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The Dieselgate scandal in the automotive industry

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Abstract

During the early 2000s, the automaker Volkswagen engaged in the development of anti-pollution systems for its vehicles with the intent of meeting stringent environmental regulations. However, in 2015, the German automaker became embroiled in one of the biggest scandals in the automotive industry, Dieselgate.

This scandal was specifically about the manipulation of emission control systems on diesel engines, with the aim of falsifying results during environmental compliance tests. The effects of Dieselgate not only affected the stock market and caused a significant drop in Volkswagen Group shares but also generated far-reaching legal consequences.

Legal costs and fines resulting from the scandal heavily impacted the company's balance sheet. Following the scandal, Volkswagen then introduced a new environmental policy, focusing on and deciding to invest in greener and electric vehicles. In the context of ethics and business, corporate social responsibility (CSR) has assumed a key role, promoting and supporting ethical business practices. Investigating the Dieselgate scandal through the lens of CSR principles highlights the urgent need for a thorough integration of ethical values in companies regarding environmental management.

1.Corporate social responsibility

1.1 Corporate social responsibility: definition, role and recent developments

Corporate social responsibility (CSR) refers to the commitment of businesses to consider the social, environmental, and economic impact of their activities and the importance of acting responsibly toward their stakeholders. The concept of CSR first appeared in 1953 through the reflections of U.S. economist Howard Rothmann Bowen, presented in his book "Social Responsibility of the Businessman." Bowen argued that corporate social responsibility consisted of the obligation of businessmen to adopt policies and make decisions that were not only economically beneficial but also consistent with the context in which the business operated.

Bowen also believed that a business generated a major impact on the entire community through its activities and was therefore required to meet social obligations. This implied a commitment to contribute to the growth and well-being of the community as a whole. The fundamental goal of CSR is to balance the creation of economic value with a positive impact on the surrounding environment, focusing on various areas including respect fot the environment, human rights, welfare, and more (Bowen, 1953). Regarding social responsibility, companies are required to assess the effects of their activities on society and are also required to adopt policies that promote social justice, diversity, inclusion, ethics, and respect for human rights. With regards to environmental sustainability, efforts focus on sustainable resource management practices, reduction of greenhouse gas emissions, energy conservation, use of renewable energy, responsible waste management, and preservation of natural resources. Of great importance are labor issues such as quality, protection, and gender diversity, which have tangible effects on the employee's well-being and productivity. The attention of workers, customers, and stakeholders to social responsibility is now extremely high, and companies are aware of this: business can no longer do without the creation of shared value.

Very important is also community involvement, which represents support for local initiatives, donations to nonprofit organizations, promotion of volunteerism among employees, and collaboration with local authorities to address social and environmental issues. However, there are critical observers who point out that, in certain cases, CSR can take on forms of "social washing." This occurs when the initiatives taken generate positive impacts that divert public attention from the real negative impact of corporate activities on associated life, as happens, e.g., in greenwashing.

Corporate social responsibility is transforming from a simple option to a vital, imperative need for companies and institutions, emerging as a crucial reputational element that can determine not only the success of a brand and its products but can also emphasize the active role of companies in contributing to the wellness of society as a whole.

Effective communication is the most powerful means of raising awareness on these issues: initiatives undertaken must be told in an informative way, avoiding falling into an empty celebration. In addition, hard data are essential to demonstrate the effects of actions taken. Data confirms that companies that meet CSR criteria have better financial results and more positive stock market listings on average than those that neglect such issues (Rete del dono Magazine, n.d.). It is important to emphasize that the concept of CSR should not be confused with that of volunteerism or philanthropy. Corporate social responsibility is integrated with the basic principles of economics, since a business that does not generate profit, or worse, that does not survive, cannot be socially responsible since it does not have a surplus to give back to the territory or the community. In today's global marketplace, every business sector must look after its image in the eyes of citizens, who are increasingly sensitive to sustainability, both economic and environmental, in their consumption choices.

1.2 Ethics and business

Ethics in the context of business deals with the study of moral principles and norms that guide ethical behavior in business activities. It focuses on the question of how organizations and professionals should act ethically and responsibly toward their stakeholders: employees, customers, suppliers, shareholders, local communities, and the environment (Twin, 2024). Integrity and ethics in business have become increasingly important issues in the modern world. Corporates are increasingly aware of the importance of acting ethically, not only to avoid litigation and reputational damage but

also to create long-term value. Consumers have become more attentive to business ethics and prefer to do business with companies that demonstrate social and environmental responsibility. In the field of business ethics, several theoretical perspectives offer guidance for ethical decision-making within the business environment. One significant approach is rights ethics (Monteiro, 2014), which places emphasis on the fundamental rights of people. Here, businesses are expected to respect and promote basic human rights such as freedom of expression, the right to privacy, and the guarantee of decent work.
Another perspective, known as consequence ethics or utilitarianism, evaluates actions according to the consequences they generate. The aim here is to maximize collective welfare and minimize harm. This approach focuses on analyzing the overall impact of decisions in pursuit of the greatest overall benefit. The ethics of duty, developed based on the thought of Immanuel Kant, focuses on the obligation to act in accordance with universal and rational ethical principles. Actions are evaluated according to their consistency with moral principles such as truth, justice, and respect for human dignity.
Another significant current is virtue ethics, which emphasizes the development of personal and organizational virtues. This approach promotes ethical behavior through the cultivation of positive traits such as integrity, honesty, loyalty, and trust. In essence, the emphasis is on encouraging an organizational culture that reflects and encourages ethical virtues in daily actions.

1.3 Ethics and economy

Ethics and economics are interconnected concepts that mutually influence how people and organizations behave in the economic environment. Ethics provides us with a set of values and moral principles that guide human behavior, while economics deals with the production, distribution, and consumption of goods and services. The mutual influence between ethics and economics has a profound connection, as both spheres play a crucial role in shaping our society. Ethics takes a leading role in the economic sphere in several ways, helping to shape the corporate landscape through principles such as corporate social responsibility (Fondazione Nazionale dei Commercialisti [F.N.C.], n.d.).

This implies that companies should consider not only the interests of shareholders but also those of employees, customers, the environment, and the local community. In addition, ethics promote transparency and accountability in business operations. Ethical businesses are encouraged to openly communicate financial information, management practices, and environmental impacts to their stakeholders. This openness fosters trust and accountability in the economic sphere, creating fertile ground for sustainable business relationships.

Another crucial aspect is the aspiration for equity and justice in the economy. This involves the equitable distribution of resources and the fair treatment of people in economic transactions. Emphasizing the importance of a sustainable approach, ethics draws attention to the need to conduct economic activities with respect for the natural environment. This involves reducing negative impacts and promoting the preservation of natural resources for future generations. At the same time, economics, in turn, exerts an influence on ethics. Economic structures and incentives can shape people's ethical behavior. An economic system focused solely on maximum profit, neglecting social and environmental impacts, can encourage ethically questionable behavior. Purchasing decisions, driven by economic factors such as price and availability, are also influenced by ethical considerations. Preference for ethically produced products or products from socially responsible companies is an example of how consumers' choices can reflect ethical values.

Economic regulation, through government policies and laws, can set ethical standards for businesses and professionals. Laws prohibiting corruption or promoting workplace health and safety are examples of how economic regulation can codify ethical norms.

In conclusion, the intertwining of ethics and economics is evident, with both spheres influencing each other. Balancing these two can contribute to a more just, sustainable, and equitable society by promoting social responsibility, economic justice, and equity.

1.4 Sustainable business and responsible business practices

The concept of sustainable business refers to a way of managing business activities that carefully considers the social, environmental, and economic impacts of business operations, with the goal of generating long-term value both for the company itself and for society as a whole. This perspective aims to balance economic prosperity with environmental protection and social welfare.

Sustainable business is primarily aimed at meeting current needs without compromising the ability of future generations to meet their own needs. This emerges from the fact that natural resources are limited and that environmental and social challenges require long-term and sustainable solutions.

Sustainable business can be defined through key elements, which are: environmental responsibility, social responsibility, sustainable economic performance, and stakeholders' engagement.

Environmental responsibility is the adoption of practices such as energy efficiency, reduction of greenhouse gas emissions, sustainable use of natural resources, and responsible waste management. This can include the use of renewable energy, adherence to eco-friendly production processes, and the promotion of a corporate culture geared toward environmental sustainability.

Social responsibility, on the other hand, emphasizes concern for the well-being of people involved in business operations, including employees, customers, suppliers, and local communities. This involves creating safe and healthy working conditions, promoting fair labor practices, protecting human rights, and actively engaging in communities through social and philanthropic initiatives.

Sustainable business also aims to achieve sustainable economic performance by considering financial aspects along with social and environmental ones. This may involve risk management strategies, sustainability-oriented innovation, business diversification, and the implementation of responsible corporate governance practices.

Finally, stakeholder engagement is critical in the context of sustainable business. Stakeholders are considered key partners and actively participate in planning and strategic decision-making. This is done through transparent and open communication with stakeholders, who are involved in assessing and managing social and environmental impacts. In recent years, the importance of sustainable business has grown significantly. Consumers have become increasingly aware of environmental and social issues, showing a preference for companies that demonstrate social and environmental responsibility. Investors are increasingly integrating ESG (Environmental, Social, Governance) criteria into their assessments of investment opportunities. In addition, government regulations and international initiatives are driving the widespread adoption of sustainable business practices.

Sustainable business represents an approach that seeks to harmonize the economic, social, and environmental aspects of business activities. Through environmental, social, and economic responsibility, sustainable business aspires to create lasting value for both the company and society as a whole.

Figure[1] Key points of CSR.

Source: https://ecommerceday.it/blogs/blog/csr-nel-2023-sostenibilita-e-diritti-al-centro

1.5 Key tools for monitoring CSR impact in enterprises

There are several tools that companies can use to monitor and evaluate the impact of CSR on their operations (Gyre, n.d.). Sustainability reports, for example, are documents that companies produce to express their performance in terms of sustainability and CSR. These reports are critically important because they provide us with detailed information on corporate practices, policies, and impacts related to different dimensions of sustainability, such as human rights, the environment, social responsibility, and economic impact. Sustainability reports can be developed in accordance with international standards, such as the Global Reporting Initiative (GRI) guidelines, to ensure greater transparency and consistency. But that is not enough. What is being done also needs to be measured. This is where key performance indicators, or KPIs, come in.

Key performance indicators are metrics that measure the progress and impacts of corporate activities in relation to CSR goals. These indicators can be defined based on the specific needs and goals of the organization and can cover different areas, such as energy efficiency, greenhouse gas emissions, waste reduction, employee engagement, social impact, and more. The use of KPIs makes it possible to systematically monitor and evaluate the progress and effectiveness of CSR initiatives.

Also of key importance are audits and certifications. Audits are processes for assessing and verifying corporate performance and practices in relation to CSR standards. Audits can be conducted internally or by independent external organizations to verify compliance with specific norms, regulations, or standards, such as, e.g., the ISO 14001 standards for environmental management or the SA8000 standard for social responsibility. Certifications can be obtained after a proper assessment and demonstrate that the organization has achieved certain levels of compliance and good practice in CSR management. Assessments must also address social impact. Social impact assessment is a process whose main objective is to measure and evaluate the social effects of an organization's activities on the community and society at large. This process involves identifying social objectives, collecting relevant data, analyzing results, and assessing positive and negative impacts. Social impact assessment can be used to identify areas where the organization can improve and to inform business decisions in ways that maximize social benefits.

A final key tool useful for monitoring and assessing CSR impact is stakeholder engagement. Actively involving stakeholders in business activities, such as employees, customers, suppliers, local communities, and nongovernmental organizations, allows for gathering feedback, assessing the perception and effectiveness of CSR initiatives, and identifying opportunities for improvement.

In conclusion, the use of these tools and approaches can help companies assess the impact of CSR on different dimensions of sustainability, identify areas for improvement, and transparently communicate their efforts and achievements. However, it is important to adapt the tools to specific business needs and contexts and to consider stakeholder engagement as a key element for a complete and accurate assessment.

2. Dieselgate

2.1 A brief history of Volkswagen

Volkswagen, a term that in German means “The car of the people”, was founded in 1937 in Wolfsburg, Lower Saxony, during the National Socialist regime of Adolf Hitler. The goal was to create a compact, inexpensive, and robust car that could be easily mass-produced, making it more affordable (Virgilio Motori, [V.M.], n.d.).
After WWII, in a country devastad by the war, Volkswagen became a symbol of Germany's economic revival. The symbol of this economic revival was certainly the beetle, a true icon of postwar Germany. The company expanded its markets in the 60s and 70s, experienced a steady grow to become among the world's automobile best-sellers consistently for decades.
In recent decades, Volkswagen's production has maintained a steady pace, expanding into the SUV sector and becoming a worldwide primary brand. Volkswagen's international success is also due to its establishment in the Chinese market. In fact, the German brand now leads in automotive sales in China, the world's largest car market. This has also resulted in the creation of models specifically dedicated to the Chinese market (Decor, n.d.).

2.2 Dieselgate: Context and Chronology of Events

In 2013, the International Council on Clean Transportation (ICCT), a U.S. nonprofit body, was conducting tests in Europe to check the environmental friendliness of diesel engines. Not satisfied with the outcome of the tests, they decided to continue the investigation in the US, in collaboration with West Virginia University.
Aware that emission standards in the U.S. were more stringent and almost certain that the test results would be negative for European cars, the researchers set to work without imagining that they would uncover one of the biggest automotive scandals in recent history. Engines were purchased to perform the tests, some of them produced by Volkswagen; these gave abnormal results (Altroconsumo Org, 2019).

Carb, the California agency responsible for emission control, was also involved in the studies. In the tests carried out in the study, the Volkswagen engines were found to be perfectly compliant with the standard, but when these tests were carried out on the road, nitrogen dioxide emissions 40 times higher than the limits allowed by law were recorded. Volkswagen, seeing the high levels of emissions produced by their diesel engines, claimed to have discovered the reason for these high levels of emissions and proposed a software remedy. In fact, through this software, which could alter the results, it attempted to conceal the facts.

Despite the recall of 500,000 cars, the Carb continued to monitor Volkswagen's performance, finding that the models produced persisted in violating standards (Automoto.it, 2016). The EPA put Volkswagen on the spot: if it did not fix the issue permanently, the 2016 models would not be approved. This negatively affected the company's image and led to a significant decline in shares. In July, the EPA threatened to put a stop to the sale of all Volkswagen models in the United States. The company still tried to justify itself, but its position was now compromised. On September 18, 2015, Volkswagen management finally decided to acknowledge wrongdoing and admitted that it had installed manipulation software to circumvent environmental regulations on nitrogen oxide emissions and diesel pollution. The software was placed in 482000 vehicles sold in America between 2009 and 2015. The German automaker admitted that there were 11 million vehicles involved on the road. This software was able to reduce emissions temporarily and was automatically activated during the testing phases of the car. In this way, the pollutant emissions detected during the tests, particularly those of the nitrogen oxide Nox, were 10 to 40 times lower than the real ones. A move described as extremely serious by the EPA itself: "Using a manipulation facility in cars to evade environmental standards is illegal and a threat to public health." When the software detected that the car was in a laboratory environment, it made changes to engine parameters that limited performance and, as a result, reduced emissions of pollutant gases, such as nitrogen oxide. This allowed the vehicle to pass emission control tests, but once back on the road, it restored normal performance with increased pollutant emissions. Volkswagen, because it was strategically aiming to regain trust, ameliorate its legal consequences, and save the company's reputation, also decided to recall the affected vehicles and stop the sale in the U.S. of Volkswagen models that had the manipulation

software. In April 2016, Volkswagen said it would allocate €16.2 billion to address the scandal. Later, in June of that year, the company agreed to pay $14.7 billion to settle civil lawsuits in the United States (Il sole 24 ore, 2016).
This amount was earmarked to compensate owners of some 487,000 diesel cars from the Volkswagen and Audi brands in the United States. Owners were given a choice between free vehicle repair and monetary compensation between $5,100 and $10,000 to compensate for the loss of value caused by the scandal, or selling the car to Volkswagen for between $12,500 and $44,000.
In addition, Volkswagen agreed to invest $2.7 billion in environmental cleanup programs and another $2 billion in programs to promote zero-emission vehicles. In January 2017, Volkswagen admitted guilt and said that the company willfully tried to conceal the use of such systems by instructing engineers to develop them so that diesel engines would pass emissions tests in the United States.

2.3 Immediate consequences

The news of the scandal had a global impact and caused serious repercussions for Volkswagen and the entire automotive industry (wired.it, 2015). The first consequences manifested internally within the group: just five days after the EPA reported the scandal, Volkswagen CEO Martin Winterkorn submitted his resignation after apologizing for betraying the trust of customers. He was replaced by Matthias Muller, then CEO of Porsche.
As the investigations, both external and internal to the group, to determine responsibility progressed, the number of people involved increased, and many of them were subject to serious charges, including criminal charges. One example is that of Oliver Schmidt, a Volkswagen executive in the United States, who was arrested on January 7, 2017 on fraud charges. In July 2017, Giovanni Pamio, a former Audi manager, was charged in the United States with fraud and violations of environmental laws and arrested in Germany for fraud and false advertising. In June 2018, Audi CEO Rupert Stadler was arrested in Germany on charges of fraud, misrepresentation, and omission.

The emissions scandal has had a significant impact on the entire automotive industry. In fact, other automakers, starting with FCA and the Renault-Nissan group, have been under investigation. Additional audits of European automakers were introduced in July 2017.
These audits revealed emissions issues, leading to the opening of an investigation by European antitrust into a possible link between Volkswagen, Daimler, BMW, Audi, and Porsche. Porsche opposed this allegation, saying its models used Audi engines and faced a €200 million compensation claim.
The news of the scandal led to heavy consequences for stock markets. After the EPA's notification on September 21, 2015, Volkswagen's stock posted a 20 percent loss on the Frankfurt Stock Exchange, followed by a 12 percent drop the next day and a further 10.5 percent drop.
Volkswagen's share price fell below 100 euros per share, hitting its lowest value in years prior to Dieselgate. Over the course of one year, between November 2014 and November 2015, Volkswagen's stock lost 24.7 percent in the U.S. market.
The consequences did not only affect the Volkswagen brand but the entire automotive sector: BMW posted a loss of 4.9 percent, while Daimler posted a loss of 5.8 percent.
Volkswagen was also forced to recall numerous vehicles, especially in the United States. The automaker was required to upgrade about 480,000 cars equipped with a device deemed illegal. An out-of-court settlement filed in U.S. District Court in San Francisco, California, was later reached, and Volkswagen was forced to invest about $10 billion to buy back or upgrade the affected cars. However, this process presented several challenges for the German group: the affected cars may have needed not only software modifications (due to the "defective" ECU), but also hardware modifications, especially for older models. While the software modification was relatively simple, the operations to adapt the hardware to environmental regulations were more complex, and in some cases, they opted to buy back the cars. Defrauded customers, who had to undergo the recall campaign, had two options offered by Volkswagen: have the car repaired free of charge at authorized workshops, with possible changes to performance and fuel economy, or allow Volkswagen to buy back the car at a pre-crash price, considering various vehicle characteristics such as mileage, wear and tear, and age.
For vehicles equipped with 3.0-liter engines, the most cost-effective solution for customers was to have the car repaired at the workshop, as the problem was related solely

to software. In April 2017, a U.S. federal court imposed a $2.8 billion fine on Volkswagen for illegally manipulating diesel engines to evade government emissions tests. Subsequently, on May 3, 2018, Martin Winterkorn was investigated in the United States for fraud and conspiracy.
On June 1, 2020, Volkswagen Group faced a total cost of approximately $33.3 billion in fines, penalties, monetary settlements, and refunds for the purchase of vehicles involved in the scandal. To this day, numerous legal proceedings are still taking place in both the United States and the European Union, as these markets were the main recipients of the cars involved.

Figure [2] Free fall of Volkswagen shares following Dieselgate.
Source: (Fabio Sciarra, 2015)
https://www.quattroruote.it/news/industria/2015/09/21/volkswagen_azioni_in_caduta_libera_dopo_lo_scandalo_diesel.html

2.4 Greenwashing

Why do companies claim to be eco-friendly when, in fact, they are not?
The term greenwashing is used to describe the communication strategy of some companies aimed at creating a false positive image about their environmental impact with

the intention of hiding the negative environmental effects of their activities or products from consumers (Quifinanza, 2022). The phenomenon of greenwashing is not new. The term was first used in the 1990s, when large U.S. chemical and oil companies, such as Chevron or DuPont, were trying to show themselves to be eco-friendly to divert attention from the pollution they were causing. This gave rise to the term greenwashing, a combination of "green" (environmentally friendly) and "whitewash" (cover-up, hiding something). It refers to the tendency of many companies to declare themselves environmentally sensitive, claiming to follow environmentally sustainable processes through strategies that look green but actually aim to shift attention away from other, non-green aspects of their operations.

Companies are primarily taking this approach to improve their image and increase profits, taking advantage of the public's growing awareness of environmental issues.

In 2010 the U.S. Federal Trade Commission (FTC) introduced guidelines regarding the ethical behavior that must be kept by companies that must necessarily be clear and transparent in communicating their commitment to the environment.

Until 2014, there was no specific legislation on greenwashing in Italy, as control was initially entrusted to the Antitrust Authority.

In March of that year, the Istituto Autodisciplina Pubblicitaria introduced provisions regarding environmental total in its Code of Self-Regulation of Commercial Communication. Currently, greenwashing is considered a form of misleading advertising in Italy and is monitored by the Autorità Garante della Concorrenza e del Mercato (AGCOM). Environmental certifications, such as the EMAS and ISO 14001 standards, may also be required to verify effective corporate sustainability, indicating the interest and commitment held by the company to the environment.

Greenwashing can be practiced by companies in several ways. One of the first warning signs is the use of unclear and overly technical language, which can inevitably confuse consumers. Suggestive images, often featuring greenery or natural scenes, can be misleading and create an illusion of environmental commitment on the part of the brand or product. For example, a company might promote a product as "green" and environmentally friendly based on a limited number of parameters. Greenwashing also means adopting marketing strategies designed to conceal unethical business practices.

This creates a falsely positive image of the company that does not truly reflect its environmental practices. One of the main challenges of greenwashing is that it can harm not only consumers and the environment but, at the same time, also companies that are truly eco-friendly. Companies that mask their non-sustainable actions may enjoy an unfair competitive advantage over those that instead carry out sustainable practices. This can then create a situation of unfair competition in the market, damaging the image of eco-friendly companies and undermining efforts to promote sustainability. Combating greenwashing, therefore, requires greater responsibility on the part of companies. Companies that are here are required to be clear and honest about what they do and the strategies they adopt, providing correct information that can be verified by consumers themselves.

2.5 "Greenwashing and unfair business practices, the state of legislation in Europe"

The implications of greenwashing and attempts to counter it reflect a complex and changing landscape. New consumer awareness of the importance of sustainability has led to increased demand for eco-friendly products, prompting companies to adopt marketing strategies aimed at promoting sustainability and ecology. However, this has increased the phenomenon of greenwashing as companies try to capitalize on consumer interest in sustainability, including through potentially misleading claims.

The European Union, along with its member states, is addressing the problem of greenwashing through new legislative proposals (Il sole 24 ore, 2022). The European Commission has submitted a proposal for a directive aimed at combating greenwashing and promoting sustainable purchasing choices. Similarly, countries such as France, Germany, and the United Kingdom are taking specific measures to protect consumers and businesses from greenwashing by imposing severe penalties for unfair business practices. In France, for example, the Climate and Resilience Act introduced stricter regulations to combat greenwashing, with penalties of up to 1,500,000 euros for businesses that use unethical practices. In Germany, the Law Against Unfair Competition and the Civil Code provide a legal framework to counter greenwashing, with the Stuttgart Court imposing strict verification standards for environmental claims.

In the United Kingdom, the Green Claims Code issued by the Competition Markets Authority provides clear guidelines for environmental claims in advertisements, with penalties for violations.

For companies operating on an international scale, it is important to pay attention to different regulations in different countries to avoid greenwashing practices and protect their image. Adhering to sustainability principles in the business model, investing in staff training, and staying up-to-date on evolving regulations and guidelines are key to maintaining credibility in communications about sustainable practices.

In conclusion, combating greenwashing is a challenge that requires great commitment from governments, companies, and consumers to ensure transparent communication and responsible corporate behavior. Only then can we ensure that business practices are environmentally friendly and authentic and that consumers can make sustainable purchasing decisions.

3.Volkswagen: new approach to sustainability

3.1 Ethical issues at stake

The Volkswagen case presents us with several relevant questions that require certain and immediate answers. Everyone can make mistakes. The most important thing, however, is to learn the right lessons from the mistake made so that it does not happen again. Volkswagen has long been considered a great example of corporate social responsibility because it has always pursued social and environmental goals along with economic ones (avvenire.it, 2015). However, the discovery of the altered exhaust emission data has called into question the reputation the German company has built over the years.

This has inevitably raised significant doubts about the credibility of companies' social and environmental commitment statements (avvenire.it, 2015). Dieselgate is not unique in corporate history. Other examples, such as British Petroleum and Enron, demonstrate how even the largest companies can collapse for engaging in unethical and improper behavior. Key ethical issues revolve around honesty, integrity, and environmental responsibility. The ethical issues at stake in Dieselgate are numerous. I mention two in particular: the ethics of deception and the ethics of leadership. The ethics of deception concern the company that knowingly manipulated tests to make its vehicles look greener than they really were. Volkswagen 's alteration of emissions data demonstrated a blatant disregard for truth and transparency. This has generated great concern about respect for truth and responsibility to consumers and the environment.

Leadership ethics, on the other hand, concerns the top management of the company, which has a duty to make decisions that comply with regulations and ethical standards. However, they preferred to give more importance to short-term profits over the long-term interests of consumers, the environment, and corporate image. The company's actions have led to serious environmental consequences, contributing to air pollution and harming public health. In addition, the scandal strongly questioned the ethical responsibility of managers, who questioned whether it was fairer to prioritize profitability or to act ethically by admitting wrongdoing and taking corrective action while facing serious financial consequences.

3.2 Volkswagen today

Even today, Volkswagen still manufactures, develops, and distributes mobility services, setting itself the main goal of becoming an example in terms of environmental protection. It uses its global innovative capacity to reduce its environmental footprint and address related challenges at all stages of the life cycle of its product offerings. The various leaders, being aware of the environmental risks of their activities, demonstrate in word and deed their commitment to compliance and environmental leadership. They are responsible for implementing this policy in their business units and for ensuring that all employees are informed, qualified, and held accountable to the extent of their responsibility. Within their area of responsibility, they create an appropriate context in which collaborators and business partners can talk about sensitive environmental issues openly and without fear of negative consequences. The Boards of Directors of the Group and each company will give environmental leadership equal weight with other business factors in the company's decision-making process. The company also follows a life-cycle approach to mitigate environmental risks and seize pro-environmental opportunities such as the integration of renewable energy sources, decarbonization, sustainable supply chains, and efficient use of resources. It applies economically sustainable methods to reduce its environmental impact throughout the life cycle of its operations, products, and services. Its efforts are audited annually and made public as key performance indicators.
In terms of its relationship with stakeholders, Volkswagen is now committed to engaging with its employees, customers, suppliers, regulators, communities, institutions, and other stakeholders to understand what their needs and expectations are in terms of the environment (Volkswagen group Italia, [V.G.I], n.d.) The company is also committed to providing transparent and reliable information in its dialogue and reporting to stakeholders. The relationship between a company and its stakeholders is of paramount importance in business management and sustainable value creation.
Effectively managing the relationship with stakeholders is critical to building positive relationships, promoting trust, and ensuring the long-term sustainability of the company. An excellent company-stakeholder relationship is critical to the company's success and sustainability. This is affirmed by stakeholder theory as discussed with more detail in the following paragraph.

3.3 Stakeholder Theory

Stakeholder theory is a conceptual approach that views the organization as a network of stakeholders, that is, individuals or groups who have an interest or "stake" in the organization's activities, decisions, and outcomes (Chron, n.d.). According to this theory, companies should not focus solely on the interests of shareholders but should consider and balance the interests of all relevant stakeholders. Stakeholder theory argues that businesses should recognize and manage stakeholder interests fairly and responsibly.

Stakeholders can include employees, customers, suppliers, local communities, governments, nongovernmental organizations, and more. Each stakeholder has a unique relationship with the organization and can be affected by or influence the company's activities. Stakeholders have different interests and expectations of the organization. These interests may relate to financial benefits, working conditions, product quality, environmental impacts, community involvement, and more.

Businesses should actively involve stakeholders in the decision-making and management of business activities. This involves open communication, listening to stakeholders' concerns and perspectives, and including their opinions in business decisions. Businesses should take responsibility for meeting stakeholder interests in an ethical and responsible manner. This involves balancing stakeholder interests, considering their impact on the long-term sustainability of the organization.

Stakeholder theory also argues that the goal of the organization should be to create value for all stakeholders, not just the shareholders. This implies that the organization should seek to generate social, environmental, and economic benefits through its activities. (Chron, n.d.). The relationship between a company and its stakeholders is of paramount importance to business management and sustainable value creation. Effectively managing the relationship with stakeholders is also necessary to build positive relationships, promote trust, and ensure the long-term sustainability of the company. An excellent company-stakeholder relationship is therefore critical to the company's success and sustainability.

3.4 Volkswagen: “360-degree sustainable approach”

Volkswagen's main goal today is to become the first carbon-neutral premium brand. To achieve this major goal, the German automaker is working on every single aspect of the value chain. Volkswagen has set a goal of reducing its emissions by 30 percent within the next five years and eliminating them altogether by 2050 (Volkswagen group Italia, [V.G.I], n.d.).

In research and development, electrification of the vehicle range plays a key role. The research and development department is working hard to bring thirty electrified models to market by 2025. Currently, the range includes mild-hybrid, plug-in hybrids, and all-electric cars. When it comes to sourcing, Volkswagen is not only making its own processes sustainable but is also committed to ensuring that its business partners also adopt sustainable practices. Having corporate responsibility means partnering with suppliers who share both a conceptual and practical view of sustainability, including protection of the environment and workers' rights. Each supplier is evaluated through a sustainability index that certifies its adherence to the guidelines set by Volkswagen. (Volkswagen group Italia, [V.G.I.], 2020). The electrification of the range has led to an increase in CO2 emissions at the procurement and production stages, so Volkswagen is working with its suppliers to develop specific measures to reduce them.

On the production side, Volkswagen has continuously improved efficiency through the implementation of high-tech and digital solutions. Energy and environmental management systems have been in place since 1995, forming the basis for Volkswagen's sustainable production and the achievement of "Mission Zero," or production with minimal environmental impact.

Volkswagen plants have major goals and are adopting concepts such as circular economy and production efficiency to progressively reduce CO2 emissions, energy and water consumption, and waste generation. The goal is to achieve zero carbon emissions at all plants by 2025. For example, the Brussels plant was the first in the premium segment to achieve carbon neutral certification as early as 2018, and in 2019 several projects contributed to energy savings and reduced CO2 emissions at various Audi and

Volkswagen plants. In the future, Volkswagen will invest 50 percent of its marketing budget in issues related to electric mobility (Volkswagen group Italia, [V.G.I.], 2020).
The goal is to emphasize the emotional aspect of new propulsion technologies, eliminate any doubts, and increase consumer enthusiasm. A successful example of this strategy is the podcast "The Future is Electric," launched in Germany in conjunction with the e-tron Volkswagen not only stands out for its digital initiatives but also has tangible and sustainable plans for future sales (Volkswagen group, [V.G.I], 2020). Since last fall, the new Audi Brand Experience Center at Munich Airport has demonstrated that economy and ecology are concepts that are not at odds with each other. This modern facility features the latest energy and building technologies, playing the role of an international training center and event venue. The German automaker is showing a great commitment to sustainability, not limiting itself solely and exclusively to the 'electrification of its vehicle range.
The spread of electric mobility will generate new challenges for dealerships and workshops, which will have to handle not only routines such as, for example, oil changes and spark plugs but also the complex technologies of high-voltage systems. Audi and Volkswagen are supporting their service partners in this transformation by providing innovative training tools. Using virtual reality in training, technicians can become familiar with high-voltage batteries in a realistic and safe way. This mode allows them to learn step-by-step the most efficient and safe way to replace switching units or battery modules. Virtual reality-based training offers great benefits: Volkswagen can extend training on a global scale, ensuring that its electric vehicles are serviced by trained technicians from the moment they are launched on the market.
Sales digitization includes innovative initiatives such as the Audi Service Station, which allows customers to drop off and pick up their cars for service at any time, regardless of service hours. In addition, the German automaker is developing its online platform to further simplify the process of buying, paying, registering, and delivering used cars.
To promote recycling and reuse, Volkswagen has worked with external partners to create a comprehensive return system. (Volkswagen group Italia, [V.G.I.], 2020).
Cars are designed to be easily disassembled at official collection facilities at the end of their life cycle. Together with other manufacturers, Audi and Volkswagen developed the International Dismantling Information System (IDIS) to facilitate and speed up the

dismantling process by providing specific information to professionals to ensure environmental compliance. Components that contain liquids, such as radiators or oil pans, are designed to be emptied easily and without residue, while electronic components and rotating parts, such as engines and transmissions, are remanufactured, providing environmental and economic benefits for both the environment and customers.

4. Dieselgate scandal: Fiat Chrysler Automobiles under investigation

4.1 Fiat to FCA: The birth of a new group

Fiat Chrysler Automobiles has been one of the world's leading automobile manufacturers, ranking as the eighth largest automotive group in terms of the number of vehicles manufactured (AGI, 2018). It was officially born in 2014 from the merger between the Italian company Fiat S.p.A. and the U.S.-based Chrysler Group. In April 2009, the first negotiations to close the deal began. Fiat CEO Sergio Marchionne had a meeting with representatives of the U.S. UAW union and Chrysler's credit banks. Between April 25 and April 27, the Fiat CEO concluded these agreements. On the same day, Daimler decided to exit Chrysler, for which it had paid $36 billion in 1998. At the end of the month, U.S. President Barack Obama declared that Chrysler would resort to a "surgical bankruptcy" with Fiat's involvement in the capital. This decision was made because of the inability to close a deal with all creditors, despite the sacrifices accepted by unions and large financial institutions. President Obama stressed the importance of the alliance between Fiat and Chrysler, stating that this would save thousands of jobs. Obama also criticized Chrysler's creditors, who did not accept the debt reduction proposals, instead giving great support to the workers and suppliers who made great sacrifices.

The piloted bankruptcy proceedings included financial support from the U.S. government, which would provide $3-3.5 billion during the bankruptcy phase and another $4 billion thereafter. Fiat would initially hold 20 percent of Chrysler, with the option to increase this stake to 25 percent. However, the Italian automaker would not be able to acquire a majority stake in Chrysler until all debts were satisfied. Sergio Marchionne expressed great satisfaction with the recognition of his company's know-how by the U.S. and Canadian governments. He thanked the U.S. and Canadian authorities, as well as labor organizations, for their support and commitment. The CEO also said that the alliance between Fiat and Chrysler would enable the company to become strong, competitive, and ready to challenge global markets (AGI, 2018).

The Fiat deal, after receiving approval from the U.S. Federal Trade Commission on May 14, faced a number of obstacles represented by three Indiana pension funds that tried to block the Auburn Hills sale. However, their opposition was overruled by a judge, allowing the transaction to proceed. During the period between June and July 2009, despite legal challenges, the sale of Chrysler was confirmed by a bankruptcy judge. Indiana funds tried to stop the transaction, but the U.S. Supreme Court finally gave its green light on June 10. This moment saw the rise of Sergio Marchionne as CEO of Chrysler, while Robert Kidder was named chairman.

At the same time, Fiat officially acquired 20 percent of Auburn Hills, while the European Commission gave its approval to the deal on July 24. Then, in November and December 2009, a business plan for Auburn Hills was unveiled, which included the launch of 16 new car models. Marchionne also announced that Fiat would begin producing engines in the United States in the fourth quarter of 2010. In April 2010, Chrysler reported positive financial results, with significant operating profit and positive cash flow in the first quarter. In September 2010, Fiat's extraordinary shareholders' meeting approved the spin-off of its industrial vehicles and agricultural machinery businesses, thus initiating the merger between Fiat Group Automobiles and Chrysler.

Between April and July 2011, Fiat gradually increased its stake in Chrysler, finally reaching 46 percent of the capital. At the same time, it repaid its debts to the U.S. and Canadian governments. In January 2012, Fiat reached 58.5 percent of Chrysler, thus completing the third performance target. Finally, Fiat's board of directors approved the corporate reorganization on January 29 of that year, creating the new industrial group called Fiat Chrysler Automobiles. The actual merger took place on October 12, 2014, transforming Fiat S.p.A. into Fiat Investments N.V. and subsequently renaming the entity Fiat Chrysler Automobiles N.V.

4.2 Fusion with PSA

On October 30, 2019, The Wall Street Journal reported news of possible negotiations between FCA and the French group PSA over a potential merger, which would create the fourth largest automotive group in the world. Immediately after the announcement, both companies quickly began the merger process. The new giant, listed on the New York, Milan, and Paris stock exchanges, would have its legal and fiscal headquarters in

Amsterdam, with Carlos Tavares as CEO and John Elkann as chairman. The board structure would have included five members from PSA (including Tavares) and as many from FCA, with a combined production of 8.7 million vehicles after the merger. In addition, PSA was originally supposed to hold 60 percent of the new entity but eventually agreed to an equal 50 percent stake, paying FCA shareholders a premium of nearly $7 billion.

On November 20, 2019, General Motors filed a lawsuit against FCA, accusing it of bribing the United Auto Workers unions during contract negotiations conducted with the three major Detroit automakers between 2009 and 2015. As a result of this accusation, three former FCA managers were arrested. FCA responded by claiming that General Motors' intent was to obstruct the merger with PSA.

The official announcement of the merger between FCA and PSA came on December 18, 2019, establishing the creation of the world's fourth-largest automaker by sales volume, with a total of 8.7 million vehicles and total revenues of 170 billion euros (avvenire.it, n.d.). The name of the new company would be decided later, and the board would include employee representatives from both companies, with the Chinese company Dongfeng's share reduced to 4.5 percent. Prior to the completion of the deal, FCA would distribute a special dividend of 5.5 billion euros to shareholders, while PSA would distribute the 46 percent stake held by the Faurecia components company to its shareholders.

In 2020, both FCA and PSA would have distributed an ordinary dividend of 1.1 billion euros related to fiscal year 2019. When the deal closed, PSA shareholders would receive 1.742 shares of the new company for each PSA share held, while FCA shareholders would receive one share of the new company for each FCA share held. Once the merger was completed, FCA would sell its stake in Comau for the benefit of shareholders in the new group.

In February 2020, it was announced that FCA would pay 730 million euros to the Italian tax authorities in connection with the merger with Chrysler L.L.C., thus closing an assessment that began in 2014. This settlement allowed FCA to avoid paying a fine of 670 million euros in penalties and interest. Finally, in January 2021, FCA was ordered to pay a thirty million dollar fine and remain under observation for three years for bribing the leadership of the American UAW union between 2009 and 2016.

4.3 Birth of Stellantis

January 16, 2021 marks the official debut of Stellantis, the massive automotive conglomerate formed by the merger of Fiat Chrysler and PSA. This event marks the completion of the merger agreement, originally announced on December 18, 2019 and later adjusted to consider the financial and economic implications of the COVID-19 pandemic. The merger became official following majority approval at the meetings.

One of the crucial aspects was the payment of an extraordinary coupon of 1.84 euros per share to FCA shareholders, totaling 2.9 billion euros. This dividend was declared "unconditional" on January 13, and payment began on January 15.

Now, the focus shifts to the next steps. On Monday, January 18, trading of the new Stellantis stock will begin on the Milan Stock Exchange and Paris Euronext. However, the listing on the New York Stock Exchange will be delayed by one day due to the closure for the Martin Luther King Day holiday; therefore, trading will begin on Tuesday, January 19. To mark this moment, a special ceremony has been organized that will see Chairman John Elkann and CEO Carlos Tavares ring the opening bell for trading. The next significant event will be Tavares' press conference Tuesday afternoon, his first major speech as head of the new automotive giant.

With the completion of the merger, the world's fourth-largest automaker is born, with 2019 sales of 8.7 million vehicles, revenues of nearly 167 billion euros and profits of about 7 billion. Stellantis, headquartered in Amsterdam with headquarters in Paris, becomes a multinational company with a vast network of operating locations around the world and a diversified shareholder base. The group will be led by Elkann and Tavares, with a board of directors that includes representatives of the founding families and other leading members.

Tavares will be faced with several challenges, such as generating the projected 5 billion euros in synergies. These synergies come mainly from sharing platforms and propulsion systems, savings on purchasing, and optimization of production processes. The positioning of brands in the market, the future of production facilities, and the electrification of cars will also be crucial. Careful consideration will have to be given to how to translate these strategies into concrete actions, including considering the impact of the merger on specific projects and brands, both positively and negatively.

Figure[3] PSA-FCA merger: here are the 20 brands that make up Stellantis.
Source:(Monica Secondino, 2021)
https://it.motor1.com/news/466473/stellantis-gruppo-marchi-numeri/

4.4 Dieselgate: Fiat-Chrysler in violation of the law

The U.S. Department of Justice has opened an investigation into the FCA group for an alleged failure to report software used to circumvent emission standards. The investigation began following numerous complaints made by the EPA, which discovered software on 104,000 vehicles produced by FCA that allegedly allowed them to exceed emission limits (ANSA, 2017). This has further drawn attention to FCA's sales practices, which were already under scrutiny by the Justice Department.
FCA CEO Sergio Marchionne said he expected thorough investigations by the Justice Department, which often follow those of the EPA. The CEO also expressly stated during a press conference that there was never any intention to falsify emissions tests. The SEC has also launched an investigation into this case. However, the FCA (Fiat Chrysler Automobiles) automotive group later admitted to the U.S. government that it sold more than one hundred thousand diesel vehicles, including the Jeep Grand Cherokee and Ram 1500 models, equipped with illegal systems designed to evade emissions tests (Il Fatto Quotidiano, 2017).

FCA eventually agreed to pay criminal penalties of approximately three hundred million dollars, comprising a fine of $96.1 million and a waiver of $203.6 million in illicit profits. Stellantis, the car company formed from the January 2021 merger between FCA and PSA, said the agreement was reached to resolve a criminal investigation by the U.S. Department of Justice regarding 101,482 diesel vehicles sold between 2014 and 2016. The agreement also calls for FCA to be subject to three years of surveillance and cooperate with further government investigations into Dieselgate. Kenneth A. Polite, deputy attorney general of the Justice Department's criminal division, commented that the guilty plea shows commitment to prosecuting all corporate wrongdoing (ANSA, 2017).

The company was accused of deceiving U.S. authorities and consumers through a multi-year fraud. The charge involved creating a marketing campaign to present the vehicles as environmentally friendly, despite the fact that they were equipped with software and other fraudulent practices to pass emissions tests. The company's investigation and admissions revealed a far different picture, highlighting a concerted strategy to circumvent environmental regulations (Automobilismo.it, 2019).

4.5 Dieselgate: Differences between Volkswagen-FCA

Volkswagen has been accused of equipping some of its TDI vehicles with software designed to detect emissions tests and alter engine settings in order to pass the tests, only to turn off during normal vehicle use. This resulted in NOx (nitrogen oxides) emissions up to 40 times higher than legal limits, a significant environmental problem given the potential negative impact on health and the environment.

The consequences of these actions have been severe for Volkswagen, with both civil and criminal lawsuits. One of Volkswagen's managers in the United States, Oliver Schmidt, was arrested because of these charges. However, the company has admitted guilt and agreed to pay fines totaling nearly $20 billion, as opposed to the $45 billion originally planned (AutoAddicted, n.d.).

As for the owners of the vehicles involved, in Europe a free recall was conducted to update the vehicles' software, while in the United States a refund ranging from $5,100 to $9,850 was offered, depending on the vehicle model, in addition to the software update itself. These actions were taken to mitigate the harmful effects of the emissions and to repair the harm caused to consumers.

Unlike the Volkswagen case, the charge against the FCA group appeared to be less serious because it focused on a lack of transparency rather than direct environmental injustice. The charge involved an alleged violation of the federal emissions law, the Clean Air Act. It was alleged that during the preliminary approval stages prior to emissions testing, FCA failed to disclose that the engine management unit software could temporarily increase emissions under certain weather or engine stress conditions to prevent mechanical damage.

Currently, this violation appears to carry only administrative consequences, with no criminal repercussions, but the EPA is still investigating whether such software may have been used in bad faith. Therefore, it cannot be ruled out that the situation for FCA could change and get worse for FCA. The group responded by saying that its diesel engines are equipped with advanced emission control technologies, including an SCR catalytic reduction system (AutoAddicted, n.d.). It also stressed the need for each manufacturer to balance the EPA's requirements on controlling nitrogen oxide emissions with other performance, durability, safety, and fuel efficiency requirements.

There are 103,828 models involved in the charge, including the Dodge Ram 1500 and Jeep Grand Cherokee with 3.0 V6 engines produced between 2014 and 2016 and sold exclusively in the United States. As for the expected penalty, there is talk of a potential maximum fine of $4.64 billion, but any plea deals or court developments could still affect the final outcome of the situation.

Conclusion

In conclusion, Volkswagen's Dieselgate has shown us the various ethical problems that can arise in corporate decision-making. Businesses are an integral part of society and have a responsibility to people and the environment in which they operate.

The adoption of sustainable practices entails a real commitment to ethics and corporate social responsibility. This involves respect for workers' rights, fairness, and contributing to the well-being and growth of the community. Industrial and commercial activities often produce polluting emissions and waste that harm the environment and human health. Operating sustainably involves adopting practices that reduce environmental impacts, contributing to the fight against climate change and environmental degradation.

Sustainable businesses tend to have a more positive image and a better reputation. Consumers and investors are increasingly attentive to companies' ethical and sustainable practices and are more likely to finance and trust those who demonstrate a commitment to social and environmental well-being. Adopting sustainable practices can lead to long-term financial savings. Reducing resource use, optimizing processes, and reducing waste can lead to lower operating and production costs. In addition, energy efficiency and the use of renewable energy sources can reduce supply-related costs.

Volkswagen has done none of these things. Instead, it has shown us how management choices can have serious consequences that affect not only the company itself but also customers, shareholders, employees, and the environment itself. Management decided to focus on immediate needs rather than on the company's long-term prospects. Volkswagen was unable to pursue its corporate social responsibility goals and showed us what consequences were suffered by a company that decided not to behave ethically.

References

AGI. (2018, July 22). *L'intuizione di Marchionne: storia della nascita di FCA.* https://www.agi.it/economia/news/2018-07-22/sergio_marchionne_fca_storia_fiat_chrysler-4185420/

Altroconsumo Org. (2019). Effetto Dieselgate: test emission di Altroconsumo https://www.altroconsumo.it/organizzazione/media-e-press/comunicati/2019/dieselgate-quattro-anni-dopo-appello-euroconsumers

ANSA. (2017, January 16). *Dieselgate: FCA in mirino anche del dipartimento di giustizia USA.* https://www.ansa.it/canale_motori/notizie/attualita/2017/01/12/fca-verso-accusa-usa-violate-norme-emissioni-diesel_735f5e88-75ea-412a-b7ea-1d992b3f9f98.html

AutoAddicted. (n.d.). *Dieselgate: le differenze tra il caso FCA e quello Volkswagen.* https://autoaddicted.com/news/dieselgate-le-differenze-caso-fca-quello-volkswagen/

automobilismo.it. (2019, October 1). *FCA sotto accusa negli USA per le emissioni del diesel.* https://www.automobilismo.it/fca-sotto-accusa-negli-usa-per-le-emissioni-dei-diesel-32279

Automoto.it. (2016, October 28). *Volkswagen Dieselgate, ecco cosa cambia dopo il richiamo* https://www.automoto.it/news/volkswagen-dieselgate-ecco-cosa-cambia-dopo-l-intervento-di-richiamo-video.html

avvenire.it. (2015, September 25). *Il crollo della reputazione dopo il dieselgate.* https://www.avvenire.it/opinioni/pagine/il-tradimento-di-volkswagen-erano-i-campioni-delleticaavvenire.it. (2009, April 30). *Economia: FCA confermato l'accordo.* https://www.avvenire.it/economia/pagine/fiat-chrysler_200904300719304070000

Bowen, H. R. (1953). *Social responsibility of the businessman. New York: Harper & Row*.

Chron. (n.d.). *The Concepts, Evidence & Implications of the Stakeholder Theory of a Corporation.* https://smallbusiness.chron.com/concepts-evidence-implications-stakeholder-theory-corporation-33236.html

Decor. (n.d.). *Volkswagen:Un marchio automobilistico al centro della storia europea.* https://www.elledecor.com/it/barche-motori/motori/a42065769/volkswagen-un-marchio-automobilistico-al-centro-della-storia-europea/

Di Francesco Gangi, Mario Mustilli (2018). *La responsabilità sociale dell'impresa: Principi e pratiche. EGEA Spa*.

Fondazione Nazionale dei Commercialisti. (n.d.). *Etica ed Economia*. https://www.fondazionenazionalecommercialisti.it/node/40

Gyre: (n.d.). *Sostenibilità aziendale: quali sono gli indicatori per misurare l'impatto ambientale*. https://blog.ogyre.com/sostenibilita-aziendale-quali-sono-gli-indicatori-per-misurare-impatto-ambientale

Il Fatto Quotidiano. (2022, June 5). *Dieselgate, FCA ammette: "Venduti negli USA veicoli truccati per superare i test delle emissioni"* https://www.ilfattoquotidiano.it/2022/06/05/dieselgate-fca-ammette-venduti-centomila-veicoli-con-sistemi-illegali-per-superare-i-test-patteggiamento-da-trecento-milioni-di-dollari/6616249/#:~:text=La%20filiale%20statunitense%20di%20Fca,per%20circa%20trecento%20milioni%20di

Il Sole 24 ore. (2022, September 26). *Greenwashing e pratiche commerciali scorrette, il punto della legislazione in Europa.* https://ntplusdiritto.ilsole24ore.com/art/greenwashing-e-pratiche-commerciali-scorrette-punto-legislazione-europa-AEBNyO3B

Il Sole 24 ore. (2016, June 28). *Usa, Volkswagen patteggia indennizzi per 15,3 M USD* https://st.ilsole24ore.com/art/finanza-e-mercati/2016-06-28/volkswagen-costo-dieselgate-usa-sale-15-miliardi-dollari-101137.shtml

Kant, Immanuel. (2013). *Critica della ragion pratica. Utet Libri.*

Monteiro, A. Reis. (2014). *Ethics of human rights. Springer Science & Business Media.*

Moveo. (n.d.). *Dieselgate, lo scandalo che ha trasformato l'industria sutomobilistica*. https://moveo.telepass.com/dieselgate-cosa-sapere/

Quifinanza. (2022, April 8). *Cos'è il greenwashing, l'ecologismo di facciata*. https://quifinanza.it/green/greenwashing-cose-definizione/479086/

Rete del dono magazine. (n.d.). *Corporate social responsibility: perché è fondamentale*. https://www.retedeldono.it/magazine/corporate-social-responsibility-csr

Tangorra, Vittorio (2023). *Economia ed etica. Marcianum press.*

Twin, Alexandra (2024). *What is business ethics? Definition, principles and importance.* https://www.investopedia.com/terms/b/business-ethics.asp#:~:text=Business%20ethics%20refers%20to%20implementing,social%20responsibility%2C%20and%20fiduciary%20responsibilities

Virgilio Motori. (n.d.). *Volkswagen: storia e curiosità della casa automobilistica*. https://www.virgilio.it/motori/auto/volkswagen-storia-curiosita-casa-automobilistica/77211/

Volkswagen Group Italia. (n.d.). *Il nostro approccio: sostenibile a 360 gradi.* https://www.volkswagen-veicolicommerciali.it/it/mobilita-elettrica/sostenibilita/il-nostro-approccio.html

Volkswagen Group Italia. (n.d.). *Politica ambientale del Gruppo*. https://www.volkswagengroup.it/ita/gruppo-volkswagen/politica-ambientale-del-gruppo

Volkswagen Group Italia. (2020, June 6). *Sostenibilità a 360 gradi: l'impegno Audi verso le zero emissioni.* https://modo.volkswagengroup.it/it/vision/sostenibilita-a-360-gradi-limpegno-audi-verso-le-zero-emissioni

wired.it. (2015, September 23). *Tutto quello che devi sapere sul caso Volswagen.* https://www.wired.it/attualita/ambiente/2015/09/23/tutto-caso-volkswagen/

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