



# Environmental Awareness Progress of Volkswagen After Emission Scandal

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**Abstract.** Volkswagen is one of the biggest car manufacturers in Europe and also in the world. The company headquarter is located in Wolfsburg, Lower Saxony, Germany. Volkswagen cars are marketed to all continents of the world, including North America. The case happened in the United States, as in 2015, the United States Environmental Protection Agency or EPA found out that Volkswagen car emission system is against the Control Air Act. Back then, Volkswagen used 'defeat devices' to pass the emission test system. The EPA stated that the cars emit forty times more nitrogen oxide (NOx) than the emission standards for public health. Therefore, Volkswagen has to recall most of the cars that have been sold to the public, and the case is called the Volkswagen Scandal. After almost a decade, Volkswagen has done several improvements on the technical and specification aspects of its products, and also improving its policy on the environment. This research is done through qualitative descriptive methods by using library research with analysis done using protectionism concept, the understanding of global value chain, and the green theory. This study will examine the degree of environmental awareness after the scandal, so that the lesson from the case can be discovered.

**Keywords:** Volkswagen Scandal, Environmental Awareness, The United States Environmental Protection Agency, The Control Air Act.

## 1 Introduction

Volkswagen (VW) is a car company whose headquarter is located in Wolfsburg, Lower Saxony. Volkswagen is a part of the Volkswagen Group that operates in two key areas, transportation and services, but the biggest field of the company is transportation. Volkswagen Group is one of the Big Three members of automobile manufacturers in Europe, the others are Mercedes-Benz and BMW. Volkswagen Group to set up one of their factories in the United States in Chattanooga, Tennessee in 1955. [1] Since 2009, the growth of Volkswagen Group sales in the U.S. reached more than

95% of sales volume from previous years which then made Volkswagen Group optimistic. [2]

Volkswagen Scandal started in September 2015, after the Environmental Protection Agency (EPA) announced that Volkswagen Group had violated the Clean Air Act (CAA) [3] about the vehicle emission standards. A similar case related to Volkswagen Group was also discovered by the EPA in 1974. Volkswagen Group had to pay \$ 120,000 as a liability because the company had modified the vehicle emission controls that produced in 1973 with an amount of the vehicles were about 25,000.[4] The EPA found ‘defeat devices’ in 590,000 vehicles from the Volkswagen Group produced from 2009 until 2015, which violated the Clean Air Act (CAA). After retesting the car, EPA found that the nitrogen oxide (NOx) emission was forty times higher than the emission standards. When investigating this scandal, the EPA cooperated with California’s Air Resources Board (CARB) and Environment Canada.

**Table 1.** The automobiles produced by Volkswagen Group that have violated CAA are as follows [4]:

2.0 litre diesel vehicle models and model years with defeat devices	3.0 litre diesel vehicle models and model years with defeat devices
Jetta (2009 – 2015)	Volkswagen Tuareg (2009 – 2016)
Jetta SportWagen (2009 – 2014)	Porsche Cayenne (2013 – 2016)
Beetle (2013 – 2015)	Audi A6 Quattro (2014 – 2016)
Beetle Convertible (2013 – 2015)	Audi A7 Quattro (MY 2014 – 2016)
Audi A3 (2010 – 2015)	Audi A8 (2014 – 2016)
Golf (2010 – 2015)	Audi A8L (2014 – 2016)
Golf SportWagen (2015)	Audi Q5 (2014 – 2016)
Passat (2012 – 2015)	Audi Q7 (2009 – 2016)

Prior to the existence of the CAA, the U.S. administration implemented the Air Pollution Control Act in 1995. The legislation was designed to provide the federal institutions and local governments with research funding and technical assistance relating to air pollution in the United States.[5] In 1967, the Air Quality Act was enacted to expand the activities of the American government within its states through law enforcement.[5] Through CAA, the EPA has the authority to establish National Ambient Air Quality Standards (NAAQS) in order to protect public welfare and regulate the emissions of harmful pollutants. One of the main goals of the CAA is to establish NAAQS in each state from 1975 for protecting the public health. [6] In 2012, Barack Obama, the former U.S. president added some stricter rules on higher emissions standards which are to increase fuel efficiency by 54.5 mpg for cars and light trucks. The goals were to save consumers more than \$1.7 trillion in fuel spending and reduce U.S. oil consumption by 12 billion barrels by 2025. [7]

Since 2009, the economic growth of Volkswagen Group in the U.S. reached more than 95% of sales volume from previous years. This led the company to become optimistic in the following years. [8] However, when the scandal happened , their ambition to have sustainable and profitable growth in the U.S. will be difficult to achieve.

Thus, Volkswagen Group requires necessary things to restore their market position. [8] When the administration of the U.S. was held by Barack Obama, there are seven defendants who are the top brass of Volkswagen Group that are indicated in this scandal. The Obama administration considered this scandal as a white-collar crime because of the large number of the executive officers. [9] U.S. environmental legislation under the Obama administration had a strict and environmentally conscious tendency. The election of Donald Trump on January 20, 2017 may have an impact on bilateral economic relations between Germany and the U.S. In every formal opportunity, Trump emphasized that he commits himself to restoring the glory of the U.S. industry by encouraging the use of domestic products and employing U.S. citizens. The existence of this case makes Trump able to protect domestic car production and stimulate the American car companies in order to compete and dominate the domestic market.

There are several possible reasons why Volkswagen Group uses defeat devices in its products, which is a strong corporate pressure to fulfil its vision and reducing the cost of production in the process. This also may relate to the differences in emission test systems conducted by the United States compared with the European Union (EU) system. This is a comparison chart made by The International Council on Clean Transportation (ICCT), an independent non-profit organization in 2016:

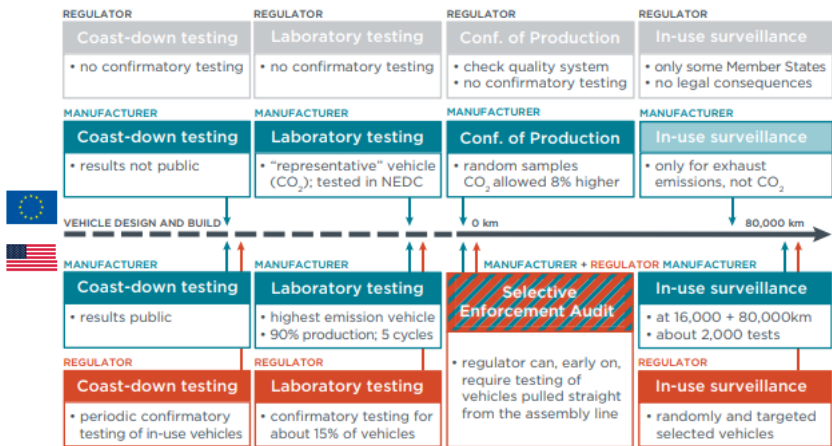


Figure 2. Overview of the EU and U.S. vehicle emissions testing and enforcement schemes.

Fig. 1. Overview of the EU and U.S. Vehicle Emissions Testing and Enforcements Schemes.

By the chart above, it can be seen that the EU emission test system for vehicles is very loose, inversely proportional to the U.S. emission test system. EU system vehicles are randomly conducted and pick the representative of several vehicle models that have been produced. This then led to the omission by the EU because not all the vehicles can represent all of the cars. In addition, the gas emission standards set by the EU are lower than the U.S. which would certainly allow the automakers to pass the emission test easier. The EU system was created because of the oil crisis that occurred

in the 1970s as the fuel taxes rose on EU fuel. The EU emission standard commonly referred as the 'Euro' which is based on the weight of the vehicle, the heavier the vehicle the higher the vehicle emissions requirements that must be achieved by heavy vehicles and vice versa. During the realization of this policy, the EU made several changes in emission standards and even provided a higher standard than the U.S., which in 2008 amounted to 140 grams of CO<sub>2</sub> per-kilometre. Currently the applicable emission standard is Euro 6 stipulates that the nitrogen oxide present in 2017 should be 90 percent below the 1992 standard. When compared to the U.S. with the EU, the implementation of EU emission standards is prioritizing the consumption of the fuel burn first, rather than prioritizing the emission. [9] This will become stricter with Euro 7 standard that aims to eliminate most emission sources by 2050.

## **2 Method**

### **2.1 Qualitative Descriptive Approach**

The method used in this research is descriptive qualitative with literature study techniques to obtain data. Descriptive research here attempts to accurately describe the nature of a particular symptom, situation, individual or group, or to determine the distribution of a symptom or the existence of certain relationships with symptoms or conditions with symptoms, or other conditions in society. Miles and Huberman qualitative data analysis techniques were used in this research, where the technique contains three stages: data reduction, data coding, and drawing conclusions. [10]

### **2.2 Protectionism**

Protectionism is an effort of the state to protect their national interests through constraints imposed by the government, especially on the economic field. Protectionism can be deducted from deviations of the free market proposed by Adam Smith because the protectionists believe that the national interests cannot be achieved perfectly because the unjust competition from the free market. [11] Therefore, protectionism policy is needed to protect the domestic market. For example, the state can propose tariff policy, taxes, import/export quotas, and other policies that can make their state become more independent. But for the libertarians, this policy is such a crime because it can cause chaos to the market and will lead to inefficiencies in the market or the invisible hand cannot be achieved.

There are advantages and disadvantages to implementing protectionism. The advantages of implementing protectionism such as the domestic economy keeps rolling, protecting the domestic industry from foreign competitors, and creating jobs for domestic workers. Otherwise, the disadvantages of implementing protectionism are the consumers pay more because there is not competitive pricing, the difficulties to get foreign goods, and the industries are difficult to innovate their products. [12]

### 2.3 Global Value Chain

A global value chain (GVC) consists of a series of stages involved in producing a good or service, with each stage adding value and with at least two stages produced in different countries.[13] Early use of the GVC methodology focused primarily on economics and competitiveness aspects, but recently social and environmental dimensions have also been included. GVC's research is currently exploring new topics such as labor regulation issues, workforce development, greening value chains and gender. Currently, GVC analysis is one of the preferred methodologies for examining global industries, international trade dynamics, and how vulnerable economic actors are involved in the chain. [14] This notion is used to analyze the environmental aspects of Volkswagen technology improvement. This also sees how this emission scandal affects the production process.

## 3 Results and Discussion

As a result of this scandal in the United States, other countries conducted similar investigations on the Volkswagen Group cars. After this emission scandal arose, the CEO of the company, Martin Winterkorn resigned from his position as a form of accountability to the consumers. Besides cutting the throat of the consumers, the Volkswagen Group itself has denied the 2018 Strategy that was created by Martin Winterkorn when he still served as CEO in 2007. Strategy 2018 was later strengthened by an 18 plus program by the Volkswagen Management Board which in essence the company will commit to producing environmentally friendly vehicles, power-trains, as well as light construction. Here are four points in Strategy 2018[15]:

- a. Volkswagen intends to become a world leader using cutting-edge innovation and technology while providing customers with satisfaction and quality at the same time;
- b. In the long run, Volkswagen aims to boost unit sales to more than 10 million vehicles per year and intends to gain market share above the average as growth in the major markets;
- c. By achieving pre-tax sale earnings of more than 8.0%, Volkswagen will maintain a strong financial position and ability to take action even during difficult market periods;
- d. Volkswagen will be the top company of all brands, companies and territories so Volkswagen must form a first-class team to make that happen.

The scandal was then resolved in several stages. The first stage was carried out by the United States District Court on June 28, 2016 which handles Volkswagen vehicles with a 2,000cc diesel engine. Then on October 25, 2016, the court approved the completion of the June 28, 2016 trial. The second stage, on December 20, 2016, the court handled Volkswagen vehicles with 3 liters diesel engines which then the settlement was approved on May 17, 2017. The third stage, January 11, 2017, the United States government filed a third trial against Volkswagen on civil law and redress for future

deterrence and subsequent decisions passed on 13 April 2017. [16] In the end, the Volkswagen Group accepts all claims made by the courts and plead guilty to allegations filed by the United States through the EPA. Volkswagen Group is willing to pay \$2.8 billion as a punitive penalty for long-term sales, which sells 590,000 diesel-powered vehicles in the United States and Volkswagen Group has to pay \$ 1.5 billion as a civil law award for environmental claims, customs, and finance. [17]

In addition to litigation, Volkswagen Group has declared that they will buy back 500 units of 2,000 cc cars that have been sold in the U.S. market. The buyback policy applies to VW Jetta, VW Golf, and Audi A3 and does not apply to cars with diesel higher than 2,000 cc. Volkswagen Group is also rumored to give compensation in return for a total of more than US \$ 1 billion for the consumers, although the Volkswagen Group does not clearly explain the amount received by every consumer. Consumers who buy the vehicle are given two-year terms in deciding to resell the vehicle they own or will repair the vehicle. [18] Also, the U.S. government has arrested several executive officers of the Volkswagen Group. The Volkswagen Group has to face the impact of this case, such as the good name of the company becoming tarnished because many people, especially those in the U.S., lose their consumer confidence, and it can cause the value of the company's shares globally to decline. Therefore, Volkswagen Group must have to rebuild the trust of its people through various ways, such as the turnover of the CEO and commit that this case will not happen in the future as well as create a new green project which then disseminates through media.

### **3.1 Later Stages of the Volkswagen Scandal**

After Donald Trump officially became U.S. president on January 20, 2017, the trial of the Volkswagen Group's executive officers is still continued and focused on the former Volkswagen Group's CEO, Winterkorn, since 2016.[19] The U.S. Department of Justice continues to investigate internal parties suspected of being the perpetrators behind this case continuing what has been done during Obama's term. The election of Trump has made some U.S. car manufacturer executives requested to Trump to review the emission regulations proclaimed by Obama administration. [20] In 2012, there was an agreement made by Obama along with the executive officers from car companies about the emissions standard and the result is Obama requires the car to run an average of 54.4 miles per gallon of fuel by 2025. The reason to increase the standard is to reduce the effect of greenhouse gas emission by 6 billion tons of the new vehicle and save 2 million gallons of fuel per day by 2025. [21] This is then strengthened by Biden's administration commitment on the environment regarding the U.S. involvement into Paris Agreement to fight the global warming

Unlike the Obama administration, the U.S. government under Trump leadership actually makes changes to laws relating to the emission standards and tends not to focus on legal proceedings but on the policy that could affect the future of the Volkswagen Group or other foreign automaker companies. The National Highway Traffic Safety Administration (NHTSA) proposed new emission standards that could be applied, that are 35.7 miles per gallon of fuel. [22] Trump along with EPA Admin-

istrator, Scott Pruitt, stated that lowering the emission standards allows U.S. automakers to make affordable cars for the people and still concerns the environmental and safety of cars. The reason is if U.S. automakers have to comply with high emission standards, the selling prices of the cars will be more expensive, and the people tend to buy an old car and this will lead to reducing the overall efficiency of cars on the road. In addition, Pruitt also said that the determination done by Obama administration is too high and too deliberate. [23] Changes of the regulation of course have certain pros and cons, especially in California which has its own emission standards.

Lowering the emission standards will aggravate human health because of decreasing air quality, also undermining legal certainty regulations for the automakers. Furthermore, reducing vehicle standards as a form of protection for the U.S. automakers will have both negative and positive impacts. For U.S. and non-U.S. automakers, it is easy to develop cars with new models without focusing too much on the emissions of the cars. On the other hand, the U.S. tends to be inconsistent towards the Paris Agreement to keep the environment from the greenhouse effect. Actually, through this Volkswagen scandal, the U.S. has shown its commitment to the environment and the world community highly appreciates the existence of the very strict environmental regulations, also this can even make other countries imitate what is done by the U.S. In addition, the tight emission side of the emissions test system in the U.S has led the EU to tighten up their regulations, although there is also a pressure factor from the public, through journals or scientific articles that are released in public about comparing the U.S. with the EU emission test system. Hence, this study will try to examine the changes that happened caused by the scandal after 2018 that can be considered as proof of rising environmental awareness, especially in the United States automobile industry.

Further development, after being caught by the emission scandal, Volkswagen then re-branding their company by promoting sustainability. As stated on their official website, Volkswagen commits to participate as a carbon neutral company in 2050 by energy efficiency and recycling to achieve a cleaner and greener environment. [24] Volkswagen also set other goals to be a data center on climate neutral by 2027. [24] This enthusiasm is carried out by expanding the computing capacities at Green Mountain in Norway where the electricity is generated by renewable energy. The renewable energy, which the majority is run by hydropower, utilized to run Volkswagen's data center at Green Mountain that would be enough to power 500 homes sustainability for a year. [25]

Moreover, Volkswagen and Canada jointly pledged more than C\$20 billion or worth to \$14.8 billion for creating a battery giga-factory in St. Thomas, Ontario. The commitment has benefits for both parties. For the Canada government, the investment on battery plants helps to accelerate the local infrastructure development. On the other hand, Volkswagen could comply with the US climate rules that mandates 50% of EV battery components be produced in North America for vehicles. Thus, Volkswagen's vehicles could meet the qualification of generous U.S consumer tax credit. The project is expected to begin in 2024 with production starting in 2027. [26]

## 4 Conclusion

The Volkswagen scandal is one of the environmental-related cases that became a major event in the realm of environmental and also international relations studies. Until 2018, the U.S. Department of Justice is still investigating the company's internal. After the case was publicly spawned, as a form of accountability, Volkswagen Group underwent legal proceedings and received sanctions in the form of fines as well as repurchases of cars produced within the range of 2009 - 2015 that are indicated using defeat devices, and even including replacing their CEO in the process.

As what can be learned from the discussion above, the Obama Administration was a period of U.S. government that tended to be restrictive and decisive about environmental issues. One of the pieces of evidence is the stipulation of emission standards that got increased in previous years. It was intended that the level of air cleanliness of the vehicle pollution of the vehicle is increasing, then the quality of public health will also get increased. However, after Trump's rise to the presidency in 2017, there are different views on setting emissions standards. It can be learned that the Volkswagen scandal has made other car companies worried, including US car companies that later make an appeal to Trump to lower the emission standards set by Obama. The National Highway Traffic Safety Administration (NHTSA) then set average 35.7 miles per gallon of fuel. This will make the automakers easier to develop their car models and less focused on developing devices to reduce emissions. However, this does not affect the legal process of Volkswagen Scandal when the Trump Administration would implement the new standards. Moreover, although it has required the emission standards, they must face 35% of taxation from the Trump Administration in order to protect domestic automakers. In other words, unfortunately it takes a strict regulation from a government regime that willing to give up the priorities of economic progress and vouch for other important things including environmental awareness.

A protectionist policy may not necessarily advance the domestic companies because there are many factors that influence the company to be the most advanced companies, such as technological differences. Differences in technology can cause the car to have a different quality than any other company, even though the government has implemented various policies that protect domestic companies. Therefore, the Trump Administration should consider their policies carefully before implementing. Policies that protect domestic producers may not be able to protect maximally as many other factors influence other than government policy.

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