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Focus Electric

Preparing for Strategy 2025

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AGENDA

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CHALLENGES

- Consumers no longer trust VW
- Diesel is losing market-share worldwide
- VW are not focusing on the right geographies

STRATEGY

Focus Electric for 2025

TACTICS

- Gradually withdraw from diesel and focus on electric vehicles
- Stay in the US, and target select areas of Asia and Europe

OUTCOMES

- Survive the $30B emissions scandal
- Become a global market leader in electric vehicles
- Position to take advantage of growth in emerging markets by 2025

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COST OF EMISSIONS SCANDAL

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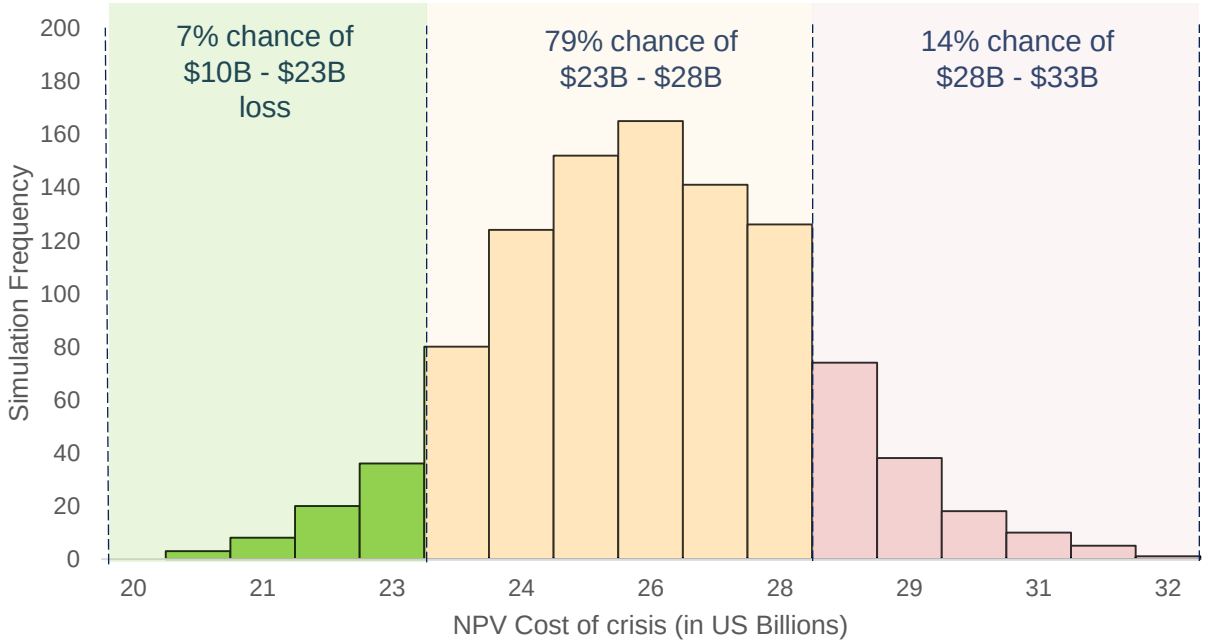
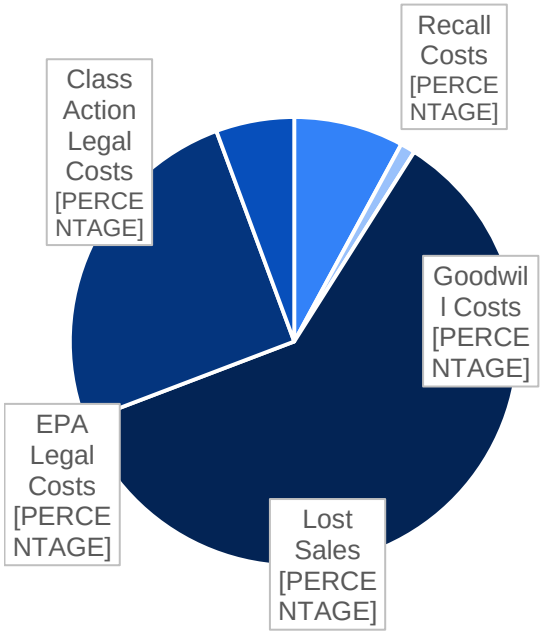
Simulations showed that there is a 79% probability that the crisis costs between $23B and $28B USD over the next 10 years

Monte Carlo Crisis Cost NPV Analysis (10 year timeline)



Breakdown of Costs



Single figure estimates are inadequate		
Forbes	VW internal	Credit Suisse
$25.7B	6.75B	$87.3B

Variables are still unknown so a range is required for reliable and accurate forecasting

Non-quantifiable costs

Customers have lost trust in Volkswagen, and are moving away from diesel vehicles

General Customer Perceptions

1. Volkswagen Group is no longer a trustworthy, especially with regards to diesel vehicles
2. Volkswagen is failing its commitment to the environment
3. Diesel engines are less powerful, with substandard fuel economies and more emissions

Key Takeaways

- Volkswagen will not be able to fully regain trust in the short term
- VW Diesel vehicles in particular have an incredibly bad reputation
- VW must look beyond their traditional petrol and diesel offerings to build new trust with new products

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DIESEL ANALYSIS

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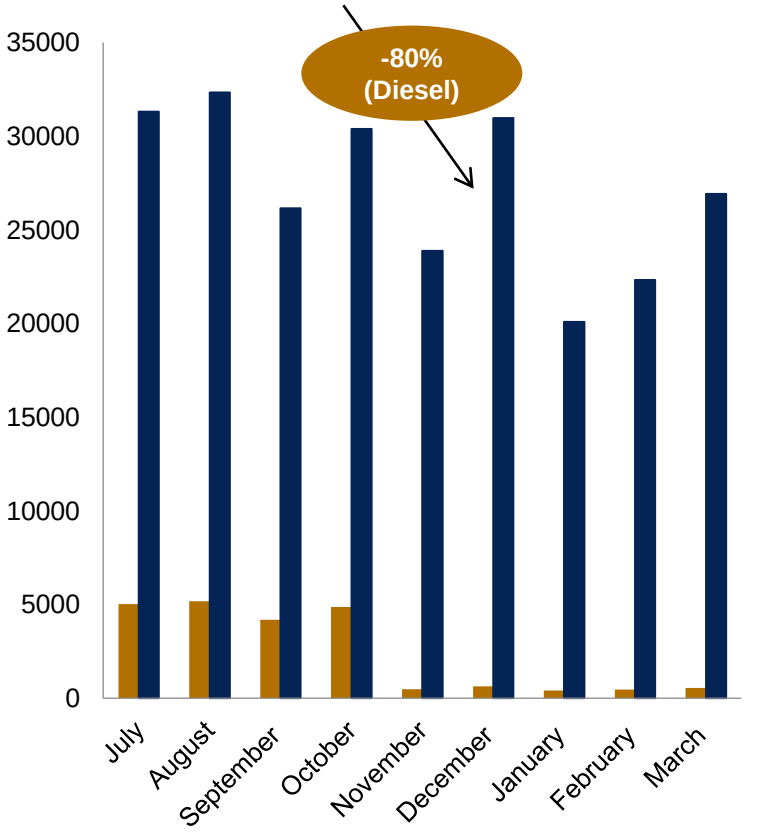
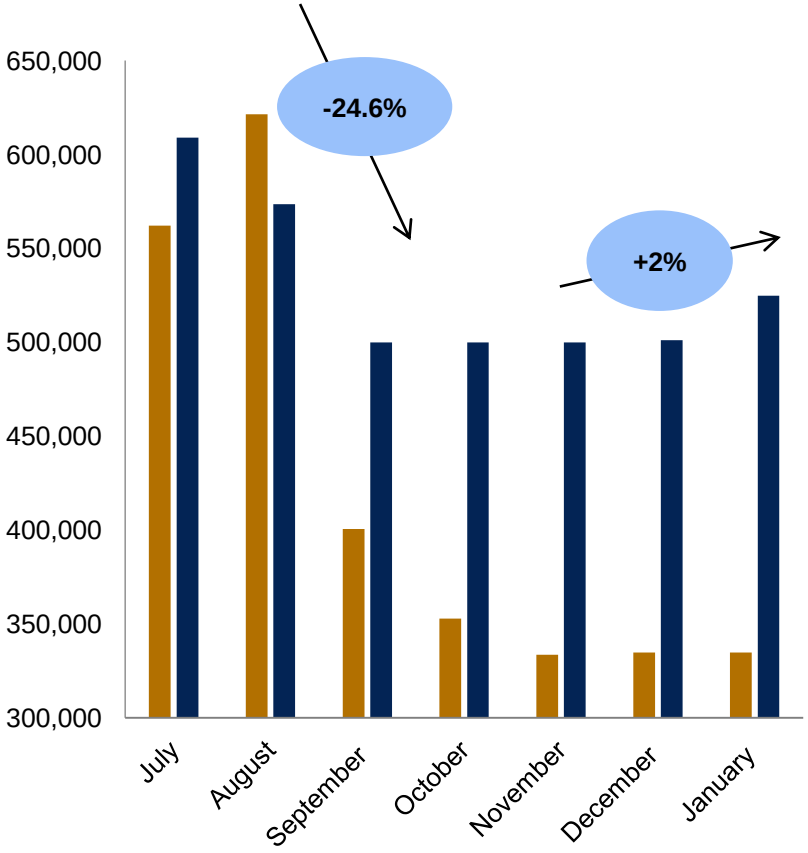
The scandal has diminished diesel sales globally for VW but early 2016 sales figures are positive

VW USA Brand Sales 2015 - 2016



Global VW Sales 2015 - 2016



Non-Diesel Sales Diesel Sales

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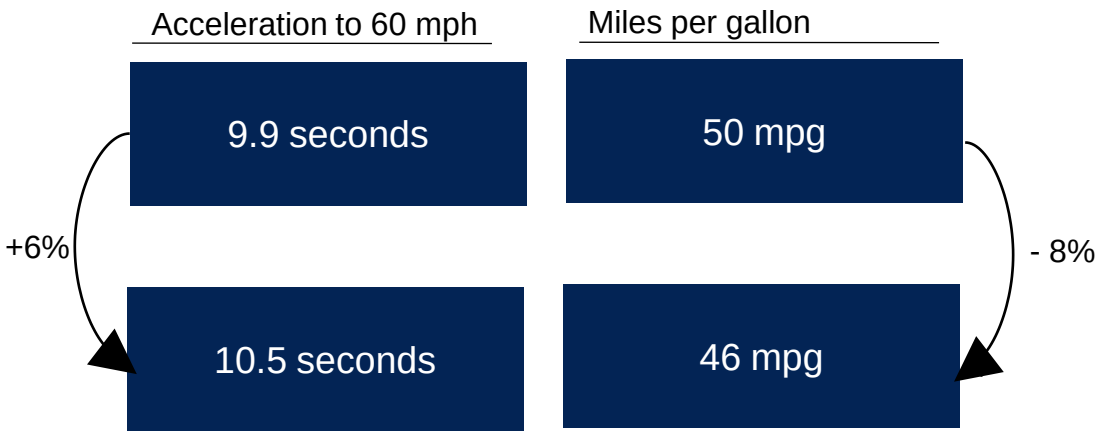
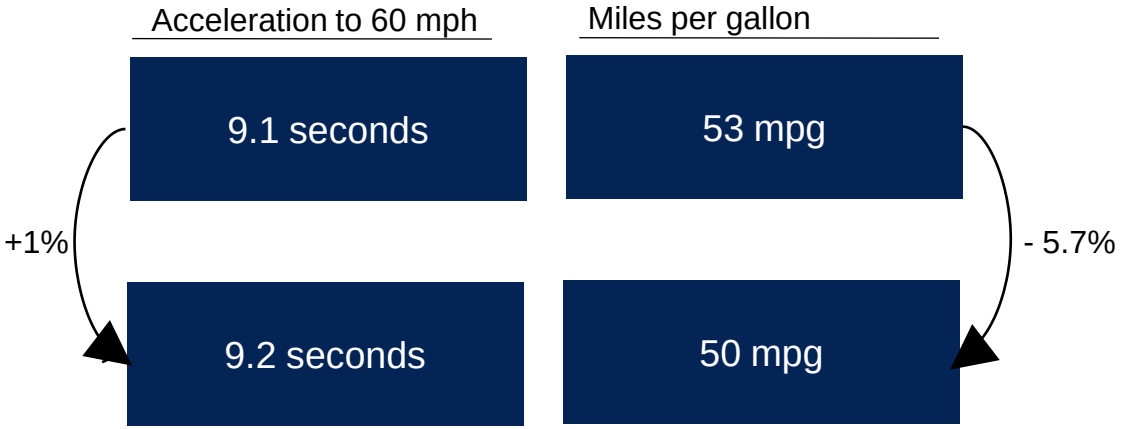
VW vehicles with a defeat device no longer perform which has lowered confidence and trust in VW diesel vehicles overall

Jetta Sportswagen 2011

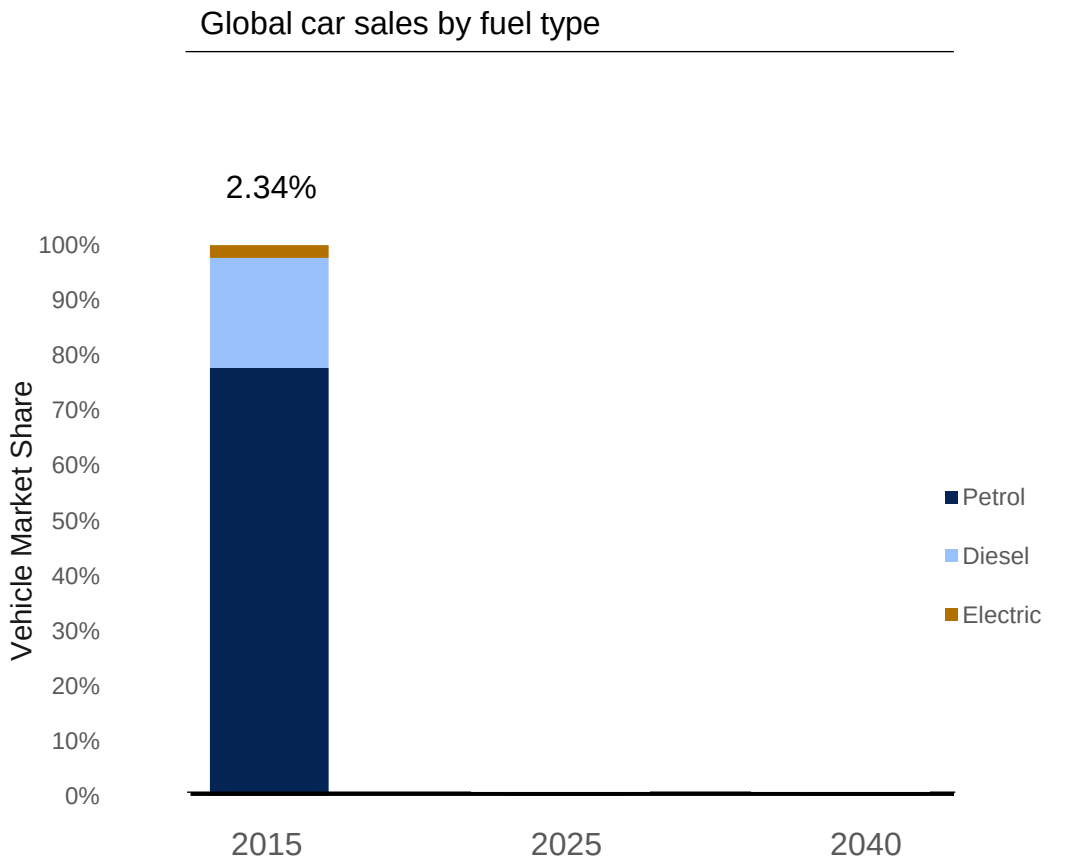


Jetta TDI 2015



Poor Diesel Performance

Diesel is predicted to shrink while EVs are predicted to take a huge piece of the market



VW must be positioned to succeed in a changing market

Diesel vehicles will become less common while EV market share grows

VW should establish a strong position to move into the next phase of growth

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ELECTRIC VEHICLE FOCUS

TRANSPORTATION CARS TESLA

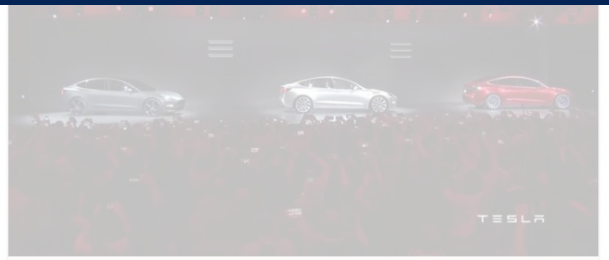
70 COMMENTS

Tesla has received 325,000 preorders for the Model 3

'Biggest one-week launch of any product ever'

By Andrew J. Hawkins on April 7 2016 11:14 am Email @andyjayhawk

Where does the Volkswagen Group sit in this mix?



15 UPDATES TO

Tesla Model 3 event: Elon Musk unveils a $35,000 electric car

APR 7 Tesla has received 325,000 preorders for the Model 3

APR 3 The Tesla Model 3 will have futuristic

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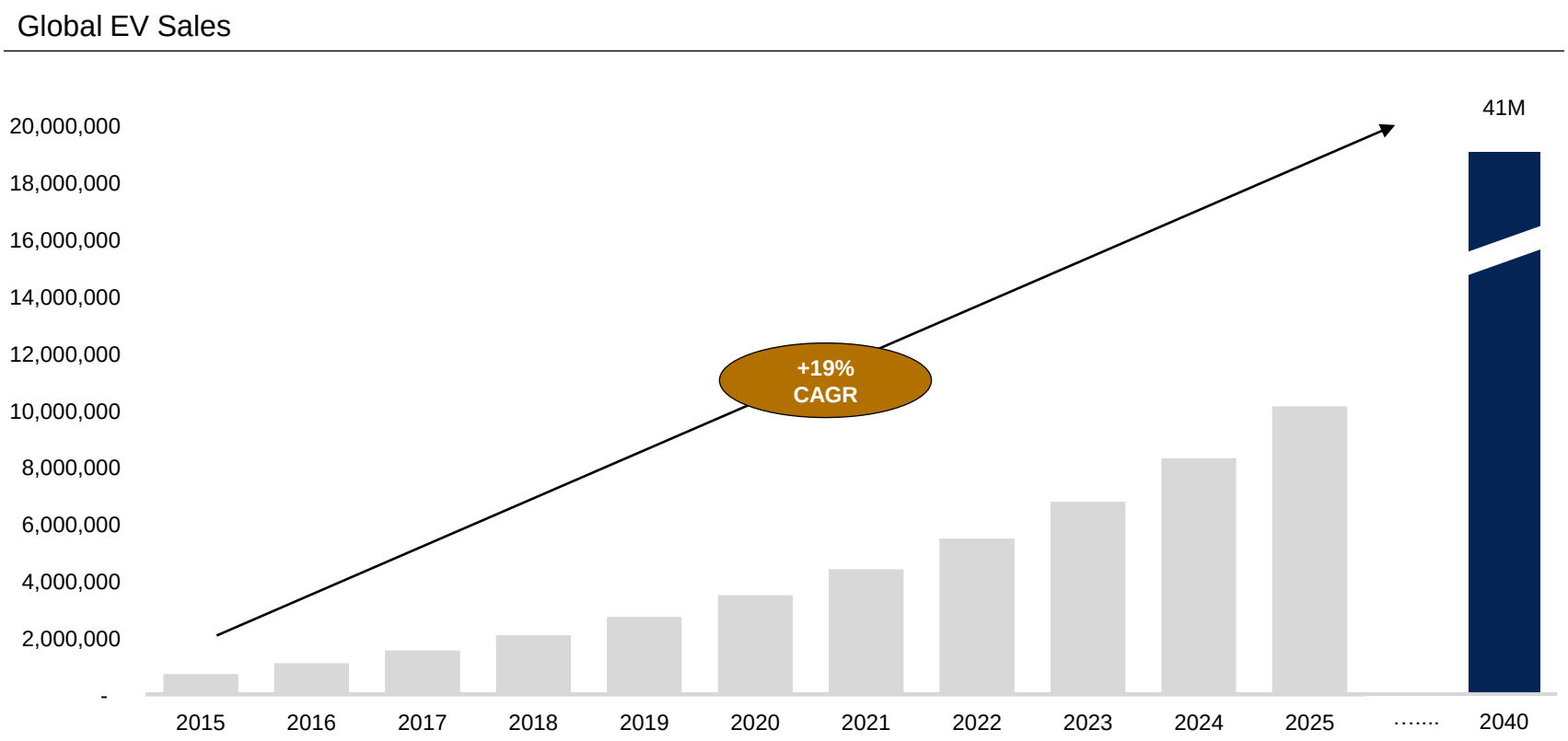
Through to 2025 EV sales will experience a CAGR of 19% and represent almost a 10th of global vehicle sales



Global sustainable transport policy

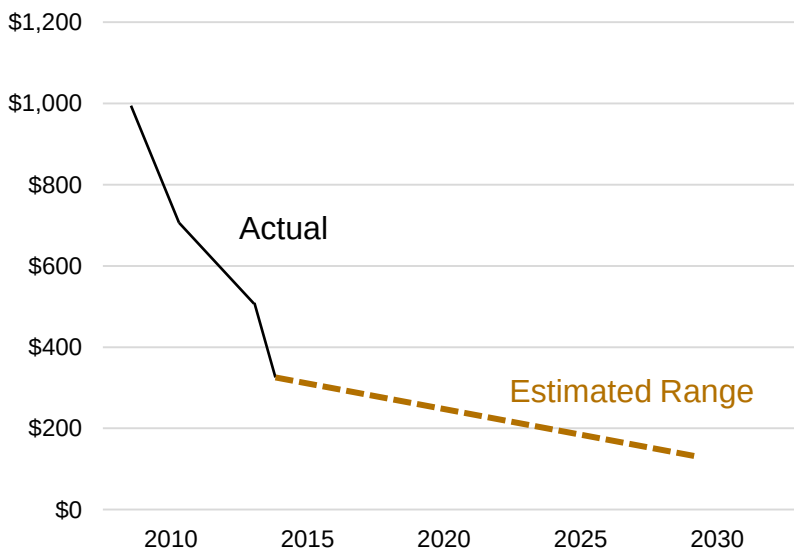
Increasing vehicle availability

65% decrease in EV battery prices from 2010

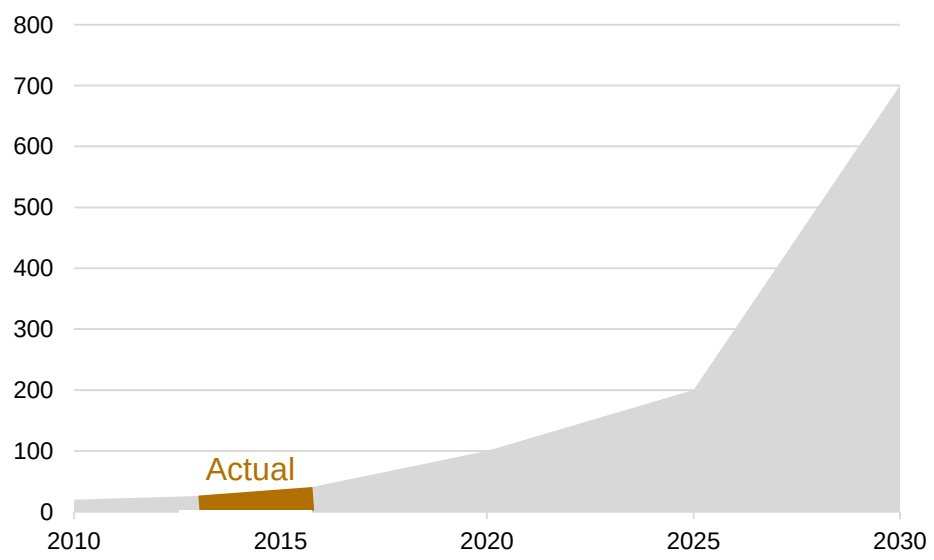
Source: Navigant Research; Research and Markets

Global sales of EVs will be spurred by huge demand for battery technology that will significantly decrease in price by 2025

Cost for lithium-ion battery packs (kWh)



Yearly demand for EV battery power (gigawatt hours)



Technical advances could increase the capacity of batteries by 80 to 110% by 2025

Market is primed for companies to compete on a total cost of ownership basis due to falling gasoline prices

Source: Bloomberg New Energy Finance

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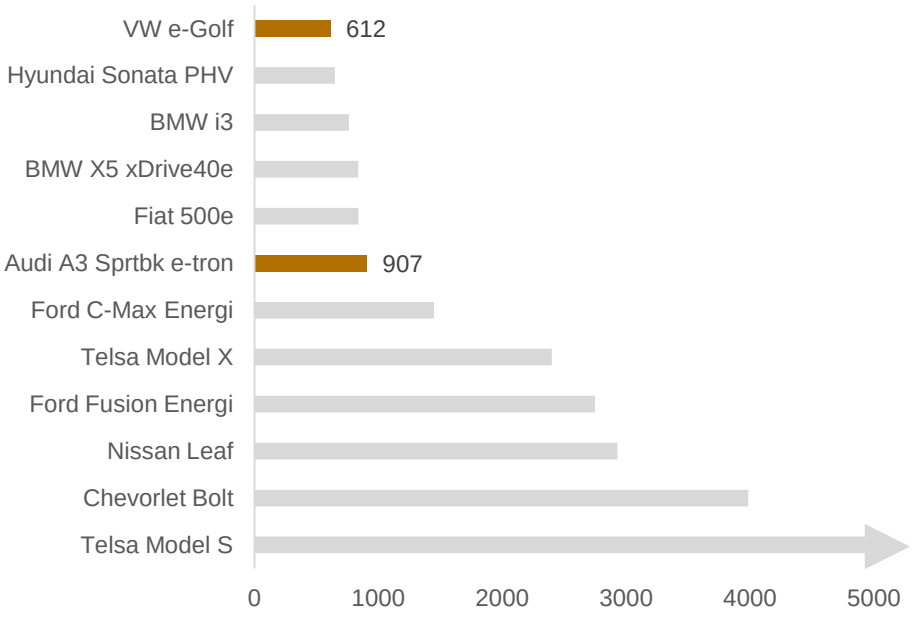
VW has a strong foundation to succeed in the EV market with considerable innovation infrastructure but is struggling with sales

VW Electronic Research Laboratory

1. Located in Silicon Valley the laboratory only employs 80 people
2. Currently a lack of focus on EV innovation and a wide spread of project types
3. Current offering in BEV limited to e-Golf and Audi R8 e-tron

Key EV models ranked 13th and 14th globally at a combined average of just 2.5% of global sales



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VW should focus on increasing ERL funding and fast-track mass market battery and EV offerings over the next 5 years

1

Fully Electric Vehicles

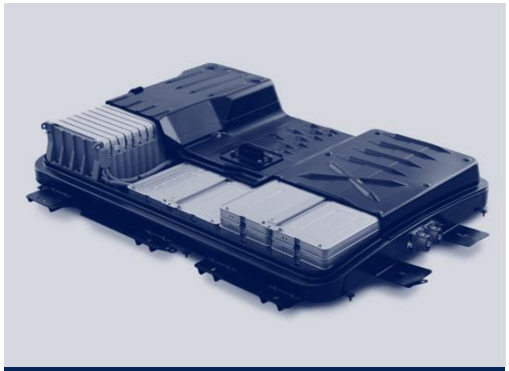
Focus on bringing forwarded more mass market EV models before 2025

2

Charging Infrastructure

Develop charging station infrastructure for your vehicles

3



EV Batteries

Fast-track your current innovations in lithium-ion batteries

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GEOGRAPHIC TARGETING

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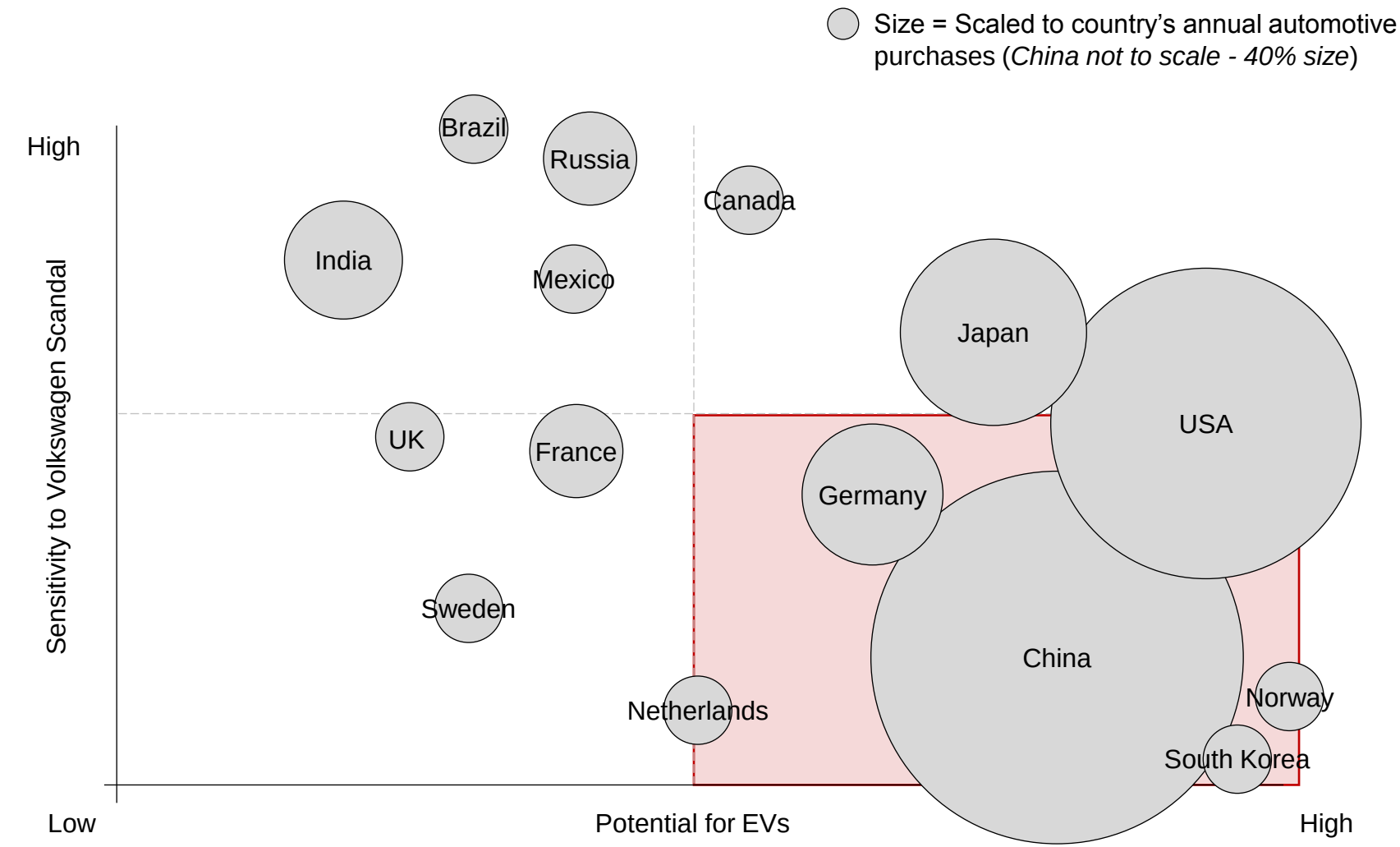
Focus on countries with high automotive demand forecast, low sensitivity to the scandal, and the potential for a large EV market



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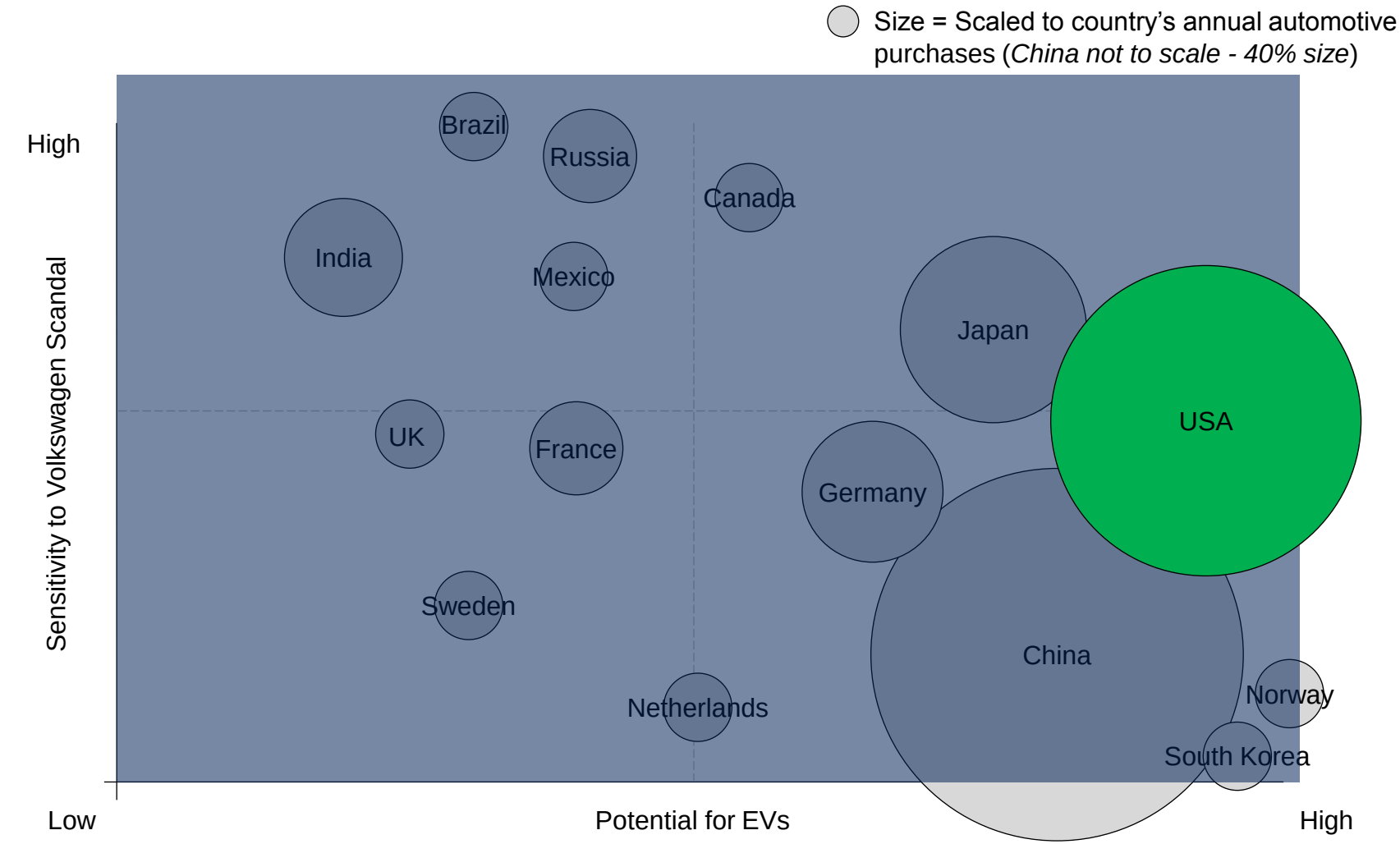

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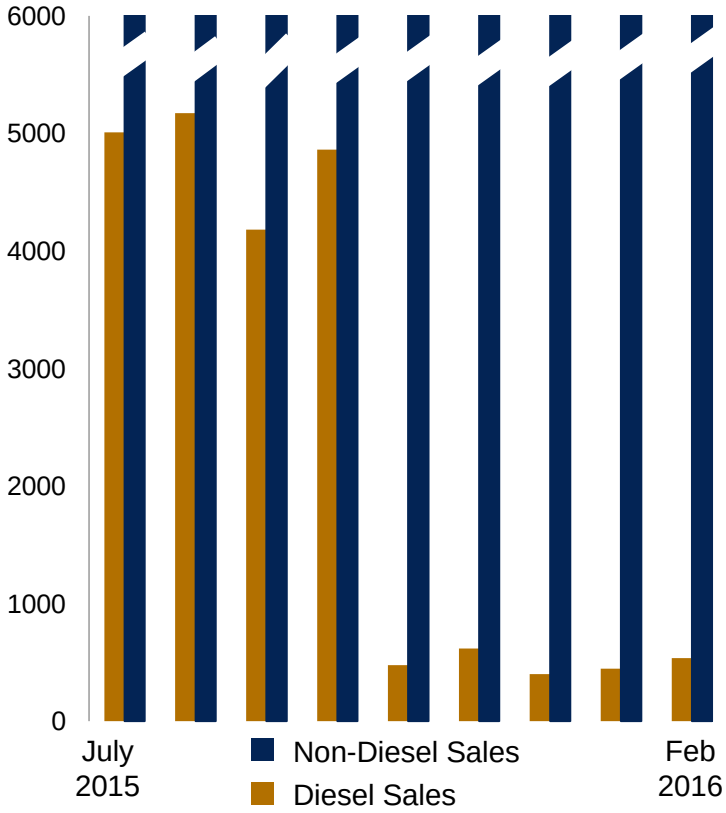
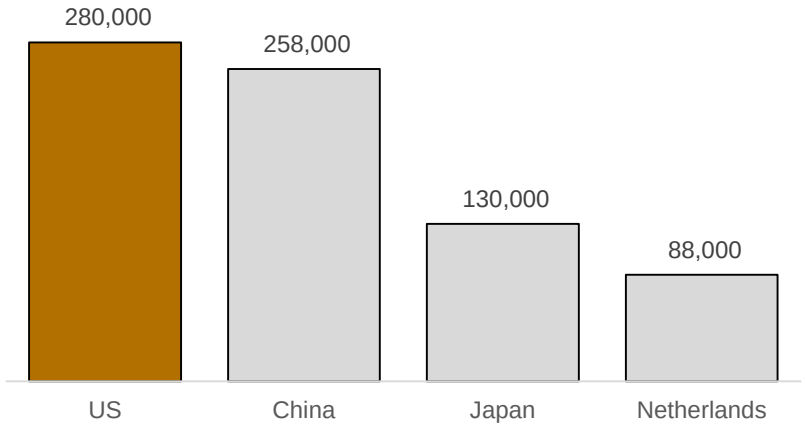
Slowly stop selling diesel cars in the US while focusing on hybrids and EVs – do not exit the market completely

US Monthly Diesel sales 2015/16



Diesel vehicle sales are down by over 80% while petrol remains strong

Top purchasing countries of EVs in 2015



In addition to being a profitable petrol market, the US is currently the largest EV market in the world

Leaving the market would be a poor decision and make it difficult to enter in the future with an EV focused fleet

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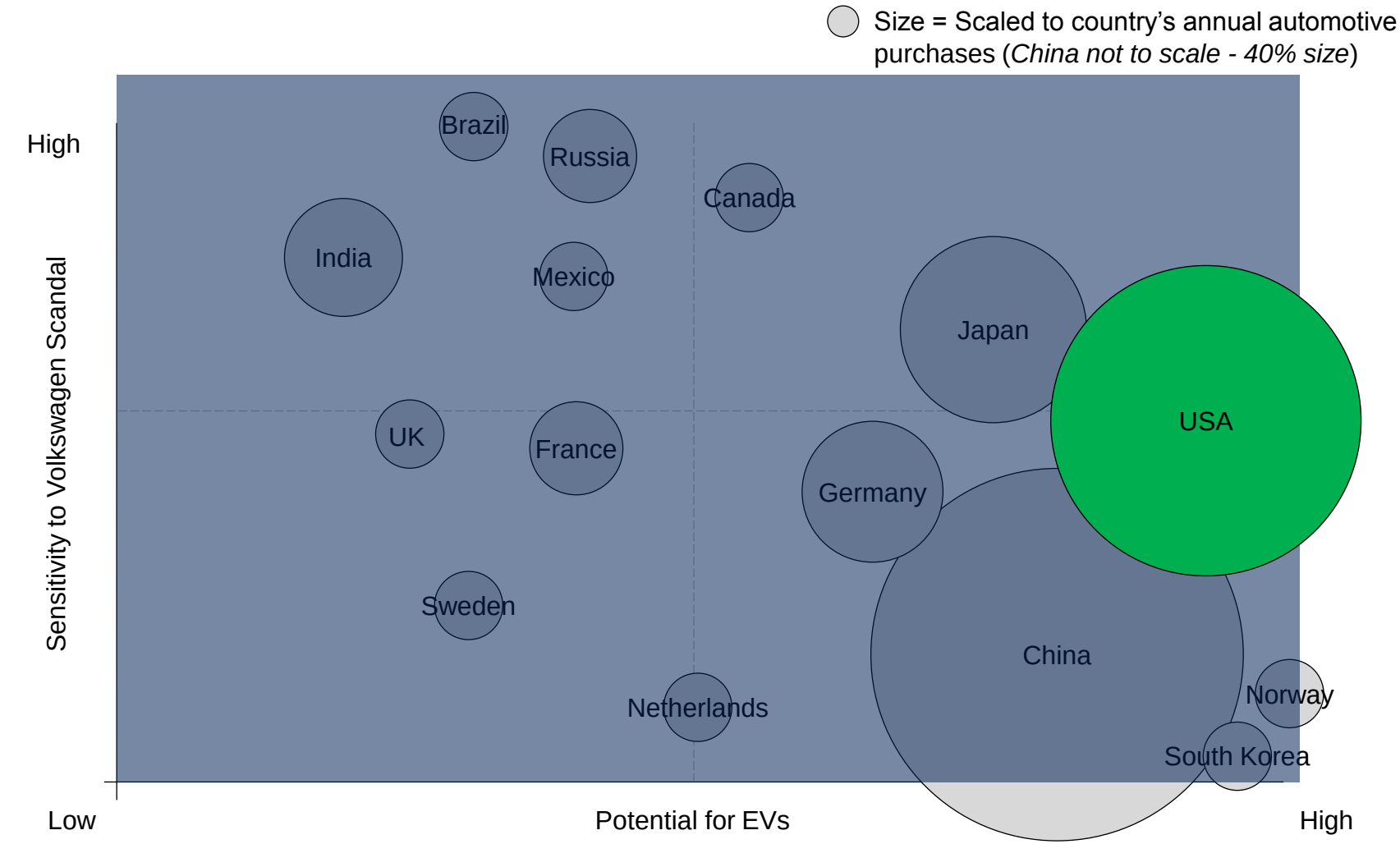

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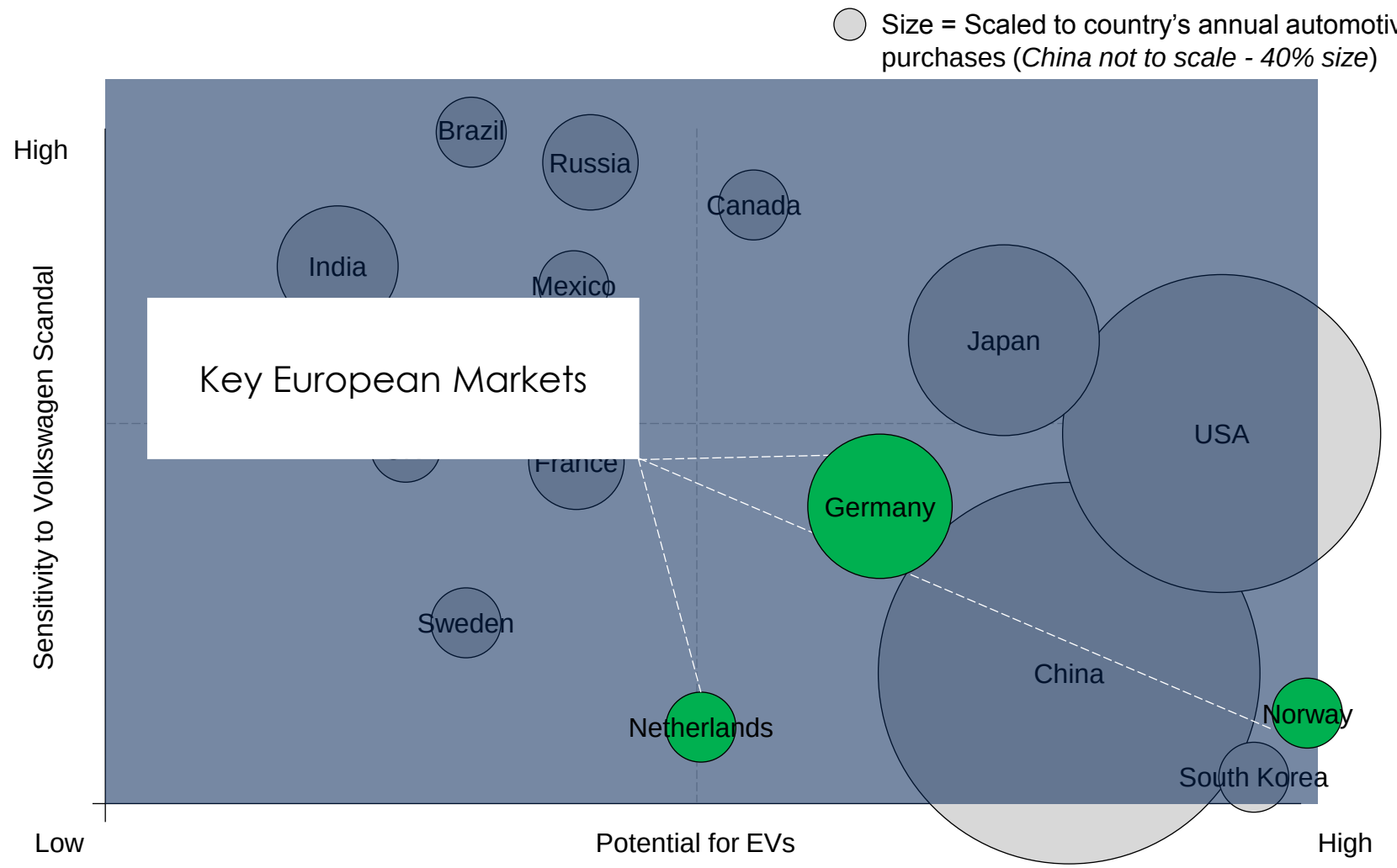

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Japan, China, and South Korea are the most attractive markets in Asia for Volkswagen

	 NORWAY	 GERMANY	 NETHERLANDS
KEY INSIGHT	Market leader in car sales with MS of 13.84%. EV sales accounted for 22.9% in 2015	VW remains best selling car brand in Germany 2015 with 3,210,000 automotive sales	High penetration of charging stations at 1.3 per EV and second largest uptake of EV vehicles
DRIVERS	EVs exempt from fees and related taxes until 2017	Accounting for 20 percent of all new car registrations (3.2 million)	2020 EV targets are 200,000 and 1M in 2025
LOOKING AHEAD	Government stated goal of **All new cars** in 2025 being emissions free The majority of these cars will be EVs	Expected VW growth rates of **50%** for EVs in coming years	Government has committed to a having **ZERO** petrol and diesel cars from sale in the Netherlands from 2025

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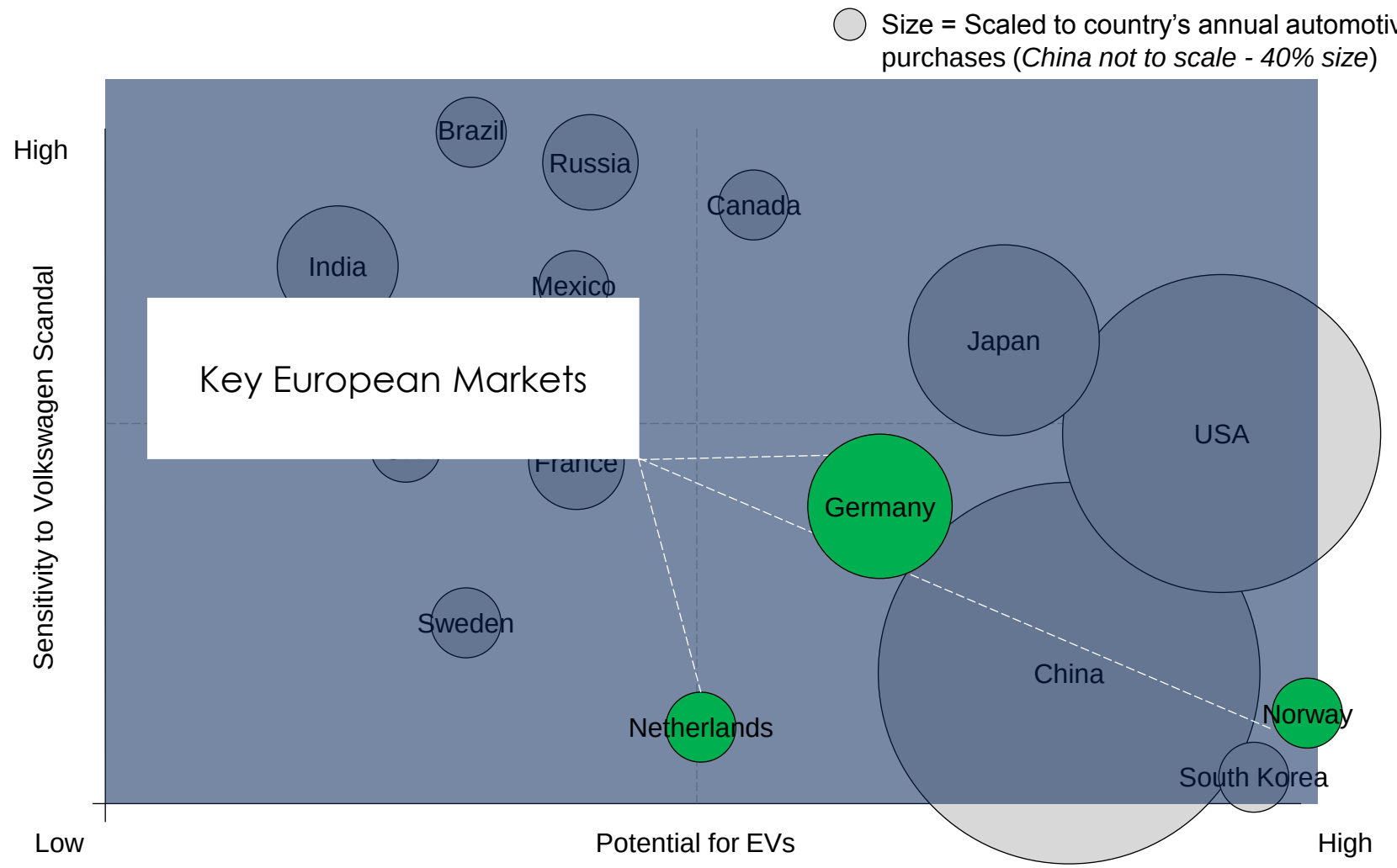
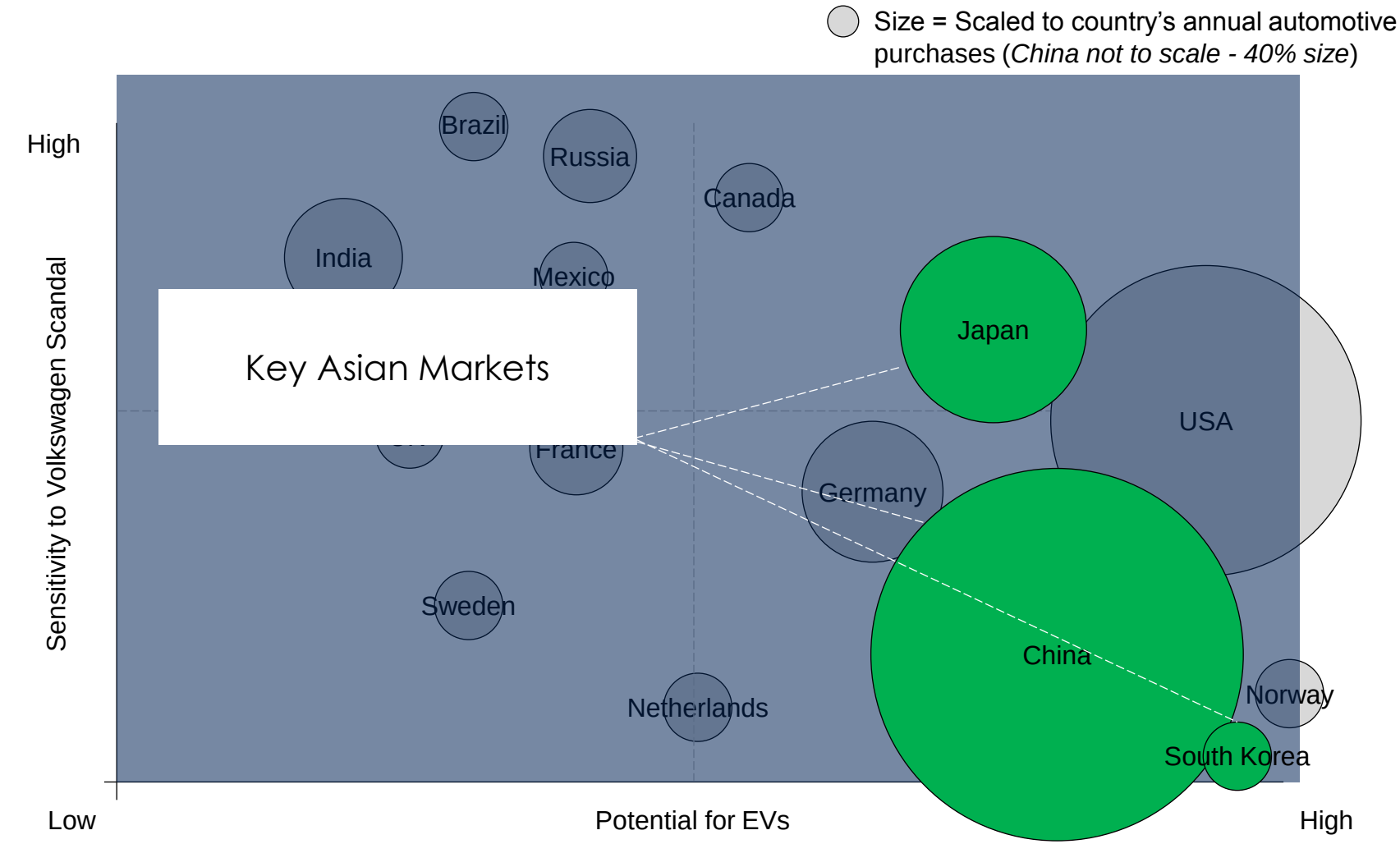
Focus on countries with high automotive demand forecast, low sensitivity to the scandal, and the potential for a large EV market



Country Targeting

Focus on countries with high automotive demand forecast, low sensitivity to the scandal, and the potential for a large EV market



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Japan, China, and South Korea are the most attractive markets in Asia for Volkswagen

	SOUTH KOREA	JAPAN	CHINA
KEY INSIGHT	Diesel VW #1 selling car in 2015. Low Scandal Impact.	Scandal had large impact but sales are still high	Dropped only 8.5% percent by end of 2015 and have already gained 15% in 2016.
DRIVERS	2011 Germany / South Korea FTA and long time success of VW brand	VW has been the #1 selling foreign car company for over 15 years.	China are 39% of all global sales, consumers reacted quickly.
LOOKING AHEAD	Government stated goal of **375% CAGR** in EV sales until 2020. Aiming for 20% of all cars to be fully electric and subsidizing heavily.	**Highest EV penetration in the world** (Excl. Scandinavia) Also committed to 20% EVs by 2020. Government subsidizing.	Government has committed **$15B** In subsidies and funding. Fastest growing market for automotive and for EV.

QUANTIFYING CRISIS | DIESEL | ELECTRIC | GEOGRAPHIC TARGETTING

AGENDA

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- VW are not focusing on the right geographies

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- Stay in the US, and target select areas of Asia and Europe

OUTCOMES

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Potential Target Countries Macro / PESTLE analysis

40. USA
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Monte Carlo Analysis Assumptions

ASSUMPTIONS:	
General Assumptions:	
Discount Rate: 6.37%	*Based on Prof. Damodaran industry estimate: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.htm*
Recall Cost Assumptions	
11 million cars to be recalled c	*Distribution of recall based on* : http://www.forbes.com/dieselgate-scandal-could-cost-volkswagen-up-to-35-billion/#1a4bc1ad3b4d
Cars recalled 2015: 3 million	
Cars recalled 2016: 5 million	
Cars recalled 2017: 3 million	
Goodwill Cost Assumptions	
Distribution of $1000 goodwill packages offered to all US owners of affected cars.	
Not all owners will take up full extent of offer. Expected users of goodwill package: 400, 000	
Lost Sales Assumptions	
Starting sales were 10.2 million in 2014.	
Sales in 2015 declined by 2% from the previous year.	
Baseline sales will continue to decline at gradually lower rates, until 2025, as a result of the VW scandal.	
The average price of a Volkswagen vehicle was $33,000 in 2015, with a growth rate of 2%	
EPA Legal Cost Assumptions	
Legal costs begin in 2017, progressing over 4 years.	
Legal costs determined from range of predictions: http://www.wsj.com/articles/u-s-sues-volkswagen-over-emissions-scandal-1451932799	
Class Action Law Suit Cost Assumptions	
Legal costs begin in 2017, progressing over 4 years.	
Legal costs determined from range of predictions: http://www.wsj.com/articles/u-s-sues-volkswagen-over-emissions-scandal-1451932799	

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Monte Carlo Profitability Analysis Histogram

	Histogram					
	Rounded Min	19,730,590,000	Actual Min	19,730,599,004		
	Rounded Max	32,246,950,000	Actual Max	32,246,946,131		
	Mean	25,595,890,651				
	Bins	**Intervals**	**Axis**	**Frequency Count**	**Percentage Distributio**	**Order**
1	19,730,590,000	$19,000,000,000	19	0	0%	0
2	20,512,862,500			3	0%	1
3	21,295,135,000	$21,000,000,000	21	8	1%	2
4	22,077,407,500			20	2%	3
5	22,859,680,000	$23,000,000,000	23	36	4%	4
6	23,641,952,500			80	8%	5
7	24,424,225,000	$24,000,000,000	24	124	12%	6
8	25,206,497,500			152	15%	7
9	25,988,770,000	$26,000,000,000	26	165	16%	8
10	26,771,042,500			141	14%	9
11	27,553,315,000	$28,000,000,000	28	126	13%	10
12	28,335,587,500			74	7%	11
13	29,117,860,000	$29,000,000,000	29	38	4%	12
14	29,900,132,500			18	2%	13
15	30,682,405,000	$31,000,000,000	31	10	1%	14
16	31,464,677,500			5	0%	15
17	32,246,950,000	$32,000,000,000	32	1		
				1001		

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Volkswagen Quantitative Cost Cash Flows

	2015	2016	2017	2018	2019	2020
Costs						
Recall Costs	$ 718,552,574.81	$ 1,096,128,331.63	$ 652,349,194.21			
Volkswagen Goodwill Costs (US)	$329,897,681.63					
Volkswagen Goodwill Cost (Global)		$ -				
Lost Sales	$ 4,616,042,400.00	$ 3,779,060,001.55	$2,716,199,963.44	$ 1,837,563,387.41	$ 1,692,514,536.16	$ 1,541,935,743.14
EPA Legal Costs				-$ 616,286,704	-$ 462,215,028.11	-$ 308,143,352.07
Class Action Law Suits						
Legal Cost Offset						
		$ -				
Cash Flows						
Net Cash Flow	$ 5,664,492,656.44	$ 4,875,188,333.18	$3,368,549,157.65	$ 1,221,276,683.26	$ 1,230,299,508.05	$ 1,233,792,391.06
Discounting Periods	0	1	2	3	4	5
Discount Factor	1	0.940114694	0.883815638	0.830888068	0.781130082	0.734351868
Discounted Cash Flow	$ 5,664,492,656.44	$ 4,583,236,188.00	$2,977,176,422.44	$ 1,014,744,223.77	$ 961,023,955.27	$ 906,037,746.80

2021	2022	2023	2024	2025
$1,049,891,052.09	$ 679,528,924.02	$ 659,849,766.38	$ 637,471,432.87	$ 612,207,949.63
-$ 154,071,676.04				
	$ 469,400,345	$ 352,050,259	$ 234,700,172	$ 117,350,086
$ 895,819,376.05	$1,148,929,268.91	$ 1,011,900,025.05	$ 872,171,605.32	$ 729,558,035.85
6	7	8	9	10
0.690374981	0.649031664	0.610164205	0.573624334	0.539272666
$ 618,451,285.11	$ 745,691,475.69	$ 617,425,173.90	$ 500,298,856.65	$ 393,430,706.75

NPV	$ 27,900,691,276

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Volkswagen Recall Costs Cash Flows

VOLKSWAGEN RECALL COSTS			
	2015	2016	2017
Cost per Year EPA	493,489,603	728,873,653	313,575,075
Discount Rate	1	0.940114694	0.8838
Discounted Cash Flow	$ 493,489,603	$ 685,224,831	$ 277,142,555
NPV of Recall Costs	$ 1,455,856,989		

Assumptions:

11 million cars to be recalled over 3 years.

Cars recalled 2015: 3 million

Cars recalled 2016: 5 million

Cars recalled 2017: 3 million

Discount Rate: 6.37%

Volkswagen Recall Costs	min	max	mean	sigma	value
Recall Cost per Car	$50.00	$450.00	$250.00	66.66666667	219.9860614
Cars recalled 2015					3,000,000.00
Cars recalled 2016	3,000,000	6,000,000	$4,500,000.00	500000	4,377,156.52
Cards recalled 2017	500,000	3,500,000	$2,500,000.00	500000	2,824,455.76

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Volkswagen Goodwill Costs Cash Flows

VOLKSWAGEN GOODWILL COSTS		
	2015	
Cost per Year EPA	459,742,202	
Discount Rate	1	
Discounted Cash Flow	$ 459,742,202	
NPV of Goodwill Costs	$ 459,742,202	

Assumptions:

Distribution of $1000 goodwill packages offered to all US owners of affected cars. *Source: Case materials*

Not all owners will take up full extent of offer. Expected users of goodwill package: 400, 000

Volkswagen Goodwill Costs (US)	min	max	mean	sigma	value
Goodwill Package Cost					$1,000
Number of Packages	180,000	580000	400,000	66666.66667	459,742.20

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Lost Volkswagen Sales Costs Cash Flows

LOST VOLKSWAGEN SALES	2015	2016	2017	2018	2019
Cost per Year EPA	$ 4,616,042,400.00	$ 4,626,299,600.88	$ 2,879,067,637.20	$ 1,896,620,982.50	$ 1,676,785,068.59
Discount Rate	1.000	0.940	0.884	0.831	0.781
Discounted Cash Flow	$ 4,616,042,400.000	$ 4,349,252,233.597	$ 2,544,565,000.215	$ 1,575,879,743.752	$ 1,309,787,257.670

2020	2021	2022	2023	2024	2025
$ 1,628,737,850.68	$ 1,018,878,239.34	$ 679,528,924.02	$ 659,849,766.38	$ 637,471,432.87	$ 612,207,949.63
0.734	0.690	0.649	0.610	0.574	0.539
$1,196,066,682.725	$ 703,408,045.566	$ 441,035,788.572	$ 402,616,707.845	$ 365,669,126.429	$ 330,147,012.940

NPV of Lost Sales Costs	$ 17,834,469,999.311

Lost Sales					
Sales in 2014					10200000
Forecasted Sales CAGR					3.06%
Sales Decline 2015					2.00%
Sales Decline 2016	0.50%	1.75%	1.13%	0.002083333	1.10%
Sales Decline 2017	0.50%	1.00%	0.75%	0.000833333	0.73%
Sales Decline 2018	0.45%	0.50%	0.48%	8.33333E-05	0.48%
Sales Decline 2019	0.40%	0.45%	0.43%	8.33333E-05	0.43%
Sales Decline 2020	0.35%	0.40%	0.38%	8.33333E-05	0.38%
Sales Decline 2021	0.20%	0.25%	0.23%	8.33333E-05	0.22%
Sales Decline 2022					0.15%
Sales Decline 2023					0.14%
Sales Decline 2024					0.13%
Sales Decline 2025					0.12%
Average Sale Price 2015					33000
Average Sale Price Growth Rate					2.00%

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EPA Legal Costs Cash Flows

EPA LEGAL COSTS FORECASTING				
	2018	2019	2020	2021
Cost per Year EPA	$ 2,148,721,416	$ 1,611,541,062	$ 1,074,360,708	$ 537,180,354
Discount Rate	0.8309	0.7811	0.7344	0.6904
Discounted Cash Flow	$ 1,785,346,986	$ 1,258,823,201	$ 788,958,793	$ 370,855,877
NPV of EPA Legal Costs	$ 4,203,984,857			
Assumptions:				
Legal costs begin in 2017, progressing over 4 years.				
Legal costs determined from range of predictions: http://www.wsj.com/articles/u-s-sues-volkswagen-over-emissions-scandal-1451				
Discount Rate: 6.37%	*Based on Prof. Damodaran industry estimate: http://pages.stern.nyu.edu/~adamodar/New_Home_*			

	min	max	avg	sigma	rand
EPA Legal Costs	$3,000,000,000.00	$15,000,000,000.00	$6,323,298,977.88	2000000000	$ 7,025,060,621
EPA Legal Cost 2017					$ 2,810,024,248.29
EPA Legal Cost 2018					$ 2,107,518,186.21
EPA Legal Cost 2019					$ 1,405,012,124.14
EPA Legal Cost 2020					$ 702,506,062.07

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Class Action Legal Costs Cash Flows

CLASS ACTION LEGAL COSTS FORECASTING

	2022	2023	2024	2025
Cost per Year EPA	$ 608,843,544	$ 456,632,658	$ 304,421,772	$ 152,210,886
Discount Rate	0.649	0.610	0.574	0.539
Discounted Cash Flow	$ 395,158,739	$ 278,620,902	$ 174,623,736	$ 82,083,170

NPV of Class Action Legal Costs	$930,486,547.38

Assumptions:

Legal costs begin in 2017, progressing over 4 years.

Legal costs determined from range of predictions: http://www.wsj.com/articles/u-s-sues-volkswagen-over-emissions-scandal-1451932799

Discount Rate: 6.37% *Based on Prof. Damodaran industry estimate: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/a*

Class Action Law Suits	$440,000,000.00	$2,200,000,000.00	$1,320,000,000.00	293333333.3	$ 1,449,032,012
EPA Legal Cost 2017					$ 579,612,804.63
EPA Legal Cost 2018					$ 434,709,603.47
EPA Legal Cost 2019					$ 289,806,402.32
EPA Legal Cost 2020					$ 144,903,201.16

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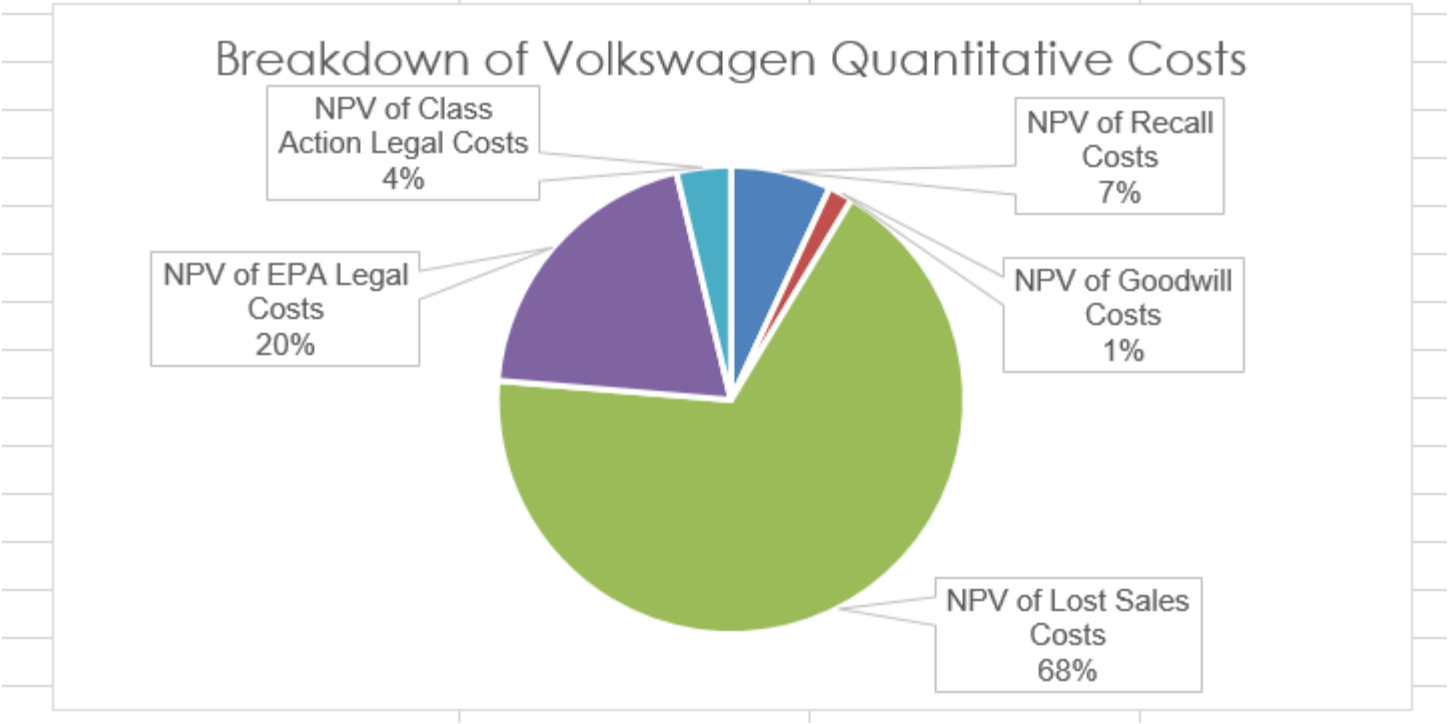
Breakdown of Costs

BREAKDOWN OF COSTS:	
NPV of Recall Costs	$ 1,716,404,514
NPV of Goodwill Costs	$ 417,719,022
NPV of Lost Sales Costs	$ 16,772,283,176.164
NPV of EPA Legal Costs	$ 4,939,186,176
NPV of Class Action Legal Costs	$930,486,547.38



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A growing number of EVs will cause a higher demand for electricity but this will only lead to a moderate rise in total demand

The Challenge

Driving an EV 15,000 km per year and charging it solely at home would roughly double the household's electricity demand, taking it from about 3,500 kWh to about 6,500 kWh per year.

Moment of charging impacts the grid along with demand following the load curve (peaks and levels) + clusters can impact power infrastructure

The *Actual* Result

Even if EVs comprised 20% of all cars on the road in Europe by 2020, associated incremental electricity demand would be 3-4% of base case without large-scale EV adoption

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Even if crude oil prices fell drastically over the forecast period mass adoption of EVs would only be delayed until the early 2030s

What about a crash in oil prices?

Key analysts are basing EV demand on crude oil price recovering to $50 and then trending back up to $70-a-barrel or higher by 2040

Even if oil prices fell to $20 a barrel and remained there through until 2025 – this would only delay adoption of EV on a mass scale until early 2030

This is in line with the price trajectory mentioned by the US Energy Information Administration in its Annual Energy Outlook 2015

Source: Bloomberg New Energy Finance

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5 Forces Analysis of global automotive industry

Threat of New Entry

Barriers to entry in this industry are **medium** and are **steady**

Supplier Power

Fragmented suppliers of raw materials with low cost of substitution and no real supplier power

Threat of New Entry

Buyer Power

Buyers are extremely price sensitive and have high ability to substitute. There is moderately low buyer power

Competitive Rivalry

Industry is highly fragmented and concentration is low

Supplier Power

Buyer Power

Threat of Substitution

Threat of Substitution

Low cost of substitution in most markets to another vehicle or a car / bus / Uber

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Porter's 5 Forces in the Global EV Market

Threat of New Entry

Barriers to entry in this industry are **slightly lower** and are **increasing**

Supplier Power

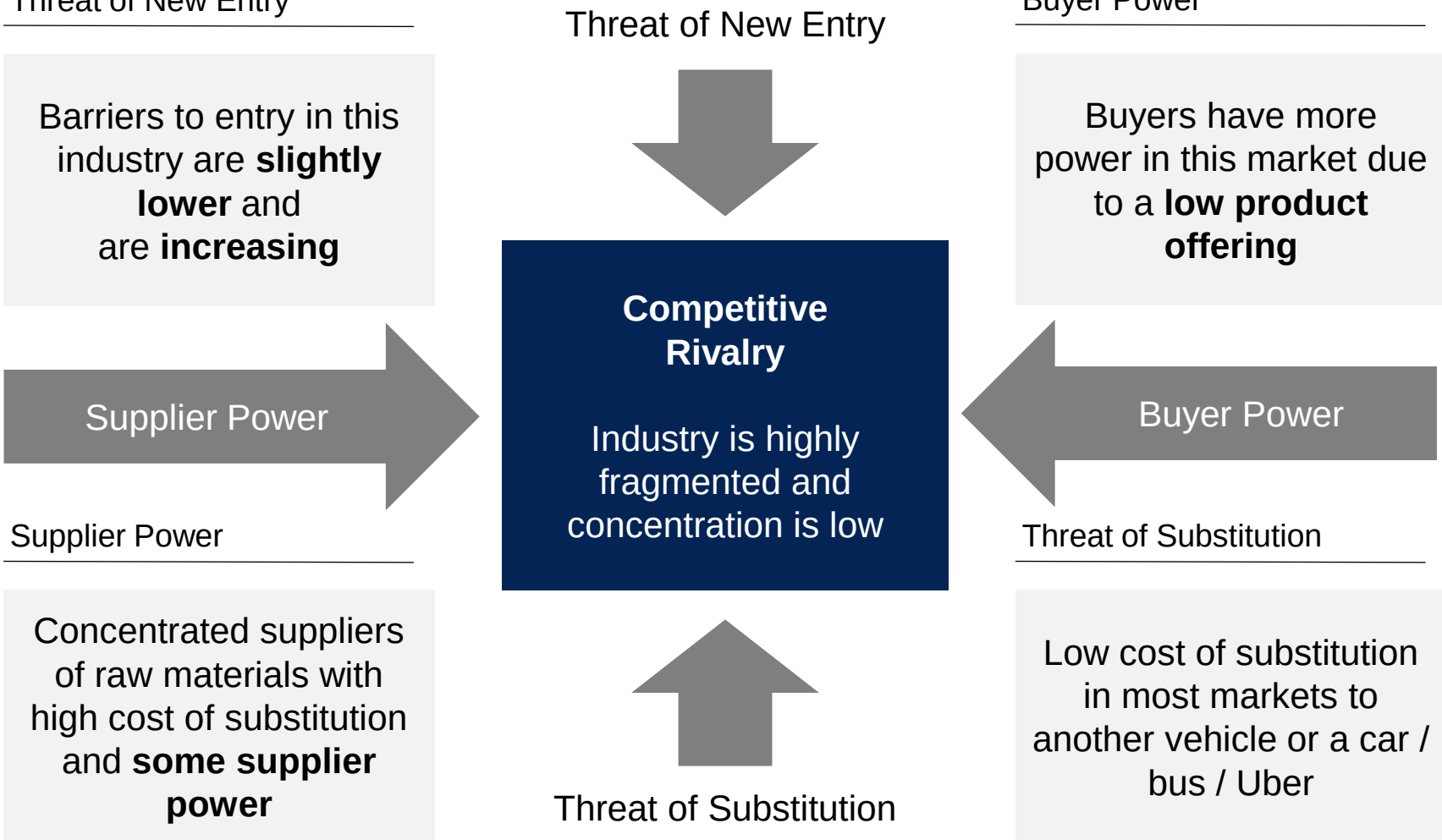
Concentrated suppliers of raw materials with high cost of substitution and **some supplier power**

Buyer Power

Buyers have more power in this market due to a **low product offering**

Threat of Substitution

Low cost of substitution in most markets to another vehicle or a car / bus / Uber



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SWOT Analysis of entering the EV segment

Strengths

- Maximize ERL capacity → re-invest diesel funds
- Established presence in the market with two key models
- Concept vehicles have sent signals to market of preparedness
- Leading automotive group with established brands and experience

Weaknesses

- Requires significant funding
- Decreased brand equity could hamper adoption rates
- Late entrant to the market
- Lack of focus on geography
- Inability to calculate level of focus for EV as a result of crisis costs

Opportunities

- Strong global growth in EV sales over the forecast period
- 35% global sales by 2040
- 41M EVs by 2040
- Reduction in battery prices will reduce costs and increase competitive ability
- Increases in battery capacity technology

Threats

- Increase in demand could increase supply and create a highly fragmented market
- Current infrastructure (charging stations) may not support demand over forecast period
- Stronger competitor position → isolated from crisis

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Currently, hydrocarbon is not a viable alternative venture to electric

Industry case study

1. Hydrocarbon cars consumer 3x more fuel than electric
2. Hydrocarbon cars cost 46% more to run
3. The transformation to energy for hydrocarbon engines is 55-60% less efficient

- Undeveloped technology
- Lack of infrastructure
- Limited consumer interest

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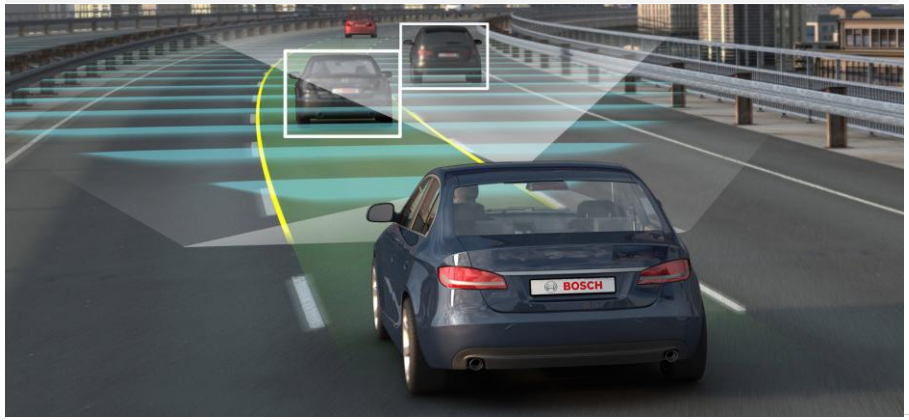
Autonomous driving technology is an attractive investment, however it does not align with VW's current position and outlook

Attractiveness of autonomous driving technology

1. Potentially a 42B USD market by 2025
2. Technology is projected to be ready for sale by 2022
3. Forecasted to make up 10% of light vehicle sales by 2035



Investing in autonomous technology will not address VW's issue of declining sales

VW's trust issue is a barrier to implementation and success

VW is not currently in the market – requires significant investment

Toyota announced a 1B USD investment over a 5 year period

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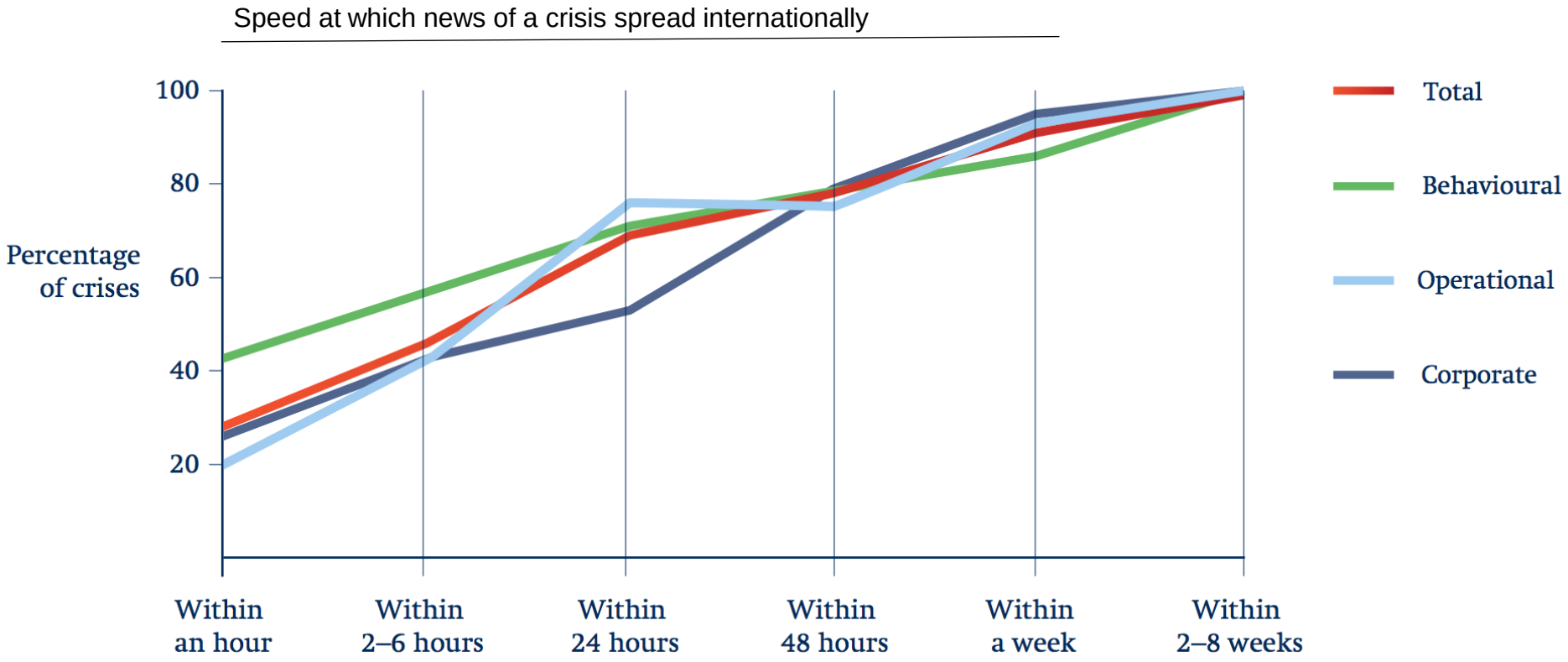
The window for a public relations campaign has lapsed



VW publically admitted to use of the deceptive software in September 2015

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The window for a public relations campaign has lapsed

VW has taken mitigating steps

1. The CEO during scandal has been removed and an independent inquiry into the controlling board is underway
2. Publically admitting the use of the deceptive software
3. Announced scheme for rebate

→ Grow trust in emerging markets

→ Scale back in most affected markets

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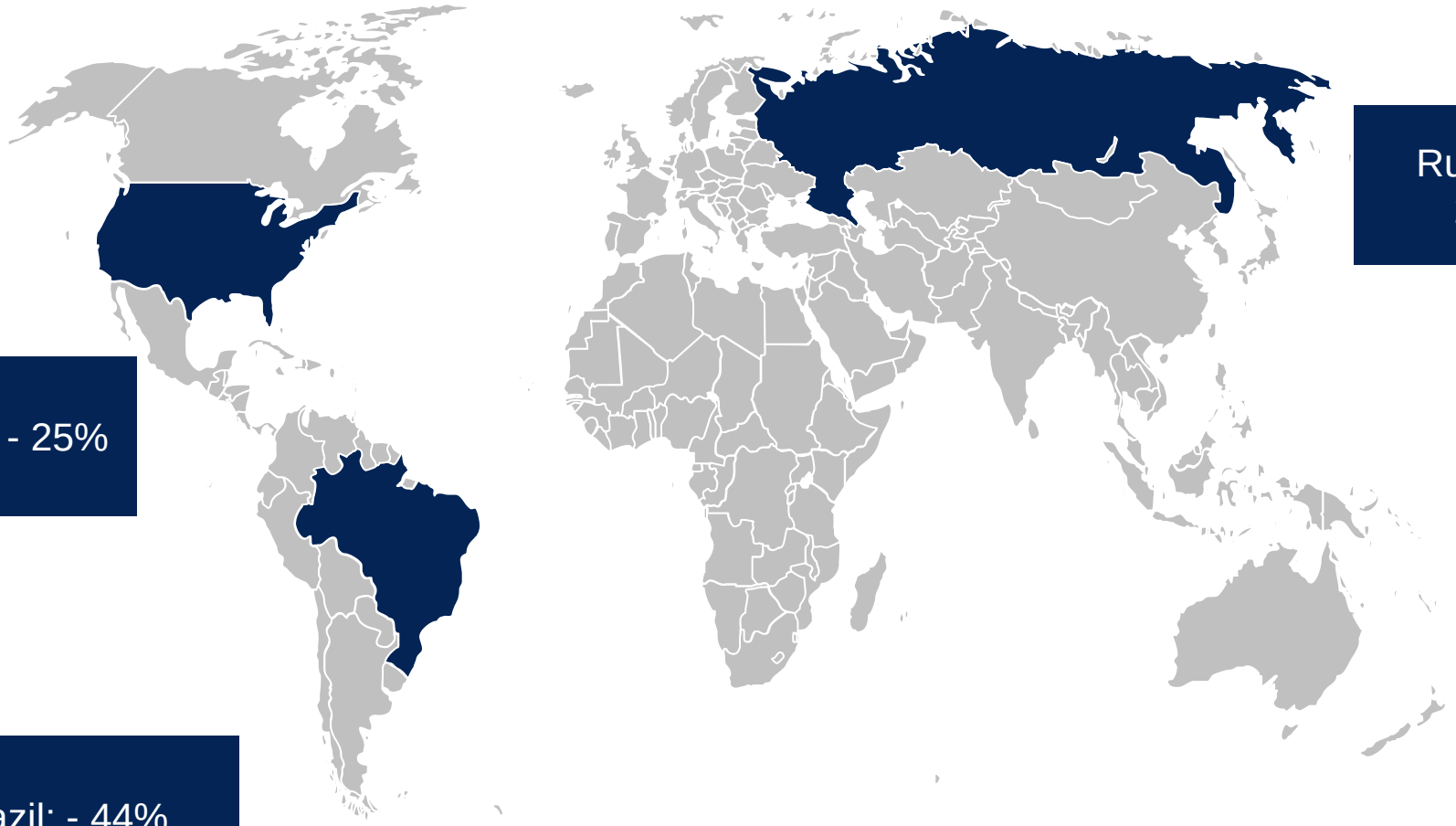
Markets to target for scaling back diesel focus, due to impact of scandal on monthly sales



Russia: - 26%

USA: - 25%

Brazil: - 44%

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Cost Management

Cost Breakdown

1. Predicted NPV of costs:
   25.6 Bil dollars
2. Cash Costs 2016:
   $500, 000 for recall
3. Legal Costs begin in 2018 at $2B
4. Legal Costs will continue until 2025 for a total NPV of $6B

Cash on Hand

1. Currently set aside $7.3B for costs, with $25B cash on hand
2. $7.3B allocation will be sufficient to cover 2016 costs
3. 25B cash on hand is ample to cover 2018 costs
4. Further loans of 21B plus remaining cash of hand will be ample for ongoing costs

Strategy Investment

1. Up to 500 million worth of investment for charging station infrastructure, EV batteries and expanded EV range
2. VW will have ample cash to cover costs of the scandal and further EV investments

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Where customer trust cannot be regained through the creation of new trust in new products, VW has two alternatives available

What if the *creation* of new trust in EV product development doesn't assist in regaining customer trust?

1	2	3
Reputation Capital	Credible Commitments to Prevention	Greater CEO Involvement
Announcements of reputation-repair actions lift share prices, on average by 2%	Johnson & Johnson credibly followed through on their commitments by creating new product type	CEO's can accelerate rebuilding customer trust by targeting softer constituencies

Sources: Stanford Graduate School of Business; McKinsey; PwC

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Regaining customer trust involves a primary focus on addressing the issue straightforwardly and a secondary focus on rebuilding reputation capital

Be open and honest about the issue	Communicate more clearly, effectively and straightforwardly
94%	93%
Visibly demonstrate concern and consideration for employees	Be involved with the community
50%	50%

Source: Rawlins (2007)

Effective restoration of trust

1. Trust harmed by untrustworthy behaviour can be restored when individuals observe a **consistent series of trustworthy actions.**
2. **Commitment to change behaviour** help accelerate the trust recovery process
3. **Implement tangible efforts** to address to issue and ensure it does not happen again e.g. Johnson and Johnson

Source: Wharton School of Business

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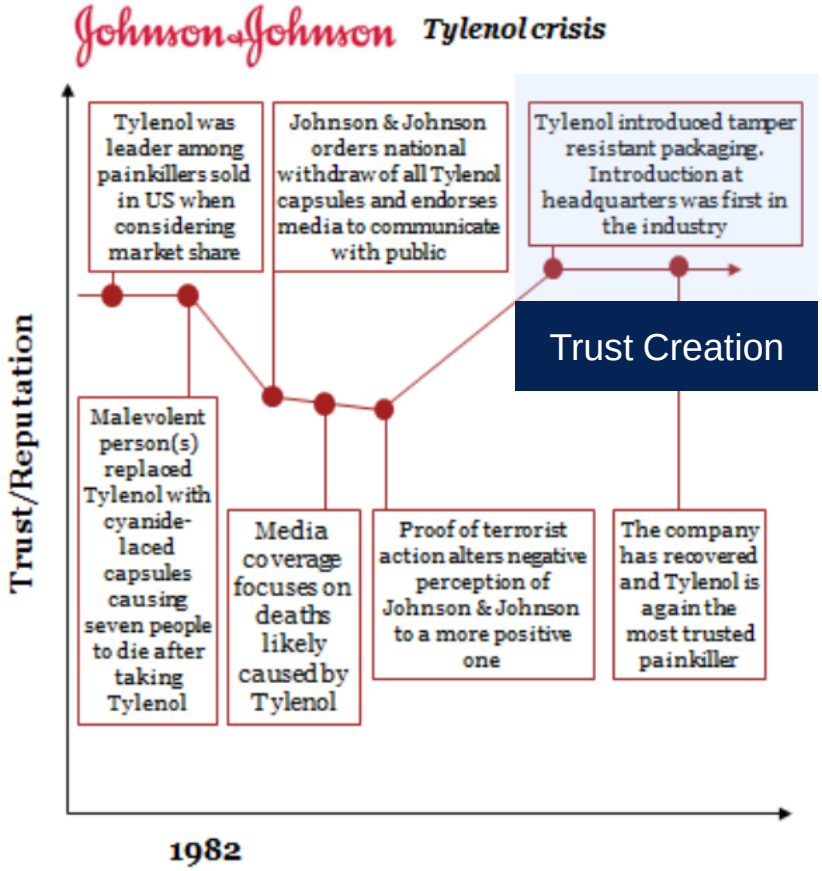
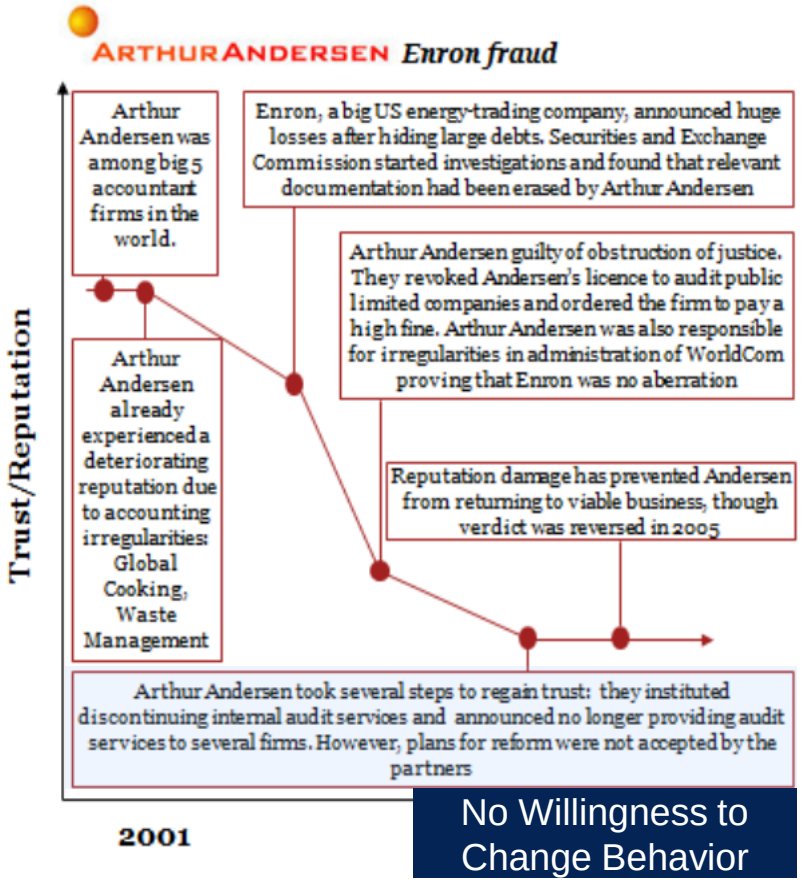
Key business case studies reveal that regaining customer trust for long term success is based on a commitment to change behavior create new trust





Source: PwC (2015)

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USA Macro-Environmental Factors

Political	**Corruption:** Ranked 16th CPI: 76	**Political Stability:** Upper 30% Rating: 0.62	**EV Scheme:** Billions of USD allocated for development of EVs
Economic	**GDP:** Ranked 1st $17,419,000 million USD	**GDP Growth:** Ranked 114th Real GDP growth rate of 2.6%	
Social	**Human Development Index (HDI):** Ranked 8th globally HDI Rating: 0.915		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 2.4%		
Legal	**Emission Standards:** Enforced by Environmental Protection Agency with large penalties for breach of relatively strong emission standards		
Sales	**VW Sales:** 2014: 367,789 2015: 349,400	**Automobile Sales:** 7,570,000	**EV Sales:** 280, 000

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China Macro-Environmental Factors

Political	**Corruption:** Ranked 37th CPI: 56	**Political Stability:** Lower 30% Rating:-.0.46	**EV Scheme:** Subsidies of up to $10, 000 USD for all electric vehicles
Economic	**GDP:** Ranked 2nd $10,354,832 million USD	**GDP Growth:** Ranked 19th Real GDP growth rate of 6.9%	
Social	**Human Development Index (HDI):** Ranked 90th globally HDI Rating: 0.727		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 7.2%		
Legal	**Emission Standards:** Relatively weak China emission standards implemented, with plans to implement 2011 EU Emission standards in 2018		
Sales	**VW Sales:** 2014: 3,674,948 2015: 3,550,000	**Automobile Sales 2015:** 21,150,000	**EV Sales 2015:** 258,328

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Japan Macro-Environmental Factors

Political	**Corruption:** Ranked 18th CPI: 75	**Political Stability:** Upper 20% Rating:1.02	**EV Scheme:** Rebates for up to $29, 500 USD per electric vehicle
Economic	**GDP:** Ranked 3rd $4,601,461 million USD	**GDP Growth:** Ranked 191st Real GDP growth rate of 0.6%	
Social	**Human Development Index (HDI):** Ranked 20th globally HDI Rating: 0.891		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 3.2%		
Legal	**Emission Standards:** Japan's emission control requirements for vehicles are the strictest in Asia and among the strictest in the world		
Sales	**VW Sales:** 2014: 67,446 2015: 54,766	**Automobile Sales 2015:** 4,240,000	**EV Sales 2015:** 130,000

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South Korea Macro-Environmental Factors

Political	**Corruption:** Ranked 83rd CPI: 37	**Political Stability:** Upper 50% Rating: 0.19	**EV Scheme:** Subsidies of up to $15, 000 USD for electric vehicles
Economic	**GDP:** Ranked 13th $1,410,383 million USD	**GDP Growth:** Ranked 112 Real GDP growth rate of 2.7%	
Social	**Human Development Index (HDI):** Ranked 17th globally HDI Rating: 0.898		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 3.1%		
Legal	**Emission Standards:** Relatively strong emission standards, following European precedent		
Sales	**VW Sales:** 2014: 28,853 2015: 35,778	**Automobile Sales 2015:** 1,408,182	**EV Sales 2015:** 1,181

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Norway Macro-Environmental Factors

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Political	**Corruption:** Ranked 5th CPI: 87	**Political Stability:** Upper 10% Rating:1.13	**EV Scheme:** Goal to reach 50 000 zero emission vehicles by 2018
Economic	**GDP:** Ranked 26th $499, 817 million USD	**GDP Growth:** Ranked 183rd Real GDP growth rate of 0.9%	
Social	**Human Development Index (HDI):** Ranked 1st globally HDI Rating: 0.944		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 6.6%		
Legal	**Emission Standards:** Predominantly enforces emission standards with incentives as opposed to penalties		
Sales	**VW Sales:** 2014: 21,593 2015: 26,344	**Automobile Sales 2015:** 181,416	**EV Sales 2015:** 84,401

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Germany Macro-Environmental Factors

Political	**Corruption:** Ranked 10th CPI: 81	**Political Stability:** Upper 20% Rating: 0.93	**EV Scheme:** Government initiatives for 1 million EV's by 2020
Economic	**GDP:** Ranked 4th $ 3,868,291 million USD	**GDP Growth:** Ranked 161st Real GDP growth rate of 1.5%	
Social	**Human Development Index (HDI):** Ranked 6th globally HDI Rating: 0.916		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 3.5%		
Legal	**Emission Standards:** Subject to EU air pollution regulations, but expecting to be unable to comply next year in 2016		
Sales	**VW Sales:** 2014: 685,669 2015: 656,494	**Automobile Sales 2015:** 3,210,000	**EV Sales 2015:** 48,669

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Netherlands Macro-Environmental Factors

Political	**Corruption:** Ranked 5th CPI: 87	**Political Stability:** Upper 15% Rating: 1.05	**EV Scheme:** 1 million EV target for 2025
Economic	**GDP:** Ranked 17th $879,319 million USD	**GDP Growth:** Ranked 153rd Real GDP growth rate of 1.8%	
Social	**Human Development Index (HDI):** Ranked 5th globally HDI Rating: 0.922		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 3.5%		
Legal	**Emission Standards:** Complies with EU standards for emissions with further guidelines for additional emission reductions.		
Sales	**VW Sales:** 2014: 42,693 2015: 56,355	**Automobile Sales 2015:** 340,896	**EV Sales 2015:** 88,991

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Canada Macro-Environmental Factors

Political	**Corruption:** Ranked 9th CPI: 83	**Political Stability:** Upper 10% Rating: 1.18	**EV Scheme:** Rebates of $5000-$10000 for 10, 000 EV purchasers
Economic	**GDP:** Ranked 11th $1,785,387 million USD	**GDP Growth:** Ranked 178th Real GDP growth rate of 1%	
Social	**Human Development Index (HDI):** Ranked 9th globally HDI Rating: 0.913		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 4.8%		
Legal	**Emission Standards:** Follows USA emission standards which are relatively strong with large penalties.		
Potential Market	**Strong Government support, growing infrastructure**	Growing EV sales **2014**: 5000 **2015**: 6700	Growing market share of EV segment **2015**: 1%

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United Kingdom Macro-Environmental Factors

Political	**Corruption:** Ranked 10th CPI: 81	**Political Stability:** Upper 40% Rating: 0.44	**EV Scheme:** 25% EV subsidies and 300 million USD grants
Economic	**GDP:** Ranked 5th $2,988,893 million USD	**GDP Growth:** Ranked 122nd Real GDP growth rate of 2.5%	
Social	**Human Development Index (HDI):** Ranked 14th globally HDI Rating: 0.907		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 7.5%		
Legal	**Emission Standards:** Successfully complies with EU emission standards and regulations.		
Potential Market	**Strong Government support, growing infrastructure**	Growing market share of EV segment **2014:** 2.1% **2015:** 2.8%	Relatively sensitive to the scandal, VW sales dropped 14%.

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Mexico Macro-Environmental Factors

Political	**Corruption:** Ranked 95th CPI: 35	**Political Stability:** Lower 20% Rating: -0.76	**EV Scheme:** Government offering small incentives to purchasing EVs
Economic	**GDP:** Ranked 15th $1,294,690 million USD	**GDP Growth:** Ranked 131st Real GDP growth rate of 2.3%	
Social	**Human Development Index (HDI):** Ranked 74th globally HDI Rating: 0.756		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 2.9%		
Legal	**Emission Standards:** Moderate emission standards for passenger vehicles, with world class emission standards for heavy-duty vehicles		
Why not?	**High corruption, low infrastructure, low Government support**	Low consumer interest. Amount of EVs on the road **2012:** 200 **2014**: 676	

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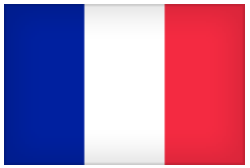
France Macro-Environmental Factors



Political	**Corruption:** Ranked 23rd CPI: 70	**Political Stability:** Upper 15% Rating: 1.02	**EV Scheme:** Up to $10,000 USD rebates offered for purchase of Evs.
Economic	**GDP:** Ranked 6th $2,829,192 million USD	**GDP Growth:** Ranked 169th Real GDP growth rate of 1.2%	
Social	**Human Development Index (HDI):** Ranked 22nd globally HDI Rating: 0.888		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: -1.2%		
Legal	**Emission Standards:** Successfully complies with EU emission standards, with pushes for increased regulation and more stringent limit values for emissions		
Potential Market	Strong Government support for shift to electric	**Strong CAGR of 50% for EV sales**	Relatively small EV sales **2014**: 14,731

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Sweden Macro-Environmental Factors

Political	**Corruption:** Ranked 3rd CPI: 89	**Political Stability:** Upper 15% Rating: 1.07	**EV Scheme:** 9 million USD allocated to funding EV subsidies
Economic	**GDP:** Ranked 21st $571,090 million USD	**GDP Growth:** Ranked 108th Real GDP growth rate of 2.8%	
Social	**Human Development Index (HDI):** Ranked 14th globally HDI Rating: 0.907		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 7.6%		
Legal	**Emission Standards:** Successfully complies with EU emission standards with national frameworks for low emission zones and congestion road tolling		
Potential Market	**Growing infrastructure**	**Small car sales** representing less than 1% of total car sales worldwide	

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Brazil Macro-Environmental Factors

Political	**Corruption:** Ranked 65th CPI: 38	**Political Stability:** Lower 50% Rating: -0.01	**EV Scheme:** Moderate tax exemptions for purchasers of EVs
Economic	**GDP:** Ranked 7th $2,346,076 million USD	**GDP Growth:** Ranked 211st Real GDP growth rate of -3.0%	
Social	**Human Development Index (HDI):** Ranked 75th globally HDI Rating: 0.755		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: -1.2%		
Legal	**Emission Standards:** Follows emission standards generally similar to the European precedent		
Why not?	**High corruption, low infrastructure**	Highly sensitive to the scandal, VW sales dropped 44%	

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Russia Macro-Environmental Factors

Political	**Corruption:** Ranked 119th CPI: 29	**Political Stability:** Lower 20% Rating: -0.84	**EV Scheme:** Gas stations ordered to provide chargers for EVs
Economic	**GDP:** Ranked 10th $21,860,598 million USD	**GDP Growth:** Ranked 213rd Real GDP growth rate of -3.9%	
Social	**Human Development Index (HDI):** Ranked 50th globally HDI Rating: 0.798		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: -2%		
Legal	**Emission Standards:** Successfully complies with EU emission standards, but typically behind the curve in adopting to stricter limits on emissions		
Why not?	**High corruption, low political stability**	Highly sensitive to the scandal, VW sales dropped 26%	

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India Macro-Environmental Factors

Political	**Corruption:** Ranked 76th CPI: 38	**Political Stability:** Lowest 15% Rating:-0.96	**EV Scheme:** Incentives of up to $2,177 USD available for electric cars
Economic	**GDP:** Ranked 9th $2,048,000 million USD	**GDP Growth:** Ranked 14th Real GDP growth rate of 7.3%	
Social	**Human Development Index (HDI):** Ranked 130th globally HDI Rating: 0.609		
Technological	**Infrastructure:** Gross Fixed Capital Formation Annual Growth: 4.13%		
Legal	**Emission Standards:** Low emission standards and regulation		
Why not?	**High corruption, Low HDI, low infrastructure**	**Low EV Sales:** **2012:** 85,000–100,000 EVs sold **2014:** 7000-8000 EVs sold	

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