Emission impossible

Which car makers are driving into trouble?
Executive Summary

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Emission impossible

CDP's sector research for investors provides the best and most tailored environmental data in the market. CDP's team of analysts, voted no. 1 climate change research provider in 2015 by institutional investors, takes an in-depth look at high emitting industries one-by-one, starting with the automotive industry, electric utilities, diversified chemicals and metals & mining. Forthcoming industries include oil & gas, cement and steel industries.

This is the executive summary. The full report is available to CDP investor signatories and includes detailed analysis, methodology and recommended areas of engagement for investors to raise with company management teams. In addition, a separate engagement booklet providing further detail on company specific engagement ideas is available to CDP signatories on request.

For more information see
https://www.cdp.net/en-US/Pages/events/2015/sector-research-for-investors.aspx

Linking emissions-related metrics to earnings for global automakers

◥ We update our Super-League Table for automakers which ranks companies based on a number of emissions-related metrics which in aggregate could have a material impact on company performance.

◥ There are four clear leaders: Nissan, Renault, BMW and Toyota.

◥ There are four clear laggards: Suzuki, Tata Motors, Hyundai and FCA.

Overview

In this report, we update our Super-League Table (SLT) for the global automobile original equipment manufacturers (OEMs), including expanding the scope of our analysis and enhancing the methodology for some metrics. We initiated coverage of the auto OEMs in February 2015 as part of a series of investor-focused reports related to high carbon-emitting sectors. Other industries under our coverage include: European electric utilities (May 2015), global chemical companies (August 2015) and global diversified miners (November 2015). Each report features the CDP Super-League Table which ranks companies in an industry grouping on a number of mostly emissions-related metrics relevant to that industry. When taken in aggregate, we believe these metrics could have a material impact on company earnings and therefore investment decisions.

In this report, we present a Super-League Table that ranks 15 of the top 16 auto OEMs globally (excluding China, by market capitalization); together they represent 90%[1] of the global auto market by sales volume. These are the 15 auto OEMs that responded to CDP's 2015 climate change questionnaire. Kia (ranked 14th by market cap, with 4% global auto market share) did not respond to the questionnaire so is not included in our analysis.

Scope of report: key areas

There are four key areas in our SLT assessment:

◥ **Fleet emissions:** fleet emissions account for approximately 80% of total emissions for the auto industry[2]. Most major global auto markets are regulated on fleet emissions and there are significant penalties for non-compliance. We assess the OEMs' performance against fleet emissions standards in the EU, US, China and Japan, which in aggregate account for nearly 70% of global passenger vehicle demand.

◥ **Advanced vehicles:** battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs) and fuel cell vehicles (FCVs) will increasingly contribute to the OEMs' reduction in fleet emissions. We assess how well OEMs are capturing growth opportunities in this area.

◥ **Manufacturing emissions:** about 17% of the industry's emissions come from the manufacturing stage. We assess the OEMs' performance on upstream (supplier) emissions along with their own manufacturing emissions and adopt this as a proxy for operational efficiency.

◥ **Carbon regulation supportiveness:** using InfluenceMap's[3] proprietary analysis, we assess each OEM's actions in supporting or opposing climate legislation. We believe that supportive firms are most likely to benefit from progressive climate legislation.

Auto industry emissions split by categories

Suppliers' emissions, 14%
Other, 4%
OEMs' own manufacturing emissions, 3%
Fleet emissions, 79%
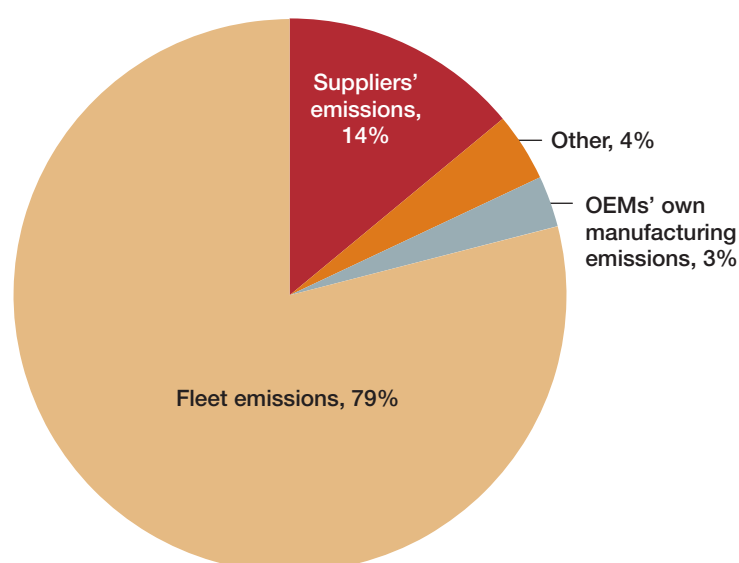
Note: Based on OEMs' responses to CDP's climate change questionnaire in 2015.

Source: CDP

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1. Based on Bloomberg and company data, and assuming 100% of joint ventures sales in China are assigned to the non-Chinese OEM partners.
2. Based on the OEMs in this study.
3. A UK-based not-for-profit organization whose remit is to map, analyze and score the extent to which corporations are influencing climate policy and legislation (www.influencemap.org).
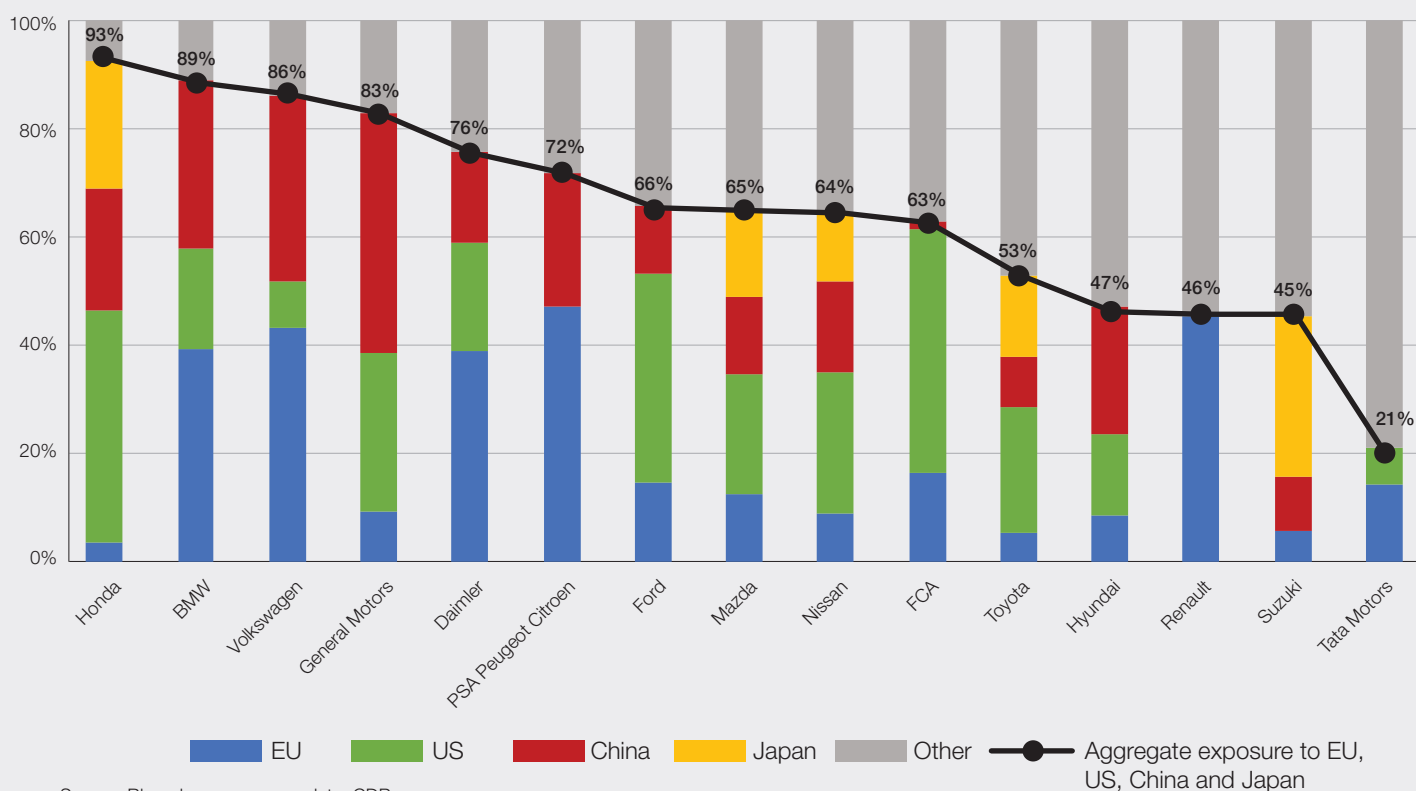
Condensed summary of the Super-League Table for global OEMs

2016 SLT rank	2015 SLT rank	OEM	Country	Market cap 2015 (USDbn)	Global market share (2014)	Overall SLT Score	Fleet emissions grade	Advanced vehicles grade	Manufacturing emissions grade	Carbon regulation supportiveness grade	CDP performance band (i)
1	1	Nissan	Japan	45.0	7%	4.42	C	A	D	A	A
2	3	Renault	France	27.5	3%	4.87	B	A	B	A	A-
3	8	BMW	Germany	70.0	3%	5.34	B	B	A	B	A
4	2	Toyota	Japan	222.0	11%	5.76	A	B	B	B	B
5	5	Daimler	Germany	95.2	3%	7.05	A	C	A	E	A-
6	7	Honda	Japan	59.3	4%	7.30	C	D	D	A	A-
7	10	Ford	US	59.3	8%	7.38	C	B	D	D	B
8	9	PSA Peugeot Citroen	France	14.0	4%	7.41	C	D	C	B	A-
9	4	Mazda	Japan	11.9	2%	7.94	A	E	A	D	B
10	12	General Motors	US	54.6	13%	8.39	E	B	D	B	A-
11	6	Volkswagen	Germany	97.1	13%	8.70	E	A	A	C	N/A
12	11	FCA	Italy	19.0	6%	9.29	D	D	A	E	A
13	13	Hyundai	South Korea	30.5	6%	9.63	D	C	C	E	C
14	14	Tata Motors	India	22.1	1%	10.27	C	E	E	C	C
15	N/A	Suzuki	Japan	18.1	4%	11.14	D	E	E	C	C
			Total		89%						
			Weights for each area				**40%**	**30%**	**15%**	**10%**	**5%**
			Adjusted weighting for VW				**42%**	**32%**	**16%**	**11%**	

(i) This is the CDP annual performance band (A to E) awarded to companies that respond to CDP Climate Change Questionnaire. The distribution of A to E grades is awarded relative to 2,233 companies that respond to CDP. As Volkswagen withdrew its response to CDP after its emissions scandal, it is not ranked and graded in this area.

Source: CDP

Vehicle sales split by geography in 2014

Legend: EU, US, China, Japan, Other, Aggregate exposure to EU, US, China and Japan

Source: Bloomberg, company data, CDP

Key findings

We note three key themes arising from our research:

◤ Around 80% of the global passenger vehicle market has some form of regulation on fleet emissions, and the regulation is tightening. However, we believe that the regulation needs to become even tighter, even quicker if global warming is to be limited to a 2-degree rise. We believe that regulators addressing the significant divergence between lab-tested results and real-driving emissions will go some way to dealing with this, although more still needs to be done. In our view, some OEMs are overly relying on generous credits which are available as regulators transition towards tighter standards.

◤ Investment in advanced vehicle technologies, such as BEVs and PHEVs, needs to be accelerated, especially as there could be a reversal in demand for diesel vehicles. In light of increasing pressure to deal with urban air pollution, and compounded by Volkswagen's NOx emissions scandal, major European cities are considering measures to discourage diesel vehicles, e.g. Paris has proposed a ban on diesel vehicles by 2020. A reduced exposure to diesel vehicles can have a negative impact on CO_2 emissions, as diesel vehicles typically emit less on a like-for-like basis, which is accentuated for larger vehicles. We favor those OEMs that are increasing their focus on advanced vehicles so that they are more flexible and better prepared for policy changes that discourage diesel vehicles. Some OEMs are lagging seriously behind in this area.

◤ Half the OEMs were found to be mildly supportive of low carbon regulation and the other half mildly obstructive. There were no real extremes of stance, as with other industries. In addition, the auto industry appears to have no regional trends, possibly due to the global nature of auto sales (unlike other industries where regulation is based on location of manufacturing facilities, the auto industry is regulated according to emissions of vehicles sold).

Leaders and laggards

Our SLT identifies those companies that consistently outperform across all key areas and those that consistently underperform:

◤ Kia is the only one of the top 16 auto OEMs globally that did not respond to CDP's climate change questionnaire in 2015 and therefore is not included in our analysis. Investors should ask Kia why it is not providing sufficient transparency on its carbon emissions and business strategy to deal with rapidly changing legislation.

◤ There are four clear leaders, Nissan, Renault, BMW and Toyota (with SLT scores ranging from 4.42 to 5.76), followed by a close middle section, fifth place Daimler to ninth place Mazda (with SLT scores ranging from 7.05 to 7.94), and then there are four clear laggards (Suzuki, Tata Motors, Hyundai and FCA, with SLT scores ranging from 11.14 to 9.29).

◤ Nissan retains last year's top position with an overall SLT score of 4.42, notably ahead of second place (SLT score 4.87). It maintains its leadership in advanced vehicles (where it receives an A-grade) as its LEAF is the best-selling battery electric vehicle globally.

◤ Renault is ranked second, improving slightly from last year's third position due to its progress in advanced vehicles and manufacturing emissions. Its battery electric vehicle Zoe receives the best score in our technical review of advanced vehicles. Together with its partner in the Renault-Nissan Alliance, it receives an A-grade in carbon regulation supportiveness as it appears to be supportive of progressive low-carbon regulations.

◤ BMW is ranked third. It improves significantly from last year's eighth rank mainly due to its support for positive climate regulations and its aggressive development pipeline of plug-in electric vehicles (PHEV). As such, it achieves a B-grade in our new carbon regulation supportiveness key area and its advanced vehicles grade is upgraded to a B-grade (from a C-grade in 2015). It is also a clear leader in managing its upstream emissions, achieving an A-grade in the manufacturing emissions key area.

◤ Toyota is ranked fourth, slightly down from second place last year. It scores well again for fleet emissions across all markets except for China (although we believe it is still on track to meet its China 2015 target). Toyota is the most active OEM in developing hydrogen fuel cell vehicle (FCV), although at the cost of shifting away from BEV technology. As such, Toyota receives a B-grade for advanced vehicles, down from an A-grade last year. On a positive note, it achieves a B-grade for manufacturing emissions, notably higher than the D-grade achieved last year.

◤ Daimler keeps its fifth place. It has an improvement in both fleet emissions (A-grade in 2016, versus B-grade in 2015) and advanced vehicles (C-grade in 2016, versus D-grade in 2015), but has a disappointing performance in carbon regulation supportiveness, where it received an E-grade. Daimler is a clear laggard in this key area due to its continued opposition to the fleet emissions regulations in the EU and US.

- Honda is ranked sixth, slightly up from last year's seventh place. It receives an A-grade in our new carbon regulation supportiveness key area, but a D-grade for advanced vehicles, down from a B-grade last year - it discontinued both of its advanced vehicles (FIT, a BEV, and Accord PiH, a PHEV) in 2015, although we also acknowledge it has a development pipeline of AVs.

- Suzuki is a clear last place. It is a new entrance to the SLT as 2015 was the first year that it responded to CDP's climate change questionnaire. Its overall SLT rank is mainly dragged down by its poor performance in advanced vehicles and manufacturing emissions. It is one of only two OEMs that do not have market-ready advanced vehicle offerings.

- Tata Motors is ranked second from bottom, a slight improvement from last year's bottom rank. It receives a C-grade in fleet emissions and E-grades in both advanced vehicles and manufacturing emissions. It is one of only two OEMs that do not have market-ready advanced vehicle offerings in the markets we analyze, and also has poor management of supplier emissions.

- Hyundai is ranked third from bottom. It receives a D-grade for fleet emissions, performing badly across all key markets. It received an E-grade for carbon regulation supportiveness as it appears to be obstructive towards low carbon regulation. Its performance in advanced vehicles is mixed: it has an insignificant sales history of advanced vehicles but it is one of the few OEMs that are actively developing FCV technology with models available in the market.

- FCA is ranked twelfth with a consistently bad performance in fleet emissions, where it receives a D-grade. We believe it is at risk of missing targets for EU 2021, US 2016 (for passenger vehicles) and China 2015 (for imported vehicles). It receives a D-grade for advanced vehicles, down from a B-grade last year due to a lack of focus on advanced vehicles – its only sales are from a 'compliance vehicle' in the US (in order to gain access to the Californian vehicle market).

- Volkswagen is ranked in eleventh, compared to sixth place last year. It receives an E-grade for fleet emissions, down from a C-grade last year, due to its emissions scandal. On the positive side, it achieves an A-grade for advanced vehicles (up from C-grade in 2015) and an A-grade for manufacturing emissions (same as 2015). It launched five new models of advanced vehicles last year, contributing to a three-fold increase in advanced vehicles sales volume globally, and has the most aggressive manufacturing emissions reduction target, at an annual reduction rate of 3.5%.

- Mazda is ranked ninth, down from fourth place. It has a mixed performance across the key metrics. It receives an A-grade in the overall fleet emissions, but an E-grade in advanced vehicles – and suffers as we now assign a higher weighting to advanced vehicles key area (30% in 2016 compared to 25% in 2015). In addition, it receives a D-grade for carbon regulation supportiveness, which is the lowest grade amongst the Japanese OEMs.

Penalties

- General Motors and Ford are at notable risk of penalties in both the EU and US; these penalties could potentially equate to a combined US$1.8 billion (114% of EBIT) and US$1.2 billion (27% of EBIT) respectively.

- In addition, we estimate that FCA is at risk of a penalty in both the EU and US totaling US$ 573 million (or 17% of EBIT).

- BMW, Hyundai, Daimler and Honda are all at risk of a penalty in either the EU or US.

- The potential penalties facing OEMs at risk of missing their targets are CDP estimates. They are based on the assumption that generous credits will not always be available to OEMs, as we believe global regulations need to become tighter in order to align with science-based targets to limit global warming to a 2-degree rise. The penalties are for illustrative purposes only.

Linking our findings to investment choices

We recognize that investment decisions are based on a multitude of different factors and that some of these can be misaligned with emissions-reduction efforts.

Our SLT rankings are not intended as definitive winners and losers for investment purposes, but rather as a proxy for business-readiness in an industry likely to be significantly impacted by the more stringent carbon regulation needed to meet long-term climate objectives.

We would flag that companies towards the bottom of our SLT are possibly higher risk-investments from a sustainability perspective than those towards the top.

Methodology

We score each OEM based on a number of different metrics which are first ranked and then weighted within each of the four key areas (see below for individual weightings) to produce a weighted rank for each key area with an accompanying grade (A to E). We calculate the overall SLT score by apportioning the weighted ranks for each key area according to their respective weights.

Each of the key areas has a separate chapter within this report with accompanying information on the precise methodology for how we rank and grade each metric.

In addition to the four key areas, we also include CDP's climate score for 2015 in the SLT. It scores 2,233 companies that respond to CDP's investor-backed climate change questionnaire based on their climate change readiness. A high overall score is a sign of completeness of the response to the questionnaire and implies a well-run business and forward-looking management team that is transparent about how climate change affects its business.

Following Volkswagen's emissions scandal, there is some doubt concerning the credibility of its CO_2 emissions data submitted to regulators; thus we assign Volkswagen the joint-lowest rank (and an E-grade) in the EU, US and China fleet emissions analyses (it does not have exposure to Japan). This gives it an E-grade for fleet emissions and negatively impacts its rank in the SLT. Volkswagen is ranked eleventh place overall; however, would be ranked fifth if we used emissions data submitted by Volkswagen to the respective regulators.

For further study

Areas of further interest to analyze include:

▼ Quantifying the cost per OEM of complying with the fleet emissions targets in each region. Cost may include R&D spend on both increasing the efficiency of internal combustion energy (ICE) vehicles and advanced vehicles (includes BEV, PEV and FCV), and the purchase of credits (provided there is a vehicle credit trading market with transparency on the price of credits).

▼ An extension of our study to include light commercial vehicles, as well as trucks (and heavier vehicles) where relevant.

▼ An expansion of the fleet emissions study to other countries and regions including South Korea, India and Latin America.

Summary of key areas, associated metrics and relative weightings within the Super-League Table

Key area in SLT	Link to company earnings	Metrics	Key area weighting in SLT	Metric weighting within each key area
Fleet emissions	Significant financial penalties for non-compliance.	i) EU fleet emissions ii) US fleet emissions iii) China fleet emissions iv) Japan fleet emissions	40%	Varies based on OEMs' sales exposure to each market
Advanced vehicles	Potentially explosive market growth opportunity, in particular in China. Early movers will benefit, laggards may miss out.	i) Technical review ii) Sales review iii) Other considerations	30%	40% 50% 10%
Manufacturing emissions (i)	Manufacturing emissions reduction is a proxy for increased manufacturing efficiency. Efficient manufacturing can enhance financial performance.	i) Manufacturing emissions performance ii) Suppliers' emissions reporting and engagement iii) Emissions reduction targets iv) Emissions data transparency	15%	40% 20% 20% 20%
Carbon regulation supportiveness	Use of lobbying and political engagement influence to support or oppose progressive climate policies for a low-carbon future.	i) InfluenceMap score	10%	100%
CDP performance band	Proxy for management quality.	i) CDP annual performance score	5%	100%

i) The four items shown here within manufacturing emissions are the four areas covering seven metrics.

Source: CDP

4. Volkswagen's internal investigation revealed "irregularities" in CO_2 emissions levels and it set aside EUR 2bn in contingency funds on the issue (in addition to the EUR 6.7bn set aside for the NOx emissions scandal).