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# TRANSPARENCY ISSUES WITH THE ACEA AGREEMENT:

## ARE INVESTORS DRIVING BLINDLY?

AMANDA SAUER
World Resources Institute
01 202 729 7689

PHILIPP METTLER
SAM Research
41 (0)44 397 10 45

FRED WELLINGTON, CFA
World Resources Institute
01 202 729 7672

GABRIELA GRAB HARTMANN
SAM Research
41 (0)44 397 10 48

The ACEA Agreement is a voluntary agreement by the European Automobile Manufacturers Association and the European Commission to reduce carbon dioxide ($CO_2$) emissions rates of passenger vehicles sold in the European Union to a fleet average of 140 grams of $CO_2$ per kilometer ($gCO_2$/km) by 2008. If the industry fails to meet the 2008 target, the Commission is expected to adopt formal regulations to reduce $CO_2$ emissions from new passenger vehicles.

## KEY FINDINGS

- Unfortunately for investors, two important aspects of the ACEA Agreement have not been disclosed to the public:
  - **Individual company commitments to bring the industry to this target are unknown.** The lack of transparency about how companies will meet the ACEA Agreement target leaves investors in the dark because there is insufficient information to understand the financial implications of the Agreement on specific Original Equipment Manufacturers (OEMs).
  - **Data on company $CO_2$ performance has not been disclosed.** Investors need this data to understand the likely costs and competitive implications each company faces to meet the obligations of the Agreement and to track OEM progress towards meeting their commitments.
- **We performed a basic cost analysis for two scenarios by which the industry could reach the 140 $gCO_2$/km target in 2008.** These two interpretations, including corporate average and uniform percent improvement approaches, capture the opposite extremes of how $CO_2$ emissions reductions could be distributed throughout the industry. **These approaches reflect the costs OEMs may face if they are serious about meeting the 2008 target, or will likely face under regulations should the industry fail to meet its commitment.**
- **OEMs face different ranges of possible cost exposures. BMW, PSA Peugeot Citröen, Fiat** and **DaimlerChrysler (DC)** stand out as having the greatest variability in potential costs under the two scenarios analyzed. These scenarios could have very different implications for individual OEM's capital expenditures. **BMW** and **DC** fair best under the uniform percent increase approach while fairing poorly in the corporate average approach. The opposite is true for **Fiat** and **PSA**.
- **Without full disclosure of all relevant information about $CO_2$ reduction strategies, investors in any of these OEMs could face unforeseen risk.** Even without a formal mechanism within the ACEA Agreement, OEMs have committed to reaching the target as an industry and therefore should have a strategy to reduce the $CO_2$ intensity of their fleet by 2008. However with the exception of **BMW**, neither these strategies, nor relevant data to support them, were disclosed in OEM's 2003 annual reports.

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World Resources Institute
10 G Street, NE
Washington, DC 20002 USA
**www.wri.org**

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SAM Group
Seefeldstrasse 215
8008 Zurich Switzerland
**www.sam-group.com**

## INVESTORS IN THE DARK

In 1998, the European Commission and the European auto industry association ACEA (Association des Constructeurs Européens d'Automobiles) came to a voluntary agreement to reduce carbon dioxide ($CO_2$) emissions. This agreement commits the auto industry to reach an overall fleet average of 140 grams of $CO_2$ per kilometer ($gCO_2/km$) by 2008 and covers 90 percent of vehicles sold in Europe. Although it is voluntary, the European Commission has repeatedly stated that it will formally regulate the industry if it fails to meet the 2008 target.

Neither ACEA nor the OEMs have disclosed two important elements of the ACEA Agreement, including:

- OEM-specific commitments to bring the industry to the 2008 target, and
- Sales-weighted $CO_2$ emissions data for each OEM.

While the auto industry has committed to meeting the 2008 target as a whole, it is not publicly known how individual OEMs plan to reduce $CO_2$ emissions to bring the industry to its fleet-wide target. Likewise, sales-weighted $CO_2$ emissions data that would allow the public to understand the carbon profile of OEMs and to track their progress towards the 2008 target is not publicly available. Without this information, there is not only a disconcerting lack of information on how companies are positioned within the Agreement, but also an absence of accountability should some companies not deliver on their $CO_2$ emissions reductions commitments.

There are several possible ways to ensure that the industry as a whole will meet the 140 $gCO_2/km$ target, each having different implications for specific OEMs. For example, OEM commitments could be similar to the CAFE (Corporate Average Fuel Economy) program in the United States, where each company must meet a corporate average $CO_2$ emissions rate for their fleet. In this scenario, OEMs such as Fiat and PSA (whose fleets are already closest to the 140 $gCO_2/km$ target) emerge as those least impacted.

In contrast, a scenario that obligates every company to decrease emissions by the same percent puts these OEMs at a disadvantage. Not only would Fiat and PSA need to lower their emissions by a larger percentage than in the corporate average scenario, the marginal cost is higher for emissions reductions from vehicles that already have low $CO_2$ emissions.

Another possibility is a flexible mechanism to allow OEMs to make their own decisions about their level of $CO_2$ reductions, such as a tradable permit system between companies administered by ACEA. The implications of a trading scheme would be greatly dependent on the structure of the trading system, the level of an emissions cap, and enforcement penalties. Because there are many options within a trading system, we do not attempt to model this approach in this analysis. In theory, a trading system with low transaction costs should neutralize some of the competitive implications of the corporate average and uniform percent increase approaches. However, given the role of ACEA with respect to the OEMs, it is unlikely they would have the authority to administer such a system.

It is also possible that there is no underlying structure to the ACEA Agreement, with each OEM determining the level of reductions it will commit to. Without some oversight on the part of ACEA, it is unlikely that the industry as a whole would be capable of meeting the 2008 target. However even in this case, it is important for investors to know details about how each OEM intends to reach its target in order to understand the potential cost and competitive implications that OEMs may face.

If ACEA is serious about meeting its commitment, the 2008 target will entail costs for the industry as a whole that are likely to be distributed differently between the member OEMs. Yet these costs, along with their competitive implications for OEMs, remain hidden from the public.

## ABOUT THE ACEA AGREEMENT

Beginning in the early 1990's, the European Council began investigating methods for reducing $CO_2$ emissions from cars as part of a broader strategy to reduce greenhouse gas emissions that contribute to global climate change. In 1995, the European Council approved a strategy to reduce $CO_2$ emissions from passenger vehicles to an average of 120 $gCO_2$/km (a reduction of 35 percent) by 2005, or 2010 at the latest. The strategy was based on three policies: (i) a voluntary agreement from industry members to reduce vehicle emissions from new models; (ii) a fiscal framework for Member States to address fuel consumption (e.g. fuel taxes); and (iii) a fuel economy labeling program to educate consumers. The European Commission, however, opted to pursue a 25 percent reduction from industry, feeling that the Council's demand for an extra 10 percent reduction could be achieved through the fiscal framework and consumer information scheme. In response, the industry association, ACEA, proposed to the Commission an 11 percent improvement by 2005 that was rejected by the EU institutions.

In March 1998, ACEA and the Commission agreed to the "ACEA Agreement," a collective undertaking by the European automobile manufacturers association and its members to voluntarily reduce the $CO_2$ emissions rates of vehicles sold in the European Union. Specifically, the agreement establishes industry-wide targets for average vehicle emissions from new vehicles sold in Europe to reach 140 $gCO_2$/km by 2008, with the possibility of extending the agreement to 120 $gCO_2$/km by 2012. In addition, an intermediate target range of 165-170 $gCO_2$/km was established for 2003 to monitor the industry's progress towards the 2008 target.

The agreement covers all vehicles produced or imported into the EU by member companies (BMW, DaimlerChrysler (DC), Fiat, Ford, GM, Porsche, PSA Peugeot Citroën, Renault and VW Group). The Korean Automobile Manufacturers Association (KAMA), which includes Daewoo, Hyundai, Kia, Ssangyong, and the Japanese Automobile Manufacturers Association (JAMA), which includes Daihatsu, Honda, Isuzu, Mazda, Mitsubishi, Nissan, Subaru, Suzuki, and Toyota, also have parallel agreements with ACEA. All together, vehicles sold by companies under the three seperate agreements with ACEA make up nearly 100 percent of total EU vehicle sales.

As part of the agreement with ACEA, the Commission initiated similar negotiations in 1998 with the Korean and Japanese manufacturers, KAMA and JAMA respectively. KAMA and JAMA agreed to similar commitments to those of ACEA with the following modifications: (i) KAMA has until 2004 to achieve the intermediate target; (ii) JAMA's 2003 intermediate target range is wider at 165-175 $gCO_2$ /km; and (iii) both KAMA and JAMA have an extra year to achieve the final 140$gCO_2$ /km target.

The ACEA Agreement includes a monitoring scheme to be administered by the European Commission to independently verify the progress of the industry. As of 2002, the Commission monitors the progress of the Agreement through analysis of member state data on the $CO_2$ emissions of new vehicle sales. According to this data, in 2002 the average $CO_2$ emissions from ACEA's new vehicle fleet was

# NOTE ON OUR ANALYSIS

In this report we assess the possible risks and opportunities that the ACEA agreement creates for the largest global auto companies including: BMW, DaimlerChrysler (DC), GM, Ford, Fiat, Honda, Hyundai, Nissan, PSA Peugeot Citröen, Renault, Toyota and VW Group. We analyze the potential costs to each manufacturer under two possible interpretations of how company commitments could be structured. Our dataset includes 2004 sales and $CO_2$ emissions data by vehicle model. The sales data was obtained from Automotive News Europe and adjusted for company ownership (e.g. Renault is attributed 44 percent of Nissan's sales and Nissan is attributed 15 percent of Renault's).

The primary source of $CO_2$ emissions data was the Federal German Transport Agency, as provided to consumers by member states under the third pillar of the European Commission's passenger vehicle $CO_2$ reduction plan. We used 2004 model year data for $CO_2$ emissions. Because we did not have access to sales-weighted $CO_2$ emissions data, we averaged reported $CO_2$ emissions across all model types, which may include variations in engine type (gasoline vs. diesel), engine size (number of liters), body type (coupe, hatchback or other variations), transmission options (manual vs. automatic) and drive options (2WD or 4WD). This approach is less desirable than receiving sales-weighted $CO_2$ emissions data by model type because these variations often impact a vehicle's $CO_2$ emissions performance. Likewise, we account for the enhanced fuel economy of diesel engines by attributing a 20 percent decrease in $CO_2$ emissions to the percent of overall diesel sales for each company, as reported in DeutscheBank's *The Drivers*, 2004. **Because the available data is not sales weighted, it is impossible to know a company's $CO_2$ emissions level with accuracy.**

Using these methods we found that the industry average $CO_2$ emission rate for our 2004 dataset is 22 percent higher than the industry average reported by the European Council for 2002. We cannot determine the extent to which this increase in the average $CO_2$ emissions rate is a function of not having sales weighted data or is an actual increase in emissions by the industry. How this relates to the $CO_2$ emissions levels of individual companies is also unknown. **As a result, we do not publish cost figures for the OEMs but instead provide results to show the relative positioning of OEMs within the industry.**

To estimate the possible costs facing OEMs under each scenario, we developed an analytical model based on each OEM's 2004 European sales and $CO_2$ emissions rates along with cost curves for the European automotive industry. We obtained cost curve data for European diesel and gasoline vehicles from the European Union (Bates et. al., *Economic Evaluation of Emissions Reductions in the Transport Sector of the EU,* 2001). We evaluated two scenarios to reflect possible company commitments under the ACEA Agreement: (1) a corporate average $CO_2$ emissions rate of 140 $gCO_2$/km for each OEM; and (2) a uniform percent decrease in $CO_2$ emissions of 15 percent by each OEM. Our model calculates the lowest-cost combination of technologies that an OEM must add to its existing vehicle fleet to ensure that it meets the target for each of the scenarios. **It is important to note that the analysis holds 2004 sales and diesel/gasoline mix constant and does not take into account changes in sales volume or vehicle mix.**

We also look at each company's strategic positioning for lowering carbon emissions to identify which companies are likely to create value if the Agreement is structured to promote carbon leadership. Specifically, we assess each company's leadership position with respect to diesel and hybrid technology in Europe using the Management Quality results from 2003 WRI/SAM report *Changing Drivers*. We did not include fuel cells or alternative fuels because neither is likely to make significant market penetration before 2008. To reflect the importance of diesels in the European auto market, we weighted management positioning for diesel more heavily (2/3$^{rds}$) than management positioning for hybrids (1/3$^{rd}$). We assess both diesel and hybrid technology in six core areas: company strategy, financial resources, corporate governance, customer relations and brand equity, human capital, and economies of scale. For more information on the Management Quality methodology, please see **http://capitalmarkets.wri.org** or **www.sam-group.com/changingdrivers**.

165 $gCO_2$/km (petrol-fuelled cars: 172$gCO_2$/km; diesel-fuelled cars: 155 $gCO_2$/km; alternative fuelled cars: 177gCO2/km).[1] This is in line with the 2003 intermediate target range of 165–170 $gCO_2$/km. Compared to 2001 this represents a reduction of 1.2 percent in new vehicle emissions. In the final period of the commitment, OEMs will need to accelerate their efforts.

The growth in diesel engines made it easier for OEMs to meet their commitment in the last three years. To meet the 2008 target, OEMs will thus have to increase the annual reduction rate to about 2.8 percent a year from an average annual reduction rate of about 1.8 percent since 1995. While the 2008 target is not out of reach, meeting the voluntary commitment will be increasingly challenging for OEMs as 2008 draws closer.[2]

As part of the 2003 review of the 120 $gCO_2$/km target for 2012, the industry repeatedly raised concerns about the implications of this target on competitiveness.[3] In this context, ACEA commissioned a report suggesting that the implications for competitiveness will be significant. OEMs will have to add on average €4,000 to the price of a car to reach a carbon dioxide emission target of 120 $gCO_2$/km by 2012, according to the study prepared by management consulting firm Arthur D. Little (ADL).[4] Ford estimates that the regulations being introduced over the next five to ten years could add €5,000 to €10,000 to the price of each new car.[5] In intense discussions with ACEA, the Commission expressed reservations about the results, in particular with the underlying costs associated with lower carbon technologies.

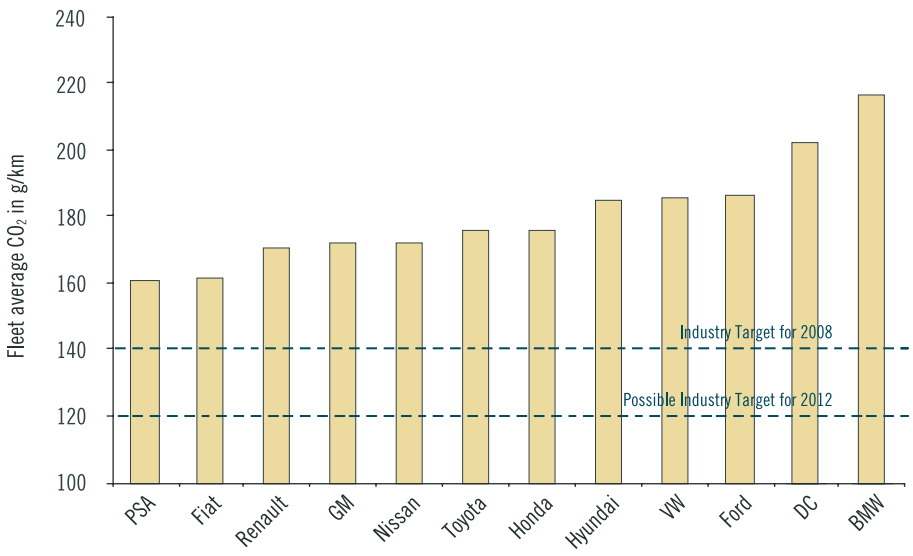
Despite challenges from the industry, the European Commission recently reaffirmed its objective to reduce per-car $CO_2$ emissions to the original goal of 120 $gCO_2$/km by 2005 (or by 2010 at the latest).[6] While there is a clear preference by OEMs to achieve the 120 $gCO_2$/km target based on a second phase of a voluntary ACEA commitment, the Commission is prepared to phase in legislation should the voluntary commitment not deliver. Furthermore, in January 2005 the European Parliament passed a resolution calling on the Commission to put forward legally-binding limits for $CO_2$ emissions from new vehicles.[7]

The latest monitoring report already signals that the European Commission might broaden its strategy in order to include alternative fuels going forward. This would respond to both the growing interest of member states for energy security and the Commission's long term target to increase the share of biofuels to 20 percent of total fuels volume by 2020. The Commission is currently preparing the fundamentals of the new strategy, including economic and technical analyses. Given the rigorous review process, negotiations with ACEA on the strategy proposed by the Commission are not expected to conclude before 2006. The recently appointed CARS 21 group (Competitive Automotive Regulatory System for the 21st Century) may influence these ongoing negotiations.

## SCENARIO ANALYSIS OF OEM COMMITMENTS UNDER THE ACEA AGREEMENT

In Europe, the automotive industry is challenged by fierce competition and downward price pressure. As a result, the industry is opposed to new regulations that could raise costs and thus affect their competitiveness as well as their profitability. While designed as a voluntary agreement, the ACEA commitment effectively represents a *de facto* regulation of vehicle-related $CO_2$ emissions due to the likelihood that the European Commission will regulate the industry should ACEA not meet its 2008 target. This is reinforced by the recent European Parliament's resolution to regulate $CO_2$ emissions from vehicles.

1. 2002 was the first time that the figures are based on data provided to the EU by member states rather than by ACEA. EU member states figures show that the $CO_2$ reduction since 1995 has been slightly less than suggested by ACEA.
2. A recent report by the European Federation for Transport and the Environment (T&E) concludes that if current trends continue, ACEA will at best achieve 80 percent of the gap between 1995 emissions and the 2008 target (or about 150 $gCO_2$/Km). Per Kageson. *Reducing CO2 Emissions from New Cars.* T&E, 2005.
3. **http://www.acea.be/ACEA/20040218PressRelease.pdf**
4. Automotive New Europe. *Scheele asks EU to analyze cost-benefit of new rules.* March 22, 2004.
5. Automotive News Europe. February 23, 2004.
6. Automotive News Europe. November 15, 2004.
7. European Parliament, *Action for a Resolution.* January 6, 2005. 80-0032/2005.




## FIGURE 1: CARBON-INTENSITY OF OEMS, EUROPEAN SALES, 2004

Source: WRI and SAM Research. 2004 data was obtained from Automotive News Europe for sales and the Federal German Transport agency for $CO_2$ emissions. Because sales-weighted $CO_2$ emissions data is not available, $CO_2$ emissions were averaged across all model types (including variations in engine type, etc.) to derive a fleet-wide average for each OEM.

The latest review of progress towards the 2008 ACEA target shows that current fleet average emissions in new European vehicles is 166 $gCO_2$/km.[8] Put another way, 21 percent of new European vehicles sold in 2002 have emissions below the desired 140 $gCO_2$/km, while 79 percent are above the intended target. To meet the first phase target, average $CO_2$ emissions-intensity will have to improve by roughly 15 percent.

The 140 $gCO_2$/km target is likely to be met through a mixture of portfolio restructuring, efficiency improvements in the internal combustion engine and diesel technology. Hence, no major technology shift will be needed to meet this target. The increase in car prices due to lower carbon technologies could lead to reduced sales and lower profitability in the near term for some models. As a result OEMs are already hedging against this development by diversifying into smaller segments (e.g. BMW's 1 and 3 series). On the other hand, some low carbon technologies such as diesel and hybrids might command price premiums and allow for sales growth in the long term.[9]

Using cost information provided in the EU's own economic evaluation of achieving $CO_2$ reductions[10] and the 2002 industry data from the latest monitoring report, we calculate that the industry as a whole faces new capital expenditures of €5.6 billion to meet the 140 $gCO_2$/km standard. Yet it is impossible to determine how this will be distributed throughout the industry without information on company specific commitments and $CO_2$ emissions data.

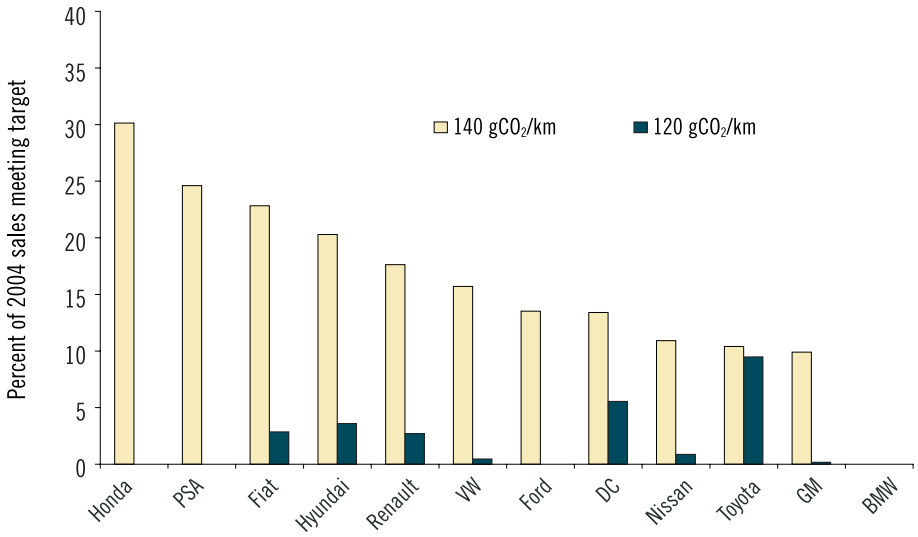
To illustrate the possible competitive implications of the ACEA Agreement for OEMs, we have analyzed OEM exposure on a variety of levels. The follow analyses include: carbon intensity, cost exposure, strategic positioning, and aggregate results.

**The results of these analyses are intended to draw attention to the significance of the ACEA Agreement and are not intended to be a definitive assessment of each company's cost exposure.** Furthermore, these results are also relevant to show the potential implications of mandatory regulations imposed by the Commission should the industry not meet the 2008 target. Without information on OEM-specific commitments, as well as better data and metrics from the companies themselves, analysts have no way to understand the potential cost exposure for OEMs in either case.

## I. CARBON INTENSITY

Figures 1 and 2 reveal the relative carbon intensity of OEMs selling vehicles in the European Union. Companies are very differently po-

8. Joint Report of the European Automobile Manufacturers Association and the Commission Services, *Monitoring of ACEA's Commitment on $CO_2$ Emission Reductions from Passenger Cars*. Final Report September 5, 2003.
9. OEMs in Europe currently receive a premium of €800 to €1,000 per diesel vehicle. Deutsche Bank: *The Drivers*, 2004.
10. Bates et. al. *Economic Evaluation of Emissions Reductions in the Transport Sector of the EU*, 2001.




## FIGURE 2: SHARE OF OEM VEHICLES ACHIEVING 140 AND 120 $gCO_2$/KM IN 2004

Source: WRI and SAM Research. 2004 data was obtained from Automotive News Europe for sales and the Federal German Transport agency for $CO_2$ emissions. Because sales-weighted $CO_2$ emissions data is not available, $CO_2$ emissions were averaged across all model types (including variations in engine type, etc.) to derive a fleet-wide average for each OEM.

sitioned with respect to their average $CO_2$ emission rate and to the share of their vehicles which already meet the 140 and 120 $gCO_2$/km targets. For example, 30 percent of Honda's vehicles already met the 140 $gCO_2$/km target in 2004, while none of BMW's models did.

## II. COST EXPOSURE

Meeting the 2008 target of 140 $gCO_2$/km will require modifications to existing models, including adoption of incremental technologies to improve fuel efficiency, along with the further penetration of diesels. OEMs could also contribute to the ACEA commitments by altering their mix of vehicles to include low carbon vehicles as a higher percentage of their overall portfolio.

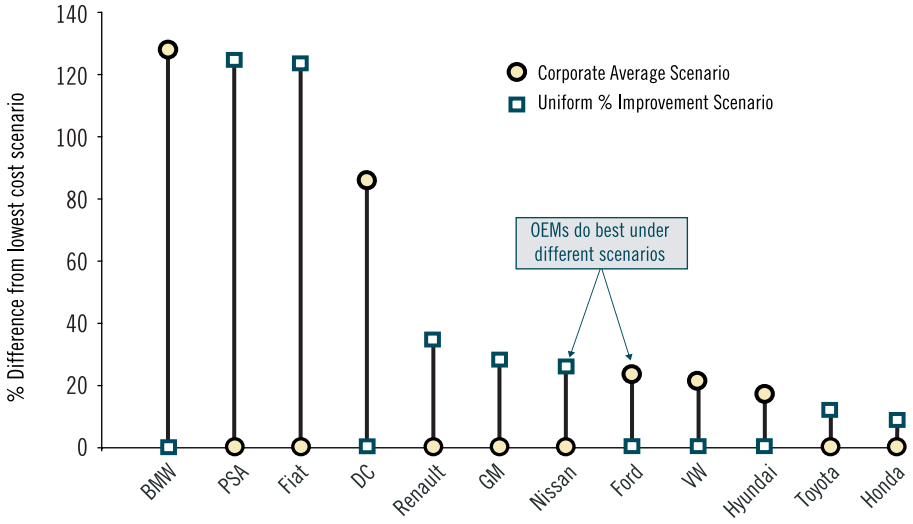
**Without knowledge of how $CO_2$ emission reduction commitments are distributed throughout the industry, it is difficult for stakeholders to determine the capital expenditures required by each company and how they will affect cash flows and debt levels.**

To demonstrate the uncertainty that the ACEA agreement raises, we evaluated two possible means by which the industry could meet its 2008 target (holding 2004 sales constant). The following scenarios are modeled to illustrate the potential variability in possible costs and do not imply that these are the actual approaches used by ACEA:

1. A **corporate average emissions-intensity** approach. Under this approach, each OEM's fleet is assumed to be required to meet the 140 $gCO_2$/km standard. This is a similar framework to the CAFE program used in the United States, but applied across the whole fleet rather than separately to cars and light trucks.
2. A **uniform percentage improvement** approach. Under this approach, each OEM is required to improve its own fleet by the same percentage required by the whole industry to meet its target (15 percent for 140 $gCO_2$/km). If each company can improve its own fleet by a specified percent, the industry average by definition will improve by the same percent.

These two interpretations capture two opposite extremes of how the agreement may impose responsibilities on individual OEMs and have very different implications for OEMs' cost exposure. The first interpretation implies higher relative costs for those companies whose vehicle fleets are the least efficient, while the second interpretation implies the opposite – higher costs for fleets that are already fuel efficient relative to the other scenarios.

Another possibility is that the industry uses a tradable permit system to meet the ACEA target. However, we do not attempt to model this approach because it is too dependent on the assumptions made about the structure of the system, including the level of an emissions cap and penalties for non-compliance. It is also possible that there is no structure to the ACEA Agreement, with each OEM left to determine and implement its own reduction target. Likewise, we do not analyze this scenario because it is impossible for us to determine how each OEM would choose to respond to the ACEA Agreement.




## FIGURE 3: RANGE OF POSSIBLE COST EXPOSURES TO MEET THE 140 $gCO_2$/KM TARGET

Source: WRI and SAM Research

Because of the lack of sales-weighted $CO_2$ emissions data, we present the cost exposure results in relative, rather than absolute terms. Figure 3 graphs the range of possible cost exposures of the two approaches for each company. Not surprisingly, the corporate average scenario is best for OEMs starting from the lowest average emissions rates (PSA, Fiat, Renault, GM, Nissan, Toyota and Honda) while the uniform percentage increase scenario is better for BMW, DC, Ford, VW and Hyundai.

As shown in Figure 3, each company faces a range of possible costs depending on the approach used to meet the ACEA Agreement. The lines reflect the percent difference between the highest and lowest cost scenario for each company. BMW, PSA, Fiat and DC stand out as having the greatest uncertainty with respect to cost exposure, while Toyota and Honda face relatively similar cost exposures in both scenarios.

The lack of transparency regarding OEMs' responsibilities under the Agreement creates marked uncertainty for investors regarding cost exposure and capital expenditure expectations. This uncertainty should cause investors to apply a higher risk factor to auto stocks as a whole until OEM commitments are made clear. Moreover, given the different carbon-intensities of OEMs, the opacity of the Agreement makes it is unclear whether low carbon OEMs are reaping the full rewards of their leadership position on climate change, or whether that leadership is in fact a relatively high burden.

**Without knowing how OEMs will bring the industry to the 2008 target, investors will need to average across all possible scenarios, thereby adding to uncertainty (and hence risk) of holding auto stocks.**

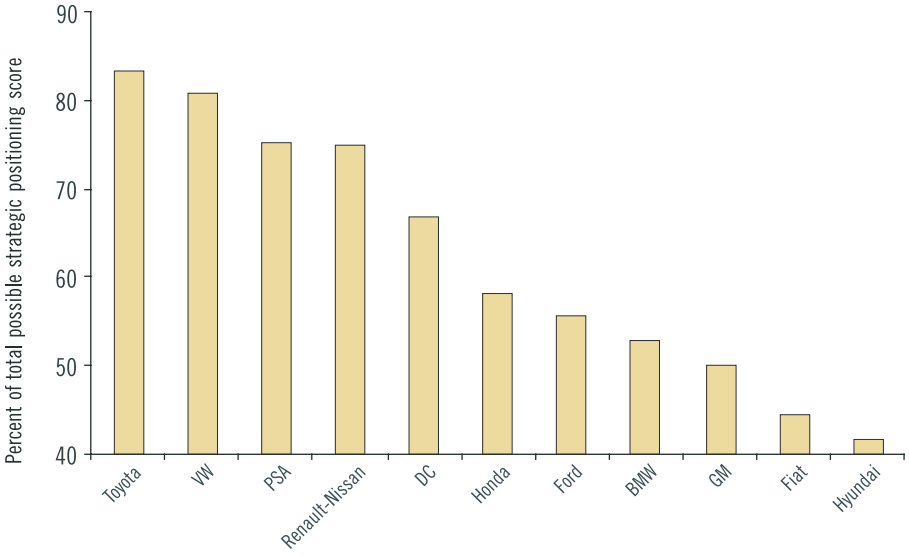
## III. STRATEGIC POSITIONING

The cost exposure analysis assumes equal access to technology. In fact, OEMs are not only differently positioned with regard to vehicle mix, but are also at different stages in developing and implementing key new technologies.

Strategic positioning on lower carbon technologies is critical for long-term competitiveness in the automotive industry.[11] In turn, technology choices are increasingly driven by carbon constraints, such as the ACEA commitment. To meet this commitment, the main technology options through 2008 will be incremental technologies (including gasoline direct injection), diesel, and to a lesser extent, hybrids.

As of 2003, 44 percent of the vehicles sold in the EU were diesel and this is expected to reach from 52 to 58 percent by the end of the decade.[12] Hence, diesels will play an important role in achieving the

11. World Resources Institute and SAM Sustainable Asset Management, *Changing Drivers*. October 2003.
12. Deutsche Bank, *The Drivers*, 2004.




## FIGURE 4: STRATEGIC POSITIONING ON LOW CARBON TECHNOLOGIES

Source: SAM Research and WRI. Renault and Nissan are considered one company in this assessment because their technology strategy will be guided by the same management team.

140 $gCO_2$/km target in 2008. Hybrids have been introduced to the European market but are not expected to make significant market penetration before 2008.

To understand how OEMs are differently positioned with regards to technology to meet the 140 $gCO_2$/km in 2008, we drew upon the Management Quality results from diesels and hybrids from the 2003 WRI/SAM report *Changing Drivers: The Impact of Climate Change on Competitiveness and Value Creation in the Automotive Industry.*[13] Although incremental technologies will be an important factor in companies meeting the 2008 target, they are generally well understood and easily accessible to OEMs, and are therefore not a source of competitive advantage. We did not include fuel cells or alternative fuels because neither is likely to make significant market penetration before 2008. To reflect the importance of diesels in the European auto market, we weighted strategy for diesel more heavily (2/3rds) than for hybrids (1/3rd). The results are shown in Figure 4 based on a qualitative scoring of strategic positioning for each technology in six core areas: company strategy, financial resources, corporate governance, customer relations and brand equity, human capital, and economies of scale.[14]

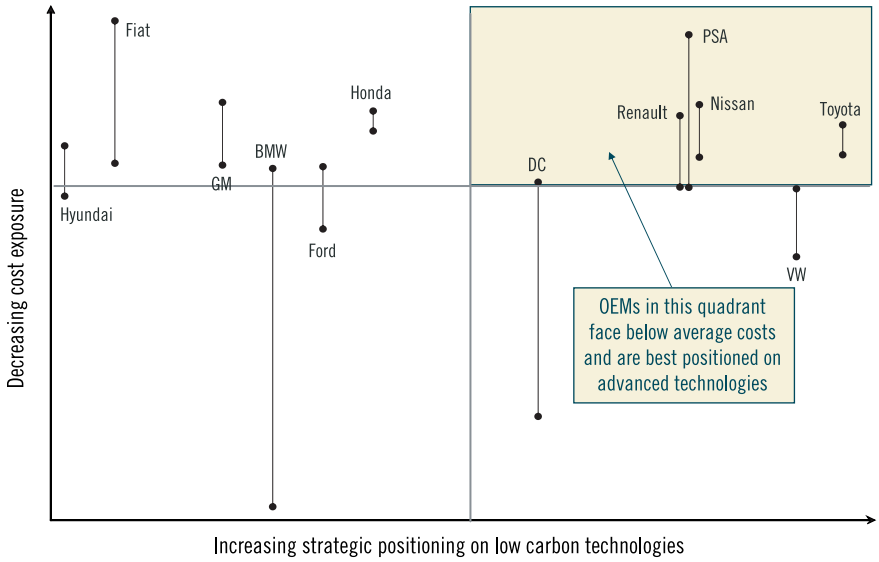
Again, uncertainty about the structure of the agreement means that it is unclear whether the technology leaders are fully capitalizing on their technological leadership or whether technology laggards are getting a free ride off of the innovation of their competitors.

## IV. AGGREGATE RESULTS

The cost exposure and strategic positioning assessments separately analyze how each company may be positioned with respect to the ACEA Agreement. Combining the two results creates a two-dimensional matrix upon which OEMs can be mapped to illustrate how they are positioned with respect to both compliance costs and access to low carbon technologies to meet the 140 $gCO_2$/km target in 2008. In Figure 5, the range of possible costs (from the corporate average and uniform percent increase scenarios) is measured on the vertical axis, while access to diesel and hybrid technologies is measured on the horizontal axis. The top right quadrant (shaded yellow) represents better than average performance on both criteria.

Figure 5 shows that not only are the OEMs differently positioned within the industry, but that they face differently ranges of possible outcomes under different burden-sharing approaches.

13. *Changing Drivers* can be found at **http://capitalmarkets.wri.org** or **http://www.sam-group.com/changingdrivers/**.
14. Please see *Changing Drivers*, Chapter 5, for more detail on the structure of the strategic positioning analysis.




## FIGURE 5: RANGE OF POSSIBLE POSITIONING OF OEMS UNDER THE ACEA AGREEMENT

Source: WRI and SAM Research. The quadrant lines indicate industry averages for cost exposure and strategic positioning. The length of the line for each company shows the range of cost exposures under the two scenarios analyzed in Section II.

# CONCLUSIONS

Toyota stands out as being best positioned regardless of possible approaches to meet the ACEA Agreement. BMW and Fiat, on the other hand, face a wide range of possible cost exposures and have lower than average positioning on low carbon technologies. However, even in its most expensive scenario, Fiat's costs would still be lower than the average for the industry. It is also important to note that BMW, which faces the largest variability with respect to possible costs, produces exclusively premium vehicles and therefore should have a greater ability to pass on these costs to consumers than other OEMs.

The positions of VW, DC and PSA are also uncertain, however these OEMs have above average strategic positioning on diesel technology, an important driver in the European market. Honda has the smallest range of possible costs across scenarios, meaning there is little variability as to how this company will be impacted by the Agreement.

### DISCLOSURE IS CRITICAL

Not only are company commitments and relevant data unknown, OEMs are not disclosing their strategies to address the ACEA Agreement in their financial reports. In a survey of 2003 annual reports, only BMW includes information on their strategy to meet their commitment to the ACEA Agreement. In fact, half of the OEMs surveyed did not even mention the existence of the ACEA Agreement in their 2003 annual reports. Investors need better information and data from OEMs on their carbon strategies and emissions to understand the constraints in the European market.

Although the secrecy of the ACEA Agreement was most likely established to hide the hardest hit companies from the effects of the Agreement, it could adversely affect investors in the European auto sector. The lack of disclosure around the ACEA Agreement means investors cannot make informed decisions because they do not know the relative cost exposure of OEMs. Given the stringency of the 2008 target, it is likely that some OEMs could incur substantial increases in capital and operating expenditures to bring their fleet to the level of $CO_2$ emissions required under the Agreement. Without information pertaining to these costs as well as their potential effect on profit margins, market valuations could be distorted. On the other hand, should OEMs not incur these costs now to meet the 2008 target, they are illustrative of the possible cost implications of a future regulatory regime.

### LOOKING AHEAD

It is expected that the proposed 2012 target of 120 $gCO_2$/km will be substantially more difficult and costly to achieve than the 2008 target, making strategic positioning around low carbon technologies and fuels vital to a company's financial success in this timeframe. The phasing in of EURO 5 air quality standards (expected for 2010) might significantly increase the cost of diesel engines because

after-treatments will become necessary for diesels to meet these standards. It is estimated that future after-treatments to comply with EURO 5 standards will cost more than €1,000 per vehicle.[15] These additional costs are expected to significantly lengthen the payback period for diesel cars and put pressure on sales growth.

The combination of stricter diesel emissions standards in 2010 and a challenging 120 $gCO_2$/km target by 2012 is likely to lead to an increasing hybridization of the product portfolio (including mild hybrids, which use electric power to run accessories but not to propel the vehicle). Moreover, it is likely that the European Commission will broaden its strategy to include lower carbon fuels into the equation for reaching the 2012 target. The degree to which hybrid or alternative fuel vehicles will penetrate the market is unclear, yet both will present a major challenge and opportunity for OEMs seeking to maximize profits under stringent emissions targets.

A 120 $gCO_2$/km target in 2012 will only intensify the need for transparency in the ACEA Agreement. Investors should demand additional disclosures about company-specific commitments, as well as sales-weighted $CO_2$ emissions data from OEMs, to be able to understand the implications of this agreement on cost structures and corporate valuation.

15. HSBC Trinkaus & Burkhardt: *Diesel Leaves Its Dirty Past Behind*. 2004.

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