating an additional target looking forward.¹⁰¹ Specifically, the European Council endorsed:

- A statement that developed countries should “collectively reduc[e] their emissions of greenhouse gases in the order of 30% by 2020 compared to 1990” and “should do so also with a view to collectively reducing their emissions by 60% to 80% by 2050 compared to 1990”;
- An EU objective of reducing GHG emissions by 30% by 2020 compared to 1990 as its contribution to a global, post-2012 international climate agreement “provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities”; and

94. See Stephen Power & Marcus Walker, *Car Trouble: German Regulator Roils Auto-Emissions Debate—Friedrich Touts Low Tech Over Alternative Fuels; A “Tiff” Over VW’s Golf*, WALL ST. J., Aug. 23, 2007, at A1.

95. See 4th NATIONAL COMMUNICATION, *supra* note 12, at 124-25 (discussing the toll).

96. Bremen won a CIVITAS City of the Year award in 2005. CIVITAS, which is short for City-VITALity-Sustainability, is an EU-supported initiative that seeks to promote integrated sustainable urban transport strategies through demonstration projects in cities throughout Europe. See CIVITAS, *Homepage*, <http://www.civitas-initiative.org> (last visited Jan. 18, 2008); <http://www.movingtheeconomy.ca/content/cspdf/BremenVideoSummary.pdf> (last visited Jan. 18, 2008) (video summary of Bremen’s integrated mobility efforts).

97. Press Release No. 63/2007, UBA, Seven Days for Sustainable Transportation: European Mobility Week From 16 to 22 September 2007 (Sept. 14, 2007), available at <http://www.umweltbundesamt.de/uba-info-presse-el/2007/pdf/pe07-063.pdf>.

98. 4th NATIONAL COMMUNICATION, *supra* note 12, at 12.

99. FEDERAL MINISTRY FOR THE ENVIRONMENT, THE NATIONAL CLIMATE PROTECTION PROGRAMME, *supra* note 13, at 5.

100. *Id.*

101. Council of the European Union, Presidency Conclusions of the Brussels European Council (8/9 Mar. 2007), No. 7224/1/07 REV 1 (May 2, 2007), art. 28, at 11-12.

- A “firm independent” EU commitment to achieve at least a 20% reduction of GHG emissions by 2020 compared to 1990, until a post-2012 agreement is concluded.¹⁰²

At the international climate conference in Bali, Germany reiterated its commitment to reduce its GHG emissions by 40% by 2020, compared to 1990 levels.¹⁰³

Germany’s publicly stated commitments are creating pressure to reduce CO₂ emissions from cars. According to one NGO expert, cars are a high priority within the overall energy and climate picture in Germany, because it is necessary to reduce transport sector emissions and to guarantee individual mobility in order to meet Germany’s CO₂ emissions reductions targets. Another NGO expert said that while there are more important sources of CO₂ emissions reductions in Germany, e.g., the inefficient heating of buildings, transport is “one of the bigger players” and it is important to consider cars to achieve a fair distribution of the reductions in CO₂ emissions across sectors.

Germany is one of two industrialized countries and the only European country (the other is Japan) that has experienced a decrease in CO₂ emissions from the transport sector in absolute terms in recent years, according to an expert with a public authority.¹⁰⁴ A wide range of policies and social factors may have contributed to this reversal of a previously upward trend. The German government cites the ecotax and improvements to the public transport system as contributing factors.¹⁰⁵ According to one expert with a public authority, several other possible reasons may explain this decrease. For instance, Germany has experienced less population growth and an aging of society, which tends to correspond to lower mobility. The availability of inexpensive flights may have contributed to a decrease in long car trips to destinations such as Italy or Scandinavia, though any such impacts cannot be quantified. Germans may have engaged in more international transport. The recent “dieselization” of the car fleet and the attendant energy efficiency effect, i.e., diesel engines have higher energy efficiency than gasoline engines, also has contributed to the overall decrease in CO₂ emissions from the transport sector.¹⁰⁶ An NGO expert suggested two additional factors that may have contributed to the decrease in CO₂ emissions: (1) unemployment, which may have decreased driving; and (2) a decrease in what the expert called the “motorization of young men”—the number of cars per young men ages 18 to 29—from 600 to 450 cars per 1,000 young men in Germany between 1993 and 2003.

Nevertheless, Germany cannot count on continued reductions in CO₂ emissions from transport, given the continuing

growth in the number of cars on the road and distances traveled, the potential for increases in vehicle size, and the fact that these trends offset improvements in vehicle and fuel technology.¹⁰⁷ To maintain the recent downward trend and obtain CO₂ reductions that are essential to its international commitments, Germany recognizes the need to proceed with specific plans and policies to address CO₂ emissions from cars.¹⁰⁸

B. The Desire to Show Global Leadership on Climate Protection

The desire on the part of Germany and the EU to show global leadership on climate protection also appears to be providing an impetus for new action to reduce CO₂ emissions from cars. As events affecting CO₂, cars, and climate unfold in the coming months, it will be interesting to monitor the role of leadership at the European level and in Germany.

Germany has shown leadership on climate protection for years,¹⁰⁹ and according to experts, Germany successfully used its dual presidency in 2007 to advance its agenda for climate protection at the EU level. Germany first promoted the need for ambitious European and German commitments to reduce CO₂ emissions. The Federal Environment Ministry stated that “[d]uring the German Presidency we will commit to setting an EU target for reduction by 2020: if the EU agrees on a reduction target of 30% by 2020, Germany is willing to make a commitment that goes beyond that.”¹¹⁰ During the German presidency, the chancellor reported to a U.N. climate panel, the EU adopted an integrated climate and energy policy strategy, agreeing by 2020 to reduce GHG emissions by at least 20% compared to 1990 levels, and, if other industrialized countries agree within the framework of a U.N. agreement to “make a fair contribution,” committing to reduce GHG emissions by as much as 30% within the same time frame.¹¹¹ One expert with a public authority identified this integrated policy as a key accomplishment of Germany’s EU presidency.

Germany continues to call on other industrialized countries—particularly, the United States, which has not ratified the Kyoto Protocol—to make similarly ambitious commit-

102. *Id.* arts. 30-32.

103. Federal Environment Minister Sigmar Gabriel, Speech at the Meeting of the Conference of the Parties to the Framework Convention on Climate Change (COP13/MOP3), Bali Must Lay the Foundations for the Future (Dec. 12, 2007) (transcript available at <http://www.bmu.de/english/speeches/doc/print/40641.php>).

104. FEDERAL MINISTRY FOR THE ENVIRONMENT, THE NATIONAL CLIMATE PROTECTION PROGRAMME, *supra* note 13, at 1 (noting a “turn-about” in CO₂ emissions in the traffic sector, which decreased by 15 million tones between 1999 and 2003 in Germany).

105. *Id.*

106. See 4th NATIONAL COMMUNICATION, *supra* note 12, at 40 (stating that the share of new car registrations for diesel cars increased from 18% in 1998 to 44% in 2004).

107. See UBA, *supra* note 67, at 1.

108. See 4th NATIONAL COMMUNICATION, *supra* note 12, at 123-28 (listing plans to reduce CO₂ emissions from cars and the transport sector generally).

109. See Lees, *supra* note 89, at 237 (noting that “Germany has assumed a leadership role in international environmental policy, such as at the 1992 UNCED Conference in Rio” resulting in the UNFCCC); Schreurs, *The Climate Change Divide*, *supra* note 12, at 213 (noting that Germany was a strong advocate of action within the EU, with Chancellor Helmut Kohl offering to host the first UNFCCC Conference of the Parties in Berlin in 1995).

110. PRIORITIES OF THE EU PRESIDENCY, *supra* note 1, at 11.

111. Chancellor Angela Merkel, Speech at the “Mitigation” Panel of the U.N. Secretary-General’s High-Level Event on Climate Change (Sept. 24, 2007) (transcript available at <http://www.bundesregierung.de/Content/EN/Reden/2007/09/2007-09-24-rede-bk-high-level-event,layoutVariant=Druckansicht.html>); Council of the European Union, Presidency Conclusions of the Brussels European Council (8/9 Mar. 2007), No. 7224/1/07 REV 1 (May 2, 2007), arts. 27-28, at 10-11 (finding that an integrated approach to climate and energy policy is needed to achieve the strategic objective of limiting any increase in global temperature to 2 °C above pre-industrial levels).

ments to reduce their CO₂ emissions.¹¹² In a September speech before a U.N. panel on climate change, the German Chancellor Merkel deemed it “both a moral and an economic imperative” for industrialized countries to lead by setting “ambitious” emissions reduction targets and demonstrating how they plan to achieve them.¹¹³ Chancellor Merkel also discussed climate change with President George W. Bush during a November 2007 meeting at his Texas ranch.¹¹⁴ At the Bali conference in December 2007, the German Federal Environment Minister, Sigmar Gabriel, threatened an EU boycott of the January 2008 “Major Economies Meeting” on climate organized by the Bush Administration if the United States did not join an agreement in Bali.¹¹⁵ Ultimately, the United States joined in an agreement outlining a process for negotiating a post-Kyoto climate agreement.¹¹⁶

In addition, Germany has emphasized the importance to all nations of participating in a timely process to negotiate a post-2012 international climate agreement under the auspices of the United Nations. The Federal Environment Ministry indicated that “[a]s President of the Council, we would like to lay the foundation stone needed for a successor to Kyoto to be agreed by 2009 to regulate the post-2012 period, which will ensure that warming is limited to a maximum of 2 degrees Celsius.”¹¹⁷ In a September 2007 speech before the U.N. General Assembly, Chancellor Merkel made clear that “only a UN agreement can provide the dependability” needed for emissions in industrialized countries and emerging economies “to converge at a level compatible with our global climate protection target,” although “any contribution from individual or groups of states is welcome.”¹¹⁸ A major breakthrough resulting from Germany’s G8 presidency was President Bush’s agreement to participate in the U.N. dialogue in Bali, according to one expert with a public authority.

Indeed, the timing of the December 2007 talks in Bali appears to have driven Germany to prepare its own positions on climate protection in order to use its efforts to persuade other countries to pursue similarly beneficial measures. For instance, the chancellor asked the BMU to review Germany’s National Climate Programme, which was last reviewed in 2005 and which usually is reviewed every five years, by early December, according to an NGO expert. On December 5, 2007, the German Cabinet adopted a package

of measures to implement its integrated energy and climate program, spanning energy efficiency, renewable energy, biofuels, transport, and non-CO₂ GHG emissions.¹¹⁹ The Cabinet also agreed to adopt a further package in May 2008.¹²⁰ The BMU estimates that the integrated program will double Germany’s GHG reductions to date compared to 1990, i.e., from the current 18% to 36%.¹²¹ Strategically, it seems that Germany stood to benefit in Bali by having prepared its own plans for future emissions reductions.

Germany has not prioritized CO₂ emissions from cars to the same degree as it has climate protection, and Germany has not yet seen its efforts on cars yield concrete results. The BMU identified clean mobility and reducing CO₂ emissions from cars in particular as a priority for Germany’s EU presidency. The BMU stated that it would set binding CO₂ reduction targets if the industry’s voluntary commitments did not achieve their objectives by 2008, and that it would seek to achieve 120 g/km CO₂ by “mak[ing] progress in technical improvements and the use of biofuels.”¹²² However, Germany did nothing about sustainable mobility during its presidency, and Germany had no real initiatives in the area, according to one NGO expert. Thus, while Germany highlighted the problem of climate change, Germany did not use its EU presidency to advance or produce any specific measures to reduce CO₂ emissions from cars.

On the other hand, Germany has been and remains actively engaged in discussions at the EU level about the European Commission’s proposed legislation to set binding CO₂ emissions targets for cars. According to one NGO expert, Germany has been the most important player in the EU-level discussions of CO₂ emissions from cars. (The United Kingdom (U.K.) also has been influential, and Sweden, which has the highest average CO₂ emissions from cars in the EU,¹²³ may be a player as well, the expert noted.) Germany therefore has a unique opportunity to exercise leadership in the ongoing debate, and a critical challenge will be upholding its reputation for strong environmental protection in the global climate arena while sustaining the German car industry at home. It may be that Germany will be able to use the setting of the EU-level debate to advance an agenda that meets its needs in these competing global and local directions.¹²⁴

The personal leadership of Chancellor Merkel has been important to Germany’s efforts to promote climate protection at the European and global levels, and it no doubt will be important on the cars issue as well. Chancellor Merkel, a

112. On behalf of the EU, former German Chancellor Gerhard Schröder asked U.S. President George W. Bush to revisit his rejection of the Kyoto Protocol shortly after the 2000 U.S. presidential election. Schreurs, *supra* note 12, at 218.

113. Chancellor Angela Merkel, *supra* note 111.

114. Michael Abramowitz, *Bush, Rice Defend Musharraf as an Ally: Desire for Pakistani Elections Made Clear*, WASH. POST, Nov. 11, 2007, at A13 (reporting that “Merkel would like to see much more aggressive efforts to curb carbon dioxide emissions than those favored by Bush”).

115. Thomas Fuller & Elisabeth Rosenthal, *Gore Joins Chorus Chiding U.S. at Climate Talks*, N.Y. TIMES, Dec. 14, 2007, available at <http://www.nytimes.com/2007/12/14/world/14climate.html?fta+y&pagewanted=print> (last visited Feb. 5, 2008).

116. See Press Release, BMU, Minister Gabriel Welcomes Bali Outcome as Major Progress (Dec. 15, 2007), available at http://www.bmu.de/english/current_press_releases/pm/40640.php (last visited Feb. 3, 2008); Decision—/CP.13, Bali Action Plan (advance unedited version), http://unfccc.int/files/meetings/cop_13/application/pdf/cop_bali_action.pdf (last visited Feb. 2, 2008).

117. PRIORITIES OF THE EU PRESIDENCY, *supra* note 1, at 10.

118. Merkel Speech, *supra* note 2.

119. Press Release, BMU, Gabriel: Germany Remains a Pioneer of Climate Protection (Dec. 12, 2007), available at http://www.bmu.de/english/current_press_releases/pm/40562.php (last visited Feb. 3, 2008); see THE INTEGRATED ENERGY AND CLIMATE PROGRAMME OF THE GERMAN GOVERNMENT *supra* note 70, at 3-5.

120. See *id.* at 5-7.

121. *Id.* at 1.

122. PRIORITIES OF THE EU PRESIDENCY, *supra* note 1, at 11-12; see *id.* at 127 (“Germany will also play an active part in the negotiations between the [ACEA] and the European Council on the voluntary undertaking to reduce CO₂ emissions by cars.”).

123. Meyer & Peterse, *supra* note 8, at 6, tbl. 2 (presenting data for the EU25, excluding Malta).

124. Cf. Silke Beck, *Localizing Global Change in Germany*, in EARTHLY POLITICS: LOCAL AND GLOBAL IN ENVIRONMENTAL GOVERNANCE 173, 186-92 (Sheila Jasanoff & Marybeth Long Martello eds., 2004) (analyzing how the Enquete Commissions dealt with competing pressures for globalization and localization in recommendations for Germany’s national and international activities).

physicist, served as Minister of the Environment during the conservative-liberal coalition government of Chancellor Helmut Kohl.¹²⁵ Climate is important to Merkel, one NGO expert observed, because she negotiated the Kyoto agreement.¹²⁶ The German car industry is certainly important to her as well,¹²⁷ and its interests appear in tension with her climate protection efforts.¹²⁸

Finally, the desire to exercise global leadership on climate protection may be motivating the European Commission's pursuit of legislation regulating CO₂ emissions from cars. The EU has played a leading role in international climate negotiations for years, and environmental protection has emerged as an important element of EU foreign policy.¹²⁹ Recently, the commission has focused on cars. According to one expert with a public authority, there are people who say that José Manuel Barroso, president of the European Commission, turned his attention to CO₂ emissions from cars because he was searching for a compelling agenda where Europe can make a difference. This was important, the expert continued, because some EU Member States refused to accept work on the European Constitution, resulting in a stalemate on the overall constitutional agenda¹³⁰; absent a constitution, some may feel it is not clear what brings Europe together. In addition, the Lisbon Agenda was intended to drive competitiveness in Europe, but that is beyond the EU's competence. By contrast, the expert added, Europe can make a difference on climate change, an issue for which the need for change is urgent. Together, the expert suggested, these factors led to "a new constellation in Europe" and facilitated a dramatic change in the policy agenda concerning CO₂ emissions from cars. Indeed, the commission may view its recent CO₂ reduction measures as crucial to the EU's credibility to assume a major role in the U.N. climate negotiations scheduled to begin in 2009.¹³¹

C. Recent Events: Groundbreaking Reports, a Green IAA, and Energy Prices

Recent developments have added momentum to the discussion of CO₂ emissions from cars in Germany. Such develop-

125. See Helmut Weidner, *Environmental Policy and Politics in Germany*, in ENVIRONMENTAL POLITICS AND POLICY IN INDUSTRIALIZED COUNTRIES 149, 157-58 (Uday Desai ed., 2002).
126. See Lees, *supra* note 89, at 226 (noting that the Kyoto protocol "bear[s] the distinct footprint of the German policy-making style—in particular the setting of clear targets for reductions in emissions over specified timescales").
127. See IAA, *62d Cars Opening Tour*, <http://www.iaa.de/07/index.php?L=1&cHash=a110b4ae5d&id=1041> (last visited Jan. 18, 2008) (IAA website showing photos of German Chancellor Merkel during an opening tour of the September 2007 IAA in Frankfurt).
128. See Erik Kirschbaum & Myra MacDonald, *Germany Should Embrace CO₂ Goal, Not Fight It: Dimas*, REUTERS, Dec. 23, 2007, <http://www.reuters.com/articlePrint?articleId=USL2341770620071223> (last visited Feb. 3, 2008) (reporting that "[e]ven though [Merkel] has made fighting climate change a centerpiece of her government, she has strongly opposed the Commission's [CO₂ proposal for cars]" and "[e]nvironmental groups have accused her of caving in to the powerful German car lobby").
129. Schreurs, *supra* note 12, at 222.
130. In mid-2005, Dutch and French voters rejected the draft EU constitution. See *Generally Fit at 50? A Special Report on the European Union*, THE ECONOMIST, Mar. 17, 2007, at Special Report 3.
131. See Honor Mahony, *Brussels Hangs Tough on CO₂ Cut Plans*, BUS. WK., Jan. 18, 2008, http://www.businessweek.com/print/globalbiz/content/jan2008/gb0080118_511704.htm (last visited Feb. 3, 2008).

ments include reports on the scale and impacts of climate change that have attracted attention around the world, a blitz of media and public attention to sustainable mobility surrounding the international motor show in Frankfurt, and soaring energy prices.

1. The Intergovernmental Panel on Climate Change and Stern Reports

Reports issued by the Intergovernmental Panel on Climate Change (IPCC) as part of its comprehensive Fourth Assessment Report have drawn attention to the urgent need for action to protect the climate.¹³² According to one expert with a public authority, the IPCC's findings are contributing to efforts in Germany to reduce CO₂ emissions from cars. In addition, the Stern Review, commissioned by the U.K. government and prepared by Sir Nicholas Stern, a former World Bank chief economist who heads the U.K. government Economic Service, framed climate change in economic terms and helped attract high-level attention to the issue among politicians and economists, according to another expert with a public authority.¹³³ The recent award of the Nobel Peace Prize to the IPCC and former U.S. Vice President Al Gore Jr.,¹³⁴ together with the November 2007 release of the last installment of the *Fourth Assessment Report*,¹³⁵ is likely to keep climate protection in the news.

2. The Green IAA

"See What's Driving the Future" was the theme of the international motor show held in Frankfurt in September 2007 and organized by the VDA. The show generated considerable publicity for cars' environmental performance, and the IAA likely raised awareness of CO₂ emissions from cars in particular among people who attended or followed news of the show in the media.

Images of a pure environment featured prominently throughout the exhibition halls and outdoor displays showcasing the latest models and gear from each car manufacturer. For instance, wall displays in the BMW exhibit hall depicted a blue sky with white clouds, and the walls around information promoting BMW's Hydrogen 7 series sedans (silver with "CleanEnergy" printed in blue on their sides) reflected a pattern that looked like clear blue water. BMW's souvenir bags were printed on paper—matching the walls of the company's exhibit hall—that bore the words "BMW EfficientDynamics." Screens above the Volkswagen podium introducing the Up! concept car broadcast changing scenes that included an inviting blue ocean and a sailboat. Many cars on display bore their CO₂ emissions per kilometer printed on their hoods or doors. Groups such as the German Green Party/Alliance 90 (Bündnis 90/Die Grünen) also promoted campaigns like the Green Car Concept from booths at the IAA.

132. Elisabeth Rosenthal, *U.N. Report on Climate Details Risks of Inaction*, N.Y. TIMES, Nov. 17, 2007, at A1. The IPCC reports are available at <http://www.ipcc.ch> (last visited Jan. 18, 2008).
133. The report is available at <http://www.sternreview.org.uk> (last visited Jan. 18, 2008).
134. Dan Balz & Juliet Eilperin, *Gore and U.N. Panel Share Peace Prize: Nobel Committee Honors Work on Climate Change*, WASH. POST, Oct. 13, 2007, at A1.
135. Elisabeth Rosenthal, *U.N. Chief Seeks More Leadership on Climate Change*, N.Y. TIMES, Nov. 18, 2007, at A3.

The car manufacturers' exhibits trumpeted environmental achievements and instructed drivers how they could reduce their emissions by better driving. One BMW wall display boasted that 19 BMW cars already meet the 140 g/km CO₂ emissions target. The Mercedes-Benz exhibit included an ECO Driving Simulator (ECO-Fahrsimulator) listing "10 Hints for Efficient and Clean Driving." The Mercedes-Benz exhibit portrayed in blue its version of "The Road to the Future," consisting of vehicle technology planned to progress from 2007 to 2010. Honda's exhibit featured its hybrid cars, and Toyota's included a hybrid Prius with lettering marking 10 years of Toyota's hybrid series production on the side (1997-2007 10 Jahre Hybrid-Serienproduktion). In contrast, a large Greenpeace banner hanging high up on a building near a popular pedestrian approach to the IAA showed a pink car that looked like a flying pig under the words "IAA" and "Klima Schweine."

One expert with a public authority hailed the green IAA as representing a big change in attitude among car manufacturers. In the weeks following the IAA, the car manufacturers' green themes dominated their showrooms in other German cities. However, as discussed in Part IV, it is difficult to know whether the apparent enthusiasm for green technologies among the car manufacturers and consumers attending the IAA will translate to overall improvements in cars' fuel consumption, CO₂ emissions, and overall environmental performance. Nonetheless, at least during the season leading up to the EU's proposed CO₂ legislation for cars, the IAA called attention to reducing cars' CO₂ emissions in Germany.

3. High Energy Prices

Consistently high energy prices appear to have contributed to the growing recognition in Germany of the need for alternatives to fossil fuel-based energy sources, according to experts. One expert with a public authority said that a dramatic increase in oil prices after Germany's 1999 introduction of the ecological tax reform or ecotax—which increased taxes on automotive fuels, heating, and electricity and used the resulting additional tax revenue to reduce contributions to the statutory pension scheme¹³⁶—helped reverse early public opposition to the ecotax. Apparently, many people's attitudes changed to reflect an acceptance of living with high oil prices and, as a result, a preference for more energy-efficient cars. It is possible that today's soaring oil prices,¹³⁷ on top of what appears to be mounting media attention and public awareness of climate change and the impact of cars on the environment, may contribute to a similar evolution in attitudes and, in turn, consumer preferences for cars.

D. Traditions in German Environmental Policy

Three traditions in German environmental policy also appear to be facilitating a wide-ranging debate on how to reduce CO₂ emissions from cars.

136. See 4th NATIONAL COMMUNICATION, *supra* note 12, at 74-75.

137. See Jad Mouawad, *High Oil Prices Confound OPEC*, N.Y. TIMES, Nov. 16, 2007, available at http://www.nytimes.com/2007/11/16/business/16cnd-opec.html?_r=3&adxnnl=1&oref=slogin&ref=business&adxnnlx=1195246328-43mCsQbf7kmaMNoHKNNdyw&oref=slogin&oref=slogin (last visited Feb. 7, 2008) (noting oil prices around \$95 per barrel).

1. Scientific and Political Consensus on the Need for Climate Protection

First, Germany has a long history of concern about climate change,¹³⁸ and it is essential to view the current debate in Germany about reducing CO₂ emissions from cars in the context of the broader climate change debate, according to an expert with a public authority. Since the early 1990s, climate change has been not only a high-ranking political issue but also a cross-party consensual issue. The third report of the Enquete Commission on climate change, which the federal Parliament commissioned in the late 1980s, recommended that Germany reduce CO₂ emissions by 30% by 2005. In 1990, the federal Cabinet endorsed a goal of a 25% reduction by 2005.¹³⁹ The endorsement marked a milestone in an upward trajectory of sophisticated political debate about climate change and its consequences, according to the expert.

Several factors have contributed to Germany's history on this issue, the expert continued. First, the knowledge proposed by the consensual commissions of the federal Parliament represented an enormous scientific undertaking and a heavy investment of research and consensus.¹⁴⁰ Second, reunification presented a window of opportunity for emissions reductions, as energy-intensive industries collapsed and were modernized; some might say this "windfall" made it easy for Germany to commit to reducing emissions, the expert added. Third, the political constellation in Germany—where members of the conservative party began to consider forming alliances with the Greens after they entered government in 1998—enabled conservatives (backed by the nuclear lobby) to come together with the Greens on climate change and to support nuclear energy. In addition, some say that Germany lost its national identity in World War II and is looking for a new identity that cannot be that of the traditional superpowers, e.g., military strength or nationalism, because the years of German fascism spoiled those traditional sources of identity.¹⁴¹ There is some truth to this, according to one expert with a public authority, although the expert added that climate change, like other issues, goes through cycles on Germany's national agenda.

2. Viewing Environmental Regulation as a Way to Competitive Advantage

The German car industry has a history of leading Europe in the adoption of new technologies in the face of environmental regulation, often to its competitive advantage.¹⁴² For instance, German car manufacturers led the way in adopting

138. See Jeannine Cavender & Jill Jäger, *The History of Germany's Response to Climate Change*, INT'L ENVTL. AFFAIRS, Winter 1993, at 3.

139. See *id.* at 13-14.

140. See Beck, *supra* note 124, at 176-86.

141. Michael G. Faure & Norman J. Vig, *Conclusion: The Necessary Dialogue*, in GREEN GIANTS? ENVIRONMENTAL POLICIES OF THE UNITED STATES AND THE EUROPEAN UNION 347, 369 (Norman J. Vig & Michael G. Faure eds., 2004) (contrasting the relative position of environmental protection in the apparent post-September 11 strategic priorities of the United States and of the EU, where environmental protection is "a major component of foreign policy").

142. See generally SONJA BOEHMER-CHRISTIANSEN & HELMUT WEIDNER, *THE POLITICS OF REDUCING VEHICLE EMISSIONS IN BRITAIN AND GERMANY* (1995).

the three-way catalytic converter in Europe following the 1984 adoption of the gasoline lead law, one expert from a public authority recalled. In the 1990s, Volkswagen and Mercedes-Benz led in developing diesel engines small enough for passenger cars and gained a competitive advantage, the expert added.

The German car industry may gain a competitive advantage by developing increasingly fuel-efficient cars as new CO₂ emissions targets take effect. Announcing plans for the proposed EU legislation, Barroso, acknowledged the importance of the car industry to the EU economies and stated that the industry would improve its competitiveness over the long term by addressing climate change.¹⁴³ The car industry always has fought mandatory technological limits but then has benefitted from them in the long run, one NGO expert noted, adding that even today, only American, German, and Japanese companies can produce high-tech cars. The car industry needs to make the mental shift to realize this advantage and to make consumers feel that it is sexier to drive these cleaner cars, the expert continued.

3. The Potential of Taxes as an Environmental Policy Tool

In Germany, it appears that there is a general public acceptance of, or at least experience with, the use of taxes as an environmental policy tool. As indicated above, in 1999, Germany introduced an ecotax on automotive fuels as part of a broad ecological tax reform package. From 1999 to 2003, the ecotax increased the price of petrol by about three cents per liter each year, for a total increase of about 15 cents.¹⁴⁴ The ecotax was accepted (perhaps in part due to steep increases in energy prices around the same time that made the tax appear less significant), and while there are no current plans to expand it, other taxes for CO₂ emissions and cars are under discussion and enjoy support from diverse interests. For instance, both the car industry and environmental NGOs generally support a CO₂-based circulation tax.¹⁴⁵ While the federalism and institutional concerns previously described do not make for easy adoption of such a tax in Germany or a similar measure at the EU level, the discussions so far suggest that taxes have the potential to facilitate additional reductions in CO₂ emissions from cars in the future.

IV. Challenges for Change

It is unclear whether the current debate in Germany will lead to marked improvements in the CO₂ emissions of the German car fleet or whether industry and consumer behavior will combine to limit changes to the current fleet to modest emissions reductions. Many NGO experts identified the car industry as posing an obstacle to reducing CO₂ emissions from cars. The German car industry is “well heard” by the

government, as one expert phrased it. The car industry also directs significant money and marketing efforts toward bigger and bigger cars, an NGO expert noted.

A related problem is consumer demand for large, powerful, fast cars.¹⁴⁶ One NGO expert described a feeling of “fighting against emotion” while attending the IAA, where the public’s emotional attachment to cars was evident among those attending the show. The expert added that it is difficult to tackle transport sector emissions because people take mobility personally. While there is some evidence of consumer interest in cleaner cars, powerful and sporty cars remain popular and it is difficult to predict how consumers will weigh concerns about fuel use and climate protection against the desire for large vehicles, power, and glitz. One NGO expert described the passenger car segment of the market as “highly irrational” because people have a higher willingness to pay for cars than one would expect.

It is also unclear whether consumers intrinsically seek big, powerful cars, as the industry often claims, or whether the industry’s efforts to market bigger cars manipulate consumer preferences in favor of bigger cars.¹⁴⁷ Experts say that an emotional discussion about sport utility vehicles (SUVs) is currently underway in Germany, where drivers traditionally have favored luxury class cars. One NGO expert stated that while the number of SUVs in Germany has been growing over the past two or three years, SUVs are becoming a symbol of bad environmental practices. One expert with a public authority believes there is a social consensus that Germany should not embrace SUVs, which are perceived as arrogant, and the expert says that while SUVs are selling in Germany, they are not taking the place of the family sedan. In any event, the expert added, the SUV debate will be decided at the cultural level, not at the political level.

It is possible that the recent media attention to cars’ environmental performance will influence drivers’ attitudes toward cleaner cars and, in turn, will motivate the car industry to produce more cars with higher fuel economy and lower CO₂ emissions. Car manufacturers seek to meet consumers’ demands, and public attitudes about cars’ environmental performance are not lost on the car industry.¹⁴⁸ In addition, some manufacturers’ successes in marketing “green” cars may have the effect of placing peer pressure on competitors to do the same. In the view of one expert with a public authority, Toyota’s marketing campaign for the hybrid Prius—on top of the fact that Toyota had produced a very clean car—hit the German car manufacturers hard, because they had not focused on hybrids. Some German car manufacturers are now developing hybrid cars.

In addition to uncertainty surrounding the car industry’s strategy and consumer behavior, various features of governance structures and the legislative and policymaking pro-

143. Bilefsky, *supra* note 51.

144. UBA, *supra* note 67, at 22; *see* THE ROAD FROM KYOTO, *supra* note 27, at 53; *see generally* MIRANDA A. SCHREURS, ENVIRONMENTAL POLITICS IN JAPAN, GERMANY, AND THE UNITED STATES 230-32 (2002) (describing the introduction and reception of the ecological tax reform).

145. *See, e.g.*, CARS 21 REPORT, *supra* note 54, at 26; Euractiv.com, *Carmakers Push for CO₂-Based Taxation*, Mar. 13, 2007 (updated May 16, 2007), http://www.euractiv.com/en/transport/carmakers-push-co2-based-taxation/article-162408?_print (last visited Jan. 18, 2008).

146. ENVIRONMENTAL DATA FOR GERMANY, *supra* note 16, at 65 (noting “a trend for more powerful, heavier vehicles and the installation of more ancillary equipment and comfort features such as air conditioning, which also increase consumption”).

147. KEITH BRADSHAW, HIGH AND MIGHTY—SUVs: THE WORLD’S MOST DANGEROUS VEHICLES AND HOW THEY GOT THAT WAY 93-123 (2002) (discussing the psychological and market research and the advertising campaigns behind car manufacturers’ promotion of SUVs in the American market).

148. Mark Landler, *Porsche Designs an S.U.V. for the Environmentally Conscious*, N.Y. TIMES, July 27, 2007, at C4 (quoting a Porsche official acknowledging that public perceptions that Porsche drivers are “environmentally unfriendly” are not good for the company).

cess in the EU and in Germany complicate efforts to reduce CO₂ emissions from cars. Several German federal government entities, not to mention the *Länder*, local governments, and actors in the private and NGO sectors, share responsibility for the legislative and policy measures discussed above and additional efforts in related areas of transport and energy policy.¹⁴⁹ However, these government entities sometimes have conflicting responsibilities that may impede constructive work on particular measures to reduce CO₂ emissions from cars. For instance, one NGO expert observed that the German federal environment and transport ministries often are working at cross-purposes in carrying out their respective, different responsibilities. Similar divisions are important at the EU level. For instance, one NGO expert said that the European Commissioner that drafts the EU proposal for binding CO₂ emissions targets would be a harbinger of the potential for change. Specifically, the expert added, if Enterprise and Industry Commissioner Günther Verheugen drafted the proposal, much could be lost, but if the Environment Commissioner, Stavros Dimas, drafted the proposal, a strong document could emerge.

The length of time required to draft, adopt, and implement new EU legislation is not insignificant. This time frame, coupled with the lead time likely to be provided in any emissions targets, means that changes on the roads remain several years away. Thus, it appears that even with a new regulatory framework, there will be a long and gradual shift in policies, technologies, and fuels, and potentially even shifts in consumer and driver behavior. One NGO expert foresees a slow shift or transition between the combustion engine (which the expert says still offers room for more efficiencies), hybrids (within the next 10 years), and plug-in hybrids. Another NGO expert expressed the view that the very idea of a car needs to be stripped to the essentials, though this revolution may take even longer. One expert with a public authority suggested that the anticipated CO₂ legislation also may lead to some changes in ownership in the German car industry as the manufacturers strive to meet new CO₂ targets.

V. Conclusion

No matter how German cars evolve, the debate in Germany over reducing CO₂ emissions from cars merits watching because of its potential significance for three areas of environmental law and policy: (1) the future of voluntary, self-regulatory agreements; (2) the value of an international legal and political framework in developing national environmental policy; and (3) the interrelatedness of environmental policy toward cars with broader energy and transport policies and climate protection initiatives.

The debate in Germany and in Brussels over the proposed EU legislation to set binding CO₂ emissions targets for cars raises a question as to whether governments in Europe will continue to view voluntary, self-regulatory agreements—a staple of environmental policy in Germany and elsewhere in the EU—as reliable policy instruments to address environmental problems. Over the years, Germany has supplemented its command-and-control regulation with non-

binding, voluntary agreements.¹⁵⁰ In the 1990s, difficult economic times and changes associated with globalization combined with progressive public attitudes toward environmental protection to create “an increasing preference” for voluntary agreements and economic measures.¹⁵¹ Voluntary approaches became popular at the European level as well. The 1998 ACEA Agreement was considered an example of a new mode of governance, because peer pressure among the participating companies and pressure from the driving public, coupled with monitoring of companies’ progress, was expected to lead to the desired results in place of oversight by a public authority.¹⁵²

However, a comprehensive study of the implementation of the ACEA Agreement concluded that while the agreement achieved better reductions than a business as usual approach, different or additional measures could achieve greater reductions and are necessary. For instance, the study found, CO₂ reductions from passenger cars occurred not only due to technological measures such as more efficient engines, but also due to the increasing share of diesel cars in the European market.¹⁵³ The fact that the car industry is highly competitive, and that current marketing favors cars with speed, power, and security, also combined to work against CO₂ emissions reductions. There was no assigned burden sharing among the participating companies, and peer pressure among the group did not appear to work, perhaps because no public authority facilitated the exchange of technical information among the participating companies. Furthermore, “customers did not tend to buy the more effective cars, which also could be related to no effective marketing campaigns of more energy efficient cars.”¹⁵⁴ The study’s authors concluded that “[f]rom a political feasibility perspective [the ACEA Agreement was] an important step in the direction of improving efficiency” and that “the annual monitoring reports keep this topic on the European Agenda.” Yet, they continued, “additional policies on [the] national level are needed to promote the diffusion of clean cars.”¹⁵⁵

Moreover, the commission and individual Member States abandoned the 1998 ACEA Agreement rather abruptly and in advance of the 2008 voluntary target date. One expert with a public authority voiced surprise at how quickly the commission acted, speculating that events at the European level in 2006 may have influenced the decision. The way the Member States received the commission’s proposal for leg-

150. Lees, *supra* note 89, at 222 (identifying Germany, along with the Netherlands, as the EU Member State with the largest number of voluntary agreements); see THE ROAD FROM KYOTO, *supra* note 27, at 54 (noting that “Germany has a strong tradition of voluntary agreements by industry”).

151. Weidner, *supra* note 125, at 192-93.

152. Bongardt & Kebeck, *supra* note 5, at 1611, 1612. The study was prepared in connection with a European Commission initiative, the Active Implementation of the Proposed Directive on Energy Efficiency. See Faure & Vig, *supra* note 141, at 355-56 (describing the 1998 Agreement as the most important nonbinding, self-regulatory agreement accepted by the EU, which has not accepted as many such agreements as individual EU Member States).

153. Bongardt & Kebeck, *supra* note 5, at 1613.

154. *Id.*

155. *Id.* at 1614; see OECD & IEA, GOOD PRACTICE GREENHOUSE ABATEMENT POLICIES: TRANSPORT SECTOR 38 (2000) (questioning whether the ACEA commitment could succeed without supporting policies).

149. See generally UMWELTBUNDESAMT (UBA), A SHORT GUIDE TO ENVIRONMENTAL INSTITUTIONS IN GERMANY (2003).

islation to establish CO₂ emissions from cars is also telling. Most Member States generally welcomed the commission's February 2007 proposal, according to an NGO expert. While some like Denmark and the Netherlands would have preferred more stringent targets, the expert added, it was significant that no objection arose from France, Germany, Italy, or the United Kingdom—the key countries that manufacture cars. This suggests that a solid consensus has emerged in Europe that additional measures beyond the voluntary agreements that governments have accepted in the past are needed to address CO₂ emissions from cars. In light of the failure of the ACEA Agreement, there also is public pressure and momentum to go beyond voluntary agreements and impose further measures, according to an expert with a public authority.

It is too soon to know whether the European Commission's abandonment of the ACEA Agreement signals a broader paradigm shift away from voluntary agreements and toward more traditional, command-and-control regulation or additional market measures at the EU level and in Germany.¹⁵⁶ It may be that the ACEA Agreement fell short of its objectives and failed to meet expectations for further, post-2008 emissions reductions for reasons largely unique to the car industry and the present heightened attention to the role of the transport sector in climate protection. The comprehensive study of the ACEA Agreement identifies reasons why the car industry might be unique, such as its super-competitive nature and the industry's marketing practices. On the other hand, it seems equally plausible that the commission abandoned the ACEA Agreement in favor of proposed legislation for reasons unrelated to the car industry that suggest a growing impatience with self-regulatory efforts. For instance, the increasing number of international commitments to reduce emissions of CO₂ and other GHG, the difficulty of achieving such commitments, and the desire to exercise leadership may have contributed to the commission's proposal for legislation to address CO₂ emissions from cars and to the Member States' general acceptance of that approach. To the extent that these and other "generic" factors lie behind the abandonment of the ACEA Agreement, they may signal a broader shift away from voluntary agreements involving other industries and environmental problems.

In addition, the debate over reducing CO₂ emissions from cars in Germany illustrates the potential for an international legal and political framework to facilitate policy formation at the national level. The public commitments to reduce CO₂ emissions that Germany made pursuant to the UNFCCC and the Kyoto Protocol provide common goals for the German government, industry, NGOs, and the public, and they therefore lend focus to any policy debate. Similarly, emissions reduction targets agreed upon by the European Council create pressure to reduce CO₂ emissions from cars in Germany. Germany's international commitments to reduce emissions also form a source of political and negotiating power. For instance, Germany's allocation of needed CO₂ emissions reductions across different economic sectors may help in promoting the need for additional reductions from the transportation sector and from cars out of fairness to other sectors

that already have substantially reduced their emissions. In addition, the process by which a post-2012 international climate agreement will be negotiated is creating incentives for Germany to pursue additional CO₂ reductions from cars. The Bali negotiations provided a deadline by which Germany updated its national plans to reduce GHG emissions, as well as additional motivation. The negotiations begun in Bali also offer a venue in which Germany may exercise leadership, and given the importance of cars and the car industry in Germany, a proactive national position on reducing cars' CO₂ emissions would lend credibility to Germany's efforts to assume a leading role in the negotiations by showing that Germany is willing to address a significant problem and a powerful industry at home. At the same time, the consensus at the EU level regarding the need for further CO₂ reductions from cars is influencing the discussions in Germany. Thus, the German Federal Environment Ministry indicated its intent to renew the ACEA Agreement in 2006 but soon after accepted the European Commission's announcement to pursue legislation. These examples show that both the substantive and the procedural components of an international legal and political framework influence national policy discussions.

Furthermore, the current debate in Germany illustrates the extent to which national policies toward vehicle emissions are interwoven with broader energy, transport, and climate policies, as well as related issues of technology, tax, and competition policy. This interconnectedness may have positive effects, helping to reduce CO₂ emissions from cars. For example, the negotiations over a post-2012 international climate agreement may help the EU to adopt binding CO₂ emissions targets from cars. Yet, this interconnectedness may hinder other efforts to reduce CO₂ emissions from cars. For instance, the federalism and institutional challenges surrounding any changes in Germany's current car circulation tax to more closely reflect cars' CO₂ emissions are impeding adoption of such a tax. Given the complex relationships among different policy areas, it is unclear what the overall impact of climate protection's high profile on the German and EU agendas will be, namely, whether climate protection will carry forward German and European policies to reduce CO₂ emissions from cars, leading to significant, sustained improvements in cars' fuel economy, or whether the monumental challenges posed by climate change will dwarf the nettlesome problem of CO₂ emissions from cars and the transport sector.

The relationship between Germany's national policies toward vehicle emissions and broader policies also suggests that improvements in cars' CO₂ emissions will continue to result from measures on many fronts, ranging from EU legislation to technology research and demonstration projects to consumer education and marketing. Besides reflecting different policy tools, EU and German commitments likely will continue to support multiple technologies. For instance, legislation to encourage the use of biofuels and to mandate further reductions in CO₂ emissions from cars will create different, competing pressure points for improvements than demonstration projects to promote the development of marketable hydrogen cars. Continued improvements are likely, but the rate of progress is difficult to predict and it is not certain that improvements will be seamlessly integrated. This, in turn, suggests that the current tension surrounding how much German policy toward CO₂ from cars should focus on

156. *Id.* (observing that "[o]ne way or another, it appears likely the ACEA commitment will determine the view of other countries regarding whether voluntary agreements can really work" and whether car manufacturers can change markets without significant government intervention).

near-term solutions and how much it should emphasize longer term breakthrough technologies is likely to remain as Germany continues to encourage both types of approaches through various measures.

Finally, the debate in Germany over reducing CO₂ emissions from cars illuminates areas for further research. It will be important to evaluate the measures included in any new regulatory framework to learn from their inevitable strengths and weaknesses. In particular, it will be instructive to compare any EU legislation that emerges with the ACEA Agreement; while legislation offers the prospect of better enforcement than a voluntary agreement, it may prove more difficult to negotiate aggressive CO₂ emissions targets in the context of proposed legislation than it would be in the context of a further voluntary agreement. The research and demonstration projects to promote new technologies, such as the HyLights projects, also merit further study, not only with respect to the projects underway but

also for the potential of the decisionmaking structures and procedures they are using to offer insights for collaborative, public-private decisionmaking in the environmental policy arena. Comparative research on efforts to address CO₂ emissions from cars in other EU Member States and in the United States would also be useful, as would research on the ways in which the EU is influencing German policy and the ways in which national concerns are influencing policy at the EU level.¹⁵⁷ Considering how the experience of Germany and the EU in addressing cars' CO₂ emissions might inform discussions in India and other developing countries that expect an explosion in car sales and use would also be productive.

157. For examples of research on these questions, see Guri Bang et al., Center for International Climate & Environmental Research (CICERO), Meeting Kyoto Commitments: European Union Influence on Norway and Germany (CICERO Working Paper 2004, 2004); SCHREURS, *supra* note 144, at 14-15.