

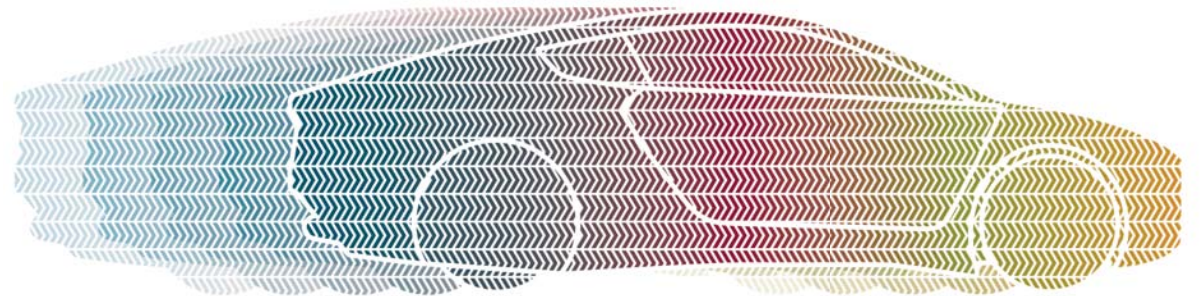
VOLKSWAGEN

AKTIENGESELLSCHAFT

JERRY WU | KALEI MUNSELL | RUI MIGUEL | NICOLE YANG

AGENDA

Overview | Costs | Analysis | Strategy | Impact | Questions



COMPANY OVERVIEW

Delivering **safe** and **environmentally sound** vehicles which can compete in an increasingly tough market and set world standards in their respective class.



Audi



SEAT



PORSCHE



ŠKODA



BENTLEY



Commercial
Vehicles

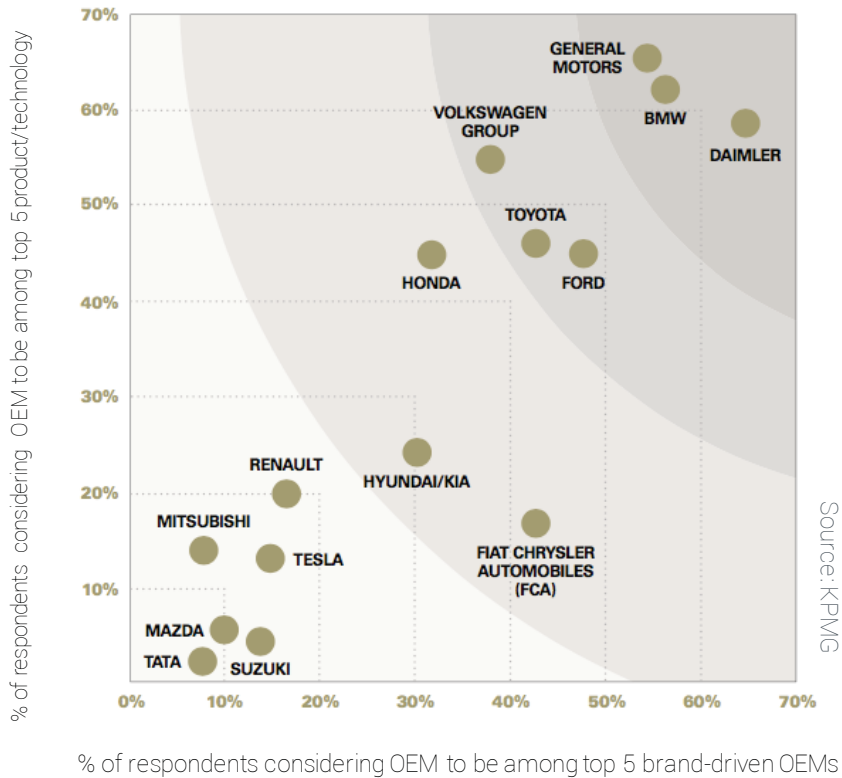


SCANIA



Overview | Costs | Analysis | Strategy | Impact | Appendix

INDUSTRY OVERVIEW



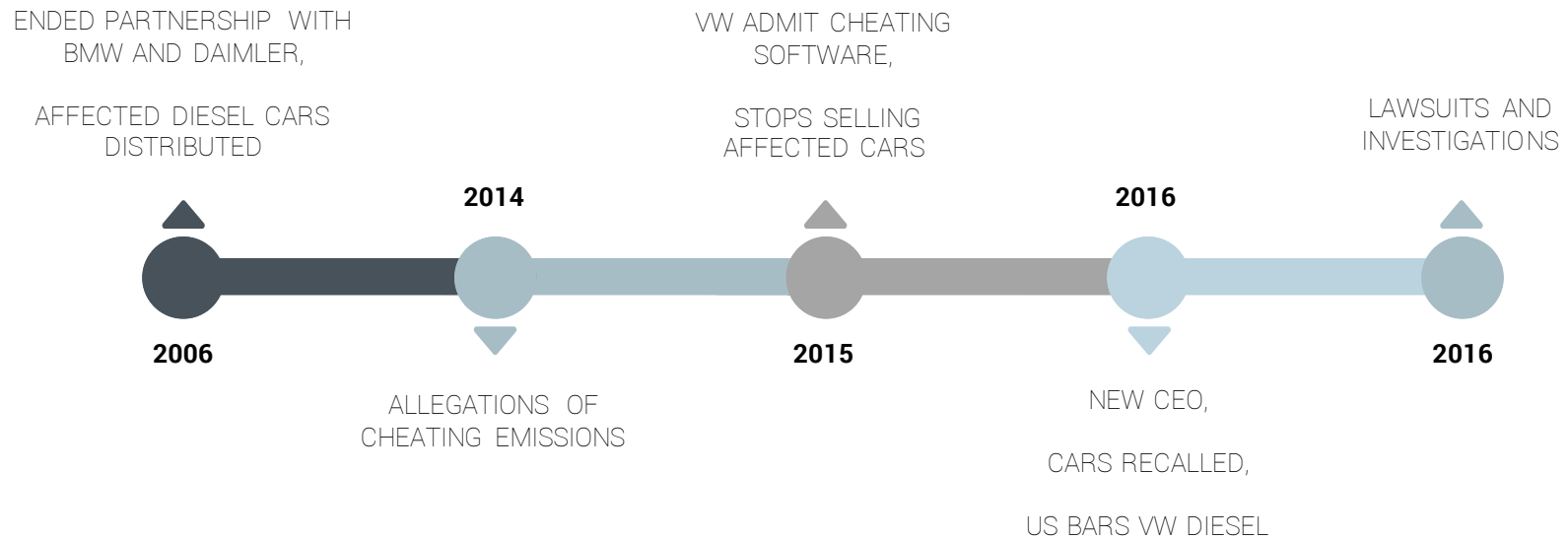
72.35 M International yearly cars sold

68.56 M Cars produced worldwide per year

Volkswagen is the leading passenger car producer 9.8 M units

Source: statista.com

SITUATION TIMELINE



Overview | Costs | Analysis | Strategy | Impact | Appendix

STOCK PRICE

Automobile Companies

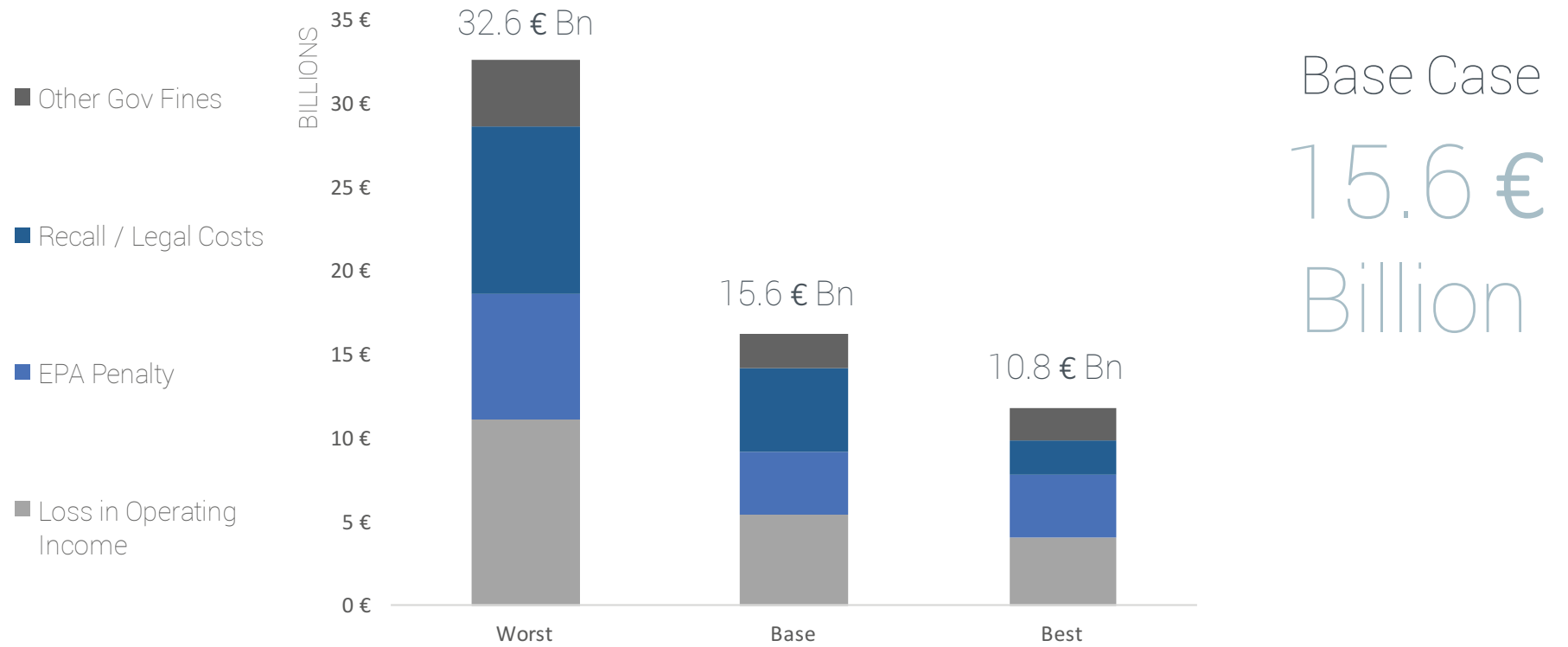


Overview | Costs | Analysis | Strategy | Impact | Appendix



FINANCIAL EVALUATION

TOTAL ESTIMATED COSTS



NON-QUANTIFIABLE COSTS

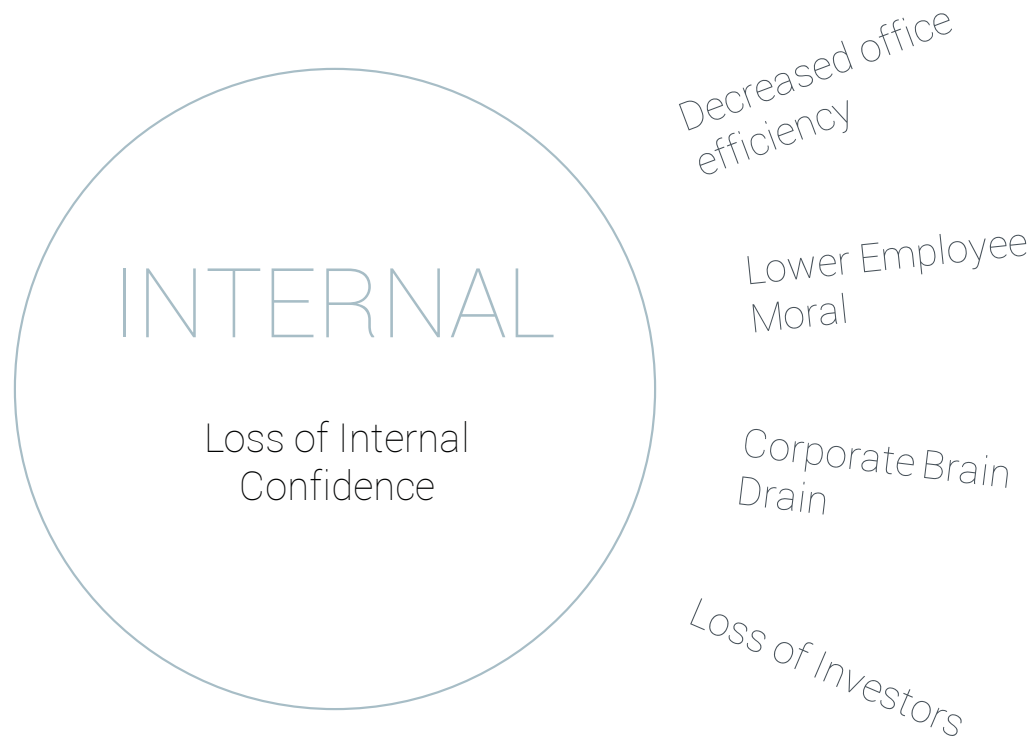
Overview | **Costs** | Analysis | Strategy | Impact | Appendix

NON-QUANTIFIABLE COSTS



Overview | **Costs** | Analysis | Strategy | Impact | Appendix

NON-QUANTIFIABLE COSTS



Overview | **Costs** | Analysis | Strategy | Impact | Appendix

NON-QUANTIFIABLE COSTS

INTERNAL

Loss of Internal
Confidence

EXTERNAL

Loss of Consumer Trust
& Brand Equity

RE-BUILDING TRUST



TELLING OUR STORY

Sustainability is demonstrated throughout the entire value chain, including the upstream and downstream stages.



RESEARCH &
DEVELOPMENT



PROCUREMENT



PRODUCTION



MARKETING & SALES



AFTER-SALES &
FINANCIAL SERVICES

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

TELLING OUR STORY

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RESEARCH & DEVELOPMENT

Laying the foundations for new models & **innovative concepts** to master the challenges of the future.



PROCUREMENT



PRODUCTION



MARKETING & SALES



AFTER-SALES & FINANCIAL SERVICES

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

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PROCUREMENT

A **sustainable supply chain** demonstrates responsibility for human rights, as well as a commitment to the environment.



PRODUCTION



MARKETING & SALES



AFTER-SALES & FINANCIAL SERVICES

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

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Efficient production ranks alongside employee health and safety as our core goal. New concepts help **prepare employees** for the future.



MARKETING & SALES



AFTER-SALES & FINANCIAL SERVICES

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

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Efficient production ranks alongside employee health and safety as our core goal. New concepts help **prepare employees** for the future.



MARKETING & SALES

We continuously **reduce the fuel consumption** of our models and offer alternative mobility services.



AFTER-SALES & FINANCIAL SERVICES

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

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AFTER-SALES & FINANCIAL SERVICES

Service provision includes **supporting** dealerships, managing the original parts business, and providing innovated vehicle-related financial services.

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

TELLING OUR STORY

Bringing visibility to the sustainable processes practiced throughout the entire supply chain.



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GIVING BACK

Currently invested in 200+ charitable projects worldwide.





PRODUCTS & TECHNOLOGY

STRATEGIC ANALYSIS

Diesel Engine

Gas Engine

Hybrid Engine

Fuel Efficiency



Price



Sustainability

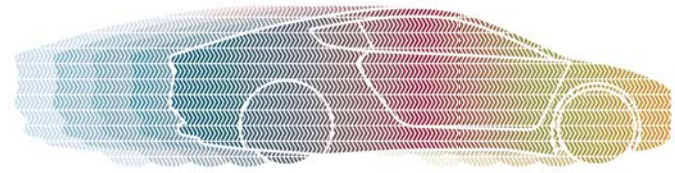


Government Incentives



Overview | Costs | **Analysis** | Strategy | Impact | Appendix

HYBRID MARKET



Diesel crisis impact on Volkswagen obligates the company to seek more sustainable markets.

Batteries prices have been decreasing over time, thus decreasing costs of hybrid vehicles over conventional vehicles

~0.3
kg/mile

Hybrids emit less greenhouse-gas than conventional vehicles

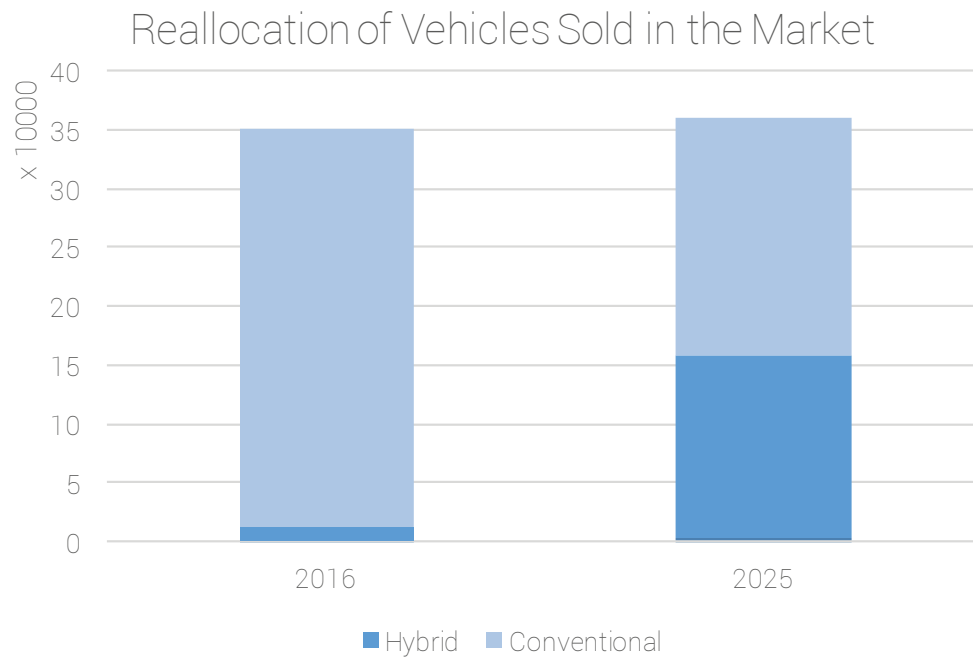
16%-20%
CAGR

Potential expected market share growth of Hybrid vehicles

Source: Navigand Research

PRODUCT / TECH

Reinforce sustainable Volkswagen products in the US market by focusing on its Hybrid models.



HOW?

Leveraging on its MQB architecture

Reallocate resources from diesel engines

Increase marketing and incentives for purchasing sustainable cars

MARKETING HYBRID

Introducing innovative products requires a narrowed approach when it comes to consumer targeting.

TARGET MARKET

Gen X & Gen Y
Volkswagen Loyalists

MARKET DRIVERS

Fuel economy
Cost
Safety features

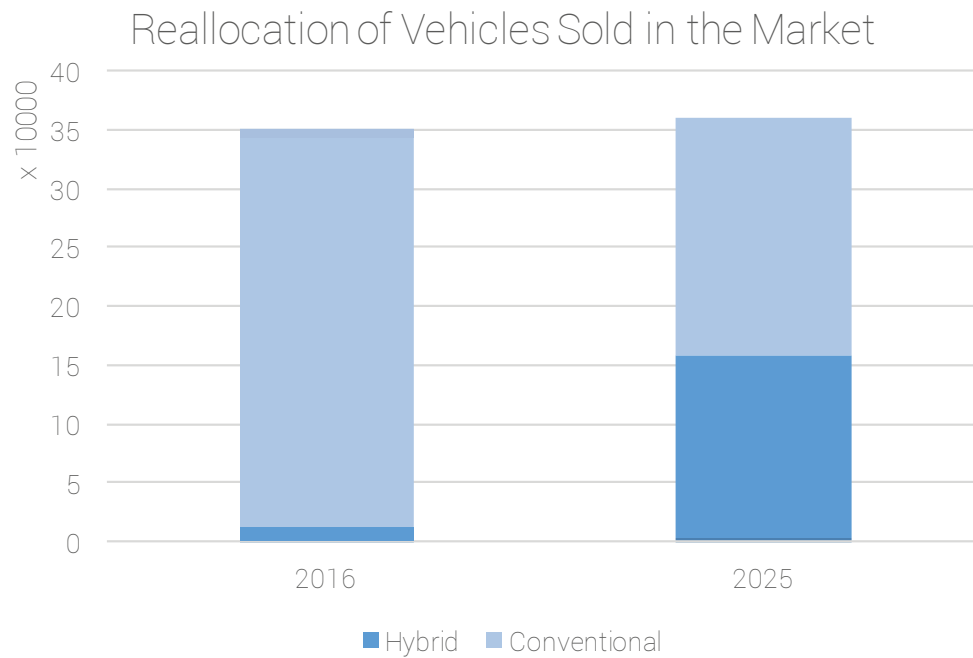


86%

Of conventional car owners would consider buying a hybrid vehicle.

IMPACT

Increase in hybrid market share as a result of reallocating funds from Diesel engines to sustainable technologies.



GOAL

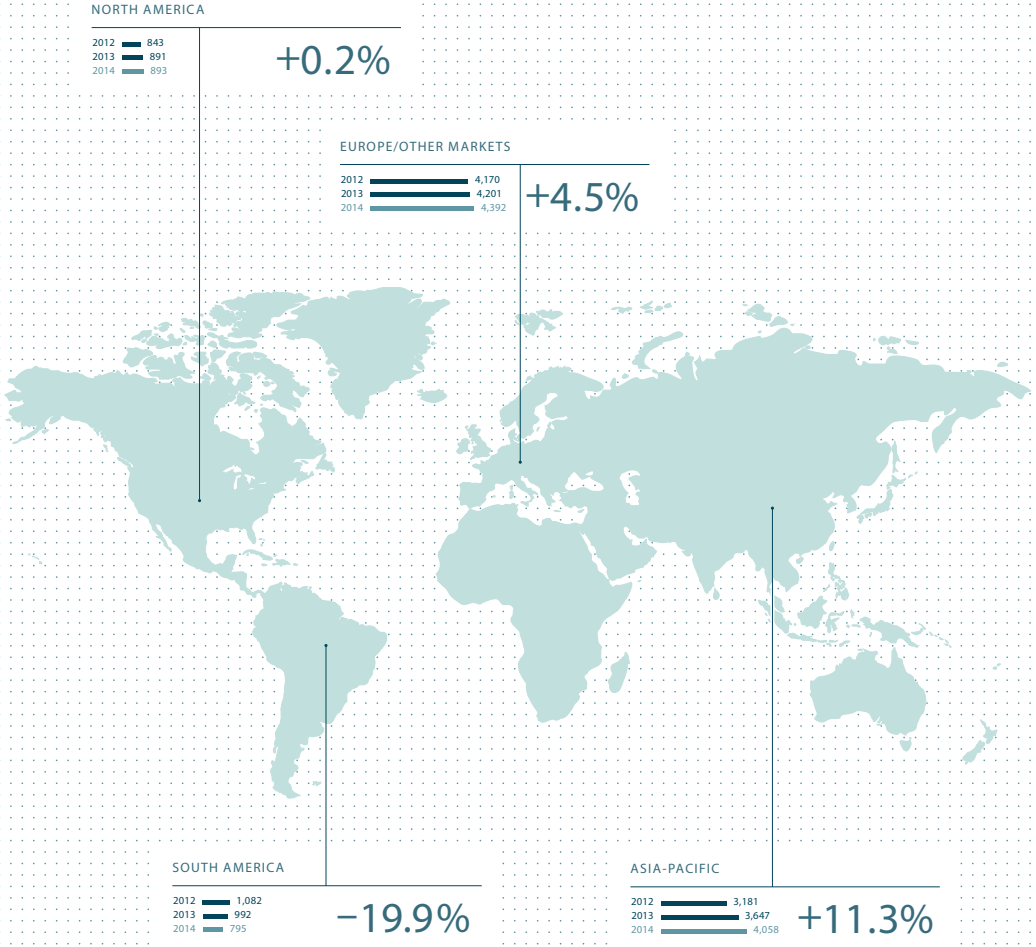
Increasing market penetration from 0.64% to 5%

155,000 hybrid vehicles produced by 2025.

GLOBAL OPPORTUNITY



GLOBAL DEVELOPMENT



GLOBAL DEVELOPMENT

	Thailand		Indonesia		China (Strong existing presence)		India (Strong existing presence)	
	2015-19	2020-30	2015-19	2020-30	2015-19	2020-30	2015-19	2020-30
GDP	7	0	-7	0	-7	-7	-7	-7
Income distribution	24	16	-8	16	16	8	16	8
Employed population	20	20	10	20	20	10	20	10
Household sizes	9	18	0	0	-18	-9	18	9
Oil/fuel prices	3	3	3	3	0	3	6	6
Currency exchange	4	0	-4	0	8	0	8	4
Interest Rates	0	0	0	0	-5	0	5	0
Tax/ Import duties	12	0	0	0	6	0	0	0
New model activity	4	2	4	2	4	2	2	0
Wildcard	0	0	0	0	-2	-1	0	0
Total Score	83	59	-2	42	22	6	68	30

Overview | Costs | Analysis | **Strategy** | Impact | Appendix

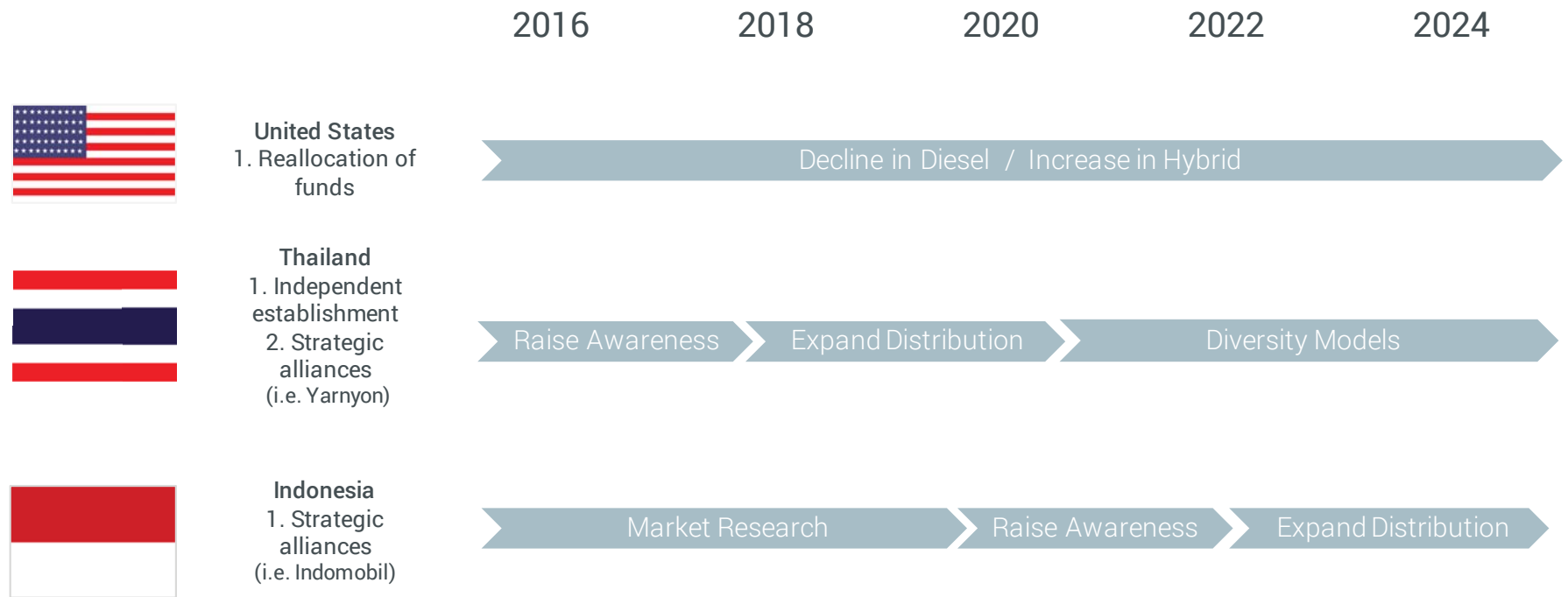
GLOBAL DEVELOPMENT

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Currency exchange	4	0	-4	0	8	0	8	4
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Tax/ Import duties	12	0	0	0	6	0	0	0
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Overview | Costs | Analysis | **Strategy** | Impact | Appendix

IMPLEMENTATION

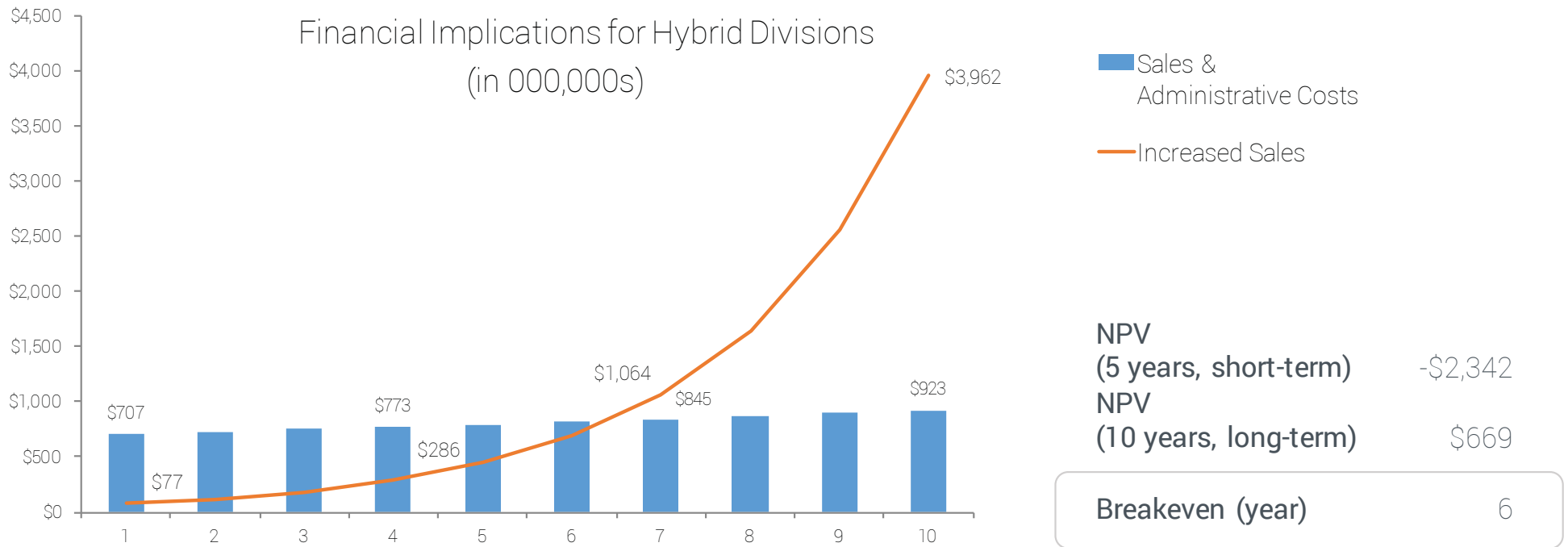
Expanding on the ten year representation of global implementation plan.





FINANCIAL IMPACT

FINANCIALS



KEY TAKEAWAYS



Overview | Costs | Analysis | Strategy | **Impact** | Appendix



STRATEGY 2025

APPENDIX

Company Overview	Industry Overview	Automotive Industry	Vehicle Size Trends
World Light Vehicles	Situation Timeline	Stock Price Timeline	Total Estimated Costs
Non-Quantifiable Costs	Income Statement	Sensitivity Analysis	Recall Costs
Other Costs	WACC	Telling Our Story	Giving Back
Engine Analysis	Hybrid Market Facts	Government Incentives	Hybrid / Electric Trends
Hybrid Sales in the US	MQB Technology	Hybrid Consumer Trends	Marketing Hybrid

APPENDIX

Marketing Impact	Buy-Back Plan	NOx in Europe	Country Analysis
Forecasts Explained	Macro Factors	Country Profile: China	Country Profile: India
Country Profile: Thailand	Country Profile: Indonesia	Country Profile: France	Country Profile: USA
Sales by Country	Implementation Timeline	Product Stages	Financials
Projected Revenue	Projected Costs	Analyst Estimates	Case Study: Toyota
Case Study: GM	Case Study: China	R&D Investments	Risk Mitigation

moving progress



RISKS AND MITIGATION

Risks

Inability to reach desired success in the hybrid vehicle market

Inability to regain market share lost from the scandal through marketing tactics

Not quickly lowering emissions of affected vehicles to meet American standards and accumulating fines.

Mitigation

- Emphasizing the hybrid market in small increments over a period of time
- De-emphasizing diesel, rather than conventional gas cars, in a market that diesel is currently banned in (United States)

- Reinforce customer relationships
- Evaluate efficiency of the plan after three months, and adjust the approach to accommodate for lack of results
- Tailor approach to individuals resisting in the market

- Investing heavily in technology for more sustainable vehicles moving forward
- Emphasize sustainability as a core value of Volkswagen with all future car designs

AUTOMOTIVE INDUSTRY

Automotive Industry Overview	Units	Statistic
International car sales	72.35m	Details →
Worldwide production of cars	68.56m	Details →
Passenger car production in China	21.08m	Details →
Volkswagen is leading passenger car producer	9.77m units	Details →
Toyota is the leading automobile manufacturer (sales)	10.08m	Details →
Sales of passenger cars in the U.S.	7.57m	Details →











Manufacturers & Automotive Suppliers	Values	Statistic
Revenue of Volkswagen	€202bn	Details →
Number of passenger cars produced by Toyota worldwide	8.79m	Details →
Size of automotive supplier market worldwide	€620bn	Details →
Revenue of Continental (Germany)	€34.5 b	Details →

Source: statista.com

Overview | Costs | Analysis | Strategy | Impact | **Appendix**

VEHICLE SIZE TRENDS

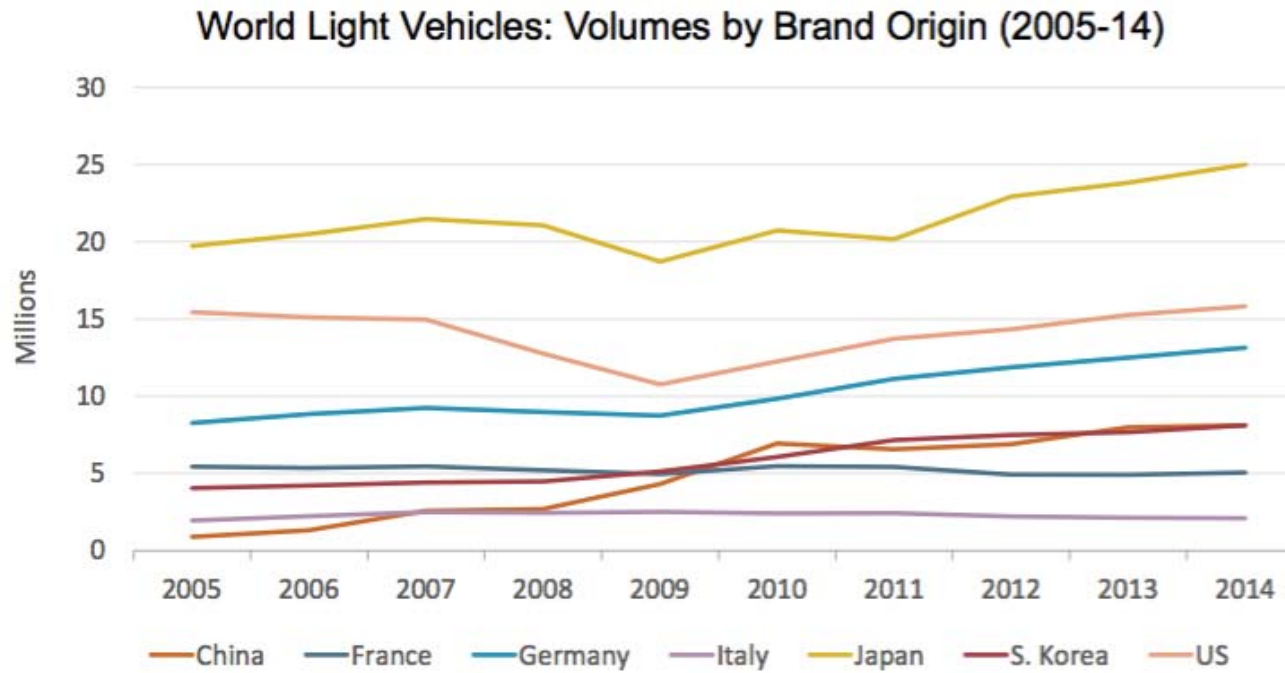
Light vehicles sizes: Top 10 segments, 2014 and CAGR to 2030

Segment:		Share of Market	Growth to 2030 <small>(top 5 risers)</small>
Lower Medium Cars		20.3%	2.8% ↑
SUVs		19.2%	4.8% ↑
Small Cars		16.6%	3.0% ↑
Upper Medium Cars		10.6%	1.5%
Pick-Ups		6.4%	2.1%
Mini MPVs		5.4%	2.4% ↑
Mini Cars		5.1%	1.1%
Executive Cars		2.5%	1.2%
Small Vans		2.0%	2.5% ↑
Full Size MPVs		1.9%	0.7%

Volume CAGR 2014-2030

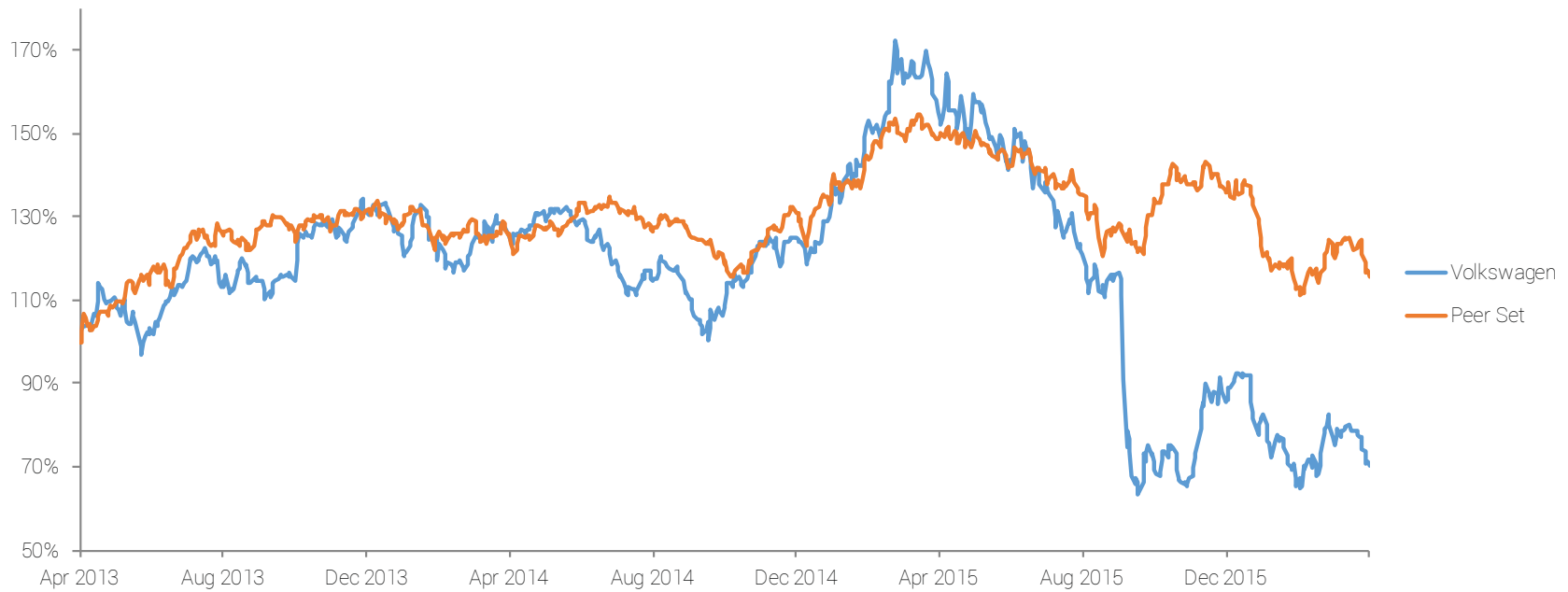
+2.9%

WORLD LIGHT VEHICLES



STOCK PRICE

Automobile Companies



INCOME STATEMENT

Volkswagen Income Statement (Euros in millions, except per share data)

Financial Year Ending December 31	Actual			Expected			
	2014A	2015A	2016E	2017E	2018E	2019E	2020E
Revenue	\$196,957	\$213,684	\$222,231	\$232,232	\$243,843	\$257,255	\$272,690
% Growth		8.5%	4.0%	4.5%	5.0%	5.5%	6.0%
Cost of Sales	(\$160,729)	(\$178,399)	(\$185,535)	(\$193,884)	(\$203,578)	(\$214,775)	(\$227,661)
% Sales	81.6%	83.5%	83.5%	83.5%	83.5%	83.5%	83.5%
Gross Profit	\$36,228	\$35,285	\$36,697	\$38,348	\$40,266	\$42,480	\$45,029
Distribution Expenses	(\$19,668)	(\$21,365)	(\$22,220)	(\$23,220)	(\$24,381)	(\$25,722)	(\$27,265)
% Sales	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Administrative Expenses	(\$6,776)	(\$7,215)	(\$7,503)	(\$7,841)	(\$8,233)	(\$8,686)	(\$9,207)
% Sales	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Other Operating Income/Expense	\$2,769	\$3,005	\$3,125	\$3,265	\$3,429	\$3,617	\$3,834
% Sales	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Operating Profit	\$12,553	\$9,710	\$10,098	\$10,553	\$11,080	\$11,690	\$12,391
Equity-Accounted Investments	\$4,076	\$4,171	\$4,706	\$4,918	\$5,164	\$5,447	\$5,774
% Sales	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
Other Financial Results	(\$1,309)	(\$1,769)	(\$1,996)	(\$2,086)	(\$2,191)	(\$2,311)	(\$2,450)
% Sales	0.7%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
Financial Results	\$2,767	\$2,401	\$2,709	\$2,831	\$2,973	\$3,136	\$3,325
Profit before Tax	\$15,320	\$12,111	\$16,800	\$17,557	\$18,434	\$19,448	\$20,615
Income Tax	(\$3,524)	(\$2,786)	(\$3,864)	(\$4,038)	(\$4,240)	(\$4,473)	(\$4,741)
% Tax Rate	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%
Profit after Tax	\$11,796	\$9,326	\$12,936	\$13,519	\$14,194	\$14,975	\$15,874
Shares Outstanding (in millions)	295.1	295.1	295.1	295.1	295.1	295.1	295.1
Diluted EPS	\$39.97	\$31.60	\$43.84	\$45.81	\$48.10	\$50.75	\$53.79

Overview | Costs | Analysis | Strategy | Impact | Appendix

SENSITIVITY ANALYSIS

(Numbers in Euro mms)

	<u>EPA Penalty</u>	<u>Recall/Legal Costs</u>	<u>Other Gov. Fines</u>	<u>Years Lost</u>	<u>Losses in Operating Income</u>
Bear Case	\$7,430	\$10,000	\$4,000	5	25%
Base Case	\$7,430	\$10,000	\$4,000	5	25%
Better Case	\$7,430	\$10,000	\$4,000	5	20%
Likely Case	\$3,715	\$5,000	\$2,000	3	20%
Bull Case	\$3,715	\$2,000	\$2,000	3	15%

<u>2016</u>	<u>Losses in Operating Income (PV)</u>					<u>Fines/Legal Tax</u>	<u>Tax Deductions</u>	<u>PV Total Costs</u>
	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>Deductions</u>	<u>(\$)</u>		
\$2,346	\$2,278	\$2,223	\$2,180	\$2,147	0%	\$0	\$32,605	
\$2,346	\$2,278	\$2,223	\$2,180	\$2,147	50%	\$1,285	\$31,320	
\$1,877	\$1,823	\$1,779	\$1,744	\$1,718	100%	\$2,056	\$28,314	
\$1,877	\$1,823	\$1,779	\$0	\$0	50%	\$630	\$15,563	
\$1,408	\$1,367	\$1,334	\$0	\$0	100%	\$945	\$10,879	

RECALL COSTS

Recall/Legal Costs

	% Resale Drop	Average Price/Car	Num of cars	Goodwill Costs	International Legal	Total Penalty (mm)
+80%	23%	\$24,386	550000	1000	\$0	\$3,689
+60%	21%	\$24,386	550000	1000	\$0	\$3,340
+40%	18%	\$24,386	550000	1000	\$0	\$2,991
+20%	16%	\$24,386	550000	1000	\$0	\$2,642
+0%	13%	\$24,386	550000	1000	\$0	\$2,294
					Average Penalty	\$2,991

Diesel Models

	<u>Low</u>	<u>High</u>	<u>Average</u>
VW Golf	\$17,995	\$29,495	\$23,745
VW Jetta	\$16,215	\$30,380	\$23,298
VW Passat	\$12,340	\$35,995	\$24,168
VW Beetle	\$20,195	\$32,475	\$26,335
Average	\$16,686	\$32,086	\$24,386

OTHER COSTS

Investor Lawsuit

% compensated	Stock price drop	Shares Outstanding	Compensation (in mms)
0%	\$63.83	295	\$0
5%	\$63.83	295	\$942
10%	\$63.83	295	\$1,884
15%	\$63.83	295	\$2,825
20%	\$63.83	295	\$3,767
Average Penalty			\$1,884

Source: Direct and Derivative Claims in Securities Fraud Litigation (Richard A. Booth, May 2009)
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1398935

International Software Updates

% Recalled	Cost/Car	Num of cars	Total Penalty
10%	\$100	11	110
33%	\$150	11	536
55%	\$200	11	1,210
78%	\$250	11	2,131
100%	\$300	11	3,300
Average Penalty			1,458

WACC

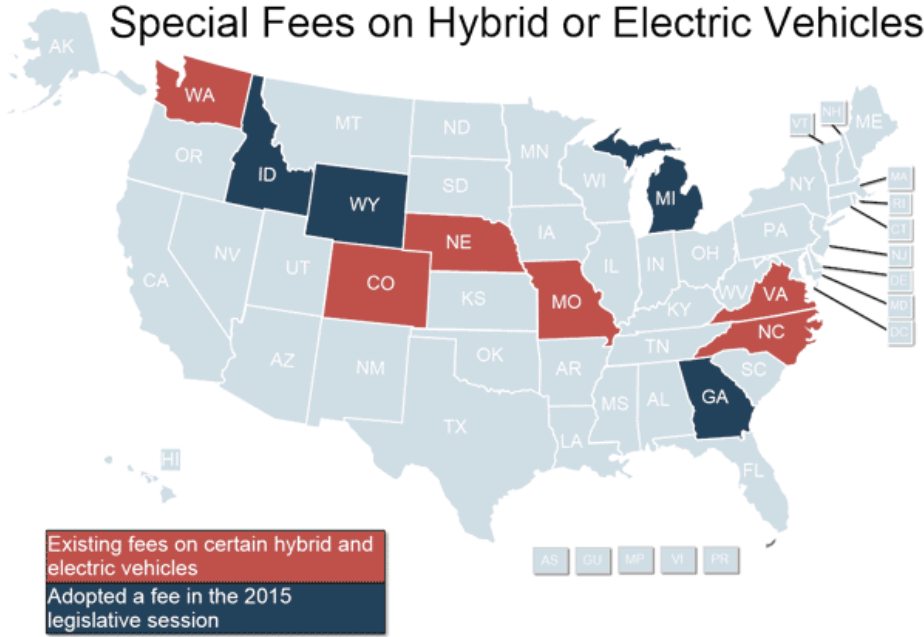
VW Beta	1.41	Source: Reuters
Risk-free rate	1.71%	
Mkt. Risk Premium	6.74%	Source: KPMG
<u>Cost of Equity</u>	11.22%	
Weight of Equity	54.55%	
10-Year Treasury	1.72%	
BBB Spread	2.53%	
Pre-Tax Cost of Debt	4.25%	
Effective Tax Rate	23%	
<u>Cost of Debt</u>	3.27%	
Weight of Debt	45.45%	
WACC	7.60%	

ENGINE COMPARISONS

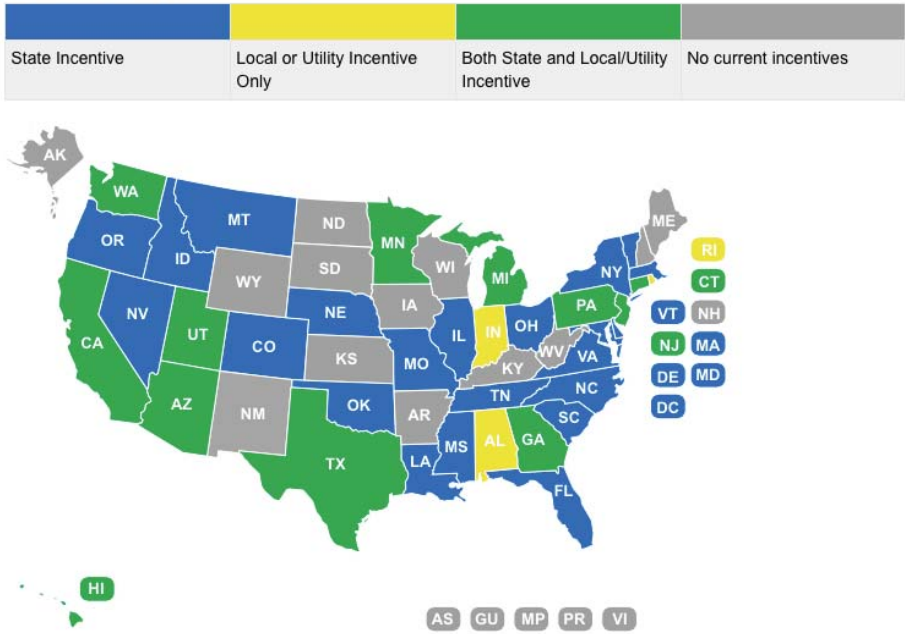
US data on	Diesel	Gas engine	Hybrid engine
Fuel Efficiency	2.9 gallon/100mi	3.7gallon/100mi	2.2 gallon/100mi
Price (MSRP)	~ 24,386	~22825	~28727
Government Incentives	Average tax on diesel fuel : 51.4 c/gallon	Average tax on gasoline fuel : 47 c/gallon	\$3,667 - \$5,335.60 in tax credit
CO2 emitted	~0,4 kg/mile	~0,4 kg/mile	~0,3 kg/mile

Source: internal data, Fuel Economy, Alternative Fuels Data Center (DOE)

GOVERNMENT INCENTIVES

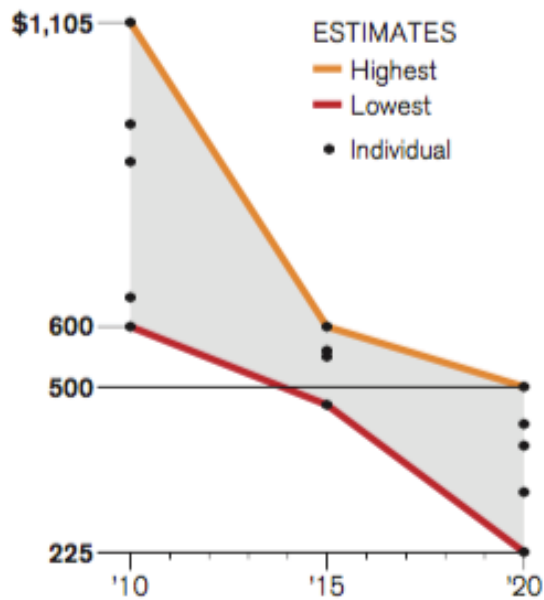


Hybrid and Electric Vehicle Incentives

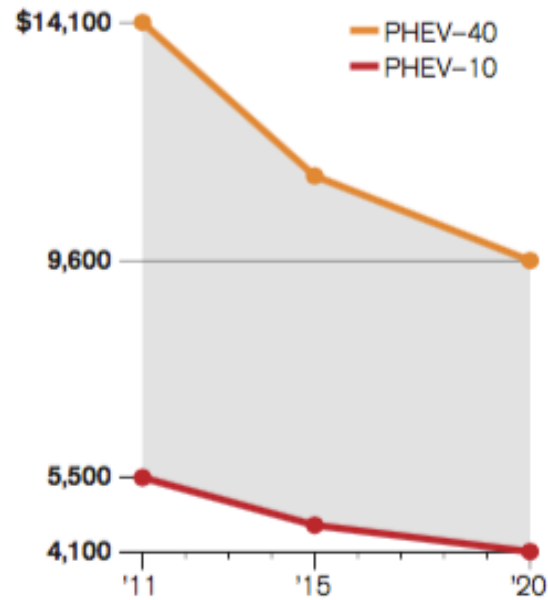


HYBRID / ELECTRIC TRENDS

Estimates of electric-vehicle battery costs
\$ per kilowatt-hour

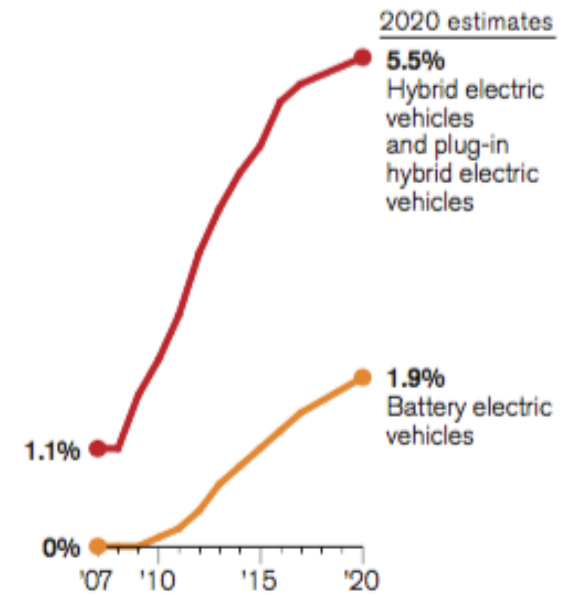


Additional cost of a plug-in hybrid electric vehicle (PHEV) over a conventional vehicle*



*Note: *Low estimates for cars with 40- or 10-mile electric range. Source: National Research Council*

Market share of hybrid and electric vehicles
2007–2020, estimated



Source: J. D. Power & Associates

HYBRID SALES IN THE US

Table 1-19: Sales of Hybrid Vehicles in the United States

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010(R)	2011(R)	2012(R)	2013	2014
Total U.S. sales of hybrid vehicles	17	9,350	20,282	22,335	47,566	84,199	205,828	253,518	352,862	315,688	290,740	274,431	269,178	470,383	547,097	507,272
Domestic	0	0	0	0	0	2,993	15,960	24,198	77,629	86,082	81,882	64,893	52,356	140,126	210,413	206,030
Imports	17	9,350	20,282	22,335	47,566	81,206	189,868	229,320	275,233	229,606	208,858	209,538	216,822	330,257	336,684	301,242

KEY: R = revised.

^a Sales includes leased vehicles and fleet sales.
^b Includes cars produced in Canada and Mexico.

NOTES

The first domestic hybrid vehicle was not introduced in the U.S. market until 2004. A hybrid vehicle is a vehicle powered by a combination of battery-electric motor(s) and an internal combustion engine.

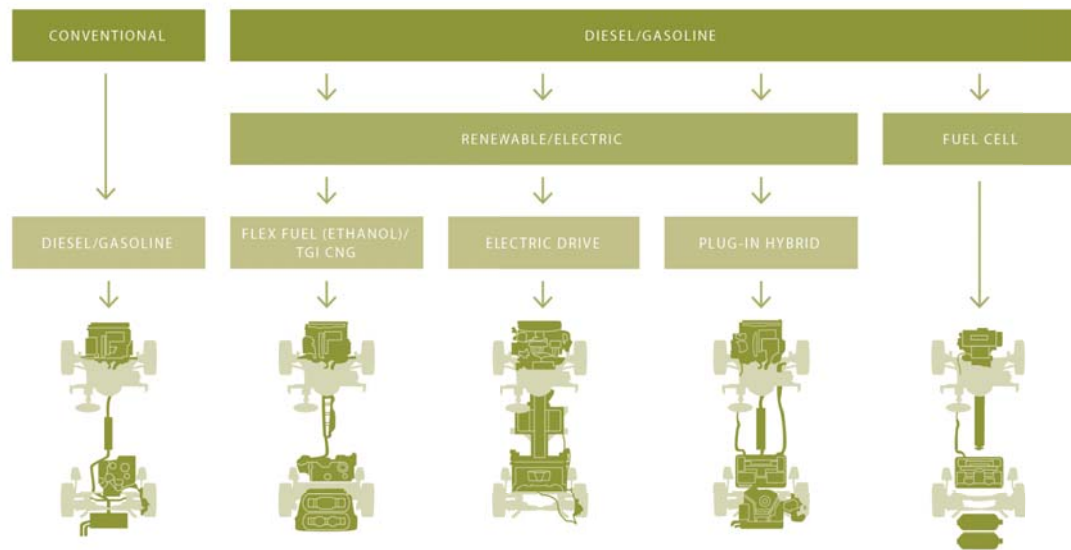
SOURCE

WardsAuto.com, Ward's Automotive Group, personal communications, Jan. 18, 2012, Jan. 23, 2013, and Feb. 25, 2015

MQB TECHNOLOGY

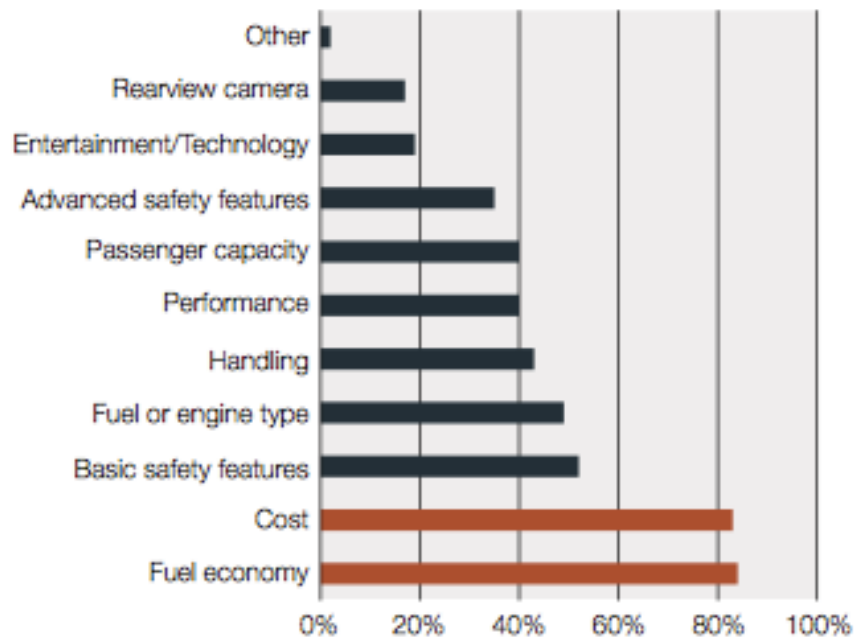
MQB

By commonizing all of the subsystems of a car, development and production can be **streamlined** and profits can be **maximized**.

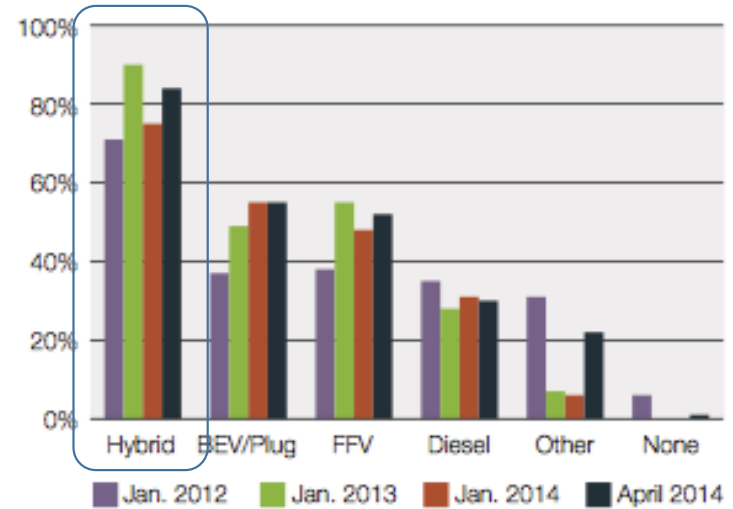


HYBRID CONSUMER TRENDS

7: Most Influential Attributes



14: Interest in Technology

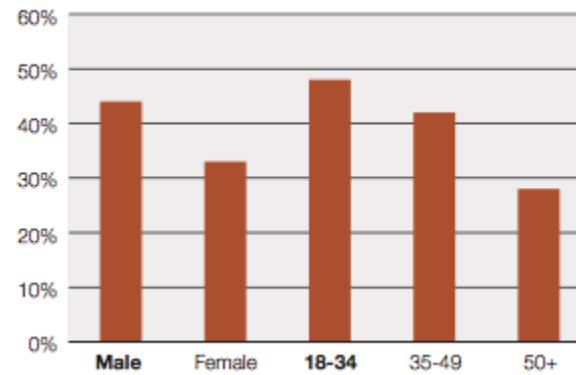


HYBRID CONSUMER TRENDS

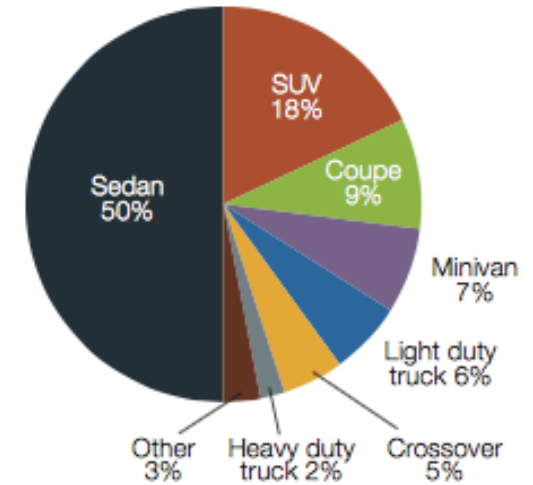
15: For your next car purchase, would you consider buying any of the following types of vehicles?

(% Gas consumers)	Gender		Age			
	M	F	18-34	35-49	50+	
Hybrid – electric and gas	85%	83%	86%	83%	87%	82%
Electric – all electric or plug-in vehicles	55%	56%	54%	60%	58%	45%
Flex fuel – can use gas or gasoline blends containing up to 85% ethanol	52%	55%	48%	52%	56%	48%
Diesel fuel	30%	35%	24%	29%	30%	33%
Other alternative – propane, natural gas	22%	25%	17%	20%	19%	28%
None of the above	1%	1%	0	1%	1%	2%

11: Consider Non-Gas Vehicle?



1: Vehicle Type Currently Driven



BUY-BACK PLAN

1 Incentive for costumers to buy in VW Hybrid models

2 VW pays for the resale value and offers a percentage/premium over Hybrid price

3 Utilize bought-back cars for further software correction or partially reintegrate in production process

CASE STUDY: NOx EUROPE

Engine family	EA 189	EA 189	EA 189
Size	2 liter	1.6 lire	1.2 liter
Units (m)	5.2	3	0.3
Status KBA	Approved	Approved	Approved
Software fix	Yes	Yes	Yes
Hardware fix		Yes	
Working time	approx. 30 min	< 1h	approx. 30 min
Work starts	Q1 FY16	Q3 FY16	Q2 FY16

Overview | Costs | Analysis | Strategy | Impact | **Appendix**

FORECASTS EXPLAINED

- Analysis is available by country with each Macro and Micro driver explained and a weighting score given for each one over time (in 5-year increments) –see below.
- Compare country scores within regions and the weighting of each driver.

	Driver Score			Country Score	
	2020-30	2015-19		2015-19	2020-30
Macro drivers	Multiplier				
GDP	8	3	2	24	16
Income distribution	10	2	2	20	20
Employed population	9	1	2	9	18
Household sizes	3	1	1	3	3
Oil/fuel prices	4	1	0	4	0
Currency exchange	5	0	0	0	0
Interest Rates	7	1	0	7	0
Micro drivers	Multiplier				
Tax/ Import duties	6	2	0	12	0
New model activity	2	2	1	4	2
Wildcard	1	0	0	0	0
FINAL SCORES	Following a staggering 81% increase in 2012 as a result of the first-time buyer incentive scheme, light vehicle sales declined in 2013 and 2014. Demand is even weaker in 2015, partly because the used car market is being flooded, but also as buyers await lower car tax rates. The rebound of GDP growth, infrastructure projects and improving consumer and business confidence will also contribute to rising sales from 2016 onwards.			83	59

FORECASTS EXPLAINED

A ranking from 1 to 10 is assigned to each of the key macro and micro drivers which impact demand along with a brief commentary and a score ranging from +5 (positive) to -5 (negative) has been assigned to each driver for each of the two time periods. Multiplying the indicator ranking by the scores then provides a country score for each indicator in each time period and adding these together finally provides a comparative tally of the opportunity in each market. This final tally for each market in each of the three time periods is then highlighted using a simple traffic light scheme; green denotes which period presents the greatest opportunity, amber for the second best and red for the weakest growth opportunity.

In the case of emerging markets, income distribution is ranked as the leading indicator of future market potential as it quantifies the number of consumers that are potentially crossing over the threshold which means they could afford to buy a new car as opposed to a bicycle, scooter or motorcycle. In developed markets, however, the economic situation is ranked as the lead indicator as this crucially influences consumer confidence and whether they will opt to buy a new car or delay the purchase.

MACROECONOMIC FACTORS IMPACTING AUTOMOTIVE



Disposable incomes

Income distribution

Access to credit

Perceived wealth is crucial to consumer confidence and thus willingness to buy a new car

Interest rates dictate repayment and thus impact willingness to take out finance for a new car

Smaller households mean smaller cars, and vice versa



Household sizes

Employed population

More employed women may mean smaller households



Oil/fuel prices

Currency exchange

High oil prices and weak currencies typically damage market potential for cars

COUNTRY PROFILE: CHINA

Driver Score				Country Score	
Macro drivers	Multiplier	2015-19	2020-30	2015-19	2020-30
GDP	8	2	1	16	8
Income distribution	10	2	1	20	10
Employed population	9	-2	1	18	-9
Household sizes	3	0	2	6	-2
Oil/fuel prices	4	2	1	8	0
Currency exchange	5	-1	0	5	0
Interest Rates	7	-1	-1	-7	-7
Micro drivers	Multiplier				
Tax/ Import duties	6	0	0	6	0
New model activity	2	1	1	4	2
Wildcard	1	-2	-1	-2	-1
<p>A slowdown in China's economic growth has already seen demand growth turn negative in certain months in 2015 but the reduction of the sales tax from 10% to 5% for cars of less than 1600cc will bolster demand in the short term. In the longer term, an end to the sales tax breaks, slower economic growth and potentially rising oil prices are likely to stifle the market's long term potential.</p>				22	6

COUNTRY PROFILE: CHINA

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Macro drivers			
Household sizes	Unlike most markets, the number of 6+ person households is holding fairly steady as generations share a home, keeping full-size MPV sales relatively stable but also supporting full-size SUV sales. It will also be intriguing to follow the impact of the relaxation of the one-child policy on segmentation. Should support up-scaling in conjunction with income distribution.	-1	1
Oil/fuel prices	Lower oil prices are supporting automotive demand in the short term as in most markets.	-1	0
Interest Rates	Lending rates in China have actually remained fairly stable, only slipping from 7.5% in 2007 to 5.3% in 2008-9 before climbing to 6.6% in 2011 and have been at 6% since. No discernible impact on vehicle sales is expected.	0	-1
Tax/ Import duties	China reinstated the 10% sales tax on small cars in 2011, having already phased out subsidies for vehicle trade-ins in rural areas. However, in the wake of negative growth, the sales tax on cars with less than 1600cc has been reduced to 5% and will thus bolster demand in the short term. There are also central government and city-specific subsidies in place which can amount to discounts of up to CNY100,000 (approximately US\$16,000).	1	0
New model activity	As in all markets, the most noticeable change in the breakdown of the Chinese market is the phenomenal growth in demand for SUVs and MPVs, as consumers defect from the traditional small, lower and upper medium segments. For example, between 2006 and 2010, sales of passenger vehicles grew by almost 250% but combined sales of MPVs and SUVs grew 10-fold. The abundance of new SUVs being launched will boost sales.	2	1
<i>Wildcard</i>	A cause for concern is the increasing curbs on new car sales in Chinese cities in order to reduce both congestion and pollution. However, Euromonitor International data suggest that the six cities that have already introduced measures – Beijing, Shanghai, Tianjin, Guangzhou, Guiyang and Hangzhou – actually only account for 12% of all Chinese households with an income over US\$10,000. Electric vehicles are exempt too, supporting the domestic EV industry.	-2	-1

COUNTRY PROFILE: CHINA

Relevance/Significance	Country Scorecard	
	2015-19	2020-30
	Micro drivers	
Tax/ Import duties	<p>China reinstated the 10% sales tax on small cars in 2011, having already phased out subsidies for vehicle trade-ins in rural areas. However, in the wake of negative growth, the sales tax on cars with less than 1600cc has been reduced to 5% and will thus bolster demand in the short term. There are also central government and city- specific subsidies in place which can amount to discounts of up to CNY100,000 (approximately US\$16,000).</p>	1 0
New model activity	<p>As in all markets, the most noticeable change in the breakdown of the Chinese market is the phenomenal growth in demand for SUVs and MPVs, as consumers defect from the traditional small, lower and upper medium segments. For example, between 2006 and 2010, sales of passenger vehicles grew by almost 250% but combined sales of MPVs and SUVs grew 10-fold. The abundance of new SUVs being launched will boost sales.</p>	2 1
Wildcard	<p>A cause for concern is the increasing curbs on new car sales in Chinese cities in order to reduce both congestion and pollution. However, Euromonitor International data suggest that the six cities that have already introduced measures – Beijing, Shanghai, Tianjin, Guangzhou, Guiyang and Hangzhou - actually only account for 12% of all Chinese households with an income over US\$10,000. Electric vehicles are exempt too, supporting the domestic EV industry.</p>	-2 -1

COUNTRY PROFILE: CHINA

		Relevance/Significance		Country Scorecard	
				2015-19	2020-30
Macro drivers					
GDP	China's economy expanded at its lowest in 2014 and China's trend rate of growth is forecast to slow gradually to around 4% by 2030. However, the weaker economic growth may be helped by China's plan for a transition from an investment and export-led economy to one that is driven by consumer demand.	2	1		
Income Distribution	Light vehicle sales have rather closely tracked 10% of households with over US\$10,000 annual disposable income in recent years and on-going healthy household incomes growth bodes well for future demand. Households with more than US\$45,000 disposable income are projected to grow the most by 2030, with their number set to increase from 18.5 million homes in 2014 to 79 million homes in 2030. The general car upgrading trend is thus set to continue, as households can increasingly afford more expensive cars.	2	1		
Employed population	The government's one-child policy decreased the number of people entering the labour force and has resulted in a decline in the share of working-age people. This is negatively impacting on the employed population and will act as a drag on demand. China's old-age dependency ratio has increased from 10.7% in 2000 to 15.1% in 2013 and is set to rise to 23% in 2020.	-2	-1		

COUNTRY PROFILE: INDIA

Driver Score

Country Score

Macro drivers	Multiplier	2015-19	2020-30	2015-19	2020-30
GDP	8	2	1	16	8
Income distribution	10	2	1	20	10
Employed population	9	2	1	18	9
Household sizes	3	2	2	6	6
Oil/fuel prices	4	2	1	8	4
Currency exchange	5	1	0	5	0
Interest Rates	7	-1	-1	-7	-7
Micro drivers	Multiplier				
Tax/ Import duties	6	0	0	0	0
New model activity	2	1	0	2	0
Wildcard	1	0	0	0	0

As expected, light vehicle sales are growing again in India due to the healthier economy and rising consumer and business confidence. The exciseduty reduction has lapsed but persistently low oil prices and four interest rate cuts are further boosting demand in the short term. In the longer term, rising incomes will continue to help consumers upgrade from budgetcars and bikes.

68

30

COUNTRY PROFILE: INDIA

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Macro drivers			
GDP	Although economic conditions remain fairly unstable, GDP growth is set to expand to 6.6% in 2015 and business and consumer confidence are gently improving. Stability is not assured but India seems to be coming out of the mire.	2	1
Income distribution	Passenger car sales historically equated to at least 10% of households with over US\$15k annual disposable income, even with the downturn in 2013, the first decline since 2001. Healthy household incomes growth forecast should help underpin rising car sales but inflation needs to remain under control.	2	1
Employed population	The employed population actually slipped slightly in 2013. The growth rate is slower than for households with sufficient disposable income to be in a position to buy a new car. In reality, car sales growth is expected to be in between these key indicators.	2	1
Household sizes	6+ person households were dominant in India, but have dropped from 45% share in the late 1970s to 30%; full-size MPV share is, not surprisingly, slipping. With household budgets stretching further, autos demand is supported.	2	2
Oil/fuel prices	Falling oil prices are supporting demand in the short term as in most markets, especially compensating for the loss of the fuel duty reduction from January 2015.	2	1
Interest Rates	In September 2015, India's central bank cut its benchmark interest rates to the lowest level in four years. This was the fourth interest rate cut in a nine-month period as the central bank attempts to bolster growth of the Indian economy.	3	2

COUNTRY PROFILE: THAILAND

	Driver Score Multiplier	Driver Score		Country Score	
		2015-19	2020-30	2015-19	2020-30
Macro drivers					
GDP	8	3	2	24	16
Income distribution	10	2	2	20	20
Employed population	9	1	2	9	18
Household sizes	3	1	1	3	3
Oil/fuel prices	4	1	0	4	0
Currency exchange	5	0	0	0	0
Interest Rates	7	1	0	7	0
Micro drivers					
Tax/ Import duties	6	2	0	12	0
New model activity	2	2	1	4	2
Wildcard	1	0	0	0	0
FINAL SCORES				83	59

Following a staggering 81% increase in 2012 as a result of the first-time buyer incentive scheme, light vehicle sales declined in 2013 and 2014. Demand is even weaker in 2015, partly because the used car market is being flooded, but also as buyers await lower car tax rates. The rebound of GDP growth, infrastructure projects and improving consumer and business confidence will also contribute to rising sales from 2016 onwards.

COUNTRY PROFILE: THAILAND

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Macro drivers			
GDP	Thailand's economy will rebound in 2015 with GDP growth of 2.5% in 2015 after gains of just 0.9% in 2014. The resumption of private and public investment, better security and a recovery in exports are the main drivers. Growth, however, is still below potential.	3	2
Income distribution	Passenger car sales have fluctuated around 10% of households with over US\$10,000 annual disposable income but were weak in 2005-9 and in 2011 due to the tsunami in Japan and floods in Thailand itself. The incentive scheme caused a major spike in 2012-13 and a downturn since but sales are projected to recover from 2016 in line with healthy household incomes growth.	2	2
Employed population	Car sales have overheated compared to the employed population but after a short-term correction, the rising employed population should underpin steady car sales growth.	1	2
Household sizes	6+ person households dominated but have dropped from accounting for 41% of homes in 1980 to 9% in 2010 and their share will fall further to 5% in 2030. MPV demand is thus slipping but small car sales are supported, especially with the introduction of new emissions-based taxes from 2016.	1	1
Oil/fuel prices	Lower oil prices have inevitably provided some support to demand in 2015, especially as fuel prices were already at a near-record level in 2014, being higher only in 2012.	1	0

COUNTRY PROFILE: THAILAND

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Macro drivers			
Interest Rates	The benchmark rate in Thailand was cut by 25 basis points in March and April but has held steady since. With the car market so inflated in 2012-13, however, any positive impact on demand in 2015 is incredibly difficult to discern.	1	0
Micro drivers			
Tax/ Import duties	The market should benefit from the new excise tax regime for vehicles, due to take effect in early 2016. Hybrid vehicles will be subject to a 10% tax and eco-cars 12-14% but the rate will be 25-30% on other passenger cars. There could be a pull-forward effect on larger vehicles in 2015, especially pick-ups and vans, but the net effect will be positive.	2	0
New model activity	The share of SUVs jumped to 17% in 2014, to the detriment of MPVs and upper medium cars as in most markets. A key change in Thailand, however, has been the rise of the small car segment, with lower medium cars suffering as a result. With US\$25,000+ disposable income households growing at the fastest rate and 1-3 person households already accounting for 2/3 of homes, this trend should continue, further supported by new models which will benefit from the tax changes.	2	1

COUNTRY PROFILE: INDONESIA

		Driver Score		Country Score		
		2015-19	2020-30	2015-19	2020-30	
Macro drivers		Multiplier				
GDP	8	-1	2	-8	16	
Income distribution	10	1	2	10	20	
Employed population	9	0	0	0	0	
Household sizes	3	1	1	3	3	
Oil/fuel prices	4	-1	0	-4	0	
Currency exchange	5	0	0	0	0	
Interest Rates	7	-1	0	-7	0	
Micro drivers		Multiplier				
Tax/ Import duties	6	0	0	0	0	
New model activity	2	2	1	4	2	
Wildcard	1	0	0	0	0	
FINAL SCORES	<p>As expected, light vehicle sales are growing again in India due to the healthier economy and rising consumer and business confidence. The excise duty reduction has lapsed but persistently low oil prices and four interest rate cuts are further boosting demand in the short term. In the longer term, rising incomes will continue to help consumers upgrade from budget cars and bikes.</p>			-2	41	

COUNTRY PROFILE: INDONESIA

		Relevance/Significance	Country Scorecard	
			2015-19	2020-30
Macro drivers				
GDP	Economic growth is moderating in 2015 and dragging down demand as a result but is due to recover to a consistent healthy 5.5% expansion from 2018.		-1	2
Income distribution	Households with disposable income over US\$10,000 are supporting rapid growth in new car sales generally but those with over US\$25,000 are growing at the fastest rate, especially supporting the lower end of the car market which also benefits from the LCGC (low-cost green car) programme.		1	2
Household sizes	The average household size is diminishing in Indonesia in line with urbanisation and increasing female employment rates, further supporting increased demand for smaller cars and a move away from AUVs (Asian Utility Vehicles) such as the Toyota Avanza that are especially popular in Indonesia.		1	1
Oil/fuel prices	Lower oil prices have compensated to a certain extent for the fuel price hike that occurred in Indonesia in 2014 but the market is still negatively impacted in 2015.		-1	0
Interest Rates	The interest rate rise in November 2014, in conjunction with the fuel price hike, is slightly compensated for by rising incomes and population growth as well as the reduced oil price but demand growth remains negative in the short term.		-1	0

COUNTRY PROFILE: INDONESIA

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Micro drivers			
New model activity	The low-cost green car (LCGC) programme first came on stream in September 2013 and the on-going commitment to this is bringing investment and new entry-level models which are helping to bolster demand at the entry-level that will also benefit from rising incomes and demographic changes. Nevertheless, demand is down in 2015 but is significantly outperforming the market overall.	2	1

COUNTRY PROFILE: FRANCE

	Driver Score				Country Score	
	2010-14	2015-19	2020-30		2015-19	2020-30
Macro drivers	Multiplier					
GDP	10	0	1	2	10	20
Income distribution	9	0	1	1	9	9
Employed population	7	0	1	1	7	7
Household sizes	3	1	1	1	3	3
Oil/fuel prices	4	0	1	0	4	0
Currency exchange	5	0	1	0	5	0
Interest Rates	8	0	1	0	8	0
Micro drivers	Multiplier					
Tax/ Import duties	6	0	0	0	0	0
New model activity	2	0	0	0	0	0
Wildcard	1	0	0	0	0	0
FINAL SCORES	<p>Real GDP should rise by 1.4% in 2016 after gains of 1.1% in 2015. GDP growth is forecast to remain modest but is stable and, crucially, above the 1% threshold which typically suggests increasing car sales. However, sales are low by historic standards and are not expected to return back to the natural 2+ million units level until 2017. Record sales are not expected until 2023.</p>				46	39

COUNTRY PROFILE: FRANCE

Relevance/Significance		Country Scorecard	
		2015-19	2020-30
Macro drivers			
GDP	A weak euro and low energy prices should keep the French economy on a modest but steady recovery in 2016 but weakness in domestic demand remains a drag. Real GDP should rise by 1.4% in 2016 after gains of 1.1% in 2015. GDP growth is forecast to remain modest but is stable and, crucially, above the 1% threshold which typically suggests increasing car sales. However, sales are low by historic standards and are not expected to return back to the natural 2+ million units level until 2017. Record sales are not expected until 2023.	1	2
Income distribution	Passenger car sales have fluctuated around 10% of households with over US\$45,000 annual disposable income. The modest economic growth forecast should help to return passenger car demand to this ratio and to track household incomes growth from 2020 onwards.	1	1
Employed population	Unemployment was 10.4% in 2015 and it will drop to 10.1% in 2016. Public sector employment will fall significantly over the next two years. Youth unemployment exceeds 25% and the participation rate is lower than in neighbouring countries. A positive step has been to cut taxes on workers with low salaries.	1	1
Oil/fuel prices	Falling oil prices invariably provided a gentle boost to passenger car sales earlier in 2015 but their short-lived rise was undoubtedly a factor in the subtle deceleration in car sales growth.	1	0
Interest rates	The long-term lending and interest rates in France remain historically low, positively supporting credit availability and, in turn, car sales.	1	0

COUNTRY PROFILE: USA

		Driver Score		Country Score	
		2015-19	2020-30	2015-19	2020-30
Macro drivers	Multiplier				
GDP	10	1	0	10	0
Income distribution	9	1	1	9	9
Employed population	7	1	0	7	0
Household sizes	3	1	1	3	3
Oil/fuel prices	4	1	0	4	0
Currency exchange	5	0	0	0	0
Interest Rates	8	0	1	0	8
Micro drivers	Multiplier				
Tax/ Import duties	6	0	0	0	0
New model activity	2	2	1	4	2
Wildcard	1	-1	0	-1	0
FINAL SCORES	<p>The looser finance environment, rising employment, robust consumer and business confidence and low oil prices drove light vehicle sales to a record 17.5 million units in 2015. Interest rates were raised in December but the Federal Reserve is not expected to hike rates in 2016. The economy will perform only modestly in the medium and long term and employment gains decelerate from 2017 too; a general deceleration in light vehicle sales growth is therefore assumed.</p>			36	22

COUNTRY PROFILE: USA

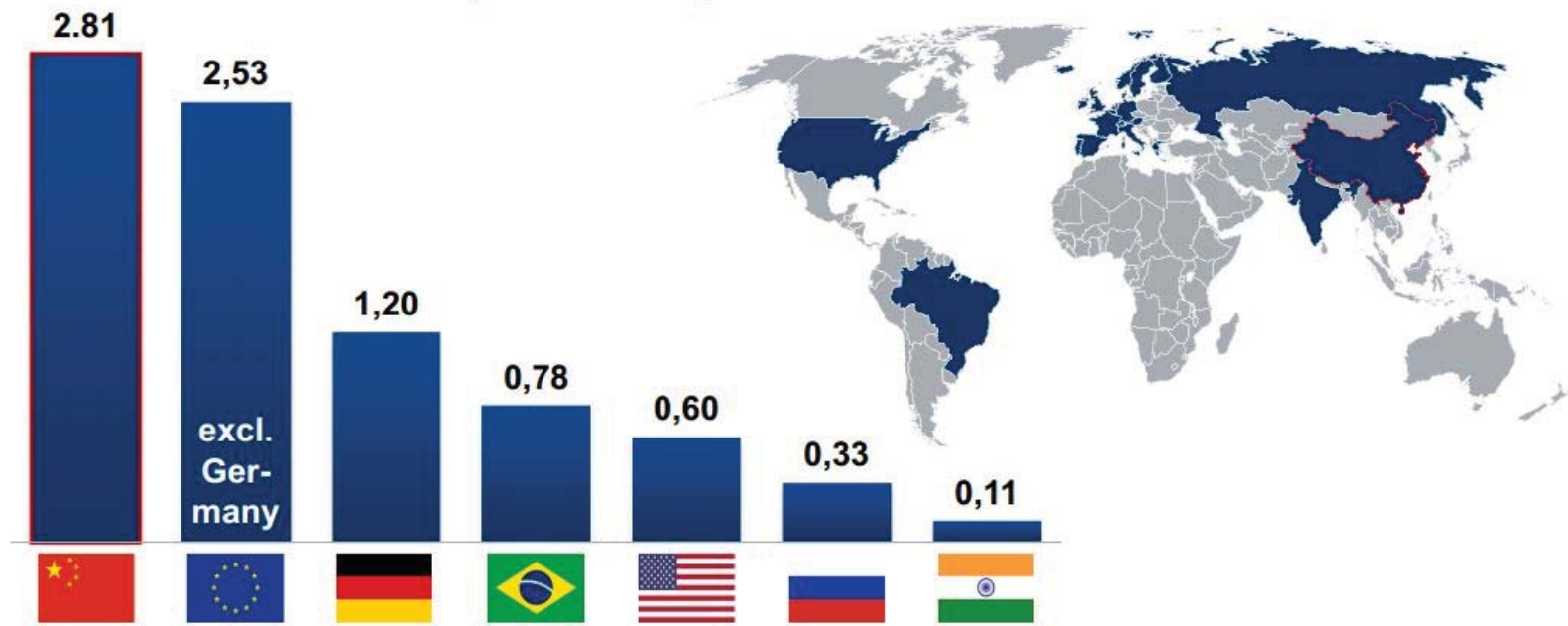
	Relevance/Significance	Country Scorecard	
		2015-19	2020-30
	Macro drivers		
GDP	Real GDP is expected to grow by 2.1% in 2016 –down from 2.3% in 2015. In line with the looser finance environment, rising employment, robust consumer and business confidence and of course low oil prices, light vehicle sales rose to a record 17.5 million units in 2015. Overall, the economy will perform only modestly in the medium and long term with annual growth of about 2.2%.	1	0
Income distribution	Light vehicle sales have fluctuated around 10% of households with over US\$15,000 annual disposable income. The reasonable growth forecast should underpin rising demand in the medium and long term.	1	1
Employed population	Employment already exceeds its pre-recession peak but the job market continues to grow. However, the underemployment rate stands at a surprising 12.6% and employment gains decelerate from 2017. A general deceleration in light vehicle sales growth is therefore assumed in the medium and long term.	1	0
Household sizes	Urbanisation and higher female employment rates lead to smaller household sizes. Single-person households climbed from 18% in 1977 to 28% in 2015 and are forecast to rise to 29% in 2030. Not a major change but is still a subtle positive for small car demand.	1	1
Interest Rates	The lending rate remains at a historically low 3.3% but interest rates were raised in December 2015. Although they could rise further in the future, the Federal Reserve is not expected to hike rates in 2016.	0	1

COUNTRY PROFILE: USA

Relevance/Significance	Country Scorecard	
	2015-19	2020-30
Macro drivers		
Oil/fuel prices	1	0
Micro drivers		
New model activity	2	1
Emissions regulations	-1	0

SALES BY COUNTRY

Volkswagen Group sales 2012 – selected countries in comparison
Deliveries to customers [million units]



PRODUCT STAGES

Strategies	Product Stages			
	Introduction	Growth	Maturity	Decline
Product	Offer a basic product	Offer product extensions, services, and warranty	Diversify brand and models	Phase out weak items
Price	Use cost-plus	Price to penetrate	Price to match or beat competitors	Cut Price
Distribution	Build selective distribution	Build intensive distribution	Build more intensive distribution	Go selective: phase out unprofitable outlets
Advertising	Build product awareness among early adopters and dealers	Build awareness and interest in the mass market	Stress brand differences and benefits	Reduce to level needed to retain hard-core loyals
Sales Promotion	Use heavy sales promotion to entice trial	Reduce to take advantage of heavy consumer demand	Increase to encourage brand switching	Reduce to minimal levels

Overview | Costs | Analysis | Strategy | Impact | **Appendix**

PROJECTED REVENUE

(in 000,000s)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Cash Outflow										
General Advertisement	\$340	\$350	\$361	\$372	\$383	\$394	\$406	\$418	\$431	\$444
Buy-back Strategy	\$367	\$378	\$390	\$401	\$414	\$426	\$439	\$452	\$465	\$479
R&D additional										
Subtotal	\$707	\$729	\$751	\$773	\$796	\$820	\$845	\$870	\$896	\$923
Cash Inflow										
b) Units of Car	3000	4650	7208	11174	17320	26848	41616	64509	99994	155000
Sales Revenue	\$77	\$119	\$184	\$286	\$443	\$686	\$1,064	\$1,649	\$2,556	\$3,962
FCF	-\$631	-\$610	-\$566	-\$487	-\$354	-\$134	\$219	\$779	\$1,660	\$3,039
NPV (Short-term)										
NPV (Long-term)										
Breakeven (year)										

PROJECTED COSTS

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Costs	\$707	\$729	\$751	\$773	\$796	\$820	\$845	\$870	\$896	\$923
% Change										
Increased Sales	\$77	\$119	\$184	\$286	\$443	\$686	\$1,064	\$1,649	\$2,556	\$3,962
% Change										

ANALYST ESTIMATES

- Source: Bernstein
 - Max base fine for 140hp car = \$21,775
 - Declines if more than 10 cars affected
 - 100,001st car, base fine = 3.2%
 - “Total cost less than 10bn Euro in bull case...is still credible in [Bernstein’s] view” (Max Warburton)
- Source: Kepler Cheuvreux
 - Total fines = 1.6bn Euro
 - Recall provisions = 8bn Euro
 - Additional R&D = 900mm Euro/year
 - Profit Loss = 1bn Euro/year
 - Total < 19.7bn

CASE STUDY: TOYOTA

- Overview:
 - Gas-pedal stuck, causing acceleration and accidents (37 deaths)
 - Revenue decline from \$19.1bn (2009) to \$17.8bn (2011), increasing to \$21bn in 2013
 - Revenue change effect fades over time
- Expectations:
 - VW Lose 20% operating income for 5 years
- Costs (Toyota)
 - \$1.1bn recalling 9mm cars
 - \$25.5mm lawsuits
 - More noise than damage
- Scaled Costs (VW)
 - Estimated recall costs of \$1.6bn

CASE STUDY: GM RECALL

- Overview:
 - Faulty ignition switches prevent airbags from inflating
 - 800,000 cars recalled in 2014; **30mm** through 2015,
 - Known to GM for at least a decade; 124 deaths
 - \$900mm fine; total costs = **\$7bn**

CASE STUDY: CHINA

“With total investment of more than €18 billion in new vehicles and technologies, new factory capacity and new, eco-friendly models, the Volkswagen Group has launched the **biggest electric mobility initiative in Chinese automotive history**.

In 2015, the Group’s existing fleet of highly efficient and innovative models, which already includes the Porsche Panamera S E-Hybrid, will be joined by the Audi A3 e-tron and the Golf GTE. From 2016, two models developed specifically for the Chinese market will follow: the Audi A6 and a new mid-size sedan from the Volkswagen brand. Both these plug-in hybrid models are being co-developed with joint venture partners FAW Volkswagen and Shanghai Volkswagen, and will be built in China.

The modular platform, which is being implemented at the Chinese factories too, will in future allow the Group to **electrify every model in the range**, right across the spectrum from compact cars to large limousines, and from all-electric to plug-in hybrid models.”

– Volkswagen Sustainability Report 2014

R&D INVESTMENTS

In 2014, the Volkswagen Group invested **€11.5 billion in research and development**. This expenditure is set to increase over the next few years: between 2015 and 2019, the Volkswagen Group Automotive Division is planning to invest around **€85.6 billion in new models, innovative technologies and its global presence**. Around two-thirds of all investments are dedicated to more efficient vehicles, alternative powertrains and more environmentally compatible production. The investment program has earmarked €21.9 billion for development work alone. The total investment sum of €85.6 billion does not include our joint ventures in China, which will be investing a further €22.0 billion in new factories and products between 2015 and 2019, financed from their own funds.

– Volkswagen Sustainability Report 2014

Overview | Costs | Analysis | Strategy | Impact | **Appendix**