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## **The Volkswagen Scandal**

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“A sustainable supply chain and environmentally compatible transportation solutions form an indispensable part of demonstrating comprehensive responsibility for human rights, as well as a commitment to the environment and to the battle against corruption.”

*Volkswagen Sustainability Report 2014, page U3.*

Volkswagen shocked the world on September 18, 2015 with its response to the U.S. Environmental Protection Agency’s (EPA) notice that Volkswagen’s “clean diesel” vehicles were found to be in violation of the Clean Air Act. In its response, the German automaker admitted that it had deliberately equipped its line of Turbocharged Direct Injection (TDI) diesel engines with software that was intended to “bypass, defeat, or render inoperative elements of a vehicle’s emission control system” during emissions testing.<sup>1</sup> Initial reports suggested approximately 500,000 Volkswagen diesel cars, model years 2009 through 2011, were affected by the device. As the scandal continued to unfold, the estimated number of vehicles affected grew to 11 million vehicles, across multiple brands worldwide.<sup>2</sup> Some reporters have referred to the scandal as “Dieselgate,” a throwback to the Watergate scandal that led U.S. President Richard Nixon to resign in 1974.<sup>3</sup>

The September 2015 announcement was preceded by a series of events that began in early 2014 when U.S. and German researchers from the International Council on Clean Transportation (ICCT) conducted tests on diesel models of the Volkswagen Passat, Jetta, and the BMW X5 in hopes of confirming that the “clean diesel” technology these cars incorporated was in fact “clean.”<sup>4</sup> ICCT enlisted the help of researchers from the West Virginia University (WVU) Center for Alternative Fuels, Engines and Emissions. At the same time, the California Air Resources Board (CARB) was conducting its own tests on the vehicles. The ICCT/WVU researchers road tested their vehicles under real driving conditions, while CARB’s tests were performed in a lab. The results were shocking. Of the vehicles tested on the open road, the Jetta exceeded U.S. emissions standards by 15 to 35 times the upper limit and the Passat tested at 5 to 20 times the standard; the BMW X5 passed the road test. Vehicles tested by CARB passed all of the emissions tests.<sup>5</sup> The EPA and CARB were notified of the results and opened investigations into the matter. Initially, Volkswagen denied any wrongdoing.

In December 2014, Volkswagen issued a voluntary recall of about 500,000 vehicles in the United States, citing a software glitch as the reason for the emissions problem and implementing a software patch. CARB continued testing the repaired vehicles and found little improvement. In July 2015, CARB and the U.S. Environmental Protection Agency notified Volkswagen that they would not certify its line of 2016 TDI vehicles unless they comply with emission standards. It wasn’t until September 2015 that the Company, unable to explain the tests, finally admitted that the cars had been intentionally designed to provide inaccurate emissions test results. On September 23, 2015, CEO Martin Winterkorn released a statement accepting responsibility for the situation and resigned his position.

The emissions scandal led to significant financial concerns for Volkswagen. Initial charges of €6.7 billion in the third quarter of 2015 have led the company to post of a loss of €1.7 billion related to the recalls. This figure does not include fines, penalties, or compensation, and analysts are projecting total costs for the scandal to rise to tens of billions of Euros. In

the first two months after the scandal broke, the company's market capitalization dropped 40% and Moody's downgraded the Company's rating one notch.<sup>6</sup> In the U.K., one of the company's biggest markets, sales dropped 10% in October and 20% in November. In the U.S. sales declined 25% in November. Even in Germany, Volkswagen's home market, sales dropped 2% in November, although that market grew 8.9% in the same period.<sup>7</sup>

On September 25, 2015, Matthias Muller was named the new CEO of Volkswagen. His every move will be scrutinized as the company faces criticism from the nearly 11 million owners of vehicles affected by the 2015 diesel scandal. Previously he enjoyed an untarnished reputation and many years of success at Porsche. However, he will have many hurdles to overcome as he works to re-establish Volkswagen's reputation for environmental friendliness and restore the confidence of consumers, employees, government regulators, and the general public, in addition to developing a strategy to continue growing the company's sales in a highly competitive international industry.

## COMPANY BACKGROUND

The history of Volkswagen dates back to 1937 Germany, where a company called "Deutsche Arbeitsfront" was tasked with creating a vehicle affordable enough for every German family.<sup>8</sup> Shortly thereafter, during WWII, workers from concentration camps built cars for the German army. After the war, the factory was taken over by the British military and used to produce "Volkswagen" vehicles, which in German means "People's Car." For the next ten years, control of the company switched hands while the "Beetle" model became increasingly popular. The next seven decades for Volkswagen were full of acquisitions and several legal battles that ultimately resulted in an automobile empire including 12 world-renowned brands: Audi, Bentley, Bugatti, Lamborghini, Porsche, Ducati, Seat, Skoda, Scania, Man, VW Commercial Vehicles, and Volkswagen. In 2014, Volkswagen was one of the largest automobile firms with a 13% global market share for passenger cars. It produced 41,000 vehicles every week-day in its 119 production plants. That same year it sold 10.1 million vehicles.

### "Strategy 2018"

In December 2007, under the direction of then CEO Martin Winterkorn, the Volkswagen group launched an incredibly ambitious growth strategy called "Strategy 2018." This strategy focused on the following four strategic goals intended to drive Volkswagen to the top of the global automobile industry:

- Volkswagen intends to deploy intelligent innovations and technologies to become a world leader in **customer satisfaction** and quality.
- The goal is to increase **unit sales** to more than 10 million vehicles a year; in particular, Volkswagen intends to capture an above-average share of growth in the major growth markets.
- Volkswagen's aim is a sustainable return on **sales before tax** of at least 8% so as to ensure that the Group's solid financial position and ability to act are guaranteed even in difficult market periods.

- Volkswagen aims to become the **top employer** across all brands, in all companies and regions. This is necessary in order to build a first-class team.<sup>9</sup>

The ultimate goal of “Strategy 2018” was to “position the Volkswagen Group as a global economic and environmental leader... the best automaker in the world by 2018.”<sup>10</sup> In an interview with Forbes in 2013, Winterkorn said the goal was to make Volkswagen “the world’s most profitable, fascinating, and sustainable automobile manufacturer” by 2018 and highlighted the goal of having the most satisfied customers and employees in the industry. Until recently, Volkswagen was well underway to achieving these goals, having achieved over 10 million unit sales in 2014, more than half of which were attributed to the Volkswagen Passenger Cars brand. However, the success was short-lived. On October 26, 2015, Toyota officially released its sales numbers for the first three quarters of 2015; Volkswagen had fallen behind.<sup>11</sup>

## OPERATIONS AND INNOVATION

The Volkswagen Group is comprised of two main divisions: the Automotive Division, for which they are most well-known, and the Financial Services Division, which manages the financing, leasing, insurance and other banking activities of the Company. The Financial Services Division also provides financial services and lending to customers and dealerships.

The Automotive Division, which as of December 31, 2014 accounted for 87% of the Company’s operating profits (€10,997m), is further divided into the Passenger Cars group and the Commercial/Power Engine group. 96% of total Company sales are attributed to the Passenger Cars group and, among the company’s brands, Volkswagen passenger cars were the top selling vehicle at 56% of total vehicle sales in the Company in 2014. Approximately 43% of vehicle sales came from Europe, 40% from Asia-Pacific, 9% from North America, and 8% from South America in 2014 (see Exhibit 1). According to the Company’s website, as of May 26, 2015, Volkswagen AG operated 119 production plants in 31 countries across Europe, the Americas, Asia, and Africa (see Exhibit 2). Its vehicles are sold in 153 countries and the Financial Services Division manages operations for over 51 countries. In 2014, Volkswagen had the strongest market share presence, in terms of vehicles sold, in Europe (see Exhibit 3). The typical Volkswagen end-consumer is between the ages of 19 and 32, is financially conscious, and values safety and reliability.<sup>12</sup> There are over 2,600 Volkswagen dealerships worldwide.<sup>13</sup>

For the past 65 years Volkswagen has been adding brands to its portfolio. The Company’s most recent move involved a tender offer to Scania AB’s shareholders for all shares outstanding, which was approved. Volkswagen intends to continue international expansion efforts in China with its electric and plug-in vehicles as well as focus on product innovations, including piloted driving, lightweight materials for vehicle body-shells, and emergency assist technology that attempts to awaken a driver that has fallen asleep. The company also intends to grow the financial services group through joint ventures to continue what it calls its financial “internationalization trajectory.” An example of this trajectory is the Volkswagen Financial Services South Africa joint venture, which started in the spring of 2015 and helped the Group increase their financial footprint.

Innovation is an important part of the Volkswagen strategy. For example, in 2012 Volkswagen AG introduced the MQB (Modular Transverse Matrix) platform, which allows the company to share modular construction of several automobiles and integrate production across different models, brands, and vehicle sizes; specifically transverse, front-engine, and front-wheel drive automobiles.<sup>14</sup> Using MQB, the company will ultimately be able to build all of its vehicles from four basic “kits” and easily exchange common components such as diesel, hybrid, or electric drive trains for gasoline engines based on consumer demand. Streamlining efficiency, the company expects to reduce car production time by 30%.<sup>15</sup> In a recent investor’s presentation at a J.P. Morgan Auto Conference, Volkswagen showed that it is continuing to roll out the toolkit strategy across its different segments and regions while realizing further economies of scale in unit cost.<sup>16</sup> Additionally, Volkswagen will be furthering its work with Daimler AG to produce the Crafter delivery van, which will continue into 2016.

### **A CLOSER LOOK AT THE COMPANY**

Volkswagen is a publicly traded company in which Porsche Automobile Holding SE holds the largest portion (31.5%) of the 475,731,296 shares outstanding as of December 31, 2014. The current voting distribution gives Porsche 50.73% of the voting rights. In exchange for this voting power, Volkswagen appoints members to Porsche’s executive board. Volkswagen’s organizational structure includes the recently elected CEO, Matthias Muller, and seven members of the Management Board. Reporting to the Management Board are twenty members of the Supervisory Board who are responsible for monitoring management, approving important corporate decisions, and appointing the members of the Management Board.<sup>17</sup> A listing of Supervisory Board Members can be found in Exhibit 4.

One of the goals of the Group’s “Strategy 2018” is to be a top employer. The company has defined being a “top employer” as 1) attractive employment, 2) job security, 3) good working climate through leadership and cooperation, 4) remuneration in line with performance, 5) personal development opportunities, and 6) product and company image.<sup>18</sup> As of December 2014, almost 113,000 associates were employed at the site of Volkswagen AG and another 480,000 were employed world-wide under the Volkswagen Corporation, an increase of 4.7% from 2013. According to the Company website, females make up 16.2% of the workforce, 3.5% are part-time workers, and the average age of an employee is 42.8 years.

Volkswagen values the opinions of its employees, and in 2014 nearly 443,000 Volkswagen associates were able to make their voice heard by participating in a survey called “the barometer of opinion.” Management generated a report for each business area and supervisors reviewed the results with their direct reports. The company uses a reward system to encourage employees to think creatively. Employees are rewarded for submitting new ideas. To date, over 2 million ideas have been submitted and the company pays out over €8m in bonuses annually.

Volkswagen is also committed to investing in the skills and competence of its employees, striving to provide personal and professional prospects at all levels. Volkswagen not only provides training opportunities for all levels of associates, from trainees to executives, but

also helps develop university graduates so they are ready to start at Volkswagen when they graduate. The company also provides the opportunity for associates that have recently completed the proper training to travel abroad and work in another country for a specified number of months. There is also a commitment to the advancement of women in the organization. The Company plans to “lift the proportion of female executives in the coming years.”<sup>19</sup>

## **Social Responsibility**

For years Volkswagen has focused on what it considered its strength and competitive advantage: an attractive and environmentally friendly range of automobiles.<sup>20</sup> The Company’s 2014 annual report includes initiatives to reduce CO<sup>2</sup> gases and to be responsible stewards of the environment. Examples of these initiatives are to increase ride sharing in countries such as China and to increase the number of electric vehicles on the road. The annual report also dedicates sections to corporate and social responsibility and touts management’s commitment to ethical practices.

To support its “environmentally friendly” emphasis, Volkswagen has aired commercials that claim its vehicles emit less greenhouse-gas emissions while maintaining a satisfactory level of acceleration.<sup>21</sup> In the 1960s, the first U.S. ad campaigns urged potential buyers to “Think Small” and buy the Beetle. In 2010, Volkswagen launched the “Think Blue” campaign as a way to “promote eco-friendly driving and green initiatives” and introduced environmentally friendly products, including “clean diesel,” and other technologies under the “Blue Motion” label.<sup>22</sup> Other recent ad campaigns further showcased the company’s “clean-diesel” technology. Volkswagen was awarded the “Green Car of the Year” award by the Green Car Journal in 2009 and 2010 for the Jetta TDI Clean Diesel and Audi A3 TDI Clean Diesel, respectively; the first non-electric and non-hybrid models to be selected for the award.<sup>23</sup>

Volkswagen’s Code of Conduct highlights the Company’s responsibility for “continuous improvement of the environmental tolerability of our products” and for “making ecologically efficient technologies available throughout the world.”<sup>24</sup> It is a Group-wide guideline that outlines the strategy for corporate global and local responsibility and for which each individual is equally responsible for compliance. The Code of Conduct states that to achieve the goal of being number one among the world’s automobile manufacturers, they must:

- Act responsibly, for the benefit of our customers, shareholders, and employees,
- Consider compliance with international conventions, laws, and internal rules to be the basis for sustainable and successful economic activities,
- Act in accordance with our declarations; and
- Accept responsibility for our actions.

## **Major Brands**

Although Volkswagen has 12 well-known brands in its portfolio, its two marquee brands are Volkswagen and Audi.

### *Volkswagen*

Volkswagen has risen to become one of the most recognizable brands in the world. In 2014, the goodwill valuation of the brand was \$23 billion.<sup>25</sup> Over 4.5 million Volkswagen Passenger cars were sold in 2014. The Volkswagen brand is made up of 23 different models and offers a vast array of vehicle styles: sedan, hatchback, station wagon, MPV, SUV, coupe, and cabrio. The top five models produced are the Golf, Jetta, Polo, Passat, and Tiguan. The Volkswagen Golf celebrated its 40th anniversary in 2014. Marketed as “The Hatchback,” the Golf comes in a 2-Door and 4-Door model. The majority of the Golf deliveries were made to the Asia-Pacific region (48.6%) in 2014.<sup>26</sup> Of course, Volkswagen’s most recognizable and iconic car is the Volkswagen Beetle. It grew in popularity after the 1968 movie “Love Bug” where the Beetle “played” a character named “Herbie.” Four years later, the Beetle broke the record for most vehicles ever produced, knocking the Ford Model T to second place.<sup>27</sup>

### *Audi*

The Audi brand is the Volkswagen Group’s most profitable automobile and the second largest in terms of absolute vehicle sales. The brand is made up of 12 different models. Its top five models, in order of units produced, are the A3, A4, A6, Q5, and Q3. The Audi brand is offered in six different vehicle styles: sedans, SUVs, crossovers, wagons, coupes, and convertibles. In 2014, the A3 e-tron had the most deliveries to the Europe/Other Markets region with 47% of total deliveries.<sup>28</sup> In 2015, deliveries to customers of the Audi brand increased by 3.8% over 2014. In 2014 the company spent \$159 million in measured-media, about \$260 million less than it spent on the Volkswagen brand.<sup>29</sup> In 2014, the Audi brand generated 20 million online views, and about 500,000 Facebook likes, shares, and YouTube comments.<sup>30</sup>

## **Finances**

In 2014, Volkswagen reported sales revenues of €202.5 billion, up 2.8% year-over-year and operating profits up 8.5% to €12.7 billion. 2014 operating margins also improved from 5.6% to 6.3%. Closing in on one of its Strategy 2018 targets, Volkswagen's return on sales before tax rose also from 6.3% to 7.3% in 2014. According to the 2015 Interim Report, Volkswagen continued its strong growth in the first half of 2015 with an 8.5% increase in sales revenue from the prior year.<sup>31</sup> Volkswagen’s five-year consolidated financial statements can be found in Exhibit 5.

The company maintains a balance of focus on its most profitable brands (Audi, Porsche, and Volkswagen Passenger cars) and investing in the future. Maintaining a capital expenditure-to-sales ratio between 6 and 7%, the automotive division has made investments in innovative technologies, size of its global production, and new products.

## THE AUTOMOBILE INDUSTRY

The maturity of the automotive industry has fostered the creation of brands with decades of history and strong customer loyalty. The automobile industry is capital intensive, and current capital investments tend to focus on automated processes and operational efficiencies, including the retooling of factories and equipment to accommodate for tighter regulations and changing customer demand.

Revenues for the Global Car and Automobile Manufacturing industry have been growing at 1.6% annually, increasing from \$1.9 trillion in 2009 to nearly \$2.5 trillion in 2015, and are expected to grow by 1.9% annually, rising to \$2.7 trillion through 2020.<sup>32</sup> Although revenues are increasing, tighter regulation and increasing costs for inputs such as steel, plastic, and other components will put downward pressure on industry profits. Lower fuel prices and global interest rates will help to bolster consumer demand. Some key ratios for the automobile industry are contained in Exhibit 6.

### Global Competition

In order of motor vehicle production, the five largest competitors in the global automobile industry are Toyota (10.4 million units), Volkswagen (9.8 million units), General Motors (9.6 million units), Hyundai (8.0 million units), and Ford (5.9 million units).<sup>33</sup> Each of these companies, like Volkswagen, has been the subject of at least one major public controversy in the past.

#### *Toyota Motor Corporation*

The company's first automotive prototype was produced in 1935 by Kiichiro Toyoda. It spawned from Toyoda Automatic Loom Works, the creation of Kiichiro's father. A year later, the company was renamed Toyota. The new name required only eight strokes to be written – a number thought to bring good luck in Japan. In 1937, the Toyota Motor Company was founded.<sup>34</sup> The core founding principles of the company are respecting people and striving for continuous improvement. Today, the company's most popular brands are Toyota, Lexus, and Daihatsu. The firm's core products are medium and small cars. In the United States, it commands a 60% market share in the hybrid market, led by its brand the Prius. Combined, the company sold over 10 million vehicles in 2013, making it the first automaker to sell above 10 million vehicles.<sup>35</sup> In 2014, Toyota had net revenues of 25,691.9 billion yen, equating to \$208.4 billion.<sup>36</sup>

In September of 2009, the U.S. National Highway Traffic Safety Administration alerted the public that the floor mats in Toyota automobiles may trigger the gas pedal to rapidly accelerate. Shortly thereafter, the company recalled 3.8 million cars. Later acknowledging that it may be a mechanical issue, Toyota added an additional 2.3 million cars to the recall. In 2014, the U.S. Attorney's Office fined Toyota \$1.2 billion for appearing to deceive the public.<sup>37</sup>

### *General Motors Corporation*

General Motors (GM) was founded in 1908 by W.C. Durant. Based in Detroit, Michigan, the automaker is known for brands such as Chevrolet, Buick, GMC, and Cadillac.<sup>38</sup> Due to operational losses beginning in 2005 and a Chapter 11 filing in 2009, the company has received more than \$30 billion in aid from the U.S. federal government. In exchange for the bailout funds, the company was forced to completely restructure. In 2014, General Motors had net revenues of \$156 billion.

In March 2014, the Justice Department launched a criminal investigation into a delayed ignition switch recall. By the end of the month, GM initiated an ignition switch recall for 2.6 million cars. GM had known that there was a potential issue with the ignition switch since early 2011. Despite the recall crisis, Tim Mahoney, Chevrolet's Chief Marketing Officer said, "the latest data that we've seen is no major shift in purchase consideration...I think we're holding up pretty well in spite of it all."<sup>39</sup>

### *Hyundai Motor Group*

Hyundai is headquartered in Seoul, South Korea. Incorporated in 1967, the company has nine models of sub-compact and large cars. Brands include: the Equus, the Genesis, the Sonata, the Elantra, the Santa Fe, the Veloster, the i30, and the Tucson. Each of these models has won numerous recognitions for safety and design.<sup>40</sup> Hyundai Motor Group also owns Kia Motors Corporation, which is the oldest automobile manufacturer in South Korea. Hyundai reported net revenues of \$81 billion in 2014.

In 2012, the U.S. Environmental Protection Agency (EPA) claimed that Hyundai had inflated its fuel economy benefit. The EPA estimated that the company had misled the public on 900,000 vehicles over the course of two years. Hyundai admitted to "procedural errors" in its testing and released updated fuel economy estimates. This "procedural error" spanned across a wide range of models, including the Hyundai Accent, Kia Rio and Kia Sorento. To fix the problem, the company issued a debit card to customers that reimbursed them for the difference in the EPA fuel economy rating. While the controversy may have temporarily damaged the reputation of a brand that was built on superior fuel economy ratings, the company remained resilient.<sup>41</sup>

### *Ford Motor Company*

Ford is headquartered in Dearborn, Michigan. Unlike General Motors, it did not receive direct federal aid during the "Great Recession", although it did secure a \$5.8 billion loan from the U.S. Department of Energy so it could remain solvent.<sup>42</sup> The major brands in the company's portfolio are Ford and Lincoln. The company has been proactive in identifying ways to improve fuel economy by introducing *EcoBoost* – a technology that Ford claims reduces emissions by 15 % and adds 20% to fuel economy.<sup>43</sup> In 2014, Ford Motor Company had net revenues of \$135.8 billion.

In August 1978, an automobile accident involving the Ford Pinto led to the death of three teenage girls. This led to the first-ever criminal homicide charge against an American corporation. A year before, Mother Jones wrote a scathing expose on the company –

claiming that Ford knowingly put a dangerous car on the road. Ford justified the production of the car with its own cost-benefit analysis. In its analysis, Ford showed that the cost of a human life, which they estimated at \$200,000, did not justify the additional \$11 needed to prevent the gas tank from rupturing. The same year, Ford recalled all Ford Pintos to modify the fuel tank.<sup>44</sup>

## **Industry Forces**

Several powerful forces have a significant influence on the global automobile industry. Among them are rapidly advancing technologies, political influences, changes in the supply chain, and unions.

### *Technology*

Technology is a significant part of the automobile industry. It drives changes not only in automobile production, but also in consumer preferences and government regulations. Production capabilities have changed significantly due to automation and improvements in technology. As a result, labor productivity improved 45% between 2003 and 2013.<sup>45</sup> Additionally, computer technology is being used in product design to assist with material, fuel efficiency, emissions, safety, and product quality design choices.

Technology has also allowed for significant improvements in safety features such as anti-lock brakes, air bags, cruise control, and other automotive and safety functions that consumers are seeking. Additionally, with decreasing costs of computing, automobile manufacturers are competing to offer the most comprehensive and user-friendly “infotainment” systems in their vehicles that are compatible across the changing landscape of mobile devices and technology.

Alternative fuel systems such as hybrid, hydrogen, and electric are also gaining in popularity. These are not necessarily new innovations; however, substantial improvements in these technologies are leading to better vehicle performance, decreased cost and increased popularity of electric vehicles. Sources at Kelly Blue Book reported that while overall vehicle prices have increased 1.2% over 2014, the prices for electric vehicles have decreased nearly 10%.<sup>46</sup> Furthermore, cars such as the Tesla Model S are lifting performance standards for these vehicles when it comes to distance, speed, and power. Compared to the global automobile market, the market for electric vehicles is said to be in the early stages of development. At the end of 2012, electric vehicle sales accounted for only 0.02% of global vehicle sales.<sup>47</sup> Industry analysts expect to see growth rates as high as 35% over the next few years leading electric vehicles to account for up to 3% of the global vehicle market by the end of 2020.<sup>48</sup>

### *Political Influences*

Government regulation of the global automotive industry is more and more stringent in most economies. Most regulations surround safety features, fuel economy, emissions, and pollution control. For example, eight U.S. states have adopted rules that will require approximately 15% of all new cars sold to be zero-emissions vehicles by 2025.<sup>49</sup> The states that participate in this program also have initiatives to purchase these zero-emissions

vehicles for their public fleets. Other government initiatives are aimed at reducing electricity rates for home charging stations, building more options for public charging stations, and offering other financial incentives for purchases of these vehicles. The United States, the European Union, and Asia impose different safety, emissions, and fuel economy regulations on automakers in their respective regions.<sup>50</sup>

Governments are seeking ways to become less dependent on foreign sources of fuel and energy and are adopting tougher fuel economy standards for new vehicles. Between 2012 and 2016, car companies' fleets will be required to achieve an average of 35.5 miles per gallon.<sup>51</sup> In 2010 the International Energy Agency (IEA) established the Electric Vehicles Initiative (EVI), "a multi-government policy forum dedicated to accelerating the introduction and adoption of electric vehicles worldwide." The EVI is supported worldwide with 15 "member governments from Africa, Asia, Europe, and North America" and "seeks to facilitate the global deployment of at least 20 million electric passenger vehicles by 2020."<sup>52</sup> The EVI is a collaborative platform in which governments and companies can share goals, strategies, best practices, research and development, and other information relative to the industry.

### *Supply Chain Trends*

Significant changes have occurred in the automobile supply chain for both parts suppliers and end-consumers. On the supplier side, "mega suppliers" have emerged due to overseas expansions and factories being built in emerging markets, contributing to the increased contribution and power of automotive suppliers.<sup>53</sup> Volkswagen's suppliers include Continental, Bosch, Bridgestone, and Johnson Controls. In 2014, Continental was the leading supplier of automobile manufacturers with revenue of 34.5 billion Euros. It provides brake systems, tires, tachographs, engine injection systems, and vehicle stability control systems.<sup>54</sup> The firm is able to maintain leadership in the industry through research and development, which is 6% of its annual sales.<sup>55</sup> Bosch is a leading supplier of both services and technologies through its operation in 150 countries around the world. Bridgestone's tires sales account for 84% of its business. Like Bosch, the company has operations in 150 countries. Johnson Controls is a massive global supplier of automotive batteries, seating components and automobile systems.<sup>56</sup> All of these suppliers have sales in the tens of billions of Euros.

For the end-consumer, the car-buying process has changed dramatically. With the accessibility of the Internet and the ability to shop online for a vehicle, the car salesperson less relevant, especially for Volkswagen's target demographic. Efficiency-conscious consumers are focused on getting the right car for the right price without the extra hassle and are arriving at the dealership armed with information. Alison Spitzer of Spitzer Auto Group states that, "The whole process of buying a car has been flipped flop from what it used to be. Today customers find the car first, then the dealership." The shift in this process has given the consumer the advantage, as they have access to the same "inside" knowledge as salespeople such as invoice price, reliability, and consumer ratings, which car salespeople historically have been able to leverage. This shift has made it harder for dealerships to sell cars at their ideal price, leaving them scrambling to make a profit on their vehicles. According to the Wall Street Journal, "average gross profit on a new-car sale dropped to \$1,283 last year from \$1,531 in 2002, according to the National Automobile

Dealers Association.”<sup>57</sup> Consequently, dealerships are putting more price pressure on automobile manufacturers.

### *Union Influences*

Union influence varies significantly by country. Volkswagen has a strong presence in Germany, and the largest union in Europe is the German Confederation of Trade Unions, or *Deutscher Gewerkschaftsbund* (DGB), which consists of over 6 million people.<sup>58</sup> IG Metall, or *Industriegewerkschaft Metall*, is the industrial union of metal workers and consists of auto-industry workers in Europe. IG Metall is the largest and most influential trade union within the DGB and recently won a wage increase of 3.4%. The pay increase, which occurred in February of 2015, was above Germany’s inflation rate and was expected to help boost the economy. Roman Zitzelsberger, head of the Baden-Wuerttemberg branch of IG Metall stated that the agreement is a “satisfactory compromise” and “this deal guarantees that the most important engine of the economy at the moment, private consumption, will continue to perform at a high level.”

IG Metall works closely with Volkswagen and has several members on Volkswagen’s supervisory board.<sup>59</sup> In August 2015, IG Metall’s former leader and current supervisory board chairman, Berthold Huber, and the Volkswagen Group works council chairman, Bernd Osterloh, discussed making large job cuts in order to increase Volkswagen profits. Volkswagen “has always played a vanguard role in the transformation of the unions. It was regarded for decades as the epitome of what is alternately referred to as the “German co-determination model”, “Germany PLC” or “co-management.” Nowhere is the relationship between executive board, trade union, works council and the world of politics as close as it is at VW.”<sup>60</sup>

In the United States, unions are less influential. The United Automobile Workers Union represents the biggest U.S. car manufacturers: Ford, General Motors, and Chrysler. The union has had an influential role in ensuring the financial viability of the “Big Three” in recent years. According to *The Decline and Resurgence of the US Auto Industry* report: “the union agreed to a lower entry wage in 2007 of \$14.20 (approximately 60 percent of the regular production starting hourly wage) for up to 20 percent of the workforce; after this threshold was reached, workers would receive the higher regular wage.” Because of these concessions made by the UAW, the wage gap between the three biggest United States auto manufacturers and foreign manufacturers is slowly decreasing.<sup>61</sup> These concessions have lead to the reported decline of the UAW’s power over the auto industry in recent years. “According to Bloomberg, UAW members produced only 54% of the car and trucks made in the United States last year. That compares with 85% of cars and trucks built in the U.S. in 1999.”<sup>62</sup> It is speculated that the decline in the union’s power is mainly due to foreign automakers over-taking the U.S. industry and building plants throughout the country, especially in the South.

## WHAT'S NEXT FOR VOLKSWAGEN?

The “Dieselgate” scandal exposed unethical and deceptive practices at Volkswagen, and hurt its brand image around the world. New CEO Matthias Muller stated that his “most urgent task is to win back trust for the Volkswagen Group – by leaving no stone unturned and with maximum transparency.”<sup>63</sup> Among efforts to repair relationships with the key stakeholders affected by the scandal, the company has withdrawn its diesel cars from the market and is working through plans for recalling the affected vehicles that are already on the road. The company has also undertaken a number of initiatives to repair important relationships with customers and dealers. These attempts include reimbursement to dealers for holding inventory and new dealership incentives connected to sales of gasoline-powered cars.<sup>64</sup> For customers affected by the scandal, Volkswagen has issued a “Goodwill Package” including gift cards, credits for services or products, and a three-year extension of roadside assistance.

Perhaps this is enough. Volkswagen’s major competitors have also been caught doing socially irresponsible or even reprehensible things in the past, and seem to have weathered their storms fairly well. Should this current crisis, although unfortunate, be allowed to distract the company from other critical issues, such as rapidly advancing technologies? What is the bigger picture with regard to the future of Volkswagen? What should its strategic emphasis be moving forward? And should the company completely abandon diesel technology? In short, how can this highly successful company get back on the path towards becoming the best auto manufacturer in the world?

**EXHIBIT 1**  
**KEY FIGURES BY GLOBAL REGION**

Thousand Vehicles / € million

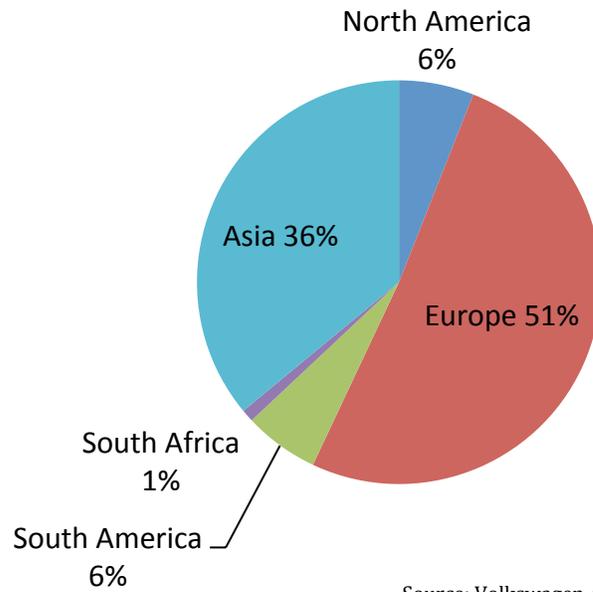
	<b>Vehicle Sales</b>		<b>Sales Revenue</b>	
	<u>2014</u>	<u>2013</u>	<u>2014</u>	<u>2013</u>
Europe / Other markets	4,430	4,209	122,858	117,062
North America	879	901	27,619	27,434
South America	794	987	13,868	17,495
Asia-Pacific	4,114	3,632	38,113	35,016
<b>Volkswagen Group</b>	<b>10,217</b>	<b>9,278</b>	<b>202,458</b>	<b>197,007</b>

Source: Volkswagen AG. 2014. *Annual Report*

**EXHIBIT 2**  
**VOLKSWAGEN GLOBAL PRODUCTION BREAKDOWN**

**Volkswagen Vehicle Production Locations**

(as a percent of total production in 2014)



Source: Volkswagen AG. 2014. *Annual Report*

**EXHIBIT 3**  
**VOLKSWAGEN AG PERCENT OF MARKET SHARE BY REGION**

<b>Region</b>	<b>2014</b>	<b>2013</b>
Western Europe	24.6%	25.0%
Central and Eastern Europe	20.1%	17.4%
North America	4.5%	4.5%
South America	16.2%	17.5%
Asia Pacific	12.6%	13.5%

Source: Volkswagen. 2015. *Interim Report: January – September*. Wolfsburg: Volkswagen AG.

## **EXHIBIT 4 THE MANAGEMENT BOARD**

### *Matthias Muller – Chief Executive Officer*

Matthias Muller worked for Volkswagen for almost 40 years before his appointment to CEO on October 1, 2015. Born in Germany in 1953, Muller held many prominent positions within Volkswagen, including his role as President of Porsche for five years. Muller is committed to bringing many of the successes he achieved at Porsche to the entire Volkswagen Group. As President of Porsche, Muller was not involved in the diesel scandal that is plaguing the company.

### *Dr. Herbert Diess:*

Dr. Diess is an expert in vehicle technology. He was appointed as a member of the Board of Management of Volkswagen AG and Chairman of the Board of Management of the Volkswagen Passenger Cars brand in July 2015.

### *Professor Jochem Heizmann*

Professor Heizmann was appointed as a member of the Board of Management of Volkswagen AG with responsibility for 'China' in September of 2012. Heizmann went to school for industrial engineering and has experience with Group Commercial Vehicles, Group Production, Production and Logistics.

### *Andreas Renschler*

Andreas Renschler was appointed as a member of the Board with responsibility for Commercial Vehicles effective in February 2015. Renschler has experience in banking, business engineering, and business administration, and held many executive level positions at DaimlerChrysler AG.

### *Frank Witter*

Witter holds a degree in business administration and has been with the Volkswagen Group since 1992. He has experience in capital markets, and held many executive level roles in Volkswagen of America. Witter became a member of the board in 2008 and was assigned responsibilities for Finance and Controlling in October 2015.

### *Dr. Francisco Javier Garcia Sanz*

Dr. Sanz has a background in business management and was appointed to the Board of Management of Volkswagen AG with responsibility for Procurement in 2001.

### *Professor Horst Neumann*

Professor Neumann studied Economics and Social Sciences and received an honorary professorship from Tongji University, Shanghai, which shared a close scientific partnership with Volkswagen for many years. In July 2002 Dr. Neumann was appointed a Member of the Board of Management of AUDI AG and became a Member of the Board of Management of Volkswagen AG with responsibility for Human Resources in 2005.

### *Professor Rupert Stadler*

Professor Stadler initially joined AUDI AG, where he assumed various roles in the Sales and Marketing area. During his career at Volkswagen Group he has had experience in the Controllershship, Accounts, Product Planning, Finance and Personnel departments before joining the Board in 2010.

**EXHIBIT 5**  
**VOLKSWAGEN AG 5 YEAR CONSOLIDATED FINANCIAL STATEMENTS**

**Volkswagen AG Five Year  
Income Statement  
in € per million**

Year Ending December 31,	2010	2011	2012	2013	2014
<b>Sales Revenue</b>	<b>126,875</b>	<b>159,337</b>	<b>192,676</b>	<b>197,007</b>	<b>202,458</b>
Cost of Sales	(105,431)	(131,371)	(157,518)	(161,407)	(165,934)
<b>Gross Profit</b>	<b>21,444</b>	<b>27,965</b>	<b>35,158</b>	<b>35,600</b>	<b>36,524</b>
Distribution Expenses	(12,213)	(14,582)	(18,850)	(19,655)	(20,292)
Administrative Expenses	(3,287)	(4,384)	(6,223)	(6,888)	(6,841)
Other Operating Income	7,648	9,727	10,496	9,956	10,298
Other Operating Expenses	(6,450)	(7,456)	(9,070)	(7,343)	(6,992)
<b>Operating Profit</b>	<b>7,141</b>	<b>11,271</b>	<b>11,510</b>	<b>11,671</b>	<b>12,697</b>
Share of Profits and losses of equity-accounted investments	1,944	2,174	13,568	3,588	3,988
Finance Costs	(2,144)	(2,047)	(2,552)	(236)	(2,658)
Other Financial Result	2,053	7,528	2,967	(465)	767
<b>Financial Result</b>	<b>1,852</b>	<b>7,655</b>	<b>13,982</b>	<b>757</b>	<b>2,097</b>
<b>Profit Before Tax</b>	<b>8,994</b>	<b>18,926</b>	<b>25,492</b>	<b>12,428</b>	<b>14,794</b>
Income Tax Income/Expense	(1,767)	(3,126)	(3,608)	(3,283)	(3,726)
Current	(2,963)	(4,351)	(4,196)	(3,733)	(3,632)
Deferred	1,196	1,225	588	449	(94)
<b>Profit After Tax</b>	<b>7,226</b>	<b>15,799</b>	<b>21,884</b>	<b>9,145</b>	<b>11,068</b>
Non controlling interests	392	391	168	52	84
Profit Attributable to AG Hybrid Capital Investors				27	138
Profit Attributable to Volkswagen Shareholders	6,835	15,409	21,717	9,066	10,847
<b>Basic Earnings per Ordinary Share in €</b>	<b>15.17</b>	<b>33.10</b>	<b>46.42</b>	<b>18.61</b>	<b>21.84</b>
<b>Diluted Earnings per Ordinary Share in €</b>	<b>15.17</b>	<b>33.10</b>	<b>46.42</b>	<b>18.61</b>	<b>21.84</b>
<b>Basic Earnings per Preferred Share in €</b>	<b>15.23</b>	<b>33.16</b>	<b>46.48</b>	<b>18.67</b>	<b>21.90</b>
<b>Diluted Earnings per Preferred Share in €</b>	<b>15.23</b>	<b>33.16</b>	<b>46.48</b>	<b>18.67</b>	<b>21.90</b>

Source: Volkswagen. Annual Report 2014, 2012, 2010. Wolfsburg: Volkswagen AG.

**Volkswagen AG Five Year Balance Sheet**  
in € per million

Year Ending December 31,	2010	2011	2012	2013	2014
<b>ASSETS</b>					
<b>Noncurrent Assets</b>					
Intangible Assets	13,104	22,176	59,158	59,243	59,935
Property, Plant, Equipment	25,847	31,876	39,424	42,389	46,169
Leasing and Rental Assets	11,812	16,626	20,034	22,259	27,585
Investment Property	252	340	433	427	485
Equity-Accounted Investments	13,528	10,249	7,309	7,934	9,874
Other Equity Investments	640	3,049	3,870	3,941	3,683
Financial Services Receivables	35,817	42,450	49,785	51,198	57,877
Other Financial Assets		12,823	6,431	7,040	6,498
Other Receivables		1,582	1,671	1,456	1,654
Total Other Receivables and Financial Assets	<b>7,519</b>	<b>14,405</b>	<b>8,102</b>	<b>8,496</b>	<b>8,152</b>
Noncurrent Tax Receivables	689	627	552	633	468
Deferred Tax Assets	4,248	6,333	7,915	5,622	5,878
<b>Total Noncurrent Assets</b>	<b>113,457</b>	<b>148,129</b>	<b>196,582</b>	<b>202,141</b>	<b>220,106</b>
<b>Current Assets</b>					
Inventories	17,631	27,551	28,674	28,653	31,466
Trade Receivables	6,883	10,479	10,099	11,133	11,472
Financial Service Receivables	30,164	33,754	36,911	38,386	44,398
Other Financial Assets		4,253	5,872	6,591	7,693
Other Receivables		4,543	4,823	5,030	5,080
Total Other Receivables and Financial Assets	<b>6,605</b>	<b>8,796</b>	<b>10,695</b>	<b>11,621</b>	<b>12,773</b>
Current Tax Receivables	482	623	761	729	1,010
Marketable Securities	5,501	6,146	7,433	8,492	10,861
Cash, Cash Equivalents, and Time Deposits	18,670	18,291	18,488	23,178	19,123
<b>Total Current Assets</b>	<b>85,936</b>	<b>105,640</b>	<b>113,061</b>	<b>122,192</b>	<b>131,102</b>
<b>TOTAL ASSETS</b>	<b>199,393</b>	<b>253,769</b>	<b>309,644</b>	<b>324,333</b>	<b>351,209</b>

Year Ending December 31,	2010	2011	2012	2013	2014
<b>EQUITY AND LIABILITIES</b>					
<b>Equity</b>					
Subscribed Capital	1,191	1,191	1,191	1,191	1,218
Capital Reserves	9,326	9,329	11,509	12,658	14,616
Retained Earnings				72,341	71,197
Other Reserves				(459)	(2,081)
<b>Accumulated Comprehensive</b>					
<b>Income</b>	<b>35,461</b>	<b>47,019</b>	<b>64,815</b>	<b>71,882</b>	<b>69,116</b>
Equity Attributable to VW AG hybrid capital investors				2,004	5,041
<i>Equity attributable to shareholders of Volkswagen AG</i>	<i>45,978</i>	<i>57,539</i>	<i>77,515</i>	<i>87,733</i>	<i>89,991</i>
Noncontrolling Interests	2,734	5,815	4,310	2,304	198
<b>Total Equity</b>	<b>48,712</b>	<b>63,354</b>	<b>81,825</b>	<b>90,037</b>	<b>90,189</b>
<b>Noncurrent Liabilities</b>					
Noncurrent Financial Liabilities	37,159	44,442	63603	61,517	68,416
Other Noncurrent Financial Liabilities		2,547	2397	2,305	3,954
Other Noncurrent Liabilities	4,742	4,394	4675	4,527	4,238
Deferred Tax Liabilities	1,669	4,055	9050	7,894	4,774
Provisions for Pensions	15,432	16,787	23969	21,774	29,806
Provisions for Taxes	3,610	3,721	4,239	3,674	3,215
Other Noncurrent Provisions	11,170	13,235	14,373	13,981	15,910
<b>Total Noncurrent Liabilities</b>	<b>73,781</b>	<b>89,179</b>	<b>122,306</b>	<b>115,672</b>	<b>130,314</b>
<b>Current Liabilities</b>					
Put Options and Compensation Rights Granted to Noncontrolling Interest Shareholders				3,638	3,703
Current Financial Liabilities	39,852	49,090	54,060	59,987	65,564
Trade Payoffs	12,544	16,325	17,268	18,024	19,530
Current Tax Payables	286	844	238	218	256
Other Current Financial Liabilities		4,888	4,425	4,526	7,643
Other Current Liabilities	10,627	11,196	11,111	11,004	14,143
Provisions for Taxes	2,077	2,888	1,721	2,869	2,791
Other Current Provisions	11,513	16,005	16,689	18,360	17,075
<b>Total Current Liabilities</b>	<b>76,900</b>	<b>101,237</b>	<b>105,513</b>	<b>118,625</b>	<b>130,706</b>
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>199,393</b>	<b>253,769</b>	<b>309,644</b>	<b>324,333</b>	<b>351,209</b>

**EXHIBIT 6**  
**INDUSTRY KEY FINANCIALS AND RATIOS**

Period Ending	Volkswagen	GM (USD)	Toyota (JPY)	Ford (USD)	Hyundai (KRW)
	(EUR)	12/31/14	3/31/15	12/31/14	12/31/14
Units Sold (Mil)	9.8	9.6	10.4	5.9	8
Revenue (Mil)	202,458.00	155,529.00	27,234,521.00	144,077.00	89,256,319.00
Gross Margin %	18.00	8.90	19.80	12.40	21.40
Operating Income (Mil)	12,697.00	1,530.00	2,750,564.00	3,745.00	7,549,986.00
Operating Margin %	6.27	1.00	10.10	2.60	8.50
Net Income (Mil)	10,847.00	3,949.00	2,173,338.00	3,187.00	7,346,807.00
Earnings Per Share	4.37	1.65	687.66	0.80	13,518.50
Dividends	0.81	1.20	200.00	0.50	
Payout Ratio %	27.20	58.20	27.40	31.30	5.00
Shares (Mil)	2,480.00	1,687.00	3,160.00	4,045.00	418.00
Book Value Per Share	46.42	24.93	43.19	6.52	82.85
Operating Cash Flow (Mil)	10,784.00	10,058.00	3,685,753.00	14,507.00	2,120,845.00
Capital Spending (Mil)	(16,613.00)	(7,091.00)	(3,357,568.00)	(7,463.00)	(4,725,895.00)
Free Cash Flow (Mil)	(5,829.00)	2,967.00	328,185.00	7,044.00	(2,605,050.00)
Free Cash Flow Per Share	(0.92)	1.82	0.38	1.33	(6.43)
Working Capital (Mil)	396.00	17,969.00	1,504,901.00	77,911.00	26,936,423.00
Net Margin %	5.36	1.80	7.98	2.21	8.23
Asset Turnover (Average)	0.60	0.91	0.61	0.70	0.64
Return on Assets %	3.21	1.63	4.87	1.55	5.24
Financial Leverage (Average)	3.90	5.01	2.84	8.41	2.55
Return on Equity %	12.21	7.48	13.91	12.45	13.41
Return on Invested Capital %	5.32	3.78	6.27	2.47	6.68
Interest Coverage	NA	11.54	127.48	6.36	34.14

Source of data: Morningstar Investment Research Center database; OICA 2014 World Ranking of Manufacturers

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