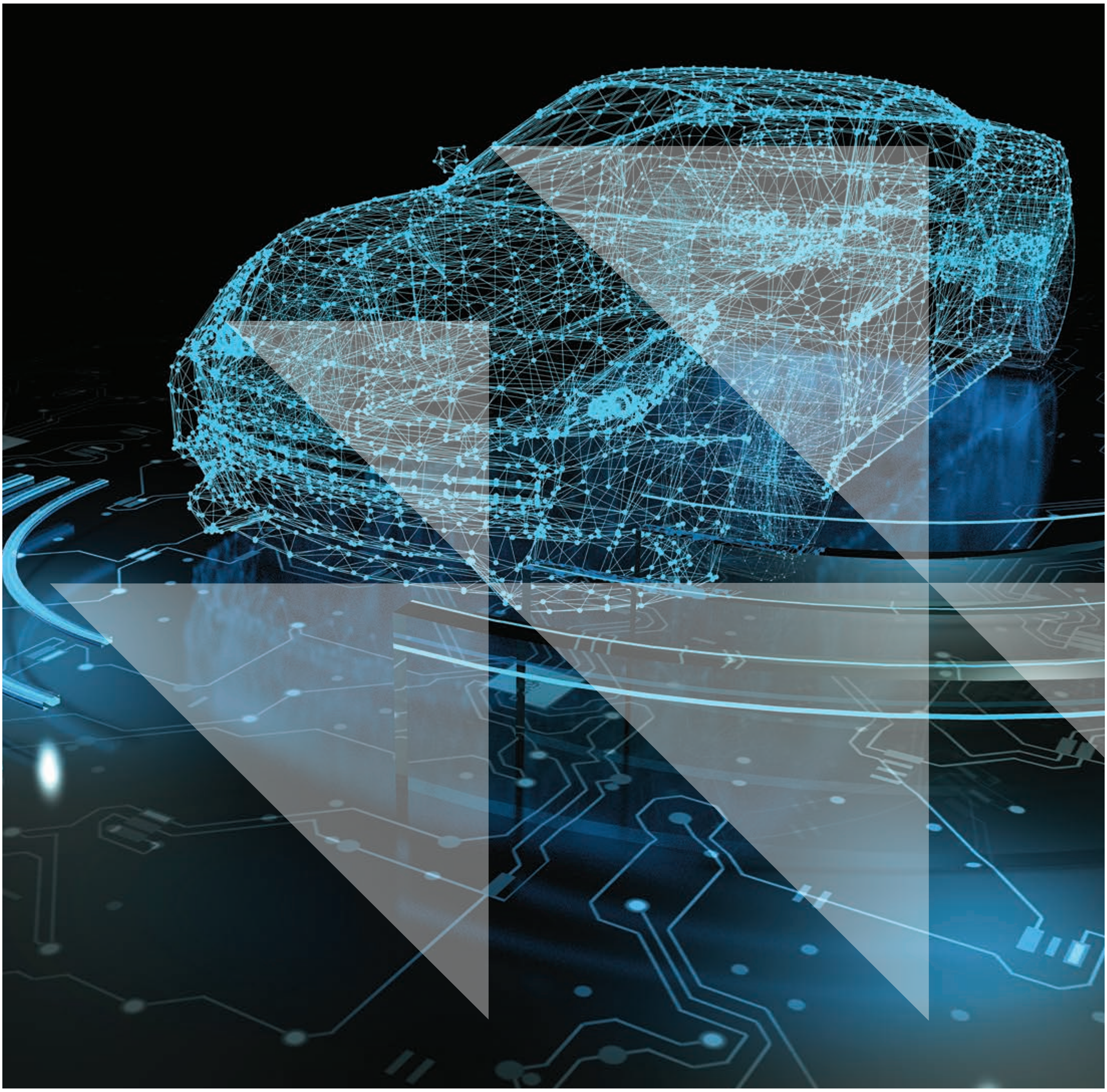
Driving disruption

Which automotive companies will seize the opportunities in a low-carbon economy?
Executive Summary

January 2018



Authors: Luke Fletcher, Kane Marcell and Tom Crocker

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Authors:
Luke Fletcher
Kane Marcell
Tom Crocker

Acknowledgements:
Sebastian O'Connor
John Hekman
Peter Uhlenbruch
James Smyth

Linking climate-related metrics to earnings for automotive companies

This report updates and expands CDP's research and League Table for the global automobile original equipment manufacturers (OEMs), first published in February 2015 and again in March 2016. It ranks 16 of the largest publicly listed automotive companies on business readiness for a low-carbon transition. The companies in aggregate represent 79% of the global passenger vehicle market by sales volume.

The automotive sector is reaching a tipping point; facing disruptive forces from advanced vehicles[1] and autonomous, shared driving. Tightening emissions regulations[2] and country quotas are forcing companies to increase penetration rates of low-emission vehicles. OEMs face challenges from tech players and profits are shifting towards tech / software suppliers and ride-sharing services.

Incumbent OEMs may see these challenges as threats to existing business models but to be successful they must embrace the new opportunities and markets that will become available over the coming years.

There are three key areas assessed in the League Table, which have been aligned with recommendations for company reporting from the G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD):

Transition risks: We assess companies' fleet emissions performance and progress towards meeting emissions standards in the EU, US, China and Japan.[3] We also rank companies on manufacturing emissions and energy intensity performance and identify which OEMs may be more resilient to disruptive technologies and market risks.

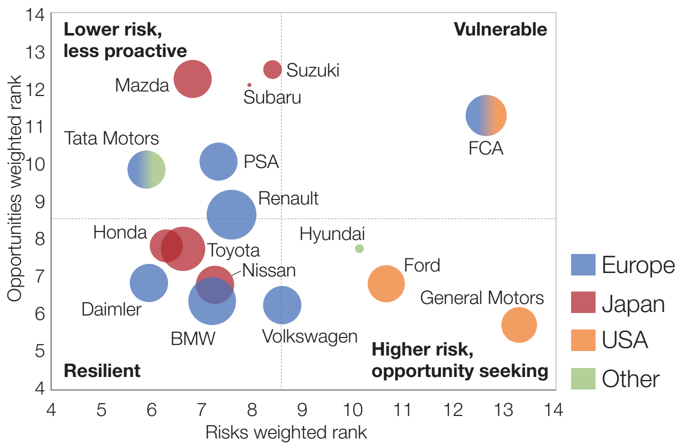
Transition opportunities: We assess companies' progress and strategy in the areas of advanced vehicles, autonomous driving vehicles (ADVs) and mobility as a service (MaaS), as well as R&D activity and renewable energy use.

Climate governance and strategy: We analyze companies' governance frameworks including emissions reduction targets, supplier engagement, water use and alignment of governance and remuneration structures with low-carbon objectives.

Key findings

- Highest ranked companies are **BMW, Daimler** and **Toyota.** Lowest ranked are **Suzuki, FCA** and **Subaru.**
- **Tata Motors** shows the most improvement, **Renault** has the largest fall in League Table rankings relative to 2016.
- 2017 saw a **profusion of OEM targets for low-emission and autonomous vehicles** – the most aggressive see fully autonomous (Level 4) self-driving services as early as 2019 and up to 25% of sales from battery electric vehicles (BEVs) by 2025.
- Since 2015 OEMs and technology companies have **invested more than $80 billion in companies developing MaaS and ADV** capabilities.[4]
- **China will play a pivotal role in auto sector disruption,** the largest vehicle market in the world has aggressive targets for new energy vehicles (NEVs).
- **Companies show some resilience to disruptive technologies** through exposure to emerging markets, luxury vehicles, high margins and diversification in areas such as trucks, motorbikes and machinery.
- **R&D % of sales is high compared to most sectors but lower than tech players entering the market.** In the face of this new competition, OEMs are beginning to focus more spend on disruptive tech, Japanese OEMs lead on advanced vehicle innovation and US OEMs on ADVs.
- **OEMs are at risk of missing fleet emissions targets:** average emissions reduction rate since 2010 of 2.9% p.a. compared to 5.3% p.a. required to avoid financial penalties.
- **OEMs will face tougher fleet emissions testing**[5] and with rising popularity of SUVs and diesel sales in decline, companies are forced to increase the share of advanced vehicles to meet targets and avoid paying regulatory fines.
- **Manufacturing efficiency is on an improving trend** – 15 of 16 companies have taken steps to reduce emissions and energy intensity of operations.

Figure 1: Opportunity vs. risk for low-carbon transition



Bubble size: Larger bubble size = stronger performance on climate governance & strategy
Source: CDP

1. Advanced vehicles includes vehicles such as fuel cell vehicles (FCVs), battery electric vehicles (BEVs) and plug-in hybrid vehicles (PHEVs).
2. Road transport accounts for 17% of global CO_2 emissions (of which 66% is from light road and 34% from heavy road transport), IEA ETP 2017.
3. In aggregate the EU, US, China and Japan account for 74% of passenger vehicle demand.
4. $11 billion directly attributable to the 16 companies in this report.
5. Many regions will be implementing the Worldwide Harmonized Light Vehicles Test Procedures (WLTP) in future.

The summary League Table below presents headline company findings. It is based on detailed analysis across a range of carbon and transitional indicators which could have a material impact on company performance. The League Table is designed to serve as a proxy for business readiness in an industry which faces significant disruption as new technologies revolutionize the sector and governments increase efforts to implement the Paris Agreement. Companies placed towards the bottom are deemed less prepared for a low-carbon transition.

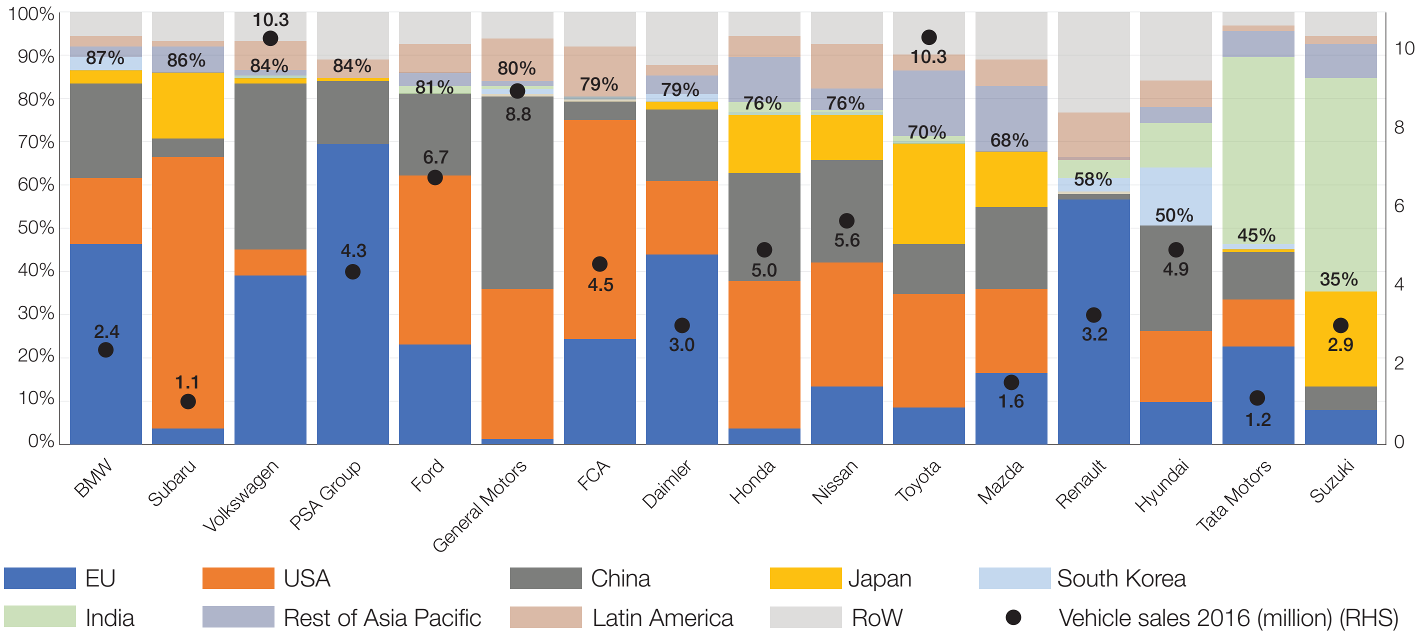
Figure 2: League Table summary [i]

League Table rank	2016 League Table rank	Company [iii]	Ticker	Country	Average market cap 2017 (US$bn)	Unit sales Global market share (2016 - Q3 2017)	League Table weighted rank	Managing transition risks rank	Transition opportunities rank	Climate governance & strategy rank
1	3	BMW	BMW GR	Germany	62	2%	6.31	6	3	2
2	5	Daimler	DAI GR	Germany	81	3%	6.42	2	5	6
3	4	Toyota	7203 JP	Japan	188	11%	6.87	4	8	3
4	1	Nissan	7201 JP	Japan	42	6%	6.91	7	4	5
5	6	Honda	7267 JP	Japan	54	5%	7.24	3	9	13
6	11	Volkswagen	VOW GR	Germany	82	11%	7.30	12	2	8
7	2	Renault	RNO EU	France	28	3%	7.39	9	10	1
8	14	Tata Motors [ii]	TTMT IN	India / UK	22	1%	7.70	1	11	9
9	8	PSA Group	UG FP	France	19	4%	8.33	8	12	7
10	7	Ford	F US	USA	47	7%	8.49	14	6	11
11	9	Mazda	7261 JP	Japan	9	2%	9.05	5	15	10
12	10	General Motors	GM US	USA	56	9%	9.18	16	1	12
13	13	Hyundai	005380 KS	South Korea	30	5%	9.93	13	7	15
14	15	Suzuki	7269 JP	Japan	23	3%	10.68	11	16	14
15	12	FCA	FCAU US	Italy / USA	20	5%	10.79	15	13	4
16	n/a	Subaru	7270 JP	Japan	28	1%	11.04	10	14	16
					Total	79%				
Weighting								**40%**	**40%**	**20%**

(i) Weighted ranks are calculated for each area. We display non-weighted ranks in this summary for simplicity only.
(ii) Analysis for Tata Motors includes fully owned subsidiary Jaguar Land Rover.
(iii) Kia, Geely (owns Volvo) and Great Wall Motors are non-responders to CDP's 2017 climate change questionnaire and are therefore not included in this report. We encourage investors to raise this lack of transparency in discussions with company management.

Source CDP

Figure 3: Vehicle sales split by region (2016)[i]



(i) Excludes motorcycle sales.
Source: CDP, company reports, Marklines, Bloomberg

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CDP Investor Research

Carole Ferguson
Head of Investor Research
+44 (0) 20 3818 3956
carole.ferguson@cdp.net

Marco Kisic
Senior Analyst,
Investor Research
+44 (0) 20 3818 3961
Marco.kisic@cdp.net

Luke Fletcher
Senior Analyst,
Investor Research
+44 (0) 20 3818 3951
luke.fletcher.cdp.net

Christie Clarke
Analyst,
Investor Research
+44 (0) 20 3818 3961
christie.clarke@cdp.net

Kane Marcell
Analyst,
Investor Research
+44 (0) 20 3818 3951
kane.marcell@cdp.net

Tom Crocker
Analyst,
Investor Research
+44 (0) 20 3818 3935
tom.crocker@cdp.net

James Smyth
Analyst,
Investor Research
+44 (0) 20 3818 3935
james.smyth@cdp.net

CDP contacts

Frances Way
Co-Chief Operating Officer

Rick Stathers
Global Director, Investor Initiatives
+44 (0) 20 3818 3956
rick.stathers@cdp.net

Emily Kreps
Head of Investor Initiatives
North America
+1 646 517 6470
emily.kreps@cdp.net

Cynthia Simon
Senior Manager,
Investor Initiatives
North America
+1 646 517 1469
cynthia.simon@cdp.net

Maria Lombardo
Investor Engagement Manager
Investor Initiatives
+44 (0) 20 3818 3928
maria.lombardo@cdp.net

Sebastian O'Connor
Senior Project Officer,
Investor Initiatives
+44 (0) 20 3818 3928
sebastian.oconnor@cdp.net

Laurent Babikian
Director of Investor Engagement
CDP Europe
+33 658 66 60 13
laurent.babikian@cdp.net

CDP Board of Trustees

CDP UK
71 Queen Victoria Street
London EC4V 4AY
United Kingdom
Tel: +44 (0) 203 818 3900

@cdp
www.cdp.net
info@cdp.net