

DECARBONIZATION PATH IN AUTOMOBILE INDUSTRY FROM THE PRISM OF THEIR ESG RATING SCORE

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Abstract: All facets of life and society are impacted by climate change, which has far-reaching effects on people. The ambitious sustainability goals outlined in the 2015 Paris Agreement and the 2019 European Green Deal are realized through a number of projects. Significantly lowering greenhouse gas emissions and decarbonization is outlined as one of the primary environmental goals. The focus of this research is analyzing the engagement of the major luxury cars producers from automobile industry in the process of greenhouse gas emissions and their ESG ratings which confirm commitment toward ESG objectives. Authors had chosen four companies from automobile industry which are encompassed by Morningstar Sustainability rating scale. According to reached ESG ratings for observed companies, authors concluded that despite of general ESG rating limitations, those companies are currently far away from achievement of net zero objectives meaning that there are a lot of space for further significant improvement in this area.

Key words: greenhouse gas emissions, ESG rating, Morningstar Sustainability, climate change, automobile industry.

1. INTRODUCTION

Recent observations have shown increased warming, and the occurrence of unseasonable heatwaves, extended droughts, abnormally warm oceans, significant flooding, and powerful storms have all acted as reminders of how rapidly climate change is occurring. In certain locations, climate change is occurring far more quickly, and non-linear processes and feedback loops have the potential to accelerate these changes even further, increasing risks. All parts of the world are being affected by the ongoing acceleration of global warming, with Europe warming twice as quickly as the global average [1]. Global greenhouse gas (hereinafter: GHG) emissions should decrease by 43% below 2019 levels until 2030 and by 84% till 2050 in order to prevent the worst effects of climate change, ensure a suitable future for everyone, and keep warming to the 1.5°C Paris Agreement temperature target [2]. According to preliminary data, EU total net GHG emissions fell 37% below 1990 levels in 2023 after declining 31% in 2022 [3]. Europe is the continent that is warming the fastest in the world, presenting significant climate risks to the welfare of its people. Furthermore, abovementioned is evidenced by the obvious fact that nearly 50,000 Europeans were murdered by heatwaves in 2023, following the 60 000 - 70 000 heat-related deaths that occurred in Europe in 2022 [4]. These findings demonstrate how urgent it is to improve social readiness and resilience to climate change. Given how quickly climate change is happening, it is imperative that we reduce GHG emissions and adapt to the changing environment right away.

The energy supply sector has been the largest contributor to carbon reductions, according to sectoral developments in 2023. This industry, which has historically produced the most emissions in the EU, lost that status after reducing emissions by a noteworthy 19% in a single year [3]. The main drivers behind this were the growth of hydropower, nuclear energy, and the continuous advancement of solar and wind energy. The sector is going through a rapid transition that is fundamentally changing how energy is generated. Emissions have also decreased as a result of changes in energy consumption patterns, particularly in the building and industrial sectors. In the transportation sector, change has been more gradual. Following the COVID-19 epidemic, road transportation fully recovered; nonetheless, the use of electric vehicles (hereinafter: EV) halted in 2023. After nearly tripling in 2021 and 2022, EVs sales increased by just one percentage point to 23.6% in 2023[3]. Numerous causes contributed to this delay, but new car models and legislative tools, which will promote electric driving, may be the driving forces behind prospective emissions reductions. The slower adoption rate of EVs and a similar trend with heat pumps, however, serve as a reminder that the transformation will require continuous support and cannot happen on its own.

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The world's greatest issue is climate change, which calls for coordinated worldwide measures to cut GHG emissions. When looking at emissions globally, this is not the case, even if they have significantly decreased in Europe since 1990. Global GHG emissions (not including Land Use, Land Use Change and Forestry, shortly: LULUCF emissions and removals) rose 62% between 1990 and 2023, according to EDGAR (*Emissions Database for Global Atmospheric Research*) estimations [5]. At the sector level, global GHG emissions from industrial processes and the energy sector have nearly quadrupled since 1990, while transportation has also witnessed a notable rise of 78%. Consequently, the EU's annual contribution to global GHG emissions has declined. Europe was responsible for 15% of the world's emissions in 1990. This percentage was slightly more than 6% by 2023. With emissions of 7.26 tonnes of CO₂ equivalent per capita (tCO_{2e}/cap), the EU is still above the global average when looking at emissions per capita, but its GHG emissions as a percentage of GDP are far lower than the global average [5].

The biggest factor reducing GHG emissions in Europe since 1990 has been the continent's decreased usage of fossil fuels, particularly coal. This continued to be a major influence in 2023. Only because of the quick growth of renewable energy has the European economy been able to decarbonize more quickly. Early forecasts from the European Environment Agency (EEA) predicted that by 2023, renewable energy will account for 24% of the EU's gross final energy consumption, up from 10.2% in 2005 [6]. Additionally, the EU has been able to keep lowering its energy usage. The pace of carbon reductions has accelerated in recent years, and these accomplishments represent a substantial step towards the EU being climate neutral. The 2023 annual decrease is more than three times the average pace since 2005 and above the rate needed to reach the climate objectives for 2030. But there are still difficulties.

By 2030, it is predicted that GHG emissions will have decreased by 51% if just domestic GHGs in the EU are considered, ignoring international transportation [3]. National energy and climate plans (NECP) updates provide a chance to incorporate further actions to close the gap toward the goal. An early evaluation of the plans provided by the European Commission confirms a higher level of collective ambition towards 2030, closing the gap to the EU's 2030 objective of 55%. These estimates show a growing discrepancy between the total anticipated emissions of the countries and the EU objectives for 2040 and 2050. In order to guarantee that carbon reductions may achieve climate neutrality in just two and a half decades, they also highlight the significance of the ongoing development of new, enlarged, and extended policies and actions. The central part of the paper is analysis of ESG ratings in automobile industry, especially in the area of luxury car production.

2. RESEARCH METHODOLOGY AND RESULTS DISCUSSION

Consumer, employee, and investor decisions are now heavily influenced by social and environmental factors. A growing number of businesses are looking for metrics that effectively assess sustainability as worries about these initiatives increase. ESG (common abbreviation for: Environmental, Social and Governance) aims to provide a more comprehensive view of a company's influence on environmental, social, and governance factors by taking into account „unmeasured criteria“ that are frequently left out of financial statistics. An ESG rating score is intended to assess how successfully a corporation or business manages risks associated with ESG factors in its daily operations. On a scale of 0 to 100, an ESG score represents a comprehensive evaluation of such risks.

Put another way, a business should aim to reduce environmental and social risks while simultaneously maximizing revenues if it wants a high ESG score. In actuality, this implies that businesses link their initiatives to every element of ESG. An organization might, for instance, include initiatives devoted to worker safety (social), board of directors' diversity (governance), and energy efficiency (environmental). Third-party suppliers who specialize in ESG evaluations typically determine ESG scores. Each of the more than 140 US companies that offer ESG scores uses a somewhat different methodology. Although having different viewpoints can be beneficial, it is challenging to compare the ESG scores of different companies due to the differences in vendor calculations. A method for assessing an investment's strength based on its historical performance is Morningstar Sustainalytics ratings. A Morningstar rating uses historical data to rate investments on a scale of one to five stars. A fund or stock's historical results are better when it has more stars.

For desk research in this paper, the authors used publicly available data for ESG Risk Rating from the company Morningstar Sustainalytics at the link: <https://www.sustainalytics.com/esg-ratings> [7]. Database is searchable and arranged according to the type of industry as well as the ESG rating. Filter “Rating” is constructed in the manner that has five possible options: Negligible Risk, Low Risk, Medium Risk, High Risk and Severe Risk. In comparison to its counterparts, a company with a high ESG rating is effectively managing its environmental, social, and governance risks. Conversely, a corporation with a low ESG rating is more exposed to mismanaged ESG risks. ESG ratings, in addition to ESG reporting, assist investors in comprehending a company's priorities and potential long-term concerns.

In this paper, authors selected “Automobile” within filter “Industry”, while filter “ESG Rating” was left empty meaning that all ratings were included. In next phase, due to obtaining too wide range of companies, authors had chosen four worldwide well known automobile producers of luxury cars (Aston Martin Lagonda Global Holdings PLC, Mercedes-Benz Group, Ferrari and Honda Motor) to compare their performances, by selecting options available at the link: <https://www.sustainalytics.com/corporate-solutions/know-your-esg-score>. Obtained results were presented in Figure 1:

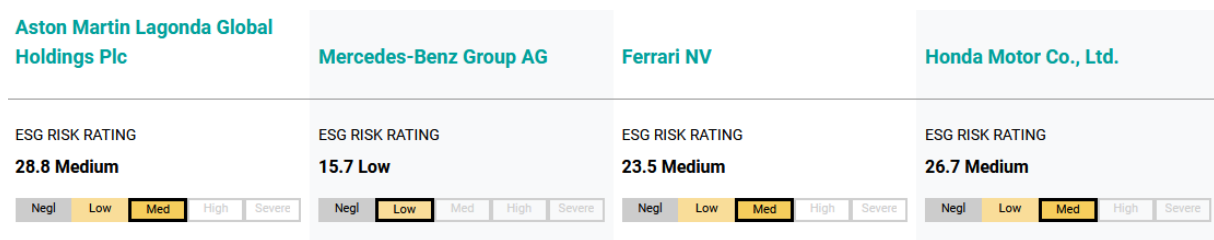


Figure 1 – Comparative analysis of ESG Ratings within automobile industry

Source: [8]

Luxury automaker **Aston Martin Lagonda Global Holdings PLC** produces high-end vehicles. It creates, engineers, and manufactures sports automobiles in United Kingdom and distributes them via a dealer network. It also performs sports car maintenance; all these operations are done under the Aston Martin brand. The automobile business is the sole one of the Group’s operating segments. The automotive segment encompasses all activities related to vehicle design, development, manufacturing, and marketing, including consultancy services; it also covers activities related to automobile brands, part sales, and maintenance. Geographically, it is present in the Americas, Asia Pacific, the Middle East and Africa, the United Kingdom, and the rest of Europe [8]. Commitment toward ESG strategy of the company Aston Martin Lagonda Global Holdings PLC is described in their “Sustainability report” under the motto “Racing. Green.” [9].

The **Mercedes-Benz Group** is a high-end automaker that produces slightly under 450,000 vans and about 2 million passenger vehicles annually, including its joint venture in China. The company’s financial situation considerably improved once Daimler Truck was spun off in 2021. Mercedes only uses its own brand, in contrast to most automakers. Thirty percent of its passenger cars sales in 2023 were entry-level (A and B Class), 54% were core (C and E Class), and 16% were top-end (G Class, Maybach, AMG, S Class). With 40% of 2023 car sales, Asia is Mercedes' greatest market in terms of volume, followed by Europe (38%), and North America (17%) [8]. Engagement of the Mercedes-Benz Group is briefly elaborated in their documents regarding decarbonization on the official company’s website [10].

Some of the costliest luxury vehicles in the world are created, designed, and built by **Ferrari**. A Ferrari, a brand entrenched in decades of motor racing history, is seen as a prestige symbol, with supply carefully managed to be below demand. More than 70% of the 13,663 cars the business sold in 2023 were to current Ferrari customers, with an average price of over EUR 400,000. The selling of automobiles and auto components accounts for 86% of revenue, while sponsorship, advertising, and

brand-related activities, such as racing and lifestyle pursuits, account for 10%. 48% of income in 2023 came from the Europe, Middle East, and Africa region, 30% from the Americas, 10% from mainland China, Hong Kong, and Taiwan, and the remaining 10% from the rest of Asia [8]. As socially responsible company Ferrari takes care of sustainability topic through defining its Sustainability Strategy [11].

Honda Motor was first established in 1948 as a motorbike company. The company now manufactures motorbikes, cars, and power equipment like lawnmowers, generators, and boat engines. In fiscal 2024, Honda sold 18.8 million motorcycles and 4.1 million light automobiles, including joint ventures. Its total sales came to JPY 20.4 trillion. Sixty-six percent of revenue comes from cars, sixteen percent from motorbikes, and the remaining portion is divided between financial services and power items. Honda also manufactures private jets and robotics [8]. ESG commitment of the company Honda Motor is described in the comprehensive document “ESG Data Book 2024” [12].

As it is evident in Figure 1, neither one of selected companies from automobile industry has high ESG rating, leading to conclusion that all observed companies are far away from full implementation of ESG rules in their business and consequently realization of ambitious decarbonization objectives. More deeply, the Mercedes-Benz Group is in the worst position among analyzed companies considering the lowest ESG rating (15.7 score) with general mark: low ESG rating. It implies the necessity for urgent adoption of ESG principles and strategic implementation through all business areas. Three other automotive companies from the sample (Aston Martin Lagonda Global Holdings PLC, Ferrari and Honda Motor) have slightly better position analyzing their ESG rating score, because they have general mark: medium ESG risk. It means that their level of transparency, performance, and exposure to environmental, social and government aspects is obvious but still there is a lot of space for future improvement. Limitation of this analysis is reflected in the fact that Morningstar Sustainalytics does not possess grades and evaluations of all luxury car producers and manufacturers, so authors were enforced to decrease the scope of observations to world most famous and well-known brands that are encompassed by Morningstar Sustainalytics’s rating scale.

Beside the aspect of decarbonization and fossil fuel usage reduction, the reason for choosing automobile industry in the analysis is the attempt for promotion of transparent ESG implementation with sound avoiding unethical and immoral behavior which is previously detected. For example, the Environmental Protection Agency (EPA) discovered in September 2015 that major car producer Volkswagen was in the center of a major scandal. Namely, their vehicles contained a “defeat device” i.e. software in the diesel engines that could recognize when they were being tested and alter the performance to enhance the results. The public media focused on those who were evading emissions tests for cars sold in the United States, which amounted to around 482,000 vehicles. Volkswagen launched a vigorous marketing campaign to promote the sale of diesel vehicles with low emissions in the US. Volkswagen has discovered “irregularities” in tests used to measure carbon dioxide emissions levels, and the corporation acknowledged that almost 11 million cars globally were equipped with described software. Following the controversy, Martin Winterkorn, the Group CEO of Volkswagen, resigned, and Matthias Mueller, the former CEO of Porsche, took his place. For every car that violates rules, the EPA has the authority to fine the firm up to USD 37,500, with a potential fine of around USD 18 billion [13].

At the end, it should point on some limitations regarding ESG rating scores. Even while ESG scores are useful benchmarks, a company shouldn’t use them as the sole criteria when deciding which investments to make because they don’t accurately predict a company’s long-term success. Organizations must combine ESG scores with thorough financial and operational due diligence in order to make an informed assessment of a company’s prospects for success in the future. It is crucial to keep in mind that the market might influence a company’s performance as well. Investors should be aware that some firms with poor ESG scores report amazing market returns, and that company with excellent ESG scores sometimes underperform in the market.

Furthermore, it is difficult to understand how a score is calculated because ESG disclosures are not yet mandated in the United States and there are no defined standards. There may be significant differences in the way businesses tabulate scores and analyze data. The three elements of the ESG

framework may be sorted differently by third-party ESG rating providers, who may also employ special metrics or scoring schemes. This implies that even while ESG rating companies use the same measures and criteria, a single company may have multiple distinct ESG scores. It goes without saying that this lack of consistency makes it even harder to gauge the impact of ESG scores. Nevertheless, regulatory pressure to standardize ESG is currently growing since ESG is becoming more and more important to investors.

3. CONCLUSION

Within ESG topics, the decarbonization and GHG emission reduction is one of the most elaborated topics. Declined trend of fossil fuels usage in Europe as well as affirmation of renewable energy sources marked the green economy development in recent period. Additionally, the pace of carbon reductions and accomplishments represent a substantial step towards the EU being climate neutral. GHG emissions should decrease by 43% below 2019 levels until 2030 and by 84% till 2050 in order to prevent the worst effects of climate change, ensure a suitable future for everyone, and keep warming to the 1.5°C Paris Agreement temperature target. Those data illustrate how urgent it is to improve social readiness and resilience to climate change. By 2030, it is predicted that GHG emissions will have decreased by 51% if just domestic GHGs in the EU are considered, ignoring international transportation. An early evaluation of the plans provided by the European Commission confirms a higher level of collective ambition towards 2030, closing the gap to the EU's 2030 objective of 55%. These estimates show a growing discrepancy between the total anticipated emissions of the countries and the EU objectives for 2040 and 2050.

One of the main industries that should widely help to realization of decarbonization path worldwide is automobile industry. According to companies' commitment toward GHG emissions reduction, they could be classified and scored. Using Morningstar Sustainalytics ratings score, authors observed four companies mainly engaged in luxury car production and make comparison of their rating scores. A common feature of all observed companies in the sample is that they transparently published data regarding sustainability on their websites. On the other hand, neither one of selected companies from automobile industry possesses high ESG rating, meaning that all observed companies are far away from realization of ambitious decarbonization goals. In other words, the achieved level of transparency, performance, and exposure for those companies to environmental, social and government showed there is a lot of space for future improvement.

Limitation of this analysis is reflected in the fact that Morningstar Sustainalytics does not possess grades and evaluations of all luxury car producers and manufacturers, so authors were enforced to decrease the scope of observations to world most famous and well-known brands that are encompassed by Morningstar Sustainalytics's rating scale. Future research should include larger sample, not only focused solely on automobile industry, with notation that the quality of conclusions widely depends upon further developments in the harmonization process of ESG rating scores created by different vendors.

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