European Strategies for Addressing CO_2 Emissions from Passenger and Freight Transportation

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EXECUTIVE SUMMARY

The United States and Western Europe enjoy the benefits of the road-based transportation systems that they have built up over the past century. With these benefits, however, have come growing costs to the environment, landscape, and quality of life. All countries face steady growth in petroleum fuel use and its attendant carbon dioxide (CO_2) emissions by passenger cars and freight trucks. Noxious air pollutants from motor vehicles also remain a persistent problem, particularly in urbanized regions. Transportation policy has been the weakest element of U.S. climate action plans. A number of countries in the E.U. have experience in pursuing promising strategies for this sector. As a contributor to the climate policy debate in the United States, the author wished to learn about European programs and policies, particularly market-based measures for addressing energy use and emissions from automobiles and freight trucks, approaches for fostering intermodalism and other integrated transport strategies, and innovative approaches including emissions allocation and trading schemes as well as "eco-labeling" and marketing for promoting greener vehicles.

Questions about these approaches opened the door to a range of informative discussions. European thinking proved to be very rich, even as policy makers at the E.U., national, and municipal levels still struggle with their own dilemmas concerning transportation and the environment. The resulting insights reflect the range of circumstances in which diverse experts work, the different problems faced in different places, and how politics and the status of policy making vary among the countries visited.

During the month-long study tour, the author met with national and local government officials, officials at the European Commission (EC) and other international organizations such as the International Energy Agency (IEA) and the Organization for Economic Cooperation and Development (OECD), academics, consultants, and non-governmental organization (NGO) representatives. What emerged were four main themes plus several other valuable findings.

- *A revival of planning and modernization of public transit.* Although implementation remains uneven, it is clear that in Western Europe, even in the face of continued demand, the era of road building as a solution has largely passed. Pricing measures, strict traffic management, and greater use of mass transit are seen as essential. However, the potential impacts of reduced road travel remain more hoped-for than observed.
- *Faith in economic rationalization.* The prevailing EC view is that most environmental problems can be solved by market forces if traditionally disparate national fiscal and regulatory barriers are removed and transport services are priced correctly (including external costs). Economic efficiencies could then take hold but regulations would still be needed to address items such as vehicle emissions and safety. No specific plans exist, however, for what to do if this approach fails to achieve CO_2 reduction goals.
- *Innovation in intermodalism for freight transportation.* Innovative planning and collaborations are occurring at all three scales of goods transport: urban, regional, and

international. Particular efforts are made to ensure a high level of good faith and cooperation among the businesses and government officials; the discourse is strikingly free of ideological overtones. Intermodalism and logistical improvements are backed by regulatory and pricing policies that act as key enablers.

- *Little interest in sectoral emissions trading.* In spite of the importance of economic thinking in Europe, no serious role is seen for an emissions allocation and trading system for transportation. Because the sector is so diverse and complex, pricing and market-based approaches are best tailored to individual modal elements and activities; "the more differentiated the instrument, the more effective," noted one official.

Several lessons for U.S. policy emerge. Perhaps most exciting is the power of well-structured government/industry partnerships, not for research and development (R&D) but rather for actual implementation of innovative approaches, such as intermodal freight solutions. The attractions of investments in new publicly financed infrastructure (such as rail modernization and expansions) can garner the support of some conservative and business interests, including their support for raising user fees in order to secure the financial success of the new ventures. The "new reality" regarding the limits of road reliance provides an important model for sustainable transportation planning in the United States. The fact that regulatory measures (such as vehicle efficiency or CO_2 emissions standards) are recognized as crucial complements to economic rationalization can help revive the regulatory paradigm, which has been quite maligned in spite of its successes. The low interest in emissions trading for this sector bodes caution for efforts to develop broad trading schemes for the U.S. transportation sector.

A number of other findings are also relevant. Two projects are helping to marshal interest in cleaner and more efficient vehicles. The International Council for Local Environmental Initiatives' (ICLEI) European Green Fleets project is developing model green procurement programs for municipal fleets. In Germany, Verkehrsclub Deutschland (VCD) publishes consumer-oriented automotive environmental ratings that have seen increasing media attention each year.

Regarding the difficulties of controlling automobile usage, studies at Energie Cités indicate that two factors are crucial: "rock solid" destination control (for example, urban parking restrictions) and a strong, long-term persistence in a city's traffic control programs and policy. These factors must be present along with whatever other transportation demand management measures are used.

Regarding the types of actions that can effect a significant modal shift of freight from truck to rail, the Swiss are making a determined effort, with steep fees on trucking slated to help pay for a new rail tunnel through the Alps. Freight sector reform is also being actively pursued in France, including efforts to raise the diesel fuel tax, an expected restructuring of the trucking industry, and new investments in rail freight capacity.

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AUTHOR'S NOTE

This study was conducted shortly before the historic treaty negotiations under the Framework Convention on Climate Change, which yielded the Kyoto Protocol for greenhouse gas emissions reductions, adopted on 10 December 1997. Thus, the findings reported here do not incorporate developments subsequent to Kyoto but rather reflect the thinking immediately prior to the conference. During the Kyoto negotiations, the European Union (EU) pressed for targets more ambitious than those that were adopted, in which the EU agreed to an 8 percent reduction below the 1990 levels by 2008–2012.

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INTRODUCTION

The environmental impacts of transportation are prominent among challenges to the global community as policy makers seek to move their countries toward greater sustainability. The United States and Western Europe, along with Japan, have led the world in building transportation systems that play vital roles in all aspects of modern economies. These systems rely heavily on highway vehicles for both passenger and freight movement, although the U.S. system is the most highway dependent. With over two decades of policy making to control urban air pollution behind them, most OECD countries have seen some success in controlling noxious pollutants from cars and trucks. But those problems are far from solved. Controlling energy consumption—a direct cause of CO_2 emissions—has been less successful. Both sides of the Atlantic are experiencing steady growth in emissions from transportation activities.

To help bolster policy development in the United States, the author investigated approaches being pursued by the E.U., individual countries, and municipalities to address transportation-related environmental problems. Topics included:

- Market-based measures for addressing motor vehicle energy use and emissions, including views on regulations, voluntary agreements, fiscal measures, and other market mechanisms;
- Transportation elements of national climate action plans, particularly any emissions allocations and trading schemes that might be under development;
- Approaches for addressing emissions from freight transportation; and
- Consumer educational and "green (eco-) marketing" approaches for lower emission motor vehicles.

These up-front objectives of the study opened the door to engaging policy makers and researchers in conversations about how to address the challenges of transportation versus the environment. What ensued were a range of discussions and an exposure to what has to be characterized as a very rich set of approaches. Thus, the results reflect the range of circumstances in which different experts work; different problems are faced in different

places and the status of politics and policy making also varies widely. Reflecting on the 40 meetings held with at least 70 individuals over the course of the four-week tour, what emerged were four main themes plus several other valuable findings.

A Revival of Planning and Rehabilitating Mass Transit

A good example is England, where many planners and policy makers feel confident that a paradigm shift has been made. The era of road building is coming to an end. Thus, new resources will be put into mass transit and other better ways to manage the system. Under the Major government, financial constraints finally broke the grip of the "road gang."[1] Transit proponents, rural preservationists, and environmentalists had an opening to significantly change the transport agenda. Under the Blair government, the Department of Transport was combined with the Department of Environment into a new Department of Environment, Transport, and Regions (DETR), which has strong political standing since its Minister, John Prescott, is also Deputy Prime Minister. The leadership is very committed to the new agenda and the Transport office has been converted from being a roads advocate into being more of an honest broker among the various interests influencing transport policy.

This paradigm shift has an intellectual component, with the new thinking both informing the policy shift and shaping public discourse on the issue. Insights include:

- "The New Reality"—No feasible road program will ever suffice to meet traffic demand (we can't build our way out of congestion).[2]
- Planning must shift from "predict and provide" to "predict and prevent."[3]
- The transport problem has a distinct rural dimension in that the attractions of rural lifestyles drive demand for motorized transport.
- A positive vision of sustainable transport must be offered, instead of defining it in terms of negatives (fewer autos, less pollution, fewer roads, etc.).

Prescriptions include strengthening both urban and rural transit systems and giving localities both the responsibility and authority to provide clean and safe access for people. The fuel duty escalation (set at 6 percent per year real) is expected to help orient the system; the expressed political concern is mostly regarding its effects on rural poor (rather than on haulers, who don't like it of course).

The British government is also looking at variablization of vehicle excise duties (like registration fees), incentives for low emissions trucks and buses, and better labeling

schemes, as well as fuel consumption or CO_2 standards (for which they are relying on the EC).[4] The Transport Division of DETR is dubious of counting on significant behavioral responses.

THE EUROPEAN COMMISSION: FAITH IN ECONOMIC RATIONALIZATION

Conversations with officials at the European Commission indicated that their approach is largely based on the premise that harmonization and reforms of the EU's traditionally diverse regulatory and fiscal policies related to transportation would be a key element of their strategy for addressing emissions problems. This approach was particularly dominant regarding freight transport. Market forces would work to improve system efficiency, thereby reducing fuel consumption and emissions, if regulatory barriers and subsidies (including fuel duty inequities, exemptions, and rebates) are removed. Pricing signals can be improved by considering external costs; nevertheless, they felt that the overall cost of transportation services should not increase. They also acknowledged roles for specific environmental regulations, such as standards for automobile emissions and fuel consumption. Some of the independent experts interviewed later, however, were skeptical about the EC really doing much to push rationalization since most policies must be adopted by individual nations; the EC has talked about reforms for some time without much action taking place.

DG-VII (Transportation) emphasizes fair and efficient pricing and rationalization of the system throughout the EU.[5] The approach to control CO_2 emissions would be:

- Maximizing the cost-effectiveness of existing investments and plans, counting on improved system efficiency to lead to emissions reductions.
- Emphasizing integrated transportation planning, meaning that economic evaluations should be comprehensive and cover all impacts, including CO_2 emissions.
- Recognizing that technology improvement will not suffice for freight. Demand needs to be controlled through modal shifts. The EC is taking a logistical approach, looking at ways to better harmonize modes and establish uniform informational procedures.

A question was raised about what the EC would do if the economic rationalization process failed to adequately control CO_2 emissions. DG-VII representatives said that rather than pursuing additional measures, the approach would be to go back and do a better job on each element of the rationalization strategy. They doubted that there would be a unified approach to environmental taxes and emphasized that any pricing changes should "burden neutral" so that transport services do not become more costly overall.

Views at the Environment Directorate echoed those at Transport.[6] A range of local efficiency measures, largely undertaken for reasons other than the environment, can achieve CO_2 reduction goals. The EC can help by promulgating guidelines for best practices. Achieving EU CO_2 targets will not depend on new technology. Emphasis will be on pricing reforms and logistical reforms. As demonstrated in Netherlands, for example, the use of logistical audits in implementing operations improvements yielded a 10 percent reduction in freight fuel consumption.

Meetings with oil and automotive industry associations' offices in Brussels indicated that these industries' views on general approaches are largely in line with views at the European Commission (although differences exist on policy details, of course).

CONCAWE is the petroleum industry's research institute covering environmental, health, and safety issues.[7] They are very focused on meeting existing regulatory pressures in the context of their Auto/Oil program covering traditional air pollutants. The CONCAWE representatives did not get into specifics on climate issues but did acknowledge the need to develop legal frameworks and independent monitoring protocols, largely in the context of petroleum companies' roles as industrial emissions sources. Fuel sulfur content is now being actively debated on both sides of the Atlantic and has bearing on CO_2 since low-sulfur fuel is an important enabler of efficient combustion engine technologies. The CONCAWE representatives noted the effectiveness of tax incentives in speeding the adoption of a very low-sulfur (10 ppm) "city fuel" in Sweden, resulting in near 70 percent use of the new fuel, which is substantially improved over the current ES90 standard (500 ppm).

ACEA (Association des Constructeurs Européens d'Automobiles) is the automobile industry's European trade association.[8] Like the oil industry, the automakers are also very focused on near-term compliance issues. What was most notable was how their demeanor on environmental issues contrasts with that of the U.S. auto industry. ACEA fundamentally accepts government interventions in terms of product regulation and taxes; for them it is a matter of negotiating reasonable and economically feasible agreements. For example, they strongly felt that the European Parliament's proposed target of 120 g/mi for car CO_2 was too stringent.

ACEA seemed to accept the need for a range of taxation measures, which they felt would help orient the market for lower CO_2 emissions: measures needed would include not only fuel taxation but also circulation taxes (e.g., vehicle registration fees) and differentiated vehicle taxation (e.g., graduated gas guzzler taxes). There was a recognition that all of these measures had their own role to play in addressing different components of the problem and were complementary, rather than one being preferred over the other. Such views were certainly not ACEA policy positions, just things that would be considered. The particular

tax schemes would have to vary country by country. In any case, such a stance is a marked contrast to the positions of the U.S. auto industry, which are stridently ideological rather than pragmatic in their insistence that fuel taxes would be the only efficient scheme. ACEA's acknowledgment of potential roles for a varied set of targeted tax schemes echoed views at the EC, recalling a comment by a DG-XI (Environment) official that "the more differentiated the instrument, the more effective."[9] ACEA felt that there should not, however, be a net tax burden increase and that they would prefer "diffuse" taxes to purchase taxes. They also emphasized that whatever the taxation scheme, it should be predictable, so that their member firms could plan accordingly.

Innovation in Freight Intermodalism

Nearly everyone involved in addressing congestion, environmental, and other social problems of transportation agrees that a key part of the solution is intermodalism: increasing the use of more efficient modes and fostering links among modes.

European transportation systems have traditionally maintained a good infrastructure for non-highway modes. However, consistent support for an inherently multimodal system has not held back increases in road traffic for both passenger and freight services. The need to strengthen intermodalism is ongoing. A meeting with a leading city planner in Cologne provided a look at that city's determined approaches to the challenges of fostering more efficient modal usage. This commitment to improving intermodal efficiency apparent in one key city was reinforced by a discussion with the Deutsches Verkehrsforum (DVF) in Bonn. DVF is a trade association of transport providers and major industrial and business transportation customers working to ensure adequate investments in system efficiency and intermodal approaches throughout Germany.

Cologne is situated on the Rhein River in northwestern Germany and serves as a major industrial center as well as a key node for both passenger and freight traffic. A meeting with a leading city planner revealed innovative planning and cooperative efforts at all three scales of goods transport: urban, regional, and international.[10]

To provide overall coordinating and planning functions, in 1992 the city instigated a stakeholder discussion process to address a variety of issues related to freight transport. Termed the Güterverkehrsrunde Köln (Cologne Cargo Roundtable), it sought strong participation by industry, limiting the number of government officials and engaging a professional moderator. It involves two rail companies, the German federal railway (Deutches Bahn) and the Cologne city/regional railway, and addresses the links to waterborne freight since Cologne is a major inland port. The emphasis on having many

industry representatives had a number of advantages, aside from building confidence on the part of industry that the resulting plans would make good business sense. Business people effectively policed each other, preventing particular interests from fooling the city planners. Under the Roundtable process, planning was done cooperatively by having city planners work directly with the industry (shippers and haulers) instead of having the city just hire consultants.

Among the outcomes were ways to reduce the impacts of delivery trucks each running separate routes within the city. This urban-scale problem aggravates congestion, parking, and traffic obstruction problems in many cities. A key firm is United Parcel Service (UPS), which routinely absorbs parking violations as a cost of doing business in its high-value, time-critical service market. Cologne city officials had approached the firm, asking them to think about solutions to the problem but were rebuffed. The city then pursued stricter enforcement, including doubled parking fines. This added cost brought UPS to the table. After studying options, it was agreed that the city would create special parking zones to accommodate larger delivery vehicles. One larger truck with a driver and one or more helpers could then displace several smaller delivery trucks manned by a single driver who also delivered the parcels. Since the cost-effective area for foot delivery is relatively small, the range of each larger truck was expanded by having some of the helpers use freight bicycles. Because the helpers on foot or bicycle are paid at a lower wage than drivers, UPS reduced labor costs; costs of parking fines and fuel were also reduced. The resulting solution mitigated the problems associated with using numerous one-person delivery vehicles while reducing UPS operating costs.

An analogous problem occurs at the regional scale, with many mid-size (6 tonne) trucks, operated by various firms and arriving from various origins, dropping off 300–500 kilogram loads throughout the city. Because the trucks were operated by competing firms, no logistical coordination was possible, and so a given shipping destination would be served multiple times by different trucks, each running different routes. While a single firm might optimize its own routing, the overall delivery operation within the city was far from optimal. Because of air quality impacts, the city was in the process of imposing traffic restrictions on shippers, the prospects of which were of great concern to the firms. The city at first proposed a central terminal but that solution was unacceptable to the haulers, which included five major firms. A solution was developed that involved engaging a separate firm that would act as a neutral partner for carrying deliveries from any of the firms from their terminals to common destinations. The incentive for a shipping firm to use this arrangement is that the traffic restrictions would be lifted for participating firms.

Finally, at the international scale, the city has facilitated truck-to-rail intermodal

transport. The city manages, in cooperation with the German national railway (Deutsche Bahn), a major intermodal freight terminal, the Köln-Eifeltor. Under guidance of the Güterverkehrsrunde Köln (the city government and industry roundtable mentioned above), the capacity and technical sophistication of the intermodal terminal has been recently upgraded. Features of this terminal include efficient road-to-rail links (including exclusive freeway ramps) and a cooperative approach to truck, trailer, container, and electronic tracking operations and services.

The Köln-Eifeltor serves as a major shipping hub between industrial and commercial centers of the Rheinland and other European countries, particularly northern Italy, Spain, Belgium, and Netherlands. For example, one major and competitive rail route is the link from Cologne to Milan. A strong incentive to use rail over this route comes from the high fees imposed in Switzerland and Austria for truck traffic through the Alps. As a result, this rail route was profitable even during the economic downturn. Austria has developed a system of "eco-points" that essentially caps the allowable environmental impact of shipping and rates trucks according to their pollution impacts. An EC sticker has been introduced indicating the standards that a given truck meets. This system gives firms an incentive to improve their technology as well as to use intermodal rail to reduce truck traffic.

The chemical industry has been embracing such innovation, in part to cultivate a greener image. Their reputation has been poor because of some high-profile accidents in the past. Therefore, chemical firms are conducting eco-audits of their shipping operations and establishing better environmental management practices, e.g., using ISO 9000 and 14000 procedures for quality assurance. Greener shipping practices, including intermodalism, are seen as a way to improve a company's environmental standing.

An impressive private sector commitment to improving transportation system efficiency through an integrated, intermodal approach is reflected in the DVF.[11] This organization is an association of about 200 member firms. It was originally established as a rail forum by the railways and their customers, including many major shippers (Deutsches Bahn has a key role, of course, and members include, for example, chemical companies as well as major industrial firms such as Daimler Benz). Its scope was recently broadened from being a rail forum to being a "traffic" (general transportation) forum, charged with giving priority to mobility issues, emphasizing intermodalism as a means of safeguarding mobility.

An impetus for DVF was addressing infrastructure needs following the reunification of Germany. A major modernization and infrastructure build-up was about to take place. Pressures existed from road and car interests to greatly expand the road infrastructure. Many companies felt, however, that mobility and therefore economic efficiency would be

endangered if there was an over-reliance on roads and a relative neglect of modernizing the rail infrastructure. Advantages would be gained if ways could be found to keep the extensive former East German rail network alive and modernize it. Much of this network was destined for privatization but this effort needed to be managed. Privatization would be linked with economic reorganization to insure efficiency. A particular issue in which the DVF had concerns was management of rights-of-way (*tasse*). The principle to be followed was that the right-of-way should be treated as a common carrier. This principle is recognized in an EU law (91-440) that addresses private ownership of rail lines and provides for a separation of the operations, which can be competitively run by private firms, from the right-of-way, which is to be commonly managed.

What was remarkable about these approaches to freight issues is the strong degree of both public and private commitment to pursuing intermodal solutions to the problems posed by transportation. A major role for government, at all levels—city, national, and EU—is recognized. But simplistic policies, either overarching regulations or pricing regimes, are not the focus of debate. I saw no ideological grandstanding about the roles of government vs. the market. Most attention goes to working out the details of policies so that public and private goals can be accommodated. Collaborative planning processes are emphasized, in which various interests are brought together; this is recognized to be an essential public function. The outcomes of such an approach appear impressive, ranging from creative micro-scale (city) solutions such as worked out with UPS in Cologne to the large financial commitments needed to modernize intermodal facilities and rail systems. Environmental concerns are one driver for these initiatives, but not the only driver, since the opportunities for such innovations to enhance economic performance are widely recognized. However, it is not yet possible to say whether these approaches will suffice to meet environmental objectives. What appears to be missing is a comprehensive framework for tracking activity level emissions and net measurable reductions within the sector.

Little Interest in Emissions Trading for Transport

DG-VII had examined emissions permits and trading schemes and concluded that they were not workable. The transportation system is too diverse, which inhibits such overarching approaches. Similarly, DG-XI felt that pricing and market-based approaches should be as differentiated as possible, in order to best link prices to costs at individual activity levels. They did some work examining tradable permits but did not find it workable or beneficial and have dropped it.[12] Support for the concept was found only with a researcher at the German Economic ministry, who warns that the planned combination of rationalization and pricing (even with inclusion of externalities) is unlikely to suffice for controlling CO_2 emissions.[13]

Representatives of CONCAWE (the European oil industry research institute) did not give a direct answer regarding value of marketable permit systems but rather discussed the need to establish metrics and set environmental quality goals for firms, which should be ranked among similar actors and similar groups of actors. ACEA (the European automakers association) did not view trading as practical or beneficial; as noted earlier, they expected that a combination of CO_2 standards and differentiated taxation schemes would be needed, although they of course had concerns about the stringency and timetables for such measures.

A discussion with a Swiss transportation and environment expert also reflected a pessimistic view regarding prospects for trading schemes in the sector.[14] By way of background, Basel had instituted a canton-level emission cap and trading system for sulfur dioxide—the so-called Basel Bubble. It ended up being inconsequential because existing regulations constrained industries at such a low level that a market for emissions permits failed to develop. Consideration was given to the concept of emissions trading a few years ago, when emissions trading was discussed at a conference, but it was concluded that a permit scheme makes no sense and would not be applicable for the transportation sector. Nothing remains to drive the interest: the greens don't care how the job gets done; government officials think that it is administratively impractical and have lost interest in developing the concepts; and industry sees no advantage—the ideas have backing only among theoretical economists.

Other Findings

In addition to the four areas discussed above, the meetings yielded a number of other findings that will prove valuable for informing the evolving mix of strategies for addressing transportation CO_2 emissions.

The Challenges of Controlling Car Travel

Great determination is likely to be required in efforts to measurably control personal travel demand. This assessment—consistent, of course, with the thinking of transportation experts worldwide—flows out of case studies conducted of several European cities by Energie Cités.[15]

What seems to work to hold down personal vehicle travel is destination control, such as parking restrictions. Other planning techniques seem to fail unless destination control is "rock solid." Long-term persistence (e.g., at least 20 years) is also critical. Even in these cases, the best that can be done is to level off car use. Energie Cités has not documented in the case studies examined any actual declines in car travel or car modal share. These views

are also consistent with those articulated by academics in England, who also noted that positive visions (emphasizing, for example, safety and healthy air for children) were needed for local transportation policy in order to gain sufficient and persistent political support for strong policies.[16] Energie Cités is also conducting research on freight traffic in several cities but this research is at an earlier stage and so specific lessons have not yet been formulated.

Municipal Green Fleets Project

The International Council for Local Environmental Initiatives has established a strong leadership role for municipal governments in many areas of environmental protection. The Green Fleets project, which ICLEI is pursuing on both sides of the Atlantic, aims to reduce energy use and emissions from city-managed fleet operations. With the support of DG-XVII (Energy), ICLEI-Europe has just developed a major project involving eight cities.[17]

The European Green Fleets Pilot Project will develop a green vehicle municipal purchasing policy and marketing materials, begin negotiating with automakers regarding accelerating green technology introduction, and develop plans for involving general consumers in each community as well as for expanding the program to additional European cities. Two notable aspects of the European Green Fleets Project are: (1) a pragmatic, and economically attractive, emphasis on "buy efficiency," involving more efficient vehicle technologies as well as operational efficiency improvements; and (2) efforts to coordinate common vehicle purchase plans among cities, in contrast to previous green vehicle initiatives wherein each municipality pursued its own definitions of what qualifies as green.

Use of "Eco-Ratings" for Influencing the Car Market

A project of this author has been developing green (eco) ratings for light duty vehicles.[18] Therefore, it was of great interest to meet with the Verkehrsclub Deutschland, which publishes an *Auto-Umweltliste* annually rating the environmental performance of vehicles for sale in Germany.[19]

The *Auto-Umweltliste* was first published in 1989 as a feature in VCD's magazine. The present stand-alone document was first printed in 1994. VCD charges 5.00 DM (≈$2.75) for the list, published as a 16-page, A4 (21x30 cm) brochure, with a current print run of 10,000. Brief articles explain the rating scheme and highlight various aspects of automotive impacts on the environment. The VCD ratings entail a system that adds or subtracts points based on various vehicle attributes, including fuel consumption, tailpipe emissions, other use-phase impacts (including noise), manufacturing impacts, and recycled content. Points are also subtracted for high power performance (e.g., top speed ability and acceleration

ability). Collaborating with the European Federation for Transport and Environment, VCD cosponsored a seminar and published a comprehensive report on the subject of vehicle rating.[20] For 1997, they redesigned their rating scheme to place a greater emphasis on CO_2 emissions. In terms of impact, their annual press conference has received increasing media interest each year, with the "top ten" vehicles getting most of the attention. Although the list is released for the public, VCD's strategy is aimed at the auto companies. Overall, current market trends are still for more speed, power, and so on. The hope is to motivate companies to improve their ratings by improving vehicle technology.

A related effort is underway in France, linked to recent actions to restrict traffic in Paris during peak air pollution days. The public response to such efforts has been generally supportive. The Ministère de l'Environnement is developing a green label for cleaner cars; it would be used to determine vehicles permitted during traffic restrictions but the ministry is also contemplating criteria as a basis for fiscal incentives for cleaner vehicles.[21]

Aggressive Action to Reduce Freight Truck Traffic in Switzerland

Popular support is strong for policies to curtail truck traffic, which is viewed as threatening traditional Swiss communities as well as damaging the Alpine environment.[22] Much of the trucking is through traffic connecting industrial and agricultural areas of the South (Italy) with those in the North (Germany and elsewhere). In 1994, the Swiss approved a referendum calling for work toward banning truck traffic through the Alps, requiring all freight to go via rail. The Swiss plan to build a major new rail tunnel to accommodate a large shift to rail; the tunnel would carry both freight and passenger traffic. To reduce trucking, the Swiss are proposing a combination of a weight-distance fee plus a special per-truck Alpine tax. As of the fall of 1997, the Swiss proposal was for a weight-distance fee averaging 0.03 SF per tonne-kilometer (≈3¢ per ton-mile) plus an Alpine tax of 410 SF (≈$275) per truck. Revenues from these fees would help support the new tunnel; since Swiss conservatives want the tunnel to succeed financially, they are also backing the steep fees.

The issue is a matter of contentious negotiation with the EC, who want free trade and not such high transport taxes. Concerns also exist about possible diversions of traffic around Switzerland, which would increase truck impacts in France, Italy, and Austria. France is generally supportive of the Swiss initiative, since it would help the French effort to raise their own fees on trucking. To build popular support for reduced reliance on trucking, Greenpeace and other groups (acting throughout Europe) are conducting a "Stupid Transport" campaign.[23] They are creating examples of consumer goods and stories of how goods are shipped all around Europe for different aspects of manufacture and processing.

For food items, questions such as "How many kilometers have you eaten?" or "How much diesel fuel did you drink today?" are being raised. An example cited was 3.6 liters of oil per kilogram (1.7 quarts per pound) of asparagus.

Reform of the Freight Sector in France

The Ministère de l'Environnement is in concert with EC efforts to rationalize transport pricing and regulatory policies throughout the EU.[24] Officials felt that such reforms would precipitate a much needed and overdue shake-out of the French trucking industry, which now has significant over-capacity and is poorly structured (many small firms). However, they noted that French freight rail capacity is insufficient and the railroads are operated to give priority to passenger traffic. Therefore, new infrastructure is needed. Rail regulatory reform is also needed; there are too many antiquated rules covering load, hours, speed, etc., which are often not respected anyway. Some responsibility will have to be placed on shippers for violations of transport quality regulations so that they can exert leverage on transport firms. The French government is sponsoring extensive surveys and other research on the freight sector in order to support modernization efforts and system efficiency improvements.[25]

For some years, France has had very high diesel use for both passenger cars and freight trucks due to a significantly lower tax on diesel fuel compared to gasoline. This tax discrepancy is another example of the types of national policies targeted for reform in order to create the harmonized European structures on which the EC is depending. It was with some skepticism that I heard representatives of the Ministère de l'Environnement suggest that the French government would shortly act to phase out the diesel fuel tax advantage but this significant policy change was in fact announced shortly thereafter. This development is also consistent with French support for the Swiss trucking fee increases noted earlier.

CONCLUSION

Several perspectives emerge from this look at European transportation-climate strategies as they were framed just prior to the December 1997 Kyoto Conference.

Western Europe has had stronger public planning traditions than the United States. But even though EU transportation systems typically rely less on private automobiles than does the U.S. system, growth trends in highway vehicle usage and emissions are similar. A consensus is emerging in Europe that public planning efforts must be strengthened yet further and coupled with supportive road pricing in order to address not only emissions but other concerns arising from steadily growing auto use. The limits of road-building are accepted, at least in built-up areas. Nevertheless, the ability of stronger planning and pricing

measures to control growth in road travel is still best characterized as hopeful promise rather than visible progress.

The European Commission is counting largely on economic rationalization for addressing many transportation concerns. Reform of member countries' traditionally disparate regulatory and fiscal regimes is seen as leading to economic efficiencies that will reduce the worst environmental problems. In contrast to most U.S. discourse, EC reliance on market forces accommodates significant government guidance. Policies such as pricing reflective of external costs and regulation of vehicle emissions are viewed as part of a sustainability-oriented rationalization strategy. Nevertheless, these approaches still remain largely in the realm of promise. Reform may be slow and uneven due to established political factors varying among member countries.

Among the most encouraging findings is that Europeans are making even stronger commitments to intermodal freight transportation. Innovative planning and public-private collaborations are occurring for urban, regional, and international goods movement. Cooperation among businesses and government officials appears to be good, with a partnership rather than adversarial approach. Consistent with the overall EC rationalization strategy, regulatory and pricing policies are viewed as crucial ways to complement planning and ensure the effectiveness of intermodal investments and logistical improvements.

Several lessons emerge that can have bearing on U.S. policy for addressing the transportation-climate challenge. Government-industry partnerships can be quite effective, and not just for R&D (which this author did not investigate), but rather for actual implementation of innovative strategies such as those reported for freight transportation. Also, it is possible to build a political consensus, including businesses and fiscal conservatives, for major investments in new publicly financed infrastructure (for example, rail system expansions and upgrades). Higher user fees can find support as being essential to sound financing of strategic investments in systems that enhance national and regional competitiveness. Finally, the overall cooperative attitude between government and industry in several areas of transport policy offers hope that positive steps can be taken to address the challenges of reducing CO_2 emissions in this critical sector.

NOTES

[1] Based on meeting with Stephen Joseph, Transport 2000, London.

[2] As articulated by Phil Goodwin (University College, London) at the Countryside Commission Conference, "Rural Traffic: Getting It Right," Barbican Centre, London, 20 October 1997; see also his lecture of 23 October 1997 available at http://www.ucl.ac.uk/~ucetwww.pbginau.htm.

[3] Susan Owens (Cambridge University), at the "Rural Traffic" conference; see also her article, "From Predict and Provide to Predict and Prevent: Pricing and Planning in Transport Policy," *Transport Policy* 2(1): 43-49, 1995.

[4] Meeting with Paul O'Sullivan, Transport Policy Unit of DETR, London.

[5] Meeting with Jan Peter Paul and Ronny Rohart of DG VII (Transport); see also *Intermodality and Intermodal Freight Transport in the European Union,* Communication from the Commission, Brussels: European Commission, May 1997.

[6] Meeting with Henning Arp of DG-XI (Environment) and Gert Jan Koopman (European Commission, Cabinet of Mr. Neil Kinnock).

[7] Meeting with Jochen Brandt and Kees von Leeuwen at CONCAWE headquarters in Brussels.

[8] Meeting with Giovanni Margaria and Luc Bastard at ACEA headquarters in Brussels.

[9] Henning Arp, DG-XI.

[10] Meeting with Reinhold Gütter of Amt für Stadtentwicklungsplanung, Stadt Köln.

[11] Meeting with Jochen Eichen, Deutsches Verkehrsforum, Bonn.

[12] An EC paper on the subject was provided by DG-XI: "Tradeable Credits to Reduce CO_2 Emissions from Cars," by R. Cointe, J-P Foray, S.R. Taylor, and R.R.T. Tinch, September 1994.

[13] Meeting with Gerhard Maier-Rigaud, Bundesministerium für Wirschaft, Bonn.

[14] Meeting with Hansjörg Blöchlinger (Consultant), Basel.

[15] Meeting with Martin Cahn of Energie Cités; see also M. Cahn, *Limiting the Need to Travel through Town Planning Techniques*, Eergie Cités, Besançon, France, March 1997.

[16] Meeting with Jo Smith, Department of Geography, Cambridge University.

[17] Meeting with Virginia Sonntag-O'Brien, ICLEI European Directorate, Freiberg im Breisgau, Germany.

[18] ACEEE subsequently published the first edition of its *Green Guide to Cars and Trucks,* by the author and Martin Thomas, in March 1998.

[19] Meeting with Sonja Klingberg, Director of Verkehrsclub Deutschland (VCD) at their headquarters in Bonn.

[20] *Car Rating in Europe: Report from the Seminar "Environmental and Safety Rating of Cars,"* Brussels: European Federation for Transport and Environment (T&E) and Verkehrsclub Deutschland (VCD), April 1996.

[21] Meeting with Dominique Dron and Patrick Fragman, Ministère de l'Environnement, and Alain Morcheoine ADEME (Agence de l'Environnement et de la Maîtrise de l'Energie) in Paris.

[22] Meetings with Hansjörg Blöchlinger (Consultant) in Basel and Rolf Iten (INFRAS) in Zurich.

[23] Meeting with François Meienberg, affiliated with Greenpeace, in Basel.

[24] Meeting with Dron, Fragman, and Morcheoine (see note 22).

[25] Overviews of freight related research were heard during meetings at Energie Cités and CERTU (Centre d'Études sur les Réseaux, les Transports, l'Urbanisme et les constructions publiques) in Lyon.