The automobile industry and its sustainable motivation

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Colophon

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Preface

This Master's thesis started at the beginning of the academic year 2021/2022. At the time, I had to look for an internship where I could write my thesis. Luckily, an exciting research assignment popped up; the graduation assignment of DAF to do a CO_2 scope analysis. This internship assignment is, unfortunately, not related to social sciences. So, the thesis had to be on a different subject, but I still wanted to give CO_2 calculations a shot as well. Ronald Stegers of DAF helped me narrow down topics that could or could not be conducted at DAF. This resulted in a research proposal regarding change agents at DAF in December.

At the start of the thesis in February, it was clear that the subject change agents did not fit for DAF. So, instead of researching the employees who bring change, the thesis is now about why DAF is motivated to become more sustainable. The internship supervisors, Jeroen Gielen and Jan Damen, helped me a lot in this process of writing the thesis. They gave suggestions for participants, articles to use, and documents on DAF and sustainability. Additionally, my thesis supervisor, Ingrid Visseren-Hamakers, helped me a lot by giving suggestions for the thesis on all matters. Besides these four people who helped, many people from DAF and outside of DAF participated in this thesis. Thus, I would like to thank all the people who were part of this thesis.

Aside from the thesis, I would also like to thank all the employees at DAF who helped me with the internship assignment.

Summary

This research started due to curiosity about why the automobile industry has become more sustainable. Recent external factors could influence the automobile industry, like the diesel scandal and new European legislation for heavy-duty vehicles/legislation that forces companies to have CO_2 certificates. The case study is about DAF, as my internship regarding CO2 emissions was also done there. During my internship, I discovered that a lot of greenhouse gas emissions occur in the value chain, particularly in the transportation of products. This is, however, a thesis on why DAF feels motivated to become more sustainable. The social relevance of this thesis is to find out if DAF is becoming more sustainable in response to the diesel scandal, to comply with the legislation, or for other reasons. The scientific relevance is to contribute to the automotive literature in social sciences; one other article about motivation and automotive has been published. This article is, however, from 2006 and an article from China which could have different socio-cultural drivers.

Therefore, the research question of this thesis is, "*What motivates DAF trucks N.V. to become more sustainable?*". To answer this research question a literature review was conducted to understand the existing concepts and theories. The questions answered in this literature chapter are what sustainability is, what corporate sustainability is, and what motivates companies to implement more corporate sustainability practices. The literature review results in a theoretical and conceptual model, which identified six motivation categories. These are internal motivation, image, eco-efficiency, external motivation, pressure from society/governance, and economic motivation.

The thesis continues by describing the philosophical perspective of the researcher and the construction of the thesis. Constructivism is the philosophical perspective of this thesis; this means that the thesis dives into the different perspectives of the research participants to find out how they view certain phenomena. This perspective fits well with a case and also a qualitative study. The goal of this research is to get an insight into the motivation of DAF to become more sustainable. This is achieved by analysing data from 4 sources: informal conversations, public documents, and interviews with employees and stakeholders. These different sources ensure the internal validity of this research. The internal validity of the study is also achieved by employees of DAF reading the thesis afterwards to see if the results align with their view on DAF's motivation. External validity is ensured by comparing the results of this research to the literature discussed in chapter 2. Reliability is achieved by using the same procedure for all interviewees during the data gathering part of the thesis. In total, 50 documents, 28 informal conversations, 13 interviews with employees, and 2 interviews with stakeholders were analysed. The interviewees were gathered using a snowball method; the internship supervisors and authors of public documents were interviewed first and asked if they knew more people to participate in the research. The method of analysing used in this thesis is coding with the program Atlas.ti 9.

Chapter 4 discusses the results of the thesis; there are 29 drivers found to influence DAF, three types of drivers, and seven driver categories. The three types of drivers are direct, indirect and in-between drivers. Of the direct drivers, costs reduction is the most mentioned to influence DAF to become more sustainable. Some more direct drivers mentioned a lot are employee motivation, improving processes, government regulations, innovation and customer wishes. Furthermore, it was found that governance regulations are the most said to influence other drivers, followed by customer wishes, cost reduction and society wishes. Lastly, some drivers are noted to be influenced a lot; the most cited is innovation. Other drivers that are affected a lot are customer wishes, costs reduction, continuity and employee motivation. The categories of the conceptual framework were used to better understand what drives DAF. And an additional category, socio-cultural drivers, was discovered.

In conclusion, what motivates DAF trucks N.V. to be more sustainable is eco-efficiency, pressure from governments and society, image, internal motivation, business model, resource scarcity and socio-cultural drivers.

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1. The automobile industry and sustainability

Less than a quarter of the listed companies worldwide are addressing global warming. Although commitments to protect the environment are increasing to address the climate crisis, paradoxically, the emissions produced by those companies are also increasing. Based on voluntary measurements, some corporations did reduce their emissions; however, a fundamental change in the industries has yet to happen (Ziady, 2021). Even though these companies made promises and have been successful in some areas, a sustainable disaster has still occurred in the automobile industry: the diesel emission scandal. Cars of various brands had a "defeat device" implemented in their software. This device could detect a vehicle's performance tests and improve the diesel engine's results during these tests. This meant that the emissions during the test were lower than the emissions the car would typically emit (Hotten, 2015). Besides the temporally financial hit for the involved companies, the image of the automobile industry as a whole also took a hit (Hotten, 2015; Jung & Sharon, 2019), and the customers' trust has still not fully recovered (Jung & Sharon, 2019).

Aside from the diesel emission scandal, other changes have also made the automobile industry struggle. Thomas (2019) names five socio-economic factors that make the automobile industry struggle and change its practices: falling demand, emission woes, the electric challenge, new trends in car ownership, and Brexit. The falling demand is caused due to a slump in the Chinese market and the cautiousness of consumers in Europe and the United States because of the diesel scandal, resulting in a decrease in sales. The emission woes refer to stricter European regulations regarding emissions, making car production more expensive. The electric challenge refers to 3 challenges for electric vehicles. The first means that the infrastructure to charge electric vehicles is not yet meeting the consumer's demands. The second is the distance range of the electric cars; this is too low. And third, automobile companies are not ready to supply the expected future demand for electric vehicles. The new trends in car ownership challenge the current business model of the automobile industry; car-sharing and self-driving cars can potentially change the use of vehicles. This could result in fewer cars being bought. Finally, Brexit creates uncertainty for automobile companies with factories in Great Britain due to the potential increase in import tariffs on car components (Thomas, 2019).

In addition to the socio-economic factors influencing the automobile industry, some governmental institutions are taking the initiative to reduce the impact of the automobile industry as well. In Europe, trucks, buses, and coaches produce a quarter of the CO_2 emissions of road transport and 6% of the total European Union (E..U.) emissions (European Commission, n.d.-b). Despite some improvements in fuel consumption efficiency, these emissions are still rising and are expected to continue to grow. In 2019, the E.U. implemented the first E.U. CO_2 emission regulation for heavy-duty vehicles. This regulation set targets to reduce the emissions for new trucks in 2025 and 2030. For 2025, a 15% CO_2 reduction is to be achieved, and a 30% reduction for 2030 (European Commission, n.d.-b). And the European Union is not just focussing on emissions; the Corporate Sustainability Reporting Directive (CSRD) is new legislation that starts in 2025. All large companies need to report CSRD; large companies have a minimum of two out of these three characteristics: a minimum of 250 full-time equivalent employees, a minimum of 40 million euros revenue, or a minimum of a total balance of 20 million euros. In addition, the CSRD forces companies to report their non-financial and ESG activities (environmental, social, and governance). The goal of the CSRD is to make sustainable investments easier, more accessible, and more transparent; besides, the goal is also to make companies responsible for their activities (European commission, n.d.-a; SRA, 2022).

The automobile industry is one of the largest industries across the globe, with a significant impact on the environment (Orsato and Wells, 2007; Szász, Csíki, & Rácz, 2021). Although sustainability is a hot topic in the automobile industry, it has mainly been researched in combination with the issues of logistics, supply chain, life cycle assessments, and technological innovations (Bergouignan, Bordenave, & Lung, 2010; Chan, Chan, & Jain, 2012; Orsato & Wells, 2007; Shigeta & Hosseini, 2021 Szász et al., 2021). So, there has been chiefly one-sided, technical research about the automobile industry, with almost no social science research (Orsato & Wells, 2007). Szász et al. (2021) filled these research gaps

partly by writing about the operational management of sustainability in the automobile industry. Other papers, like Kushwaha and Sharma (2016), discuss firms' performance and adoption of green initiatives. Marsden and Reardon (2017) explore the impact of sustainable policies on the transport industry. Zhu and Sarkis (2006) discuss the motivation of the automobile industry in China to implement more green initiatives. Government regulations, customers, suppliers, image, competitors, costs, and mission are motivations for the Chinese automobile industry to become more sustainable. The scene of the automobile industry has changed drastically compared to 2006 due to the diesel emission scandal, innovation in new engines for transportation (electric motor), and new legislation (European Commission, n.d.-b; Thomas, 2019). Therefore, in these 16 years, the motivations of automobile companies could have changed.

This thesis researches the motivation of an automobile company to become more sustainable. The research question to explore motivational drivers is: "*What motivates DAF trucks N.V. to become more sustainable?*". This thesis is, therefore, a case study of DAF that researches the motivation of an automobile company to implement more sustainable practices. The social relevance of this thesis is: to make the automobile companies more transparent, to find out if large automobile companies are concerned about sustainability, and if they mainly present themselves as more sustainable due to legislation or to improve their image. Another public interest in this thesis is for the automobile companies, in particular DAF, to know what drives them to write a report for the CSRD legislation. The scientific relevance is expanding the literature by combining automobile and social science. Zhu & Sarkis (2006) wrote about the motivations of the automobile industry in China. However, their article is only focused on China and is more than a decade old. A study about the sustainable motivation of a European truck company could be valuable to challenge and compare the results of Zhu and Sarkis (2006).

The case study is about DAF. DAF is an automobile company located in the Netherlands; it produces and sells single parts for trucks. DAF started as a trailer company in the 1920s; since then, it has evolved into a truck company. DAF used to be an independent company, but it became a daughter company of Paccar in 1996 (Paccar, n.d.). Besides a mother company, DAF also gained sister companies with this change: Kenworth and Peterbilt trucks. These truck brands are slightly different from DAF and are present in other parts of the world. DAF is primarily operational in Europe, South America, and Australia. Additionally, second-hand DAF trucks are found in Africa and Asia. DAF is, among the sister companies, the only one that produces its engine; this gives DAF a lot of opportunities to improve and change the energy efficiency of the truck.

Regarding sustainability, most of the DAF trucks produced and sold are still powered by diesel; the electric battery is not strong enough to transport multiple tonnes of kilos during the desired long-distance range per charge. This makes the electric truck not an ideal option for road transport yet. However, DAF is continuing to improve the fuel efficiency of the diesel motor, innovating with clean diesel technology, improving the hybrid electric and battery electric trucks, and testing/improving hydrogen trucks (DAF, n.d.-a). Besides alternative fuels, DAF is also certified by third parties for its sustainable practices; DAF has the ISO14001 certificate and the Vecto (Vehicle Energy Consumption calculation Tool) certificate (DAF, n.d.-b). From 2019 onwards, the Vecto certificate is a mandatory tool for new trucks in the European Union. Vector calculates the CO_2 emissions and determines the fuel consumption for a fair comparison between brands (European Commission, n.d.-c). In addition, ISO14001 is used to perform audits and to measure the environmental impact of DAF on-site (DAF, n.d.-b). Furthermore, DAF is also continuously improving the impacts on-site on the environment by reducing waste, energy, and water usage. DAF also encourages employees to continue their studies by offering to pay for further education. Other social sustainable activities of DAF include investing in the local communities, so Eindhoven, in art and sport.

Lastly, DAF is also the company where I did my internship. The assignment for the internship was different from my thesis. The internship assignment is to find out what the greenhouse gas (GHG) emissions in 2021 are from only the distribution centre of DAF, Paccar Parts. The method to calculate

the GHG used is a scope analysis. A scope analysis has 3 scopes: the direct emissions of a company/department; the indirect emissions of energy use (e.g., electricity); and the indirect emissions of all other company activities. The first two scopes clearly state what is needed to report; the first scope includes heating and between departments of DAF, and the second scope includes electricity usage. The third scope, however, is enormous. So, for the internship assignment, I only focussed on the expected highest contributors to GHG emissions or categories that were easily available to calculate. For Paccar Parts, I did this for waste, packaging, water use, employee commuting and transportation. The last step for this assignment was to find solutions to reduce these emissions.

This thesis counts 6 chapters. Chapter 1 is the introduction to the thesis and ends with this paragraph. Chapter 2 is a literature review to answer the research question; it is necessary to know what the current theories are and what the terms used in this thesis mean. It answers the questions of what sustainability and corporate sustainability are and what motivates companies. The chapter ends with a theoretical and conceptual framework. Chapter 3 discusses the philosophical perspective of the researcher, the research structure, the gathered data, and the validity and reliability of this thesis. Chapter 4 is the result of the thesis. Chapter 5 is the conclusion of the thesis. Lastly, chapter 6 is the discussion in which the construction of the thesis, the results from other perspectives, and recommendations are discussed.

2. Sustainable motivations in the literature

In this chapter, the relevant literature is explained. This is done by first breaking down what sustainability is, what corporate sustainability is, and what the motivations of companies to become more sustainable are. Then, the chapter continues with the theoretical framework, followed by the conceptual framework. In these two sections, the relationships between the researched concepts are explained. Lastly, the operationalisation of the concepts includes an explanation of all the researched concepts.

2.1. What is sustainability?

Human activities increasingly affect the climate and ecosystems (International Panel on Climate Change, 2007; Millennium Ecosystem Assessment, 2005). So much so that a new epoch has begun: the Anthropocene. In this epoch, humans are the determinant driver of the changing Earth's systems (Crutzen, 2002; Steffen, Crutzen, & McNeill, 2007). The exponential growth of human activities is pressuring the Earth System; this could lead to potentially irreversible environmental and disastrous human well-being impacts (Stern, 2007). Sustainability is seen as the way to prevent this doom scenario of pressuring the Earth System. There are discussions in the literature about what sustainability exactly is (; Asveld, Ossenweier, & Posada, 2019; Landrum, 2018). In this thesis, the definition of the Brundtland Commission's report is used: "*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (World Commission on Environment and development, 1987, para 1).

How is sustainable development measured not to compromise future generations? Asveld et al. (2019) identified two types of factors of sustainability: quantifiable factors and nonquantifiable factors. A quantifiable factor can measure an activity's environmental impact, like CO2 emissions or water use. A nonquantifiable factor also identifies sustainability; however, it cannot measure the sustainability of an activity. Sometimes it is difficult to quantify factors because it is complex and surrounded by uncertainties or differentiating perspectives; an example is the social well-being of people. Other nonquantifiable factors are hard to measure because the factor is ideological and relates to social structures and possible future effects (Asveld et al., 2019). Sustainability is not a clearly defined concept; reliable indicators are needed to distinguish sustainability. However, indicators are only reliable when perceived to reflect concerns about sustainability (Asveld et al., 2019). There are two popular methods to quantify sustainability; the first one looks at planetary boundaries and the second one at environmental ceilings and social floors. These two methods are explained in the following paragraphs. The planetary boundaries identified quantifiable criteria if the environment is impacted. However, perspectives also surround these boundaries crossing these boundaries is disastrous for the existence of Earth as we know it (Rockström et al., 2009). The doughnut economy takes the quantifiable boundaries and adds a social foundation to it, making the space for sustainable human operations smaller. The social foundation has more nonquantifiable factors, such as social well-being and gender equality. These concepts are based on ideology and surrounded by perspectives (Raworth, 2012). Another difference is that planetary boundaries assume that each factor does not influence the others. At the same time, the doughnut economy is also used to see how the factors interact.

The planetary boundaries

A new concept, at the time, was presented called the planetary boundaries "*for estimating a safe operating space for humanity with respect to the functioning of the Earth System*" (Rockström et al., 2009, p. 3). Rockström et al. (2009) have identified vital Earth System processes and quantified each process at the boundary level. These boundary levels are a quantified number of an Earth System. To not have a disastrous impact on the Earth, these numbers should not go above the boundary. For example, climate change has as measurement CO_2 equivalents; if the boundary is crossed, then global warming will impact the environment terribly. Each proposed boundary position assumes that no other boundaries are transgressed. "*The planetary boundaries approach rests on three branches of scientific*

inquiry. The first addresses the scale of human action about the capacity to sustain the Earth, a significant feature of the ecological economics research plan, drawing on the essential role of the life-support environment for human well-being and biophysical constraints for the enlargement of the financial subsystem. The second is the work on understanding key Earth System processes, brought together in the global change research toward Earth System science and the development of sustainability science. The third is the framework of resilience and its links to complex dynamics and self-regulation of living systems, emphasising multiple basins of attraction and thresholds effects" (Rockström et al., 2009, p. 5). This approach is not a roadmap for sustainability; it provides biophysical boundaries at a global scale for humans to choose pathways for well-being and development; the boundaries are presented in figure 1.

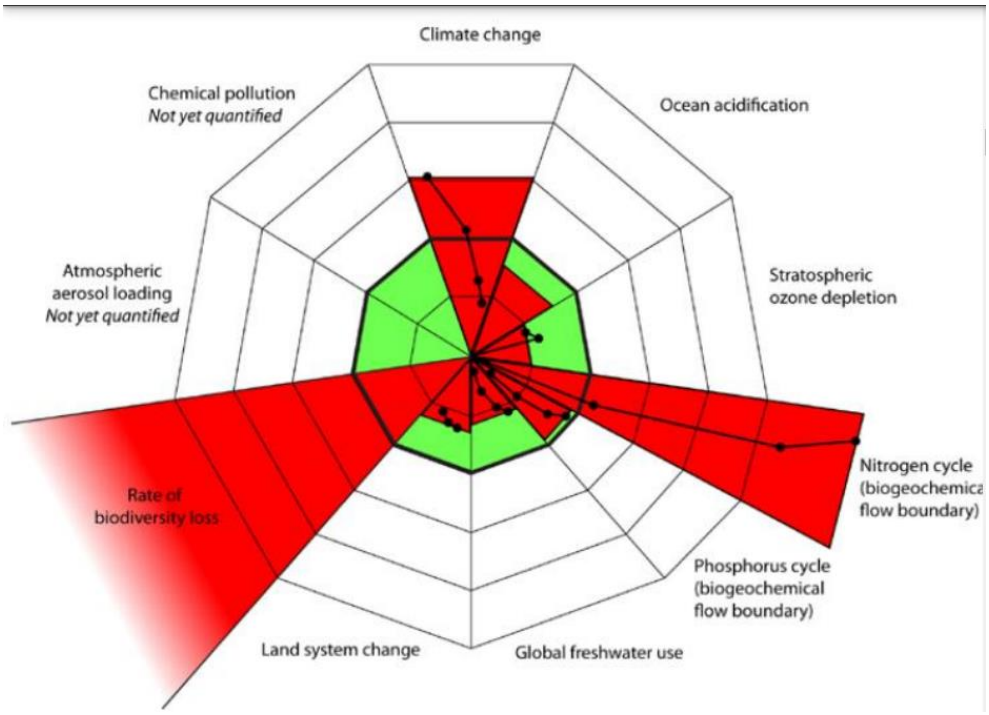

Figure 1: Planetary boundaries of (Rockström et al., 2009, p. 22)

The doughnut economy

Raworth (2012) developed the second popular manner to measure sustainable development. Her doughnut economy builds upon the planetary boundaries of Rockström et al. (2009) and adds a social foundation, see figure 2. Raworth (2012) argues that sustainable development only happens when social and environmental justice is secured. In the middle of the framework, the critical human deprivations are depicted to create a social foundation. Around that is the ecological ceiling; these are comparable to the planetary boundaries. Within these two circles lies the safe space for humanity, the area for human and planetary well-being. This approach has several functions. Besides being able to identify whether or not the world is becoming more sustainable, the framework can also be used to explore interactions between the boundaries.

Furthermore, the framework also questions where the responsibility lies for pushing humanity's use of natural resources in an unsustainable way. Raworth (2012) gives four insights into this. First, ending poverty for all does not need to stress the planetary boundaries. Second, the highest source of planetary boundary stress is excessive consumption levels of the wealthiest 10%. Third, to emulate today's high-income lifestyles, the aspirations of increasing consumer seeking. Lastly, the inequalities and inefficiencies of resource use, transformation, recycling and restoring natural resources to meet human needs.

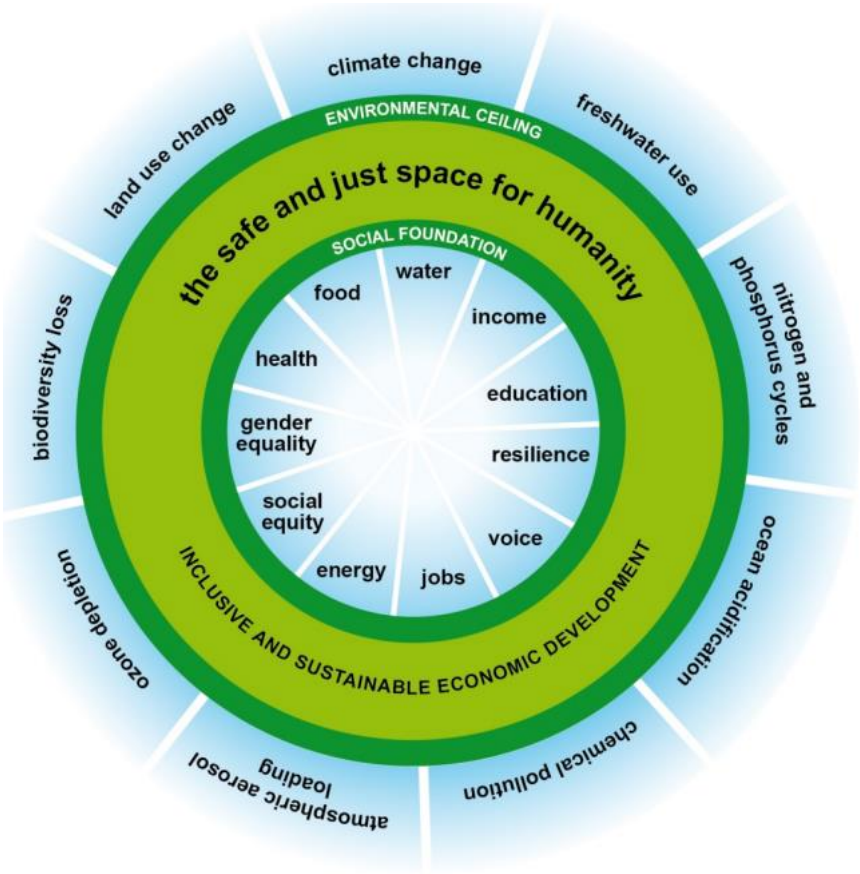

Figure 2: Doughnut economy framework (Raworth, 2012, p. 4)

2.2. What is corporate sustainability?

The terms sustainability and sustainable development are discussed above. This thesis looks at corporate sustainability, so where do corporations fit in sustainability? One term used in the literature and by companies is corporate sustainability (C.S.). The term corporate sustainability is interchangeably used with corporate responsibility, corporate social responsibility (CSR), corporate citizenship, etcetera. There are discussions about whether there is a difference between the concepts and what the concepts mean (Landrum, 2018). The same definition for sustainability is used here as for corporate sustainability. Corporate sustainability is, therefore, the contribution of a company to achieving sustainable development (Landrum, 2018). Regarding corporate sustainability, there is also a discussion on which dimensions a company should be sustainable. Carroll (1979) defines four social responsibilities: economic, legal, ethical, and philanthropic. Other studies have three parts of CSR: economic, social, and environmental (Santos, 2011; Vilanova, Lozano, & Arenas, 2009). Corporate sustainability in this thesis focuses on the economic, social and ecological dimensions as discussed by Vilanova et al. (2009) and Santos (2011). C.S. has paradoxes in an organisation: C.S. opposes business goals, values, and processes and sometimes the C.S. is conflicting (Vilanova et al., 2009). Furthermore, C.S. is a process, it changes throughout the whole organisation and the different levels therein, and it takes commitment to achieve (Hahn & Scheermesser, 2006; Linnenluecke & Griffiths, 2010).

Commitment is not enough for C.S.'s success. The capacity to implement C.S. practices is also necessary for companies to achieve C.S. (Brockhaus, Fawcett, Knemeyer, & Fawcett, 2017). Capacity entails the ability to invest and cultivate sustainable initiatives. Just like commitment, capacity is influenced by differing levels, and core values could amplify the effectiveness of C.S. implementations (Brockhaus et al., 2017; Hahn & Scheermesser, 2006; Linnenluecke & Griffiths, 2010). Luxury products, like trucks, have the benefit of being desirable if sustainable due to the social desirability of the sustainable luxury image (Brockhaus et al., 2017). Sustainability as a trend has not yet stuck to products as the standard;

however, it could be compared to the Green Wave of Etsy and Winston (2009) or the hype cycle of Brockhaus et al. (2017). As seen in figure 3, C.S. has had a peak and slump in the graph. Nowadays, a renewed momentum is emerging (Brockhaus et al., 2017). This continued momentum could be influenced by new legislations like the CSRD of the European Union (European Commission, n.d.-a).

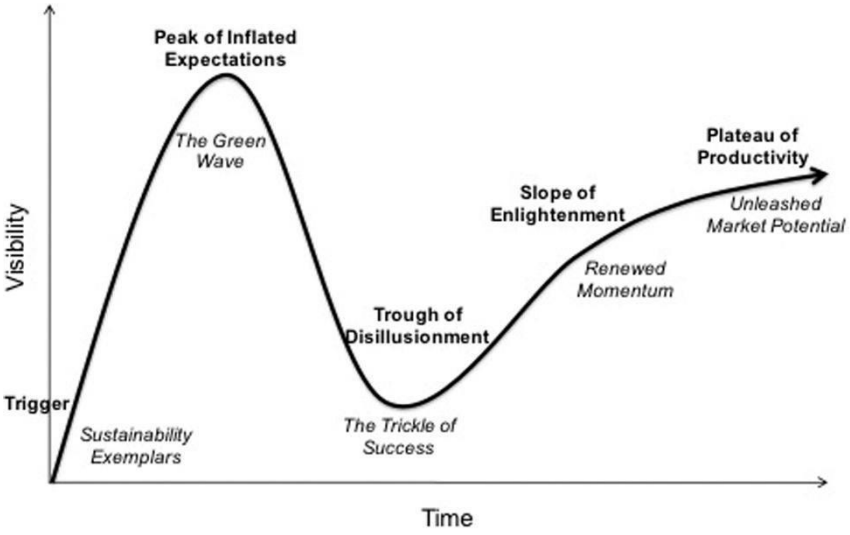

Figure 3: Sustainability hype cycle (Brockhaus et al., 2017, p. 943)

Other authors also recognise the influence of managers on the success of C.S. implementations. Managers can make many decisions and have a lot of power in the execution. A manager's frame of perspective can drastically change the process of C.S. or the drivers of the process (Klettner, Clare, & Boersma, 2013; Lozano, 2015; Swaim, Maloni, Henley, & Campbell, 2016). Ergene, Banerjee and Hofmann (2020) identified perspectives on how the managers of organisations interact with nature. There are two perspectives: managerial and critical. The managerial perspective focuses on the corporate interest. Environmental and social concerns are inserted in existing economic theoretical frames for performance and profit maximisation. So, environmental and social issues become a strategy for corporations as resources, capacities, competitive advantage, organisational performance, stakeholder pressures, and institutional legitimacy. Environmental concerns are a win-win market-based solution for corporations to reduce costs in energy efficiency, waste reduction, recycling initiatives, or to increase profits in premium pricing for green products. In short, environmental protection is a strategy for economic advantage (Ergene et al., 2020; Schmidheiny, 1992). The other perspective is the critical perspective. This offers a critique of a corporation's role in environmental degradation. A new economic and political system is needed to reduce the environmental pollution of economic paradigms. Sustainability is argued in this perspective to push economic growth to more than performance and profit maximisation; it is an extension of community and economic development. The ecological crisis is inseparable from political and corporate interests and addressing it requires challenging the current management frameworks (Ergene et al., 2020; Gladwin, Kennely, & Krause, 1995).

A worrying trend has emerged; corporate sustainability is limited in addressing the root causes of environmental and social problems. As mentioned before, corporate sustainability has become, for many, a label or strategy for economic principles of competitiveness and profitability (Jacobs, 1993). While companies have justified their practices, the problems have worsened over time, like climate change and income inequality (Ergene et al., 2020). Several focus points of corporations, like recycling, waste disposal and energy efficiency, only reduce unsustainability but do not take care of the root problems. Currently, the system collapse is only slowed down, but the trajectory has not changed (Ehrenfeld & Hoffman, 2013). To quote Ergene et al. (2020, p. 1323): "*the analytical tools of corporate sustainability reinforce the managerial view and do not capture the contradictions of market-based*

ideals and socio-ecological well-being, and therefore reproduce the illusions that we can pursue unlimited economic growth while managing the natural environment and creating equitable societies."

2.3. What motivates companies to become sustainable?

The terms sustainability, sustainable development and corporate sustainability have been explained now. So, why do companies then want to be more sustainable? Just like the other concepts, the drivers for companies to become more sustainable are discussed in the literature. In general, a division is made between internal and external drivers. Internal drivers are intrinsic reasons to do something, in this case, intrinsic motivations of companies to become sustainable (Davis, 1973). External drivers are reasons from external sources to do something, in this case, extrinsic reasons for companies to become sustainable (Kulözü-Uzunboy & Sipahi, 2022).

Some authors divided the sustainability drivers into categories and classified companies into different groups based on these drivers. Hahn and Scheermesser (2006) identify three groups of companies that change their environmental practices: sustainability leaders, environmentalists, and traditionalists. Sustainability leaders have a solid commitment to sustainability. At the same time, environmentalists act to save face or save costs. And traditionalists look at revenue growth, new market opportunities or a positive corporate image. Weizsäcker (2009) mentions that there are two main reasons for companies to become more sustainable; the whole system approach and the rebound dilemma. The whole system approach means that the resource productivity is drastically improved to have a more sustainable company. When the whole system approach does not reduce the use of resources, the rebound dilemma is implemented by governments. Landrum (2017) mentions five groups of companies; however, in this case, these are different stages of C.S. that can apply to companies. That means that even though a company is now implementing more C.S. due to, e.g., costs, this could change over time, and a company could go to another level of C.S. implementation by having a main driver as intrinsic motivation. The first stage of Landrum (2017) is called compliance: companies are defensive of their C.S., and the C.S. activities are externally enforced. The second stage is business-centred, meaning there is internal enforcement of sustainability initiatives to increase the company's competitiveness. The third stage is systemic: the company wants to improve social well-being from an external perspective. This perspective is the same as the managerial position of Ergene et al. (2020), explained in chapter 2.2. The fourth stage is regenerative: it looks at sustainability beyond growth and consumption and adopts practices to repair the economy by being oriented towards restoring and regenerating nature. The last stage of Landrum (2017) is called coevolutionary; this stage moves beyond restoring or managing wildlife but instead adopts the view of participating in symbiosis and self-management of human and nature and their interactions. Carroll (1979) also identifies four categories; these are also mentioned as stages, as with Landrum (2017). Carroll (1979) says economic, legal, ethical, and discretionary responsibilities. The lowest motivator, economic responsibilities, is the first motivator to be more CSR involved. The four primary motivators, according to Carroll, are: economic responsibilities to provide services and goods that society wants and for them to make a profit; legal responsibilities to uphold societal rules; ethical responsibilities to fulfil expectations of society above the legal requirements; discretionary responsibilities to meet expectations of society that are not a clear-cut message for businesses. Lastly, Buehler and Shetty (1974) identify different types of social involvement for companies: urban or community affairs, consumer affairs, and environmental affairs. Urban or community affairs are about social responsibility concerning employment and supporting or improving the company's local area. Consumer affairs regard social responsibility for customers by providing adequate information and services and providing reliable and safe products or services. Environmental matters are about ecological responsibility to protect against or reduce the impact of a company on the environment.

Other authors discuss drivers and divide them into categories without classifying companies. Davis (1973) argues that intrinsic or ethical motivations are the main reason for sustainable practices, while Baron (2004) argues that economic motivation is the reason companies become more sustainable. Other scholars, like Buehler and Shetty (1974), argue that both moral and pragmatic motivations are essential. While Grimstad, Glavee-Geo and Fjørtoft (2020) agree with Buehler and Shetty (1974) that both moral

and pragmatic motivation is necessary, they argue that internal drivers have a larger impact than extrinsic reasons. Brockhaus et al. (2017) partly agree with Grimstad et al. (2020) because Brockhaus et al. (2017) mention that authenticity makes the impact of motivations bigger. Authenticity means that the motivation comes from a desire to be more sustainable without other motivations driving it. Authenticity exists on multiple levels; it can therefore exist in both internal and external drivers, although it is more prevalent in internal drivers (Brockhaus et al., 2017). Other scholars like Campopiano, De Massis and Cassia (2012) looked at the motivations of stakeholders to engage in C.S.; these are ethical and economic motivations. One driver for companies to become more sustainable is the middle manager. Managers can listen to the top and bottom and combine both to create a plan that works for the company. Managers combine the wants and needs of the employees with those of the stakeholders (Kulözü-Uzunboy & Sipahi, 2022; Vercalsteren, 2001; Yu, Hills & Welford, 2008; Zhu and Sarkis, 2006).

An overview of the named drivers by the authors is given in appendix 1. The first column represents the drivers identified in the literature, and the second column shows which article mentioned the driver

2.4. Theoretical framework

The theoretical framework forms the basis on which the conceptual framework is made. For this thesis, 3 articles are used for the theoretical framework, and these 3 articles are discussed more in-depth about their perspectives on motivation drivers of sustainability.

The three motivations of Windolph, Harms and Schaltegger (2013)

There are three primary motivations for companies to implement corporate sustainability, according to Windolph et al. (2013), namely pressure from governments and society, market success through sustainability management, and internal improvements. The first motivation, pressure from governments and society, is about forcing companies to gain or secure legitimacy. Legitimacy means that their actions are perceived as desirable or appropriate against the background of societal norms or values (Suchman, 1995). To achieve legitimacy, companies comply with environmental and social regulations and laws as an aspect of sustainability management (Epstein, 2008; Frondel, Hornbach, & Rennings, 2008; Windolph et al., 2013). Institutional pressures are also created through private or self-regulation, and various actors within industries foster the implementation of sustainability management in companies (Aguilera, Williams, Conley, & Rupp, 2006; Frondel et al., 2008; Windolph et al., 2013). Black and Härtel (2004) argue that social responsiveness results from both the CSR orientation and the public relations orientation of companies.

The second primary motivation is that sustainability management can improve employee motivation within the company and employer attractiveness (Daily & Huang, 2001; Moon, 2007). On the capital market, socially responsible investing (SRI) has also gained relevance (Hockerts & Moir, 2004). SRI is defined as an investment process that considers the social and environmental consequences of investments, both positive and negative, within the context of rigorous financial analysis (Social Investment Forum, 2003).

The third primary motivator, internal improvement mainly refers to the sustainability-oriented optimisation of processes. More specifically, increases in eco-efficiency or socio-efficiency, i.e., the relation between a firm's added value (economic dimension) and its environmental or social impact (Schaltegger and Burritt, 2005), serve to reduce both resource consumption and costs (Von Weizsäcker, Hargroves, & Smith, 2009). Internal improvement requires the engagement of purchasing, logistics, and the production department, which form essential parts of the supply chain and whose collaboration is crucial for material and information flows (Gold, Seuring, & Beske, 2010; Nidumolu, Prahald, & Rangaswami, 2009). Purchasing contributes to sustainability management by considering the market and societal demands. They can purchase resources from responsible suppliers, use recycled materials, and reduce packaging (Gold et al., 2010; Leire & Mont, 2010). Purchasing also has the potential to shape the supply chain and foster sustainability efforts in other departments such as production or marketing (Carter & Jennings, 2004; Carter & Rogers, 2008). Internal improvement also requires the contribution

of finance and accounting departments. These departments provide top management with information for investment decisions, price calculations, and product and process designs (Epstein, 2008; Schaltegger && Burritt, 2010). Integrating environmental and sustainability data into corporate information management is essential for well-founded sustainability decisions and financial reporting and auditing (Epstein, 2008; Schaltegger & Burritt, 2010). Another issue for internal improvement is employee satisfaction, a task mainly assigned to human resources. Sustainability management can contribute to employee motivation and thus enhances productivity (Carter & Rogers, 2008; Daily & Huang, 2001; Moon, 2007; Windolph et al.,2013)

Circular economic motivations of Ellen MacArthur Foundation (2015)

The Ellen MacArthur Foundation (2015) has also identified reasons for companies to change to a new economic model. However, in this case, it is from a linear model to a circular one. Nonetheless, these drivers could also motivate other sustainable developments within corporations. The identified drivers are mainly economic motivations. The first one includes financial losses due to structural waste. The current economy is wasteful in its model and value creation; a more efficient model could lower the waste and economic losses. Second and third, price and supply risk are also financial motivation drivers. Price risk includes mostly volatile resource prices or supply disruptions, and increased volatile resource prices can reduce economic growth. Besides, supply risk impacts mostly areas where resources are less prevalent. Both risks increase uncertainty. Fourth, natural system degradation is the productivity of economies affected due to depletion of resources and degradation of the environment. Fifth, regulatory trends are a non-economic reason; it involves the legislation to become more sustainable. Sixth, technological advances are a social and economic motivator; they create new opportunities for society and business approaches. Advances result in more efficient collaboration, tracking of materials, logistics and an increase in renewable energy. The seventh reason is the acceptance of alternative business models. This entails that there is a shift to services instead of owning. The last, eighth motivation is urbanisation; due to increased urbanisation, the costs of asset-sharing services and collecting end-of-use materials will reduce. This is due to a denser pick-up area, simpler logistics, and larger scale for service providers (Ellen MacArthur Foundation, 2015).

The four motivation types of Brockhaus et al. (2017)

Brockhaus et al. (2017) mention four aspects of motivation. The first movers signalled that sustainability might be a dynamic capability that could be leveraged for competitive advantage. Decision-makers across industries were forced to evaluate whether the sustainability movement would change consumer expectations and buying behaviours. Naturally, in an intensely competitive environment, no one would want to be disadvantaged by a failure to build a sustainability capability. So, motivation derives from competition and opportunities. Competition and opportunities result from all kinds of external factors; these could all potentially result in the reason to increase C.S. Not all motivations are equally powerful or influential. Brockhaus et al. (2017) identify two types of motivations: lightweight and highly influential. Lightweight motivations could not have enough influence to establish sustainability as a top priority, sustain resource allocation for change, or produce a marketable sustainability capability. The manner a corporation operationalises its processes results in the four primary motivators of this article. These are image enhancers, efficiency maximisers, resource acquirers, and true believers.

The image enhancer

The image enhancer has the lowest amount of authenticity of the four motivations. Companies with this driver use sustainability to attract people to their company, either customers, employees, or shareholders. Companies want to present themselves as a sustainable corporation that can be trusted in a competitive market. So, their reputation is important to them. Aside from attracting people to their companies, they could also want to distance themselves from their industry's negative image or value chain. For these companies, sustainability is a risk that needs to be treated. These companies are mainly influenced by societal pressure, and stakeholder wishes to change their practices to more sustainable ones. Still, they also risk being branded a “green washer”. Being branded a “green washer” happens when a company

deflects criticism and is assumed to be inauthentic. Image enhancement does not derive from a company's core values.

The efficiency maximisers

The efficiency maximisers have the second-lowest authenticity. The surplus of companies in this category consists of companies engaged in lean operations. Lean operations try to minimise costs and resources, effectively maximising the efficiency of their operations. Becoming more efficient is a natural starting point for many companies to become more sustainable. Efficiency maximisers focus primarily on their products' usability, quality, and price. This is especially true for business-to-business companies. Efficiency reduces excess resources or transport, which helps reduce the carbon footprint. An advantage of efficiency maximisers is that they change the value chain upwards, where end-consumers initially do not have much influence. Efficiency is often externally driven; efficiency is already used as a business practice, and the sustainable wins are an add-on rather than a reason to be more efficient. Efficiency maximisers rarely have missions or rethink their value proposition; their values lie in a positive return of investment (ROI), lower costs, and higher revenues. A positive ROI is when investments make at least the same amount of money as the money put into the investment. These three are also the main drivers of becoming more sustainable for companies.

The resource acquirers

The resource acquirers have the second-highest authenticity. These companies focus their sustainability practices on managing their resources, primarily to ensure that their resources can be used indefinitely in the future. The future risk of scarcity of resources is a reason for companies to become more sustainable or more circular; if companies are not prepared for the future shortage, it could affect their (economic) growth or survival. This threat of resource scarcity is an external driver; at the same time, a driver to be the first in renewable resources is an internal driver. A drawback of having socially and ecologically conscious practices is that the value, costs, and prices increase. In an economic recession, this could result in financial restrictions or challenges to keeping afloat. Another challenge in investing in responsibly sourced resources is that these resources are scarce and could push the prices even higher. However, investing in responsibly sourced resources could also lower the costs if the quantity of the resources increases. Therefore, when a brand starts investing in socially responsible resources, it has to continue that path.

The true believers

True believers have the highest authenticity. True believers often call their sustainability part of their DNA; sustainability is a core business value. True believers are sustainable because of their intrinsic solid motivation and high authenticity. Their customers are loyal as they prefer a company with the same values. The goal of these types of companies is to impact the world positively. The company's identity is crucial to them, as it is for the customers. A drawback is that their product usually is a premium product with a premium price. However, these types of companies typically have a loyal customer base. It should be mentioned that almost no company is a "true" true believer. Companies rather have a strong intrinsic drive to believe it is the right thing to do.

2.5. Conceptual framework

As mentioned in the theoretical framework, the conceptual framework builds on the theories used in the theoretical framework. For this research, the motivation theories of Brockhaus et al. (2017), Windolph et al. (2013) and Ellen MacArthur Foundation (2015) are used. The goal of the conceptual framework is to answer the research question: "*What motivates DAF trucks N.V. to become more sustainable?*". The theoretical framework identifies 6 motivations for a company to implement more C.S. practices. These 6 are business model, eco-efficiency, image, internal motivation, pressure society/governance, and resource scarcity. These concepts are operationalised below the conceptual model, figure 4, and

table 1. Table 1 shows a review of the identified drivers in Appendix 1 for each of the motivation categories to drive C.S. of the conceptual model.

The conceptual model shows the 6 motivation categories on the left side. Figure 4 depicts the categories not influencing each other, as it is assumed that the influence on each other is minimal, making the figure easier to understand. All 6 motivations have an arrow pointing towards "motivation to become sustainable". The arrows mean that the motivation drivers on the left increase the motivation to become sustainable. This means that the motivation drivers increase the sustainable practices of a company. The box on the right "motivation to become sustainable" refers to a company's motivation to improve its C.S. practices. In short, it illustrates, in the case of this thesis, that the drivers on the left increase the motivation to implement or enhance C.S. practices at DAF.

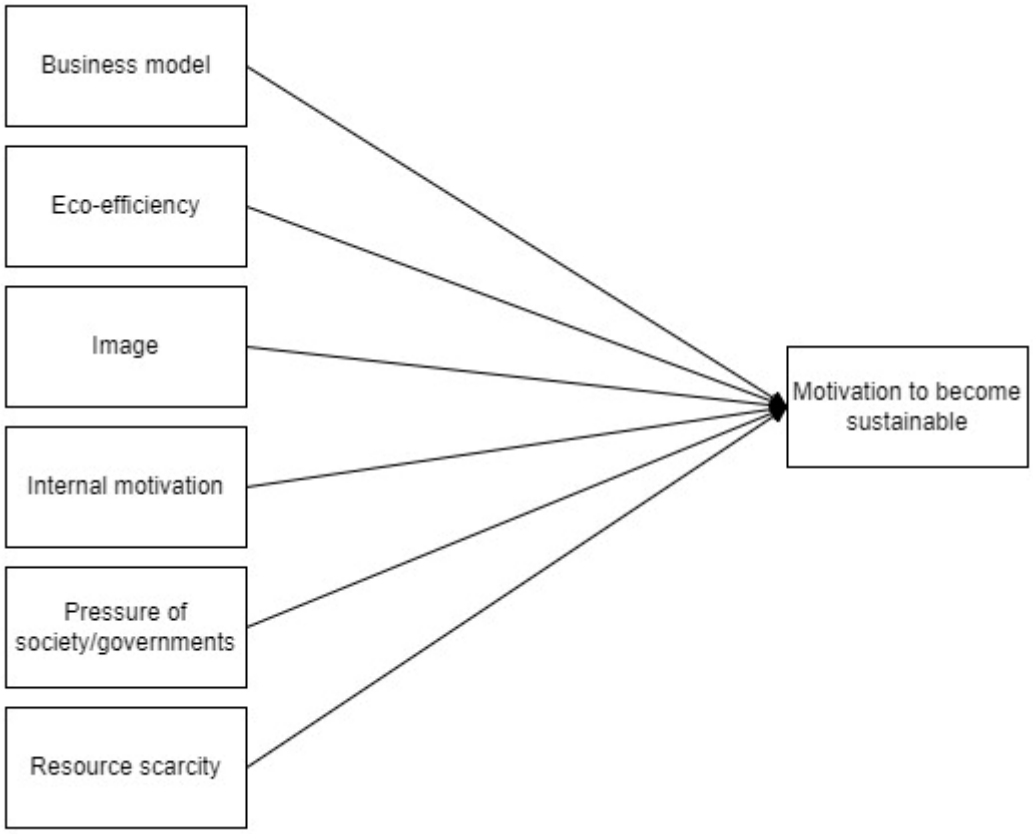

Figure 4: Conceptual framework of motivation categories to increase corporate sustainable operations by author

Table 1: Motivation categories of the conceptual framework and its drivers by author

Motivation categories	**Drivers from literature Appendix 1**
Business model	Continuity of business; firm size; internationalisation; urbanisation
Eco-efficiency	Cost savings; efficiency; innovation; profit increase
Image	Customer wishes; image creation; shareholder wishes; supplier pressure; attract future employees; union wishes
Internal motivation	Employee wishes; managers wishes; values company

Pressure of society/ governments	Governmental pressure; green organisations pressure; legal compliance; societal pressure
Resource scarcity	Resource scarcity; value chain

Business model

The acceptance of an alternative business model and urbanisation are both drivers of the Ellen MacArthur Foundation (2015) that are about the adaptation of a company to continue to exist. This category refers to all drivers that have to do with the business model, continuity of a business, market share/competition, and financial responsibility. These last 3 drivers are not mentioned by the Ellen MacArthur Foundation (2015) in the theoretical framework but are included in the chapter 2.4 as business drivers for C.S.

Eco-efficiency

Eco-efficiency is a category based on all three main articles used in the theoretical framework. Brockhaus et al. (2017) mention the efficiency maximisers, Windolph et al. (2013) discuss the driver called internal improvement and Ellen MacArthur Foundation (2015) economic losses due to structural waste and advances in technology. Brockhaus et al. (2017) say that those lean companies already focus on efficiency and sustainability as an add-on to their current practices. Their focus is on lower costs, higher revenue, and lower ROIs by reducing time and resources. Windolph et al. (2015) agree and add that transport flows are one of the main components in making the process more efficient. Furthermore, there is a focus on the impact a company has on the supply chain with eco-efficiency. Lastly, Ellen Mac Arthur agrees with the reduction of resources, transportation and time and adds that technological advances result in more efficient collaboration, tracking of materials, logistics, and an increase in renewable energy. Thus, eco-efficiency means making the internal processes use as little as possible.

Image

The first motivation category is based on the motivation driver image enhancer of Brockhaus et al. (2017) and the sustainability management motivation of Windolph et al. (2013). Companies are becoming more sustainable in attracting people to their company, whether customers, employees or shareholders (Brockhaus et al., 2017; Windolph et al., 2013). Companies also want to be perceived as trustworthy in a competitive market. Aside from attracting people to their companies, they could also want to distance themselves from their industry's negative image or value chain. Sustainability is, for these companies, a risk that needs to be discarded. These companies are mainly influenced by societal pressure, and stakeholders wish to change their practices to more sustainable ones. Still, they risk being branded a "green washer" (Brockhaus et al., 2017).

Internal motivation

This motivation category is based on the true believer motivation of Brockhaus et al. (2017) and the sustainability management motivation of Windolph et al. (2013). Windolph et al. (2013) discuss that managers have the power to improve employee motivation to implement more C.S. Brockhaus et al. (2017) go further and describe that internal motivation is at the core of a business's DNA and that the employees think it is the right thing to do. Therefore, both the encouragement of managers to implement C.S., the business' core motivation and the motivation of the employees to implement more sustainable practices are part of the internal motivation.

Pressure of society/governments

The third motivation category is based on the pressure from governments and society driver by Windolph et al. (2013) and the regulatory trends driver as mentioned by Ellen MacArthur Foundation

(2015). The Ellen MacArthur Foundation (2015) states that legislation drives sustainable change. Windolph et al. (2013) add that society and governments pressure companies through regulations and laws; the pressures could even come from other actors in the industry.

Resource scarcity

Both Brockhaus et al. (2017) and Ellen MacArthur Foundation (2015) mentioned reasons for companies to become more sustainable due to the value chain changing; resource scarcity, natural system degradation, and risk of price and supply. While both mention resource scarcity, only Ellen MacArthur Foundation (2015) said that this is due to natural system degradation. Furthermore, the result of scarce resources could be increased prices, volatile prices, or risk of supply. Brockhaus et al. (2013) call this chain of effects and view it as one driver. However, the Ellen MacArthur Foundation (2015) recognises that one driver is not the same as the other and splits these up into three drivers. So, the drivers in this category are natural system degradation, risk of price and risk of supply.

3. Methodology

The previous chapter explained the theoretical foundation of this thesis. In this chapter, the methodology of the theory is described. The chapter starts with the philosophical perspective, continues by explaining the structure and the data gathering, and ends with the validity and reliability of the thesis.

3.1. Philosophical perspective

The perspective used in this research is constructivism. This research is about discovering phenomena' perspectives (Moses & Knutsen, 2012). This is in line with this qualitative research, as it seeks to uncover the motivations of DAF to implement more C.S. practices. This is done using an informal conversation with employees, the analysing of documents, and interviews with employees of DAF and stakeholders. In constructivism, several "truths" can exist at the same time. Constructivism believes that humans are cultural beings with the capacity to have an attitude towards the world. This means that social facts, like C.S., depend on a human agreement and usually require human institutions for their existence (Moses & Knutsen, 2012; Searle, 1995). The ontology of constructivism argues that perspectives determine what to mean. There is not one truth for everyone; the truth lies in the eyes of the observer. The epistemology of constructivism explains that experience and reasons are a means to discover perspectives; however, researchers can influence the outcome with their views (Moses & Knutsen, 2012). Hence, constructivism is a proper perspective for this thesis as it tries to uncover a company's motivation, partly through the eyes of the employees and stakeholders. So, the truths of their employees and stakeholders are necessary to determine what DAF drives towards sustainable practices. Constructivism also fits with a case study approach since a case study gives the researcher the space to dive into the perceived truths of the employees within an institution (Moses & Knutsen, 2012).

3.2. Research structure

The goal of this research is to gain an insight into the motivations of the automobile industry to become more sustainable. So, this thesis uses a deductive research design to achieve the goal. Deductive research designs test whether theories apply to specific instances (Hyde, 2000). In contrast, an inductive research design tries to explore and find theories in a phenomenon (Hyde, 2000; Van de Ven & Poole, 2005). As mentioned before, there are already multiple theories regarding companies' motivations. Even in the automobile industry, there is a study about the motivation of Chinese automobile companies to become more sustainable (Zhu & Sarkis, 2006). However, this research was published over a decade ago and was conducted in a different socio-cultural setting. Despite that, there are still theories on the motivation of companies to become more sustainable, making the deductive approach the appropriate research design. A deductive research design can be combined with quantitative and qualitative methodologies (Hyde, 2000). A qualitative methodology is used when research should be open-minded (Symon & Cassel, 2012); the methods used are document analysis, informal conversations, and interviews.
On the other hand, a quantitative approach is about predicted relationships measured through variables (Field, 2013; Walker, 1997; Yilmaz, 2013). Bleijenbergh (2013) agrees that a quantitative approach looks at the relationship between certain variables. And that qualitative research is more explorative, explains social constructed dynamics, and emphasises more in-depth descriptions of phenomena. The qualitative approach is the most suitable because it concerns itself with perspectives, interpretations, and meanings of experiences (Hyde, 2000; Yilmaz, 2013). This makes qualitative research more appropriate for the study, as it focuses on the perspectives of employees and stakeholders in their company.

The first step is to gather data; the type of data collected is explained in chapter 3.3. The first step in gathering data is analysing documents of DAF about past environmental changes. This helps in gaining an understanding of who was involved in the process and how the process went. It also helped form the base on which the interviews are structured. In the meantime, I was also having informal conversations with employees at DAF. These informal conversations addressed why a shift towards more sustainability is or is not happening. This provides indications about how the employees perceive sustainability. Employees' perspective give an insight into the problem areas that DAF still faces to become more sustainable and in what areas DAF is performing well. The second step is gathering data from interviews.

The first people I reached out to were those whose names were in the document analysis or whose names were provided by my supervisors. In addition to that, I also asked the interviewed people if they knew other relevant people for the research; this is the snowball sampling method. Snowball sampling starts with a random sample of individuals at first, after which each individual is asked to name other individuals in the population (Goodman, 1961). In the case of this research, that would be other employees who are involved in the process of making DAF more sustainable. This process of sampling is continued until enough respondents have reacted. When no new drivers for DAF to become more sustainable were mentioned, there were enough respondents. This was measured during the interview and in the coding and transcribing process. During the 11th interview with the employees, it was recognised that no new motivations were mentioned. There were still two interviews planned at this point; these continued as scheduled and confirmed the assumption that the employees identified no new drivers. This process of securing that no new drivers were mentioned did not happen with the stakeholder interviews because there was a lack of responses to participate in this thesis. In total 13 stakeholders were invited to have an interview of 30 minutes regarding sustainability and automobile companies; only three stakeholders were willing to have an interview. The other ten did not respond or did not have the time to participate in an interview. The invitations were sent through an e-mail to governmental organisations, unions, representatives of the customers, and advice organisations for legislation on vehicles in Europe. Unfortunately, out of the three stakeholders that responded, one stakeholder stopped responding. So, only two stakeholders were interviewed. Besides a lack of responses from the stakeholders, there was also a lack of response from DAF employees. Multiple employees wrote back not to have time, or there was no response. At this point, two stakeholder interviews were planned, and seven interviews with employees were finished/scheduled. The people from different departments with whom I had contact for the internship assignment were asked if they or someone they knew would like to participate in this thesis to get more interviews. Two of them replied that they wanted to participate themselves. The others forwarded the e-mails to the other employees; this resulted in four more interviews.

The informal conversations happened either during coffee or lunch breaks or before or after meetings. These conversations were neither structured nor planned. Therefore, there was no format for these conversations. As these informal conversations are not recorded, I summarised the talks when I thought they could be used as data for this thesis. The interviews were semi-structured, which helped get an idea of critical motivational drivers from the interviewees' perspectives. Semi-structured interviews are a means to gain insight into the participants' points of view. It is often used in qualitative research (Symon & Cassel, 2012). All interviews started with an introduction of myself, my assignment at DAF, and my thesis subject. Before the interviews began, the participants were given a heads-up about the subject, the recording, and that the interview was for a thesis of the Radboud University. During the interview, this was repeated, and the participants were asked if they agreed to participate and record the interview. A semi-structured interview has as a pro that the thought process of the interviewees can be followed and explored; it starts with a few introductory questions to get them talking and thinking about DAF going. It ends with what they perceive to motivate DAF in C.S. The advantage of a semi-structured interview compared to a structured interview is the ability to understand what is essential to the participant. In contrast, a structured interview asks preprepared questions without delving into the participant's perspective (Symon & Cassel, 2012). Understanding what is essential to the interviewee helped discover some relations between the motivation drivers.

The transcribing process also started when the interviews were conducted. At this point, the public documents' coding process was already started. Using coding as a method, the data were analysed using the programme Atlas.ti 9. Only the informal conversations were not coded using the programme Atlas.ti 9 because the summarised sentences were easier to code in Microsoft Word. The first step in the coding was to code all sustainable drivers word for word with the words from the text. The second step was to merge the codes and give the texts with similar codes a summarising a driver's name. The third step consisted of either changing the code names to the codes found in the conceptual framework/Appendix 1 or giving it a different name when the code did not fit the drivers of the conceptual framework/Appendix 1.

Some codes were named after a driver; other codes were called the relationship between drivers, the symbol used to illustrate a relationship is the hyphen symbol (-). For example, one code is named "customer wishes – governance regulation". This code means that in the quoted area, the government influences the customer's wishes for more sustainable practices of DAF. In other cases, the slash symbol (/) was used; this means that one driver influences multiple other drivers. For example, one code is "innovation – employees/customer wishes - profit". This code indicates that in the quoted area, innovation for more sustainable practices happens due to employee and customer wishes; these stakeholder wishes are influenced by profit. The fourth step was putting the codes in code groups for every direct driver. The meaning of direct, indirect, and in-between drivers is explained in chapter 4.1. The group codes contain all the codes that mention a driver. For example, the earlier mentioned code "customer wishes – governance regulation" was put in both the groups "customer wishes" and "governance regulation". The fifth step in the analysis happened in Excel. A few excel-sheets were made where the number of times a driver was mentioned was counted (by hand). Each driver was counted multiple times and assumed to be correct if the same number was counted 3 times to ensure that it was calculated correctly. The sixth step is calculating the relations between the codes by counting them with a hyphen and presenting them in a table. This was also calculated by hand, and the number was assumed to be correct if it was the same number 3 times.

However, while rewriting chapters 1 and 2, I realised that I had worked with a tunnel vision in analysing the documents. So, I decided to restart the coding process and analyse the results. The first step was combining all data in 1 Atlas.ti document, so the informal conversation, documents and interviews are all together in 1 place now. The second step was creating document groups; I made the document groups "documents", "informal conversations", "interviews", "interviews employees", and "interviews stakeholders". The third step was checking if the codes correlate to the drivers in the quotations. This resulted in deleting quotes from codes, deleting codes altogether, dividing codes into sub-categories, and merging codes. The fourth step was colour coding the codes by the categories of the conceptual framework. So, purple is eco-efficiency, blue is business model, yellow is resource scarcity, red is image, green is internal motivation, orange is pressure from society/governments, and pink is other drivers. With these colours are also new group codes made. The fifth step is rereading the data to find out if I had not overlooked drivers. The sixth step is a repetition of step 3. The seventh step was analysing the data using the code-groups function of Atlas.ti; these tables were exported to Excel to make graphs and figures from it. Step eight is a repetition of the old step 6.

3.3. The gathered data

From February to April, the participant observations took place. In total, 28 people were summarised during this period. This means that when sustainability was mentioned in conversations in combination with their personal views and/or DAF practices, the statements were written down. The participants were primarily from one of the offices where I worked, meaning that 15 of the 28 people were working at the same office. Ten people are working at the distribution centre of Paccar Parts, and three employees are from another department of DAF. Aside from the different workplaces, I also talked with people in different functions. Four employees were other interns, 6 had a managing role in the distribution centre, 4 had a managing role in the office, and the rest were employees in the office. As DAF mostly has male employees working at their company, most of the summarised employees were male, and only four were female. Furthermore, all informal conversations took no more than 3 minutes, and 24 did not last even a minute. Usually, sustainability was mentioned briefly in between when talking about my thesis subject and the internship research project. These conversations introduced what drives DAF to be more sustainable and what they think some sustainable projects for DAF could be.

For the document analysis, I gathered on the 28th of March as many articles by DAF or PACCAR mentioning the environment or sustainability as I could find from January 2020 to the 28th of March 2022. These documents were either shared on their site for press releases (https://www.daf.com/en/news-and-media/news-articles/global); or shared on the about DAF page dedicated to the environment and sustainability (https://www.daf.com/en/about-daf/daf-and-the-

environment; https://www.daf.com/en/ about-daf/sustainability); or it was a public document that could be downloaded at the site. These included: a sustainability brochure called “on the road to even cleaner road transport”; a document of DAF’s/Paccar achievements from 1958 until 2021; Paccar’s ESG presentation from 2020; and DAF Trucks N.V. sustainability report 2020. In Appendix 2, a breakdown of the analysed documents is given with the links to these documents. In total, 50 documents were examined.

Regarding the employee interviews, a total of 13 interviews were held with employees of DAF. Out of those 13 interviews, five were with employees from the office where I worked, and the other eight were from offices divided over DAF. The employees were diverse in age, work experience at DAF, and departments. Only one female employee was interviewed, and the rest of the interviewees were male. The interviewees were from logistics, marketing, human resources, product development, planning, product quality, operations, the environmental team, product design, and the distribution centre.

Lastly, as mentioned in chapter 3.2, 13 stakeholders were asked to participate in this research, and many different actors involved with DAF were invited to participate. However, only two stakeholders were able and willing to participate; one governmental organisation and one organisation representing the clients of DAF were interviewed. So, a total of 15 interviewees were held. All the interviews were held in Dutch and started with an introduction of me, my thesis research, and my internship assignment. Then, the interview continued by talking about some or all of the following subjects: what sustainability is, what DAF does about sustainability, why DAF participates in sustainable practices, general questions about what the benefits are for a company when becoming more sustainable, and if the sustainable practices of DAF changed over the years. As mentioned before, the interviews were semi-structured. This allowed the interviewees to talk about the motivational drivers that they thought were important for DAF to become sustainable. All interviews had a duration of between 25 – 75 minutes. In terms of confidentiality, it was agreed upon to only refer to the employees and stakeholders as employee or stakeholder A without specifying their department or the type of stakeholder they are.

3.4. Validity & reliability

To keep the measurement error to a minimum, validity and reliability are essential. Validity is about whether the research precisely measures what it said to do. Reliability is whether analysis can be used to conclude other similar situations (Field, 2013). Validity consists of two aspects: external and internal validity. External validity is determined by comparing the findings of this research to other results of literature in other fields. External validity is ensured by using the conceptual framework based on the existing literature on corporate sustainability. In the discussion, the results are compared to the theoretical framework to compare whether the findings align with other literature. Internal validity is ensured by using several research methods to conclude from, in this case, documents, informal conversations, interviews with employees, and interviews with stakeholders. The internal validity is also ensured by having the supervisors from DAF read whether the results are what is happening in DAF or if it does not represent DAF drivers in their eyes. Lastly, reliability is achieved by reflecting that the structure of the research, the interview questions, and the research question align. The reliability can easily be reduced if the research question sets out to research more or less than the obtained data (Field, 2013). The research aim is to find the drivers that motivate DAF to be more sustainable; the data gathered all has to do with sustainability at DAF; one article of the mother company, Paccar, was used because the site of DAF referred to their sustainability goals. So, all the gathered data represents DAF's sustainability initiatives and practices. Around these initiatives are reasons for the corporate sustainability practices to happen; these are coded.

There are, however, two validity issues with this research; one has to do with the sampling process and the other with analysing the data. The validity issue with the sampling process is that all the respondents are intertwined. This could result in a less representative sample of the researched population (Goodman, 1961). However, there was a way around this problem as people who did not know me or my supervisors were more reluctant to participate and said they did not know about the sustainability practices at DAF. So, the best way to get enough respondents was to ask the participants for others who would like to

participate in the research. The other validity issues happened in analysing the data. As mentioned before, the philosophical perspective constructivism has the drawback that the researcher's perspective influences the results. In this case, it could be an even more considerable risk that the researcher's view affects the results as only one person is analysing the data. This is, however, the assignment of a Master's thesis with the goal of testing the students' research skills.

4. The motivations of DAF

In this chapter, the results of the thesis are discussed. It starts with the general results of the research and continues by discussing the driver categories from the conceptual model, plus one extra driver category. The drivers explain what drivers were found and the relationship between the drivers. The results continue in discussing each driver category that influences DAF to be more corporate sustainable. Furthermore, the quotes from public documents and interviews are transcribed from Dutch to English. Behind every quote a number is given; this corresponds to the quotes in Appendix 3 that show the translated quotes and their original text, for documents only the original text.

4.1. The drivers of DAF

In this thesis, 23 direct drivers were found to make DAF want to be more sustainable. However, aside from the direct drivers, there are also drivers that I call indirect drivers and in-between drivers. Indirect drivers cause other drivers to influence DAF to be more sustainable. And in-between drivers are drivers influenced by drivers, and these in-between drivers either affect other in-between drivers or DAF. All motivation drivers are part of at least one of these three types of drivers. For example, the driver called governance regulation has been found in all three types of drivers; the following codes illustrate the difference:

- "*Governance regulations*" means that government regulations are not influenced by other drivers and influences DAF to be more sustainable, so it is a direct driver in this code.
- "*Innovation – customer wishes – governance regulations*": this code means that government regulations are not influenced by another driver but do influence the customer wants, leading to DAF innovating and being more sustainable. So, it is an indirect driver in this code.
- "*Governance regulations – society wishes*": this code means that society influences the government, and the government influences DAF to be more sustainable, so it is an in-between driver in this code.

As can be seen by the example of the driver governance regulations, a driver can be part of all three types. And a driver is always part of at least 1 type of driver. Figure 5 shows only the direct motivation drivers and the number of times it is mentioned as a direct driver per source type. Some drivers are not part of the direct drivers and are only in the indirect and/or in-between driver categories. These are not included in table 2; in total, there are 29 drivers. As seen in figure 5, costs reduction has been mentioned the most as a direct driver with 49 times. The other direct drivers are: employee motivation (39), improving processes (38), government regulations (38), innovation (30), customer wishes (29), society wishes (16), market shares (15), attract employees (15), management motivation (11), marketing (10) DAF ethics (9), supply risk (8), shareholder wishes (7), PACCAR wishes (6), financial responsibility (5), external circumstances (5), business model (4), suppliers wishes (3), price risk (3), infrastructure (3), continuity (3), and value chain (1).

In comparison, table 2 shows the influence between drivers. The drivers in this table are either direct, indirect or in-between drivers. In the first column, each of the 29 drivers has a number; these numbers correspond with the top row. So, number 1 in the first column and 1 in the top row represent the driver attract employees. The columns represent what the driver influences and the rows represent what influences the driver. In the last column and row, there is a T; this stands for the total number the driver is influenced (T in the column) and the total number a driver influences other drivers (T in the row). Furthermore, the table also shows the number of times a driver is a direct driver; this happens at the places where the numbers meet. So, for attract employees, this is 15. The table is also on a colour scale: grey means that it is not mentioned, light yellow means that it is said once, and dark green is the highest number of times a driver or the driver combination is mentioned. So, the darker green a driver of driver combination is, the more that combination was said. Below table 2, the drivers and their numbers in the table are explained.

As seen in table 2, governance regulations have the most influence on other drivers, namely 65 times. Followed by customer wishes (57), cost reduction (35) and society wishes (31). Some drivers are noted

to be influenced a lot; the most mentioned is innovation with 45 times. Other drivers that are affected a lot are customer wishes (43), costs reduction (29), continuity (26) and employee motivation (26).

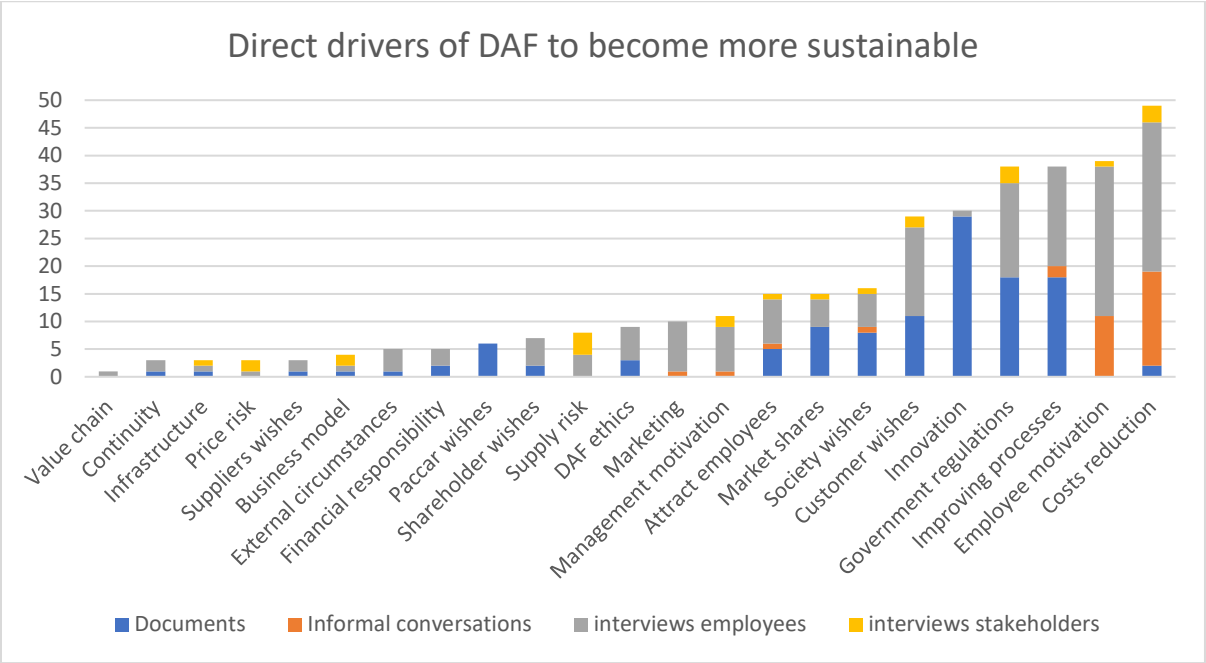

Figure 5: Direct motivation drivers of DAF to become more sustainable by author

Table 2: Influence of drivers on each other by author

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	T
1	15	0	0	0	2	2	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**7**
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	**4**
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
4	1	0	0	4	5	0	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	**13**
5	0	0	0	0	3	1	3	0	0	1	0	0	5	0	1	10	0	1	0	0	0	0	0	4	0	0	0	0	0	**26**
6	0	0	0	0	0	49	12	0	0	0	2	0	6	0	0	0	0	2	2	0	1	1	0	0	0	3	0	0	0	**29**
7	0	0	0	0	0	2	29	2	0	0	0	0	26	0	1	1	0	2	0	0	0	0	0	5	0	2	0	2	0	**43**
8	0	0	0	0	0	4	2	9	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	**10**
9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**2**
10	0	0	0	0	0	14	3	0	0	39	0	0	1	0	0	0	0	0	2	0	1	0	0	5	0	0	0	0	0	**26**
11	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
12	0	0	0	0	0	0	2	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
13	1	3	0	0	0	0	1	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	**15**
14	0	0	0	0	0	8	3	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**2**
16	0	0	0	0	0	1	22	1	1	2	0	2	13	0	0	30	0	2	0	0	0	0	0	0	0	1	0	0	0	**45**
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	**0**
18	1	0	0	0	0	0	2	0	0	0	0	1	6	0	0	5	0	15	0	0	0	0	0	1	2	0	0	0	0	**18**
19	0	0	0	1	0	0	3	0	0	1	0	0	3	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	**8**
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
21	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0	6	0	0	2	6	0	0	0	0	**15**
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	**0**
23	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	0	0	**2**
24	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	2	0	0	0	16	0	0	0	0	0	**5**
25	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
26	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	**6**
27	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	**3**
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
29	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	**5**
T	**4**	**0**	**3**	**1**	**7**	**35**	**57**	**3**	**6**	**6**	**8**	**3**	**65**	**0**	**3**	**16**	**0**	**11**	**12**	**2**	**2**	**1**	**2**	**31**	**13**	**7**	**0**	**2**	**1**	

All identified drivers that influence DAF to be more sustainable are:

1. Attract employees: to attract future employees or keep the current employees.
2. Automotive industry: the influence of the automotive industry.
3. Board: the influence of the board of DAF on DAF.
4. Business model: the influence of DAF's business model on their practices.
5. Continuity: to prepare for the future and being able to keep existing as a company.
6. Costs reduction: reducing the costs of DAF or increasing the profits of DAF.
7. Customer wishes: the influence of customers with expectations and wishes of DAF.
8. DAF ethics: wanting to be more sustainable as DAF itself.
9. Educational level: the influence of the educational level of employees/society.
10. Employee motivation: the influence or initiative of employees on DAF.
11. External circumstances: influencing change in the market or business processes due to unforeseen changes in the world, like Covid-19.
12. Financial responsibility: wanting to create a product that is contributing to and wanted by society.

13. Governance regulations: the influence of governmental institutions with legislations.
14. Improving processes: the improvement of internal processes of DAF.
15. Infrastructure: the influence of infrastructure on the decision making of DAF.
16. Innovation: the improvement of products of DAF.
17. Management motivation: the influence of managers on sustainability practices of DAF.
18. Market share: increasing the market share of DAF or becoming a market leader.
19. Marketing: promoting the company, a product or service to create a positive image of DAF.
20. Media attention: media focussing on practices of DAF.
21. PACCAR wishes: the influence of PACCAR on DAF.
22. Price risk: the influence of price fluctuations or price uncertainty on DAF.
23. Shareholder wishes: the influence of shareholders on DAF.
24. Society wishes: the influence of society wants on the market.
25. Socio-cultural factors: conservative perspective of automobile companies.
26. Supply risk: the influence of potential lack of materials or employees in the future on DAF.
27. Suppliers wishes: suppliers initiating more sustainable practices or suppliers wanting to collaborate to be more sustainable.
28. Urbanisation: the trend in society to live more in cities which changes business practices.
29. Value chain: the influence of the value chain on DAF.

So, what do these results mean? The drivers are too broad still, so the conceptual model is used to make sense of the drivers and their relations to each other. The conceptual framework has six motivation categories; however, some drivers do not fit in these categories. Figure 6 shows how many times these are mentioned. There is also a 7th motivation category found; this one is called socio-cultural drivers. This chapter discusses each motivation category and explains which relations/drivers are part of which motivation category. It starts with the most mentioned motivation category and ends with the least mentioned category. So, the order is eco-efficiency (150), pressure from society/ governments (149), image (118), internal motivation (82), business model (59), resource scarcity (35), and socio-cultural drivers (17). All categories also have corresponding colours to differentiate the categories easier. So, eco-efficiency has purple, pressure from society/ governments is orange, image is red, internal motivation is green, business model is blue, resource scarcity is yellow, and socio-cultural drivers is pink.

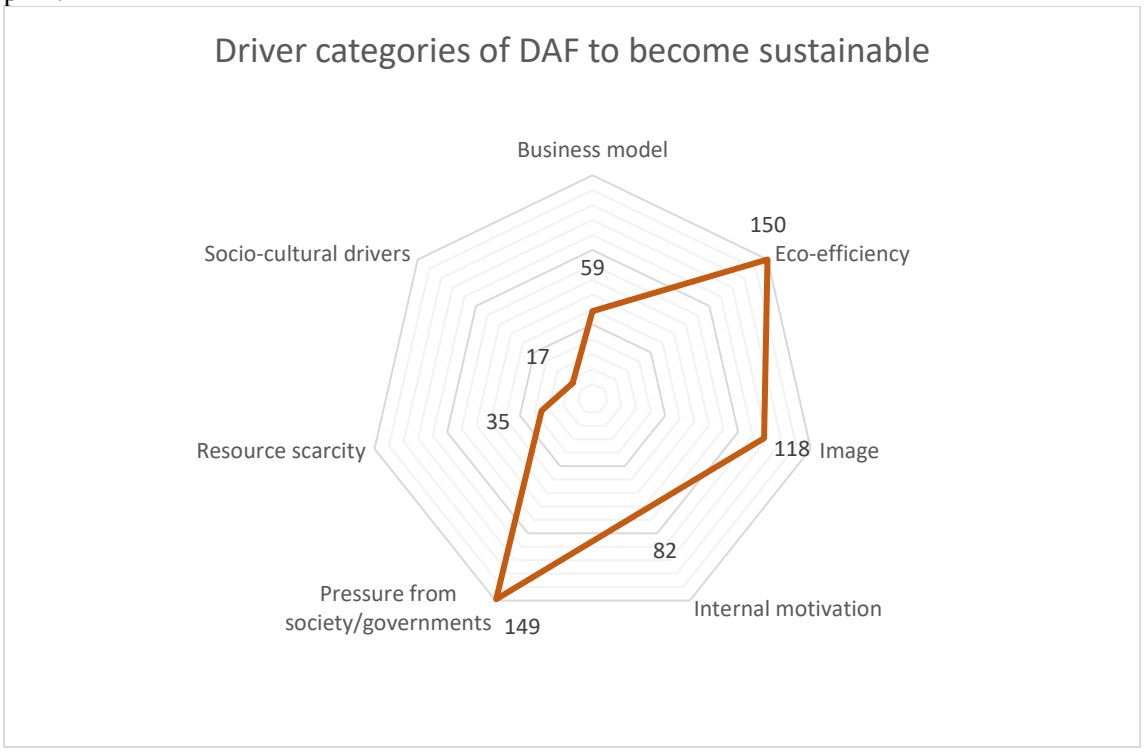

Figure 6: Motivation categories of DAF by author

4.2. Eco-efficiency

Figures 7 to 13 are all created in the same way. The colour of the drivers indicates to which category the drivers belong. From there on, there are several connecting lines to either drivers or to the diamond shape called direct drivers. The diamond shape indicates what direct drivers there are in the category. The drivers connected to the category are in-between drivers; the indirect drivers are the last in the row with a number behind them. The number behind indirect or direct drivers refers to the number of times the direct driver or the combination of in-between and indirect drivers is mentioned. All the figures also only represent relations or direct drivers when they are mentioned more than once. For all categories, there are assigned drivers that are only direct or indirect drivers for that category. So, in the case of figure 7, eco-efficiency as an indirect driver influences in-between drivers of the categories internal motivation, eco-efficiency, business model and image.

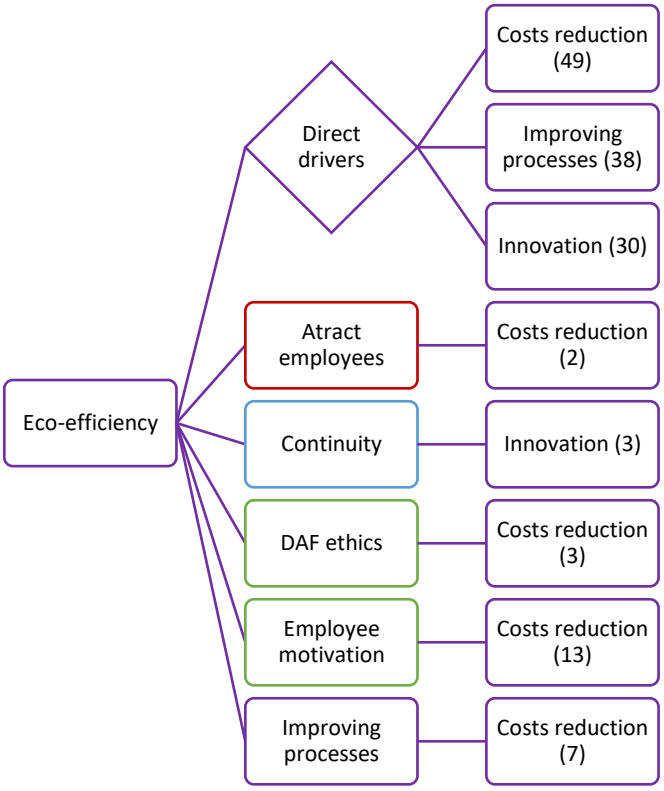

Figure 7: Eco-efficiency drivers by author

Eco-efficiency means that DAF is becoming more sustainable by making the internal processes use as less as possible. Some keywords for eco-efficiency are: reducing costs, increasing profits, looking at low ROIs, reducing transport time or distance, and reducing other resources like waste. As seen in figure 7, there are 3 drivers of eco-efficiency: costs reduction, improving processes, and innovation. All three direct drivers are in the top five most mentioned direct drivers. And costs reduction also has the second most mentioned influence on other drivers.

Both innovations and improving processes are about efficiency. Innovation refers to new techniques in the trucks that make the products more sustainable. Employee H explains this relationship of innovation and continuity in quote 29, saying that it is necessary to keep innovating to keep existing as a company by creating more sustainable techniques such as electric trucks. Innovation is a direct driver in terms of making the trucks more efficient, as mentioned in document 29 in quote 4. On the other hand, improving processes is about making the business practices of DAF more efficient, as explained by employee A in quote 11. Although, as seen in table 2, innovation has an impact on market share, which is confirmed by employee C in quote 14, a more efficient truck is more competitive as it reduces fuel use and, therefore, emissions. Another noticeable difference is that for innovations, which are about products, DAF plans a lot to make the trucks more sustainable. At the same time, for improving processes, which is about production, there are uncertain goals to reach for the future.

> *"I don't know if that is really sustainability. But it is a bit of efficiency, which also benefits emissions. So that, in our planning system, we can set how often we want to buy something. So, for how many days do we want to buy the demand at least? So, a forecast is being made."*
> Quote 11, employee A

Cost reduction is also an essential part of DAF: if costs are going to be reduced, then DAF wants to be more sustainable. Stakeholder A confirms this in quote 46. Cost reduction also influences employee motivation; several interviewees confirm that some initiatives will not happen when the costs or ROI are too high, as mentioned by employee 24 in quote 9. However, cost reduction is also a means to influence employees to be more sustainable, as explained by employee F in quote 22. They explain to the employees that they are throwing their profit marge out the window when they don't separate the waste.

> *"Yes, absolutely, that has always been the case. In every commercial meeting I have, they clearly say: right, but we want to save costs. But that's really from the open perspective. There are no companies yet that say, gee, you can add 10% to the costs. No, but anyway, that is what we were just talking about, and I think that it will change one day."*
> Quote 46, stakeholder A

4.3. Pressure from governments and society

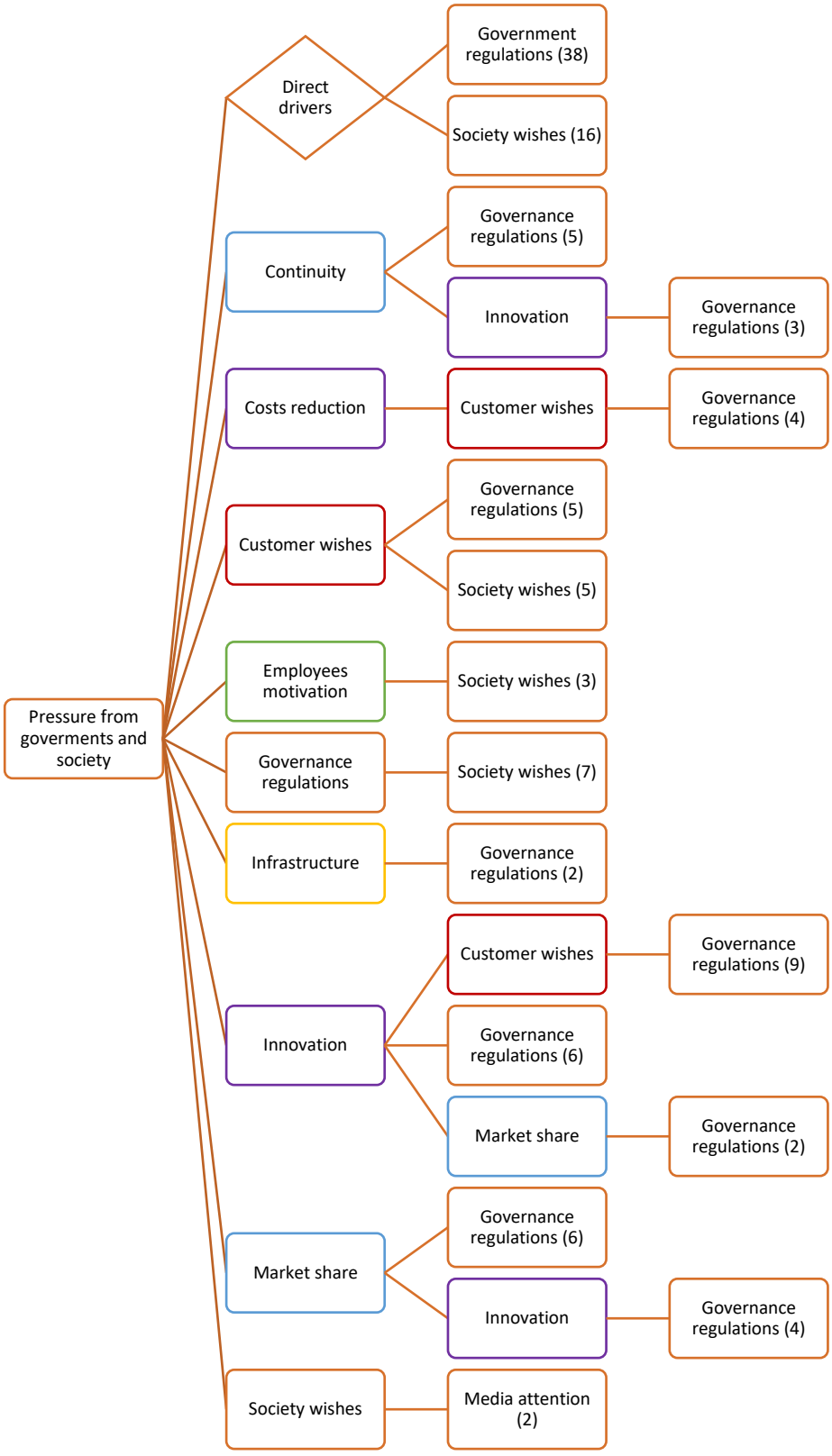

Figure 8: pressure from governments and society drivers by author

Pressure from society/governments means that governments and society push DAF to become more sustainable through legislation, laws or other forms of pressure. This category has only two direct drivers: governance regulations and society wishes. Media attention is only an indirect driver. Also, figure 8 shows that pressure from governments and society influences all categories except for socio-cultural drivers.

The driver governance regulations have the most indirect influence on other drivers to make DAF more sustainable, as seen in table 2. Government institutions make regulations in terms of noise pollution and emissions and other social or environmental implications. These regulations influence DAF or their stakeholders the most, especially customer wishes. Customers need to reach sustainable targets from the government, and DAF provides that for the customers. Employee H mentioned this, for example, in quote 30. The direct influence of governance regulations is explained in quote 15 by Employee C.

Society wishes are pretty well explained in document 47, quote 5. Society influences DAF directly but has more power indirectly over DAF through mainly stakeholders of DAF. Employee J explains the indirect influence of society in quote 36. It is, however, notable that DAF is more mentioned to be influenced by governments than by society. The business model of DAF could explain this; it is a business-to-business model; there is no direct contact between

society and DAF. DAF sells trucks to other companies who either transport their goods to the end-consumers (society) or they transport other companies' goods, which makes DAF further apart from the end-consumers. Employee M explains this dynamic in quote 45.

"Thus, legislation is simply steering us in that direction. And we just have to make sure that our customers get the products and opportunities they need to meet their sustainability targets. And rather us than Mercedes."
Quote 30, employee H

"And that's exactly what the other company doesn't do, and they have such a fantastic report. Then you have that interaction there and even then, they say," why should we do that? We are not selling any extra trucks." That was actually the main reasoning behind this: why should we write beautiful stories? The customer is not expecting it. Naturally, this makes it prevalent that we work more on a business-to-business basis. And not so much towards the customer, the consumer or the citizen, because ultimately, they have more influence, especially with companies to get things done. If you look at Campina, a dairy company, they have some fantastic reports. The consumer is quite content with them, if they had to choose, then perhaps Campina."
Quote 45, employee M

4.4. Image

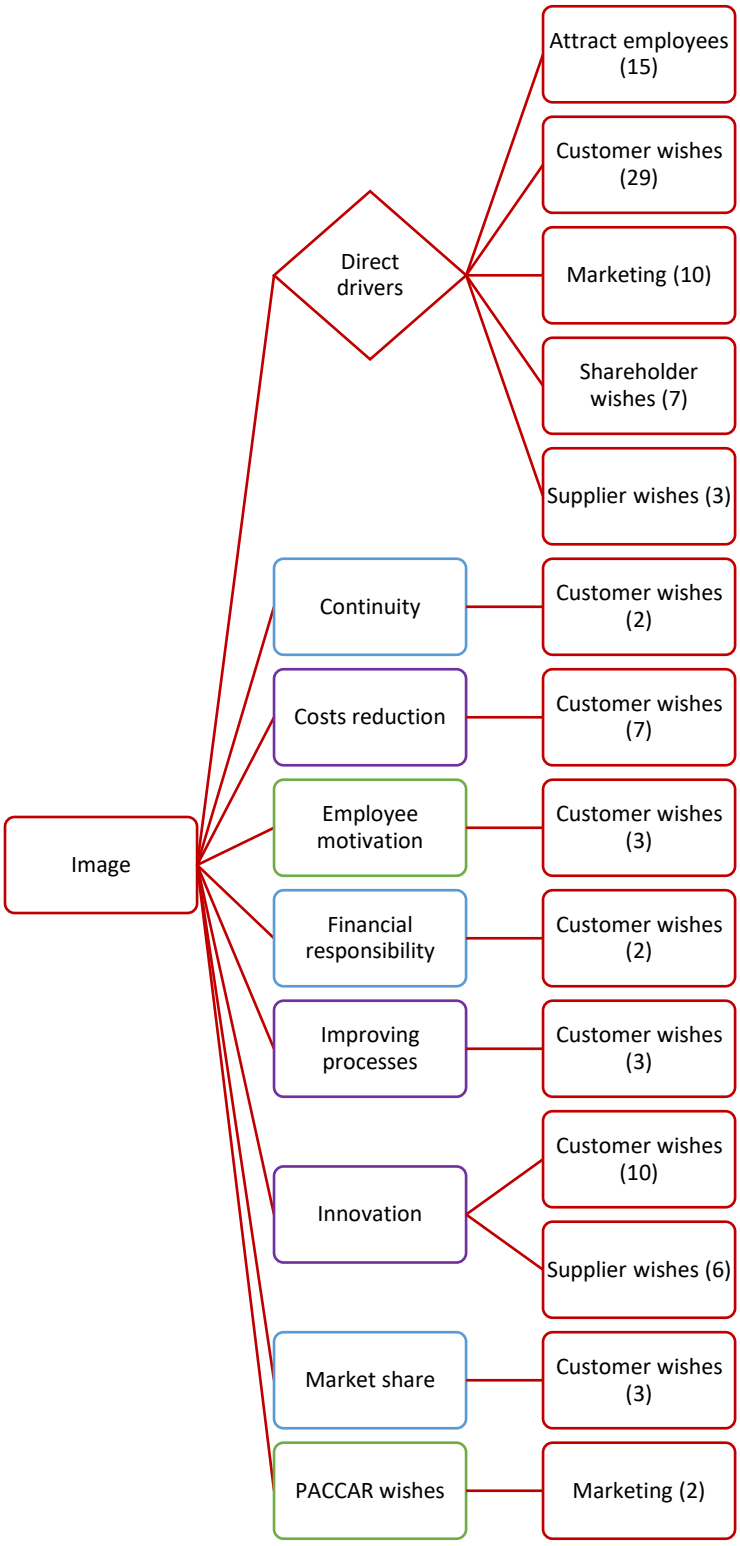

Figure 9: Image drivers by author

Image refers to attracting people to DAF and being perceived as a trustworthy company. There are 5 direct drivers in the motivation category image: attract employees, customer wishes, marketing, shareholder wishes, and supplier wishes. All drivers are indirect drivers as well. Figure 9 shows that image has the most influence on eco-efficiency, internal motivation, and business model.

Attracting employees has to do with sustainable employability, making DAF an attractive place for employees to work, as employee E mentions in quote 19. It also has to do with being sustainable in the sense of reducing the environmental impact, as employee B says in quote 12. However, the interviewed employees who worked less than five years at DAF did not mention sustainability as a reason to apply at DAF. Furthermore, attracting employees also influences other drivers: market share, government regulations, Paccar, and continuity. A future-proof company has to have an attractive workplace that attracts employees, as stakeholder B puts it in quote 47.

Customer wishes refer to attracting customers to buy truck parts or the truck from DAF. Employee A mentions that DAF sells truck parts that are R products to attract customers. R products are recycled products; these R products are sold more than the non-recycled products, as stated in quote 11. Customer wishes also have indirect influence through efficiency, innovation, market share, PACCAR, government regulations, image, and employees. Efficiency is the most mentioned; this relation is that customers want an efficient truck which DAF offers with more efficient techniques or programs to train the drivers to drive more sustainability as mentioned in document 4 in quote 1.

> *"That is why DAF offers its customers support through advanced route simulation models to help devise the most efficient planning for their vehicle, including useful advice on smart and efficient recharging of the battery. DAF also offers advice – together with selected suppliers, such as VDL – regarding the optimal charging infrastructure"*
> Quote 1, document 4

Marketing has been mentioned both to distance DAF from the reputation of the automobile industry with the diesel emission scandal and in the uncertainty of DAF whether or not they are sustainable. Employee G explains in quote 25 that the diesel scandal does require DAF to improve the image of diesel as the fuel will still be used in the upcoming years. Employee D, in quote 17, explains that DAF does not mention its sustainability unless they are sure it is sustainable, indicating that DAF wants to be a trustworthy company. However, in September, as employee D says in quote 18, the new products of DAF are marketed to attract customers to DAF.

> *"In September, we are going to promote the electric truck again with some new products. A white version of this truck [at the back of the screen]. Which is super cool and will generate a lot of attention."*
> Quote 18, employee D

In the category image, the influence of stakeholders pushes DAF to be more sustainable. For example, it is mentioned that the shareholders are primarily interested in enhancing their value with ESG practices, as mentioned in document 20 in quote 2. And suppliers also impact DAF becoming more sustainable; as employee F says in quote 23 that for the suppliers with an electric truck, a charge station at DAF comes.

4.5. Internal motivation

Internal motivation is the category that shows the inner drive of DAF, PACCAR, its employees, and the automobile industry as a whole to want to be more sustainable. As figure 10 shows, internal motivation influences pressure on governments and society, eco-efficiency and image.

As seen in figure 10, in the automobile industry, companies are lobbying governmental institutions to change the current manner of calculating the CO2 emissions from tank-to-wheel to well-to-wheel. Tank-to-wheel means that only the emissions from the moment it is in the truck until it is burned are considered, without looking at the impact to get the fuel in the truck. On the other hand, well-to-wheel calculates the emissions of the whole chain, from creating to burning the fuel in the truck. This would make more companies responsible and create more

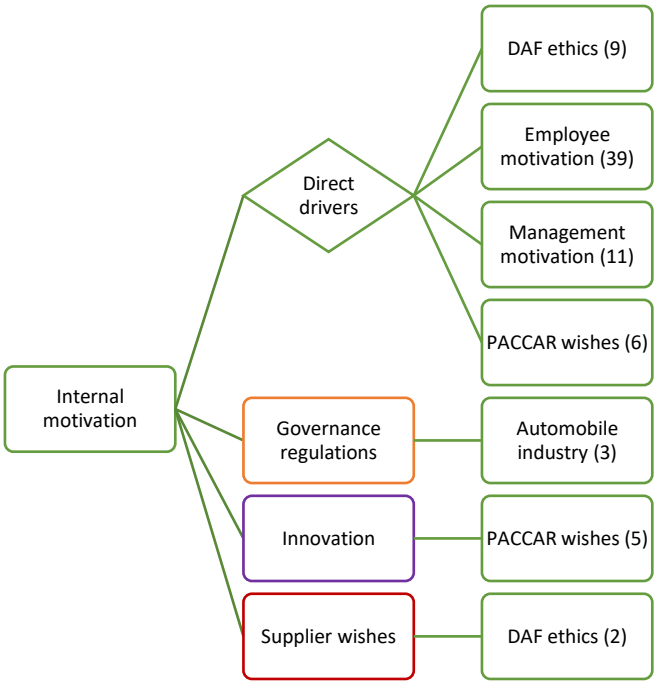

Figure 10: Internal motivation drivers by author

responsibility for the whole industry, as employee H mentions in quote 28.

PACCAR has social goals with the PACCAR foundation; they want to positively impact the communities of employees, as is mentioned in quote 7 from document 49. Furthermore, PACCAR is also innovating in new technologies, like autonomous driving technology, as mentioned in quote 6 from document 49, although it is implemented in the brands Peterbilt and Kenworth. This is also an example of the influence of Paccar wishes on driver innovation, as seen in figure 10.

DAF is interested in innovation; they are exploring the fuel technologies as it is DAF's philosophy to explore the full suite of technologies on the road of decarbonising road transport, as mentioned in quote 4 of document 36. Besides innovating, DAF is also concerned with the health of its employees, and they have sustainable employment projects. For example, employee F mentions this in quote 24; a new project is whether people should smoke at DAF.

> *"DAF's philosophy is that we need to explore the full suite of technologies on the road of decarbonisation of road transport. Next to battery electric solutions which we already offer today and hybrid trucks which we have under development, hydrogen technology may become a very interesting option for the future."*
> Quote 4, document 36

Besides goals or initiatives of DAF and PACCAR, the employees and managers of DAF are also motivated. As employee B mentions, plans are made on board level and go down the company hierarchy. However, with the lack of goals from above, managers have created their own goals, as mentioned in quote 13. Besides setting their own goals, employees are also starting to wonder why some things are not happening already. For example, employee I says that more and more employees are wondering why the waste is not separated yet in quote 32. Also, employees are proud to work for DAF and to make the trucks, as mentioned by employee E in quote 21. However, employee L says in quote 42 that initiatives from employees are happening, but there are not yet enough initiatives happening throughout the company.

> *"We do some initiatives, but in general it is not something that is promoted company-wide nor is it something that is attempted to get into everyone's head. It certainly is not. So, it's just some small projects now. And you see, if you look here on the site, you don't see any windmills, no solar panels. Some energy is recovered in the test engine plant."*
> Quote 42, employee L

4.6. Business model

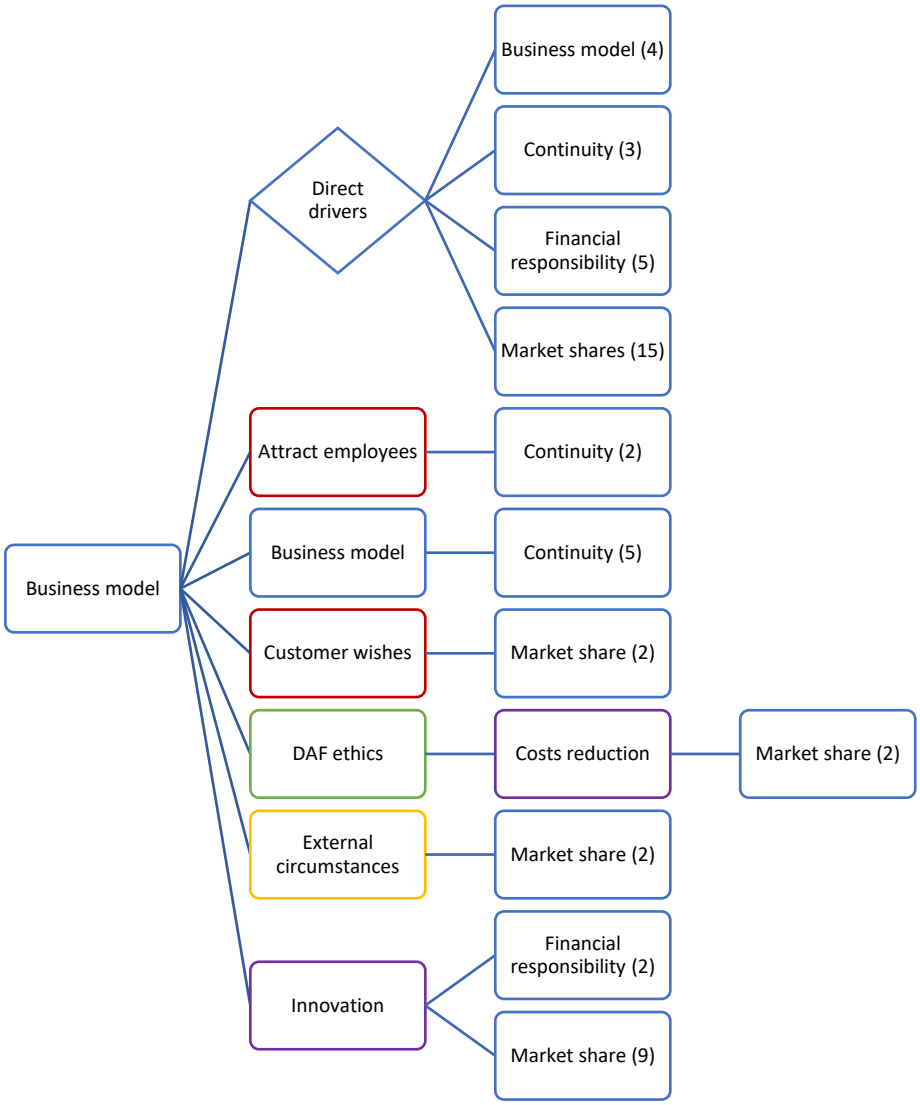

Figure 11: Business model drivers by author

The business model means that DAF wants to be sustainable to sell products that society wants, have a market share, and continue its company and business model. Figure 11 shows the identified relationships and drivers if mentioned more than once. It shows that business model influences eco-efficiency, business model, image, internal motivation and resource scarcity.

The business model of DAF should change to producing more sustainable products if they want to continue to sell trucks, as stakeholder B mentioned in quote 48. So this shows the relationship continuity has on the business model, as seen in figure 11.

Financial responsibility refers to commercial pressure to sell such a truck that society wants, as employee L mentions in quote 41.

DAF also wants to keep and increase its market share and, therefore, invest more in sustainability. As employee M mentions in quote 43, sustainability is something that DAF wants to invest in not to lose its market share. Employee J connects market share to costs reduction and DAF ethics in quote 37, as seen in figure 11. They mention that money is the prime driver of DAF, and market share is their focus, as well as to grow their market share. If the market share or profit grew, then DAF would invest in more or only green products.

> *"I do not need a 20 per cent market share. No, they do not say that. No, they do want that. And so, just as an example, (...) so for us it's about being money-driven, so to speak. And yes, that is the driver."*
> Quote 37, employee J

4.7. Resource scarcity

This category refers to price risk, supply risks, infrastructure and other unforeseen happenings in the world that make DAF more sustainable, as seen in figure 12. Figure 12 also shows that resource scarcity influences eco-efficiency, resource scarcity and image.

Employee M explains in quote 44 that companies should be more sustainable to be less dependent on price fluctuations in the market and share the profit with suppliers to prevent supply risks. Stakeholder B explains in quote 49 that the infrastructure available on a company's site is also crucial for a company to become more sustainable. If the hydrogen infrastructure, e.g., is unavailable for DAF, it will be difficult for DAF to make their internal processes more sustainable with the use of hydrogen energy.

Another factor that changed DAF to become more sustainable is Covid-19. Employee E mentioned in quote 21 that DAF has a work-from-home regulation after COVID-19, not because DAF wanted to implement it but because external circumstances forced it.

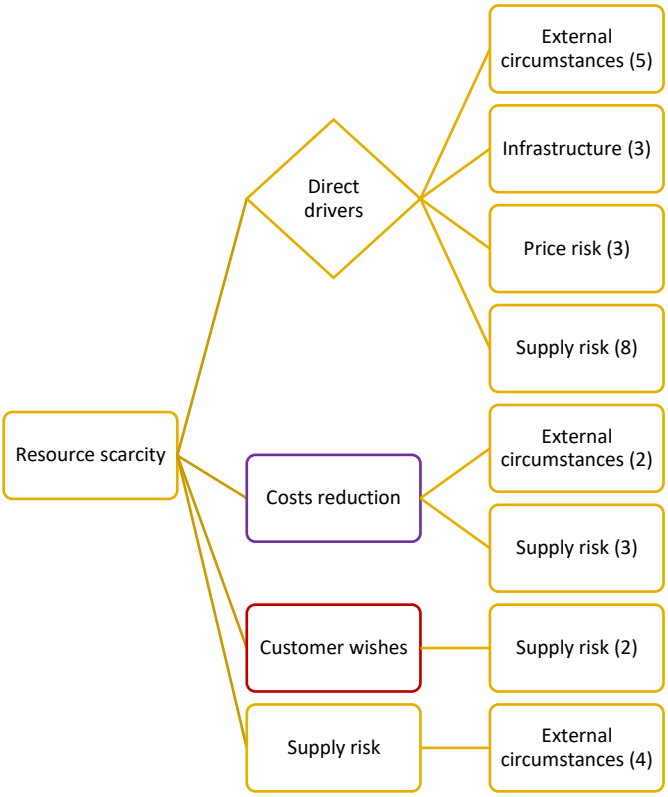

Figure 12: Resource scarcity drivers by author

> *"Are we sustainable because of the existing rules or because of external circumstances that are beyond our control, such as Corona? And so that aspect of working from home is not because we believe in our heart that it contributes to sustainability. But we were forced to do so by Corona."*
> Quote 21, employee E

4.8. Socio-cultural drivers

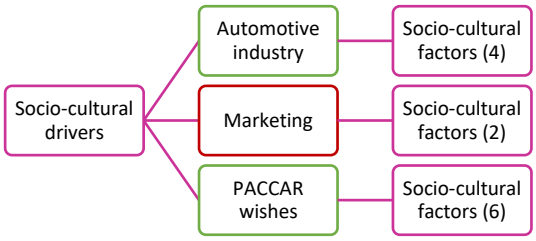

Figure 13: Socio-cultural drivers' drivers by author

This is the only category with no direct drivers and is not in the conceptual framework. This category is called socio-cultural drivers and is similar to society wishes as a driver. However, the difference is that society wishes refer to the society outside the company that influences DAF, while socio-cultural drivers are perspectives of DAF or PACCAR themselves. Figure 13 shows that socio-cultural drivers influence internal motivation and image the most.

These drivers refer to educational level and the (political or economic) perspectives of the companies and employees on the sustainability process of DAF. Educational level is explained in combination with society awareness by employee I in quote 33. As a result, there has been a development in the knowledge level, which created awareness to change the current practices.

The conservative perspective also influences the educational level, the automotive industry, and marketing. The traditional viewpoint is in the automobile industry due to its existence for 100 years and its labour-intensive process. So, many conservative people are working jobs with modern products. Therefore, the procedures are difficult to change into a complete sustainable one. Also, the societal changes are often coming from students, and that is not necessarily the employees of DAF, as employee J says in quote 34.

Furthermore, socio-cultural factors mainly refer to the conservative view of PACCAR, DAF, and the automobile industry. PACCAR is a conservative company. The traditional perspective and culture of the USA are perceived to influence PACCAR, which has translated to DAF, as employee L mentions in quote 40. This resulted in an excellent financial policy for DAF, as employee J says in quote 35. This relationship between socio-cultural factors (conservative perspective) and Paccar is also the highest mentioned relation in socio-cultural drivers.

> *"Look and of course, the automotive industry is a sector, well it' s been around for a long time. But look, the automotive, so to speak, has existed for about a hundred years. It is one of the first industries. And it is of course, a rather [...] labour-intensive process. (...) Anyway, we are of course a relatively old industry, if you can call it that, with a modern product (...) and also a different level of education. Because (...) the social changes often come from students etc."*
> Quote 34, employee J

5. Conclusion

To answer the research question, "*What motivates DAF trucks N.V. to become more sustainable?*": costs reduction, employee motivation, improving processes, government regulations, innovation and customer wishes have been mentioned more than 30 times to influence DAF to be more sustainable. In total, 29 motivation drivers for DAF to become more sustainable have been found. These drivers can be divided into three types: direct, indirect, and in-between. Direct drivers are not influenced by drivers and influence only DAF. Indirect drivers affect drivers but are not influenced by drivers. Finally, in-between drivers are influenced by drivers and either impact DAF or other in-between drivers. All drivers can be part of all three types of drivers and are at least part of one driver.

Of the direct drivers, costs reduction was mentioned the most 49 times. The other direct drivers are: employee motivation (39), improving processes (38), government regulations (38), innovation (30), customer wishes (29), society wishes (16), market shares (15), attract employees (15), management motivation (11), marketing (10) DAF ethics (9), supply risk (8), shareholder wishes (7), PACCAR wishes (6), financial responsibility (5), external circumstances (5), business model (4), suppliers wishes (3), price risk (3), infrastructure (3), continuity (3), and value chain (1). Other drivers are only indirect or in-between drivers; these are automotive industry, board, educational level, financial responsibility, media attention, and urbanisation. Furthermore, governance regulations are the most mentioned to influence other drivers 65 times. Further drivers that are mentioned a lot to influence other drivers are customer wishes (57), cost reduction (35) and society wishes (31). Some drivers are said to be influenced a lot; the most mentioned is innovation with 45 times. More drivers that are affected a lot are customer wishes (43), costs reduction (29), continuity (26) and employee motivation (26). To better understand what drives DAF, the categories of the conceptual framework were used, and an additional category, socio-cultural drivers, was added. The categories are eco-efficiency (150), pressure from society/ governments (149), image (118), internal motivation (82), business model (59), resource scarcity (35), and socio-cultural drivers (17).

All categories except socio-cultural drivers have direct drivers. However, all seven categories do have indirect and in-between drivers. Furthermore, it is noticeable that socio-cultural drivers are not mentioned as in-between drivers and pressure from governments and society only in the categories of internal motivation and pressure from governments and society. Resource scarcity is an in-between driver in the categories of pressure from governments and society, business model and resource scarcity. Image is an in-between driver in all categories except image, and eco-efficiency in all categories except socio-cultural drivers. The most mentioned relations between the drivers in the categories are employee motivation – costs reduction (13), innovation – customer wishes – governance regulations (9), innovation – customer wishes (10), innovation – PACCAR wishes (5), innovation – market share (9), supply risk – external circumstances (4), and PACCAR wishes – socio-cultural factors (6). From these results, it could be concluded that innovation and internal motivation are essential drivers for DAF to be more sustainable.

In conclusion, what motivates DAF trucks N.V. to be more sustainable is eco-efficiency, pressure from governments and society, image, internal motivation, business model, resource scarcity and socio-cultural drivers.

6. Discussion

In this chapter, a discussion on and reflection upon the results is held. Firstly, there is looked whether the research has been conducted correctly. Secondly, the thesis results are compared to the results of the literature discussed in chapter 2 regarding motivation drivers for companies to become sustainable. Thirdly, other sustainability themes are applied to the case study to see what would happen to DAF due to those themes. The thesis and this chapter end with recommendations for future research and policies.

6.1. Conduction of the thesis

At the beginning of the process of writing the thesis, I only focused on the environmental side of sustainability. I thought that otherwise, the subject would be too large. Hence, the research question was at the beginning: "*What motivates DAF trucks N.V. to become more environmentally sustainable?*". However, during the interviews with the employees, it became clear that they care about more than just environmental sustainability; social sustainability is also essential to them. The employees are proud of their products and what they can mean for society, e.g., traffic safety, and they are proud of their work facilities and benefits. Besides, there are also projects to keep employees working at DAF for as long as possible, so when the work takes a toll on their physique, they get opportunities to work at less demanding stations. This is also in combination with DAF offering workplaces for people with a disadvantage in society. So, it was decided after the data gathering to change the research question and focus on social sustainability as well. The research question became, therefore, "*What motivates DAF trucks N.V. to become more sustainable?*".

During the data gathering, some interviewees and informal conversations overlapped. The employees from the informal conversations are also the employees that I talked to concerning either my internship or because they were nearby in the office. These are also the people that either I knew that I could ask for an interview, or they are involved in the sustainability of DAF in general. Out of the 11 employees I interviewed, 6 of them also participated in the informal conversations. This could affect the outcomes of the research; however, the informal conversations are more of a quick answer, while the interviews went in-depth into the motivations. Besides, these are only 6 out of the 28 informal conversations, so the outcomes of the informal conversations have likely not been impacted by the overlap.

Furthermore, the participants in both the informal conversations and interviewees could misrepresent the population of DAF. This is because most male employees from the building where I also worked participated in the research. So, female employees and employees from other facilities are less prevalent in the thesis. The mix of managers/team leaders, employees in the office and employees from the workplace, are represented fairly. DAF has a skewed population of more males than females at the company. And DAF is also a compartmentalised company meaning that there is not a lot of contact between different departments, let alone various offices. So, the misrepresentation of departments of DAF could influence the results.

Lastly, the participants in both the informal conversations and interviewees could also have mentioned that they think sustainability is necessary but not important enough to do something about that. In the interviews, this was discussed more deeply; in the informal conversations, not so much. However, this motivation driver internal motivation is one of three that is represented in all three sources, making the driver internal valid.

6.2. Comparison of the results and the literature

In the conceptual model, there are six motivations identified from the literature. However, these drivers in the conceptual model do not influence each other, while it was found in this thesis that motivation drivers do influence each other. Mainly, governance regulations, customer wishes, costs reduction, and society wishes affect motivation drivers. The motivational drivers with the most direct influence in this thesis are: costs reduction, employee motivation, improving processes, government regulations, innovation and customer wishes. More direct drivers influencing DAF to become more sustainable, who

are mentioned less frequently, are society wishes, market share, attract employees, management motivation, marketing, DAF ethics, supply risk, shareholder wishes, PACCAR wishes, financial responsibility, external circumstances, business model, suppliers wishes, price risk, infrastructure, continuity, and value chain. In terms of categories, eco-efficiency is the most prevalent, which aligns with Brockhaus et al. (2017). They stated that companies with a business-to-business model and lean operations focus on efficiency, which is confirmed in this thesis with DAF.

Furthermore, several authors argued that moral, ethical, or intrinsic motivation has the highest impact on or are the main reason for C.S. practices (Buehler & Shetty, 1974; Campopiano et al., 2012; Davis, 1973; Grimstad et al, 2020). This is not necessarily the case for DAF; although internal motivation is mentioned the fourth most, it is not one of the higher categories. The interviewees were also a bit conflicted on whether or not DAF is becoming more sustainable for from moral, ethical, or intrinsic reasons. There is a lack of communication from the top to managerial/employee level, as PACCAR does state goals for environmental and social sustainability, it is unknown to those at lower levels in the company. Furthermore, employees do want a change, as multiple participants stated; however, there it is not happening some reason.

From the literature regarding the automobile industry, a lot is written about efficiency, cost savings and the influence of external stakeholders on the sustainability of the automobile industry (Chan et al., 2011; Kushwaha & Sharma, 2016; Orsato & Wells, 2007; Szász et al., 2021; Zhu & Sarkis, 2006). These motivation drivers were also prevalent in this thesis. In this research, the internal motivation of both managers and employees is also an important motivation for DAF to become more sustainable. This motivation driver is only mentioned by Zhu and Sarkis (2006), so, this is a slight difference between this thesis results and the literature. Similarly, the motivation image is one of the drivers that is supported in the automobile literature to influence automobile companies to be more sustainable (Zhu & Sarkis, 2006). The article of Zhu and Sarkis (2006) focuses on passenger cars in China, so that could be a reason that image perception is a more prevalent reason in their article. Their article is also had mentioned that governments of other countries have a large impact on the sustainability practices of passenger car companies, while DAF only mentions the E.U. and rarely the U.S.A due to PACCAR. This could also be because DAF has a different business model than passenger car companies; DAF has a business-to-business model and passenger car companies a business-to-consumer model. Another reason could also be that DAF mostly sells trucks in Europe and a bit in Australia and South-America. In other continents are mostly second-hand DAFs sold.

6.3. Other literature themes and DAF

This part of chapter 6 discusses the other literature themes that involve DAF. These different themes or views create a new perspective on this thesis. Several themes are discussed: the bio-based economy, circular economy, autonomous driving, next-day delivery, and the sustainable market transformation strategy of governments.

Bio-based economy

As Asveld et al. (2019) mentioned, the bio-based economy is up and coming. However, a few challenges are rising with the bio-based economy as well. As was mentioned in interviews as well with the external circumstances, sometimes the new sustainable products do not sell due to a lack of infrastructure or due to politics holding the new products back. This was also the case with the biofuels for DAF trucks; these trucks are barely sold because there is no infrastructure in the whole of Europe for biofuels, and some countries oppose the use of biofuels. Asveld et al. (2019) also mentioned this as a challenge for the bio-based economy. Furthermore, on the DAF site, it was said that these biofuels do not influence food security which Asveld et al. (2019) mentioned as one of the challenges. So, the last challenge should not be that influential for the bio-fuels that DAF trucks can drive on.

Circular economy

A circular economy means that no new materials are used. This can be done in several ways, like recycling, reusing, and recovering materials. A circular economy has several wins that are also

mentioned in this thesis to drive DAF to be more sustainable. These are reduced costs from environmental taxes and raw materials/energy, a greener image, attracting investors, more use of the materials, and new employment possibilities (Korhonen, Honkasalo, & Seppäla, 2018). For DAF, the most influential drivers are governance regulations, costs reduction, attracting customers, improving processes, and innovation. So, if the costs were reduced, it would attract investors, and governments would push it, then DAF could change its business model to a circular one. However, these are a few scenarios that are not yet present. Besides, DAF is already participating in circularity in some ways, with the R-products, engine return option, recycling, and the use of wooden boxes as packaging in the Netherlands. The R-products and engine returns are ways of reusing products that were sold for a second time. The products are fixed and sold again for a lower price, which makes them attractive to their customers to buy.

Autonomous driving

Thomas (2019) mentioned a current theme in the transport industry: autonomous driving. Documents 13 and 45 that were analysed report about the tests that DAF is doing in collaboration with other companies to bring autonomous trucks on the market. For environmental sustainability, reducing emissions, this development would be better. As mentioned in document 39, drivers must learn eco-driving to minimise emissions during transport. And in document 41, truck platooning is explained. This wireless system allows trucks to drive in close formation, reducing emissions and resulting in safer traffic flows. However, autonomous trucks would result in less employment for truckers. Additionally, Maurer, Gerdes, Lenz and Winner (2016) found more challenges with autonomous driving systems.

Maurer et al. (2016) recognise that the automobile industry has increased its technical ability to implement autonomous driving. However, ethical and human challenges still need to be solved. The ethical question refers to what is the right thing to do. Humans can decide what they think the better solution is on the spot; a computer cannot unless programmed to do one thing over other things. For example, should a computer regard the safety of the passengers of the vehicle higher or the safety of pedestrians/passengers of another vehicle higher? Should an autonomous vehicle always brake, which damages the car or goes around/go through obstacles, which results in less damage. However, autonomous vehicles could register objects and living beings as the same thing. These questions apply in numerous cases where the "best" answer can differ. So, what about human intervention? This would mean that humans should stay focused and monitor the computer while driving. If the passenger is doing other activities, the reaction time of 1-2 seconds during driving increases to 40 seconds. Monitoring computers while it travels is already used in the aviation industry; pilots do not fly aeroplanes but primarily monitor the computer. It has resulted in a decrease in accidents, so aviation travel has become increasingly safer. However, there are three negative consequences of only monitoring: insufficient or excessive trust, a reduction of manual and cognitive capabilities, and maintaining an appropriate degree of the situation and system awareness. So, if DAF or PACCAR were to continue with the development of autonomous trucks, some ethical and human challenges should be discussed.

Next-day-delivery

Buldeo Rai, Verrlinde and Macharis (2019) mention that the last mile delivery accounts for 13-75% of the total supply chain costs due to the expectation of society to want to have products as fast as possible. These short delivery terms hinder the efficient routing of packages. In addition, the low delivery location density and remote logistics facilities add to the inefficiencies. These two reasons result in at least five times the costs for retailers to sell products online versus in-store. Consumers also expect free delivery or are unwilling to pay for delivery while expecting the packages to arrive on the day, the next day, or within a few days. This results in a vicious cycle making the sustainability and inefficient problems larger and larger. Aside from making the transportation mode of the last mile more sustainable as DAF and PACCAR are doing, there are also several other options to reduce the environmental impact. For example, instead of home delivery, local pick-up points and lockers could be used. These make the routing more efficient for the last mile delivery. However, not all consumers care enough about sustainability to choose more sustainable options. This provides an opportunity for DAF to convince the end consumers or possibly their consumers to choose sustainable options. The research of Buldeo Rai

et al. (2019) does confirm that end-consumers are willing to wait longer for their order if the delivery is free, and others are willing to deliver their packages to pick-up points. This would both result in more sustainable and more efficient transport.

Sustainable market transformation strategy of governments perspective by Simon and Nijhuis (2021)
A systematic change is necessary to solve the sustainability problems we face today. The issues tackled now are just symptoms of the underlying structure (Simon & Nijhuis, 2021). This can also be said about the thesis; it looks at only at why DAF wants to be more sustainable and solely addresses the symptoms that one actor influences. The institutions that DAF is part of are not considered in this research. As mentioned in the introduction, less than a quarter of the listed companies in the world are addressing global warming, let alone other sustainability challenges. To address the climate crisis, commitments to protect the environment are increasing; paradoxically, the emissions produced by those companies are also increasing. Based on voluntary measurements, some corporations did reduce their emissions; however, a fundamental change in all industries has yet to happen (Ziady, 2021).

This also aligns with what Simon and Nijhuis (2021) say about systematic changes; a single actor cannot change a system problem such as climate change. Actors are influenced by each other and their understandable, self-serving, and self-optimising motives. Understanding the reasons for a single company such as DAF shows the actors playing in the same institution. In this case, customers, suppliers, employees, shareholders, PACCAR, municipal governments and the E.U. All these actors have collective behaviours, meaning all actors contribute to the problem, a system problem which is hard to solve. These behaviours can be interpreted as reinforcing loops and balancing loops to keep the current system repeating. Reinforcing loops make something continuously bigger or smaller, leading to the unavoidable collapse of a system when nothing is done about it. Balancing loops are loops that balance out the system. So, a single actor changing their practices voluntarily and leading by example is the way to improve the system problem, right? Not according to Simon and Nijhuis (2021), the only thing that changes is lower profit for you and higher profit for the competitors. Even worse, when the problem is happening and actors realise it, there is an increased chance that the actors will accelerate the system's collapse. This is due to the behaviour called 'prisoners dilemma'; actors may not want to cooperate, even if it is in their own best interest to do so. Actors are inclined to choose the 'freeriding' behaviour, meaning that they want to benefit from the actions of others while doing nothing themselves. So, paradoxically it is better to wait and benefit from a failing system than to go first and try to change it.

Applying the loops theory to the automobile industry

1. Loop 1: market dynamics: the automobile industry is an industry that is hard to step into due to the high investments upfront to make a vehicle. The vehicles produced are used in the transport industry by citizens wanting a car to travel. The vehicles and fuels are mainly produced from non-renewable resources. Consumers of cars often want one that has efficient fuel use, is not too expensive and has a quality/luxury feel. Consumers wish, therefore, to make the most of their money. And the automobile production companies want to reduce their costs as well. A lot of industries are also dependent on the automobile industry, the need their products distributed and transported, on land transport the truck is the most used option still. Ships, trains and aeroplanes cannot reach every place, have too high costs, or take too long. The automobile industry is, therefore, both desirable by other sectors and end consumers. The global competition puts the automobile companies also pressure on prices, which makes it difficult for individual companies to take a sustainable approach. This changed due to some companies, especially Tesla, creating an electric truck. This changed the market and collective behaviour of the automobile industry; all automobile companies started to put vehicles with hybrid or electric engines on the market.
2. Loop 2: enabling environment. More transport movements mean more vehicles sold and more employment. This results in more taxes and more economic development for countries. The involved ministries are satisfied by economic growth and less unemployment. Besides, transport is needed to stimulate other industries in their economic growth and have more employment. Governments want to reduce the impact of the automobile or transport industry but also want it

to keep growing to fulfil the short-term economic and social interests of governments. Governments try to minimise the impact by only allowing zero-emission vehicles in cities or by making companies produce cars with a particular fuel efficiency standard, like the Euro 6 standard for new manufactured heavy-duty vehicles.

3. Loop 3: mismatch benefits and effects. The automobile industry, transport industry, industries that transport their goods, and travellers on land transport all benefit from an ever-expanding growth and volume of the sector. Travellers, for example, can go faster from A to B or have more accessible public transport. Governments also benefit from the ever-expanding automobile industry; they are responsible for protecting the public good but also have a short-term mindset.
4. Loop 4: lack of alternatives. Aside from diesel vehicles, there are also petrol, electric, hydrogen, hybrid, and bio-fuel vehicles. Despite these options, non is ideal, while some are better than others. The diesel and petrol vehicles are driving on fossil fuels, which are non-renewable and likely the worst option. However, they have advantages: an efficient combustion engine, an available infrastructure to refuel the vehicles, long-range refuelling takes almost no time, and the cars are cheaper to buy. Hybrid vehicles have the advantages of a diesel or petrol car; they are only more expensive to purchase upfront. Hybrid vehicles, furthermore, could be both made with a dynamo, the car recharges the electricity by driving, or with a charge point, so a charging station needs to be available in this case. Electric vehicles emit less GHG emissions when green energy is used, not necessarily when grey electricity is used. Hydrogen is even less efficient in energy use than electric vehicles as of now; it either needs fuel or electricity to burn water to drive the vehicle. Bio-fuels have a problem in that land is required to make bio-fuels on.

   Furthermore, some disadvantages of Electric, hydrogen and bio-fuel vehicles are the same; there is no accessible infrastructure to charge/refuel the vehicles across a continent, yet, different governments prioritise different solutions. The range is not as far as diesel or petrol vehicles, they are more expensive up front, and installing a new infrastructure to refuel or recharge the vehicles is also costly. Hydrogen and biofuels have the advantage that refuelling takes almost no time. Electric vehicles do not share this advantage; the recharge time of an electric car is a disadvantage. There is no real alternative mode of transport; there are trains, motorcycles and bicycles to travel on land. Trains do not reach everywhere and take more time. Motorcycles can only transport 1 or 2 people, cannot transport high volumes, and are less desirable in lousy weather. Bicycles take more time and effort to transport and are also less desirable in lousy weather.

So, the automobile industry is still in phase 1. Local governments are experiencing backlash from residents for having too much air pollution in the cities, so the governments have made zero emissions zones. The automobile industries offer electric and hybrid cars and are still testing biofuel and hydrogen cars. The transport industry itself offers CO2 certificates. Some vehicle companies are committed to only producing electric vehicles; however, not every company does this yet. All companies are building their electric cars and are testing with

6.4. Recommendations

In this last part of the thesis, recommendations are given for both future research and policies.

Further research

What is supported is that image perception is a driver of influence for the automobile industry to become more sustainable (Zhu & Sarkis, 2006). As mentioned before, the article of Zhu and Sarkis (2006) focuses on the whole automobile industry of China, while this thesis only looks at the truck vehicle. The customers and interaction between society and the company could be completely different. For example, DAF is a business-to-business company; individuals do not buy a truck, while a car company is a business-to-consumer company. Future research could investigate whether these different types of automobile companies have various motivational drivers to become sustainable.

Another suggestion for future research is about the direct, indirect and in-between drivers. A quantitative analysis would be appropriate to find out how the industry interacts with each other. Does the government push all the actors, or is it, as Simon and Nijhuis (2021) mentioned, that all actors keep each other in a loop of behaviours. Some participants in the research even said that the automobile industry has a bit of influence to change the legislation to make the trucks more sustainable.

Policies

The automobile industry was identified as a conservative industry in the interviews, meaning that automobile companies do not change to more sustainable practices from their principles. However, when a new company like Tesla announces a new innovative product, the whole industry changes with the new company. This is also the case for the government, like the municipal legislation, to have zero emissions in their cities. This means that the whole industry has to change its products as well. Otherwise, their customers can no longer drive in those cities with their vehicles.

As Simon and Nijhuis (2021) mentioned, if the government acts too early and too harsh, it sets the progress of awareness and willingness to change back to the start, which means that actors are not willing to do anything anymore. So, I would like to suggest that governments continue spreading awareness and introduce the well-to-wheel approach sooner. This is to make more actors responsible for the emissions during transport. And I would recommend a European policy for the infrastructure of renewable fuels. It is not beneficial for the transport sector to change vehicles because some countries do not support, e.g., the bio-fuels. The infrastructure for renewable fuels should be discussed by all countries or at least incorporated into all countries. To stimulate companies even more in driving more sustainable, a subsidy for, partly, the costs of putting charging stations or other sustainable fuel stations on the site of companies.

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Appendix 1: Sustainability drivers from literature in chapter 2.3

Drivers	Authors
Continuity of business	Davis (1973); Kushawa & Sharma (2016)
Cost savings	Baron (2004); Borchardt et al. (2009); Fronel et al. (2008); Grimstad et al. (2019); Hahn & Scheermesser (2006); Landrum (2017); Santos (2011); Zhu & Sarkis (2006)
Customer wishes	Campopiano et al. (2012); Carroll (1979); Fronel et al. (2008); Santos (2011); Szász et al. (2021); Vercalsteren (2001); Windolph et al. (2013); Zhu & Sarkis (2006)
Efficiency	Borchardt et al. (2009); Brockhaus et al. (2017); Chan et al. (2011); Daily & Huang (2001); Orsato & Wells (2007); Santos (2011); Szász et al. (2021); Weizsäcker (2009); Windolph et al. (2013)
Employee wishes	Daily & Huang (2001); Fronel et al. (2008); Landrum (2017); Santos (2011); Zhu & Sarkis (2006)
Firm size	Grimstad et al. (2019)
Governmental pressure	Borchardt et al. (2009); Campopiano et al. (2012); Carroll (1979); Davis (1973); Daily & Huang (2001); Fronel et al. (2008); Grimstad et al. (2019); Hahn & Scheermesser (2006); Orsato & Wells (2007); Santos (2011); Schaltegger & Burritt (2010); Szász et al. (2021); Vercalsteren (2001); Weizsäcker (2009); Windolph et al. (2013); Zhu & Sarkis (2006)
Green organisations pressure	Fronel et al. (2008)
Image creation	Borchardt et al. (2009); Brockhaus et al. (2017); Buehler and Shetty (1974); Davis (1973); Fronel et al. (2008); Hahn & Scheermesser (2006); Kushawa & Sharma (2016); Santos (2011); Schaltegger & Burritt (2010); Zhu & Sarkis (2006)
Innovation	Kushawa & Sharma (2016); Vercalsteren (2001); Weizsäcker (2009)
Internationalisation	Grimstad et al. (2019)
Legal compliance	Buehler and Shetty (1974)
Managers wishes	Daily & Huang (2001); Ergene et al. (2020); Kulözü-Uzunboy & Sipahi (2022); Landrum (2017); Sipahi (2022); Yu et al. (2008)
Market competition	Borchardt et al. (2009); Hahn & Scheermesser (2006); Landrum (2017); Schaltegger & Burritt (2010); Vercalsteren (2001); Zhu & Sarkis (2006)
Prevention of future problems	Buehler and Shetty (1974); Davis (1973); Fronel et al. (2008)
Profit increase	Baron (2004); Buehler and Shetty (1974); Carroll (1979); Davis (1973); Grimstad et al. (2019); Hahn & Scheermesser (2006); Landrum (2017)
Resource scarcity	Brockhaus et al. (2017); Davis (1973); Gold (2010); Hahn & Scheermesser (2006); Landrum (2017); Weizsäcker (2009); Windolph et al. (2013); Zhu & Sarkis (2006)
Shareholder wishes	Campopiano et al. (2012); Davis (1973); Hockerts & Moir (2004); Szász et al. (2021);Windolph et al. (2013)
Societal pressure	Campopiano et al. (2012); Carroll (1979); Davis (1973); Huhn & Scheermesser (2006); Kushawa & Sharma (2016); Szász et al. (2021); Windolph et al. (2013); Zhu & Sarkis (2006)
Supplier pressure	Campopiano et al. (2012);Szász et al. (2021); Vercalsteren (2001); Zhu & Sarkis (2006)
To attract future employees	Windolph et al. (2013)
Union wishes	Fronel et al. (2008)
Urbanisation	Ellen MacArthur Foundation (2015)
Value chain	Kushawa & Sharma (2016)
Values company	Brockhaus et al. (2017); Fronel et al. (2008); Grimstad et al. (2019); Hahn & Scheermesser (2006); Santos (2011); Schaltegger & Burritt (2010); Vercalsteren (2001)

Appendix 2: Public documents that were used in the analysis

Reference number	Type of publication	Name	Date published/ retrieved from site	Link
1	DAF media publications	15% saving on fuel with a nearly-new DAF truck	17-01-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q1/15-01-2020-saving-on-fuel-with-a-nearly-new-daf-truck
2	DAF media publications	First DAF CF Electric refuse collection truck delivered to ROVA	16-03-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q1/16-03-2020-cf-electric-refuse-collection-truck
3	DAF media publications	Waste recycler Renewi orders another 200 trucks from DAF	18-05-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q2/18-05-2020-waste-recycler-renewi-orders-another-200-trucks-from-daf
4	DAF media publications	DAF introduces CF Electric with Extended Range	02-09-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q3/daf-introduces-cf-electric-with-extended-range
5	DAF media publications	DAF expands roll-out of EcoDrive+ Training in Europe	23-09-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q3/23-09-2020-daf-expands-roll-out-of-ecodrive-plus-training-in-europe
6	DAF media publications	DAF receives important factory safety prize	19-12-2020 published	https://www.daf.com/en/news-and-media/news-articles/global/2020/q4/19-10-2020-daf-receives-important-factory-safety-prize
7	DAF media publications	DAF LF Electric for ‘zero emission’ urban distribution	17-01-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q1/27-01-2021-daf-lf-electric-for-zero-emission-urban-distribution
8	DAF media publications	DAF strengthens position in 2020	04-02-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q1/daf-strengthens-position-in-2020
9	DAF media publications	DAF expands DAF Connect functionality	06-04-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q2/06-04-2021-daf-expands-daf-connect-functionality
10	DAF media publications	DAF introduces charging stations for electric vehicles	29-04-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q2/29-04-2021-daf-introduces-charging-stations-for-electric-vehicles
11	DAF media publications	Drive the New Generation DAF XG and XG+ online	22-07-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q3/drive-the-new-generation-daf-xg-and-xg-plus-online

12	DAF media publications	DAF XF achieves hat-trick of 'Fleet Truck of the Year' titles	15-09-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q3/daf-xf-bags-hat-trick-of-fleet-truck-of-the-year-titles
13	DAF media publications	PACCAR begins extensive field test with self driving trucks	29-09-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q3/paccar-begins-extensive-field-test-with-self-driving-trucks
14	DAF media publications	Start series production New Generation DAF	04-11-2021 published	https://www.daf.com/en/news-and-media/news-articles/global/2021/q4/04-11-2021-daf-starts-series-production-new-generation-daf-trucks
15	DAF media publications	DAF Trucks in 2021 solid performances in challenging year	31-01-2022	https://www.daf.com/en/news-and-media/news-articles/global/2022/q1/31-01-2022-daf-trucks-in-2021-solid-performances-in-a-challenging-year
16	DAF media publications	Paccar Exhibits Innovative Electric Connected and Autonomous Trucks at CES 2022	05-01-2022 published	https://www.daf.com/en/news-and-media/news-articles/global/2022/q1/paccar-exhibits-innovative-electric-connected-and-autonomous-trucks-at-ces-2022
17	DAF media publications	DAF starts field test of new generation distribution trucks	07-02-2022 published	https://www.daf.com/en/news-and-media/news-articles/global/2022/q1/08-02-2022-daf-starts-field-test-of-new-generation-distribution-trucks
18	DAF media publications	DAF delivers five CF Electric trucks to Amazon UK	24-03-2022 published	https://www.daf.com/en/news-and-media/news-articles/global/2022/q1/24-03-2022-daf-delivers-five-cf-electric-trucks-to-amazon-uk
19	DAF environment site	Environmental Management System and certification	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/daf-environmental-policy/environmental-certification
20	DAF environment site	PACCAR Environmental, Social and Governance	28-03-2022 retrieved	https://www.paccar.com/about-us/environmental-social-and-governance/
21	DAF environment site	Emissions to air	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/emissions
22	DAF environment site	Noise	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/noise-reduction
23	DAF environment site	Use of Water	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/use-of-water

24	DAF environment site	Energy consumption	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/energy-consumption
25	DAF environment site	Soil	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/soil
26	DAF environment site	Waste	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/production-and-the-environment/zero-waste-to-landfill
27	DAF environment site	Our products	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/our-products-and-the-environment
28	DAF environment site	Production	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/our-products-and-the-environment/production
29	DAF environment site	Use	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/our-products-and-the-environment/use
30	DAF environment site	Alternative fuels and drivelines	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines
31	DAF environment site	Battery Electric Vehicles	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/battery-electric-vehicles
32	DAF environment site	Hybrid Electric Vehicles	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/hybrid-electric-vehicles
33	DAF environment site	Clean diesel technology	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/clean-diesel-technology
34	DAF environment site	Hydro-treated Vegetable Oil	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/clean-diesel-technology/hvo
35	DAF environment site	Power-to-liquid	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/clean-diesel-technology/power-to-liquid
36	DAF environment site	Hydrogen	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/alternative-fuels-and-drivelines/hydrogen
37	DAF environment site	Disposal	28-03-2022 retrieved	https://www.daf.com/en/about-daf/daf-and-the-environment/our-products-and-the-environment/disposal
38	DAF sustainability site	Sustainability	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability
39	DAF sustainability site	Driving & Performance	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/driving-and-performance

40	DAF sustainability site	Intelligent Logistics	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics
41	DAF sustainability site	DAF Ecotwin/Ensemble	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics/daf-ecotwin
42	DAF sustainability site	DAF EcoCombi	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics/daf-ecocombis
43	DAF sustainability site	TelliSys	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics/tellisys
44	DAF sustainability site	Bid data	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics/daf-big-data
45	DAF sustainability site	Urban distribution 2050	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/intelligent-logistics/urban-distribution-2050
46	DAF sustainability site	Legislation	28-03-2022 retrieved	https://www.daf.com/en/about-daf/sustainability/legislation
47	DAF brochure sustainability	ON THE ROAD TO EVEN CLEANER ROAD TRANSPORT	28-03-2022 retrieved	https://www.daf.com/-/media/files/document-library/brochures/sustainability/daf-brochure-duurzaamheid-en-531456.pdf
48	DAF environmental achievements	Environmental achievements product development	28-03-2022 retrieved	https://www.daf.com/-/media/files/daf-corporate/environment/daf-environmental-achievements-product-development-en.pdf
49	PACCAR ESG	PACCAR ESG presentation	28-03-2022 retrieved	https://www.paccar.com/media/3192/paccar-esg-presentation-january-2022.pdf
50	DAF sustainability report	Sustainability report 2020	28-03-2022 retrieved	https://www.daf.com/-/media/files/daf-corporate/environment/sustainability-report-2020-en.pdf

Appendix 3: Quotes used from informal conversation/interviews

Quote number	Source	Employee/ Document/ Stakeholder	Dutch	English
1	Documents	4		That is why DAF offers its customers support through advanced route simulation models to help devise the most efficient planning for their vehicle, including useful advice on smart and efficient recharging of the battery. DAF also offers advice – together with selected suppliers, such as VDL – regarding the optimal charging infrastructure
2	Documents	20		PACCAR's ESG approach is focused on environmental leadership, social responsibility, ethical business conduct, and corporate governance practices that enhance shareholder value.
3	Documents	29		Engine design is therefore an extremely important part of product development. For 60 years, DAF has built its own engines, and in that time it has earned a worldwide reputation for highly efficient engines that have as little impact on the environment as possible
4	Documents	36		DAF's philosophy is that we need to explore the full suite of technologies on the road of decarbonisation of road transport. Next to battery electric solutions which we already offer today and hybrid trucks which we have under development, hydrogen technology may become a very interesting option for the future
5	Documents	47		"On the road to a cleaner future" means that we need to focus on reducing CO2 emissions, which contribute to global warming. This is a global challenge. In addition, we need to take action regarding the air quality in our cities — this includes emissions such as nitrogen oxides (NOx) and particulate matter (PM). This is a local issue.
6	Documents	49		PACCAR is the provider of choice for autonomous driving technology companies. The majority of the autonomous test trucks on U.S. roads today are Peterbilt and Kenworth
7	Documents	49		Foundation Vision: To enhance, enrich and positively impact the communities in which our employees live and work. Foundation Values: We are committed to philanthropic efforts that support the areas of Education, Social Services and the Arts. We believe that with education comes opportunity and that the arts and social services enhance and enrich our communities.

8	Informal conversation	17	DAF maakt zich alleen zorgen over duurzaamheid omdat het hip en trendy is om duurzaam te zijn.	DAF is only concerned about sustainability because it is hip and trendy to be sustainable.
9	Informal conversation	24	De ROI is belangrijk als we bij DAF iets willen doorvoeren, zonder een goede ROI gaat het feest niet door!	The ROI is important if we want to implement something at DAF, without a good ROI it won't be implemented!
10	Interview employee	A	Wij hebben we hebben dit zeg maar niet voor ieder artikel, maar voor de artikelen zeg maar waar we het wel hebben. Dan zie je toch wel vaak dat dat meer dan 75 procent van de van de aankopen die dan worden gedaan toch wel op het R-deel zitten dus op het recyclede deel wat goedkoper is. Dus dan zie je eigenlijk wel bij de meeste artikelen wel terug waarvan men een R-deel aanbiedt, dan wordt dat ook meer verkocht dan het gewone deel.	We do not have this for every article. But for the articles, say, what we do have it for, then you often see that more than 75% of the purchases that are made are on the R part. So, on the recycle part which is cheaper. So, you actually see that with most articles of which we offer an R part, then that is also sold more than the normal part.
11	Interview employee	A	Ik weet niet of dat per se duurzaamheid is, maar het is wel een stukje efficiency wat ook wel ten goede komt van de uitstoot. Dus dat, zeg maar, in ons planning systeem kunnen we instellen hoe hoe vaak je iets wil inkopen. Dus hoeveel dagen van de vraag wil je minimaal inkopen? Dus wordt eigenlijk forecast gemaakt	I don't know if that is really sustainability. But it is a bit of efficiency, which also benefits emissions. So that. In our planning system, we can set how often we want to buy something. So, for how many days do we want to buy the demand at least? So, a forecast is being made.
12	Interview employee	B	Je ziet een nieuwe generatie mensen die binnenkomen. Plus de de laatste vijf jaar die is veel meer, die vraagt ook punten in een job interviews naar wat doen jullie aan duurzaamheid en wat doe jullie aan milieu?	There is a new generation of people coming in. Especially in the last five years that has increased. They also ask about it in job interviews. Such as: "but, what are you doing about sustainability and what are you doing about the environment?"
13	Interview employee	B	De doelen van binnen op dit bedrijf, die worden eigenlijk vanuit board management niveau vastgelegd. En daarna eigenlijk gewoon gecascadeerd naar beneden. En ja, daar staan ze niet in. Ik weet dat weet ik ook niet precies. Dus. Ja, ik persoonlijk zeg maar, ik zet het doel wel, want je hoeft niet alleen, jij krijgt niet alleen maar die doel, je kan ook originele doelen stellen. Dus ik stel het dus ik persoonlijk stel zowel voor mezelf en ook voor mijn team. En zo zijn er nog meer hoor. Alleen d'r is ook een groep een redelijke groep die dat niet doet, dus dat zal toch dan vanuit boven moet boven in de top moeten komen en daar gebeurt het niet op die manier op die schaal is misschien ook lastig. Van hoe ga je dat nou bepalen.	The goals within the company are actually set at the board management level. And those go down the company. But they're not in there. I don't know it exactly either. So, personally, I do set a goal. You don't have to, you don't just get a goal, you can also set original goals yourself. So, personally, I set them both for myself and also for my team. And there are more [who do that as well]. Just not the entire group. If not the entire group [sets goals], then it will have to come from above at the top. And it doesn't happen there, on that scale it might also be difficult, because how are you going to determine that.
14	Interview employee	C	Dus als je daarin kan reduceren, dan heeft dat marktwaarde op zich. Dus als wij een auto zuiniger maken met brandstof, dan is dat altijd een verkoopargument voor de auto. Dus dat is niet alleen idealiter voor, goed voor de voor het milieu en maar dat is ook goed om die auto competitief te maken.	So, if you can reduce that, it has market value in itself. So, if we make a car more fuel-efficient, then that is always a selling point for the car. So not only is that ideally good for the environment, but that's also good for making that car competitive.

15	Interview employee	C	En daarnaast, en dat is dat helpt natuurlijk ontzettend met dingen als de green deal waarbij we uitrollen. Dat wil zeggen dat we in 2025 zoveel procent schoner moeten zijn qua CO2 uitstoot (...) En die getallen, die kunnen op een gegeven moment niet meer gehaald worden met een brandstofmotor. Dus dan zul je zien dat we ook een transitie moeten gaan maken naar auto's die bekend staan als de zero emissie. (..). Ja, dan heb je het natuurlijk bijvoorbeeld over elektrische auto's. En dan heb je het over auto's die op waterstof rijden en nog nog veel andere. Want er zit eigenlijk veel meer in dit palet. En daar zijn we natuurlijk ook volop mee bezig. Want die kunnen we niet, zeg maar in 2025 ineens op de markt zetten.	And besides, it helps of course a lot with things like the green deal that are rolled out. So, we say that by 2025 we must be that much cleaner in terms of CO2 emissions. (…) And those numbers can no longer be achieved with a fuel engine at a given moment. So, you will see that we also have to make a transition to cars that are known for zero-emissions. These are for example electric cars. And also, cars that run on hydrogen, and many more. Because there are actually much more. And of course, we are also working hard on that. Because we cannot suddenly put them on the market in 2025, so to speak.
16	Interview employee	C	In de industrie kunnen we helemaal niet de performance van een DAF uitrekenen en de volumes van een Mercedes uitrekenen en zeggen: "kijk is, DAF is de groenere auto. U moet DAF kopen." Dat is zo'n ingewikkelde berekening daar kom je nooit uit. En dat zal Mercedes niet accepteren (...). Dus is de dat blijkt niet heel erg te helpen om een auto zeg maar af te kunnen zetten en dan als het onderdeel daar wel duurder van wordt, maar het helpt niemand, behalve dan het milieu (...). Dan is het heel erg moeilijk om om om de groenere keuze te maken, dus we zien dat dat niet zo efficiënt is.	In the automobile industry, we cannot calculate the performance of a DAF and that of a Mercedes and say: Look, DAF is the greener car. You should buy DAF. That is such a complicated calculation And Mercedes would not accept that. (...) It doesn't seem to help much to sell a car, so to speak, and as a part of it, the truck becomes more expensive. That doesn't help anyone, except the environment (...). That makes it very difficult to make the greener choice, so we find that it is not very efficient.
17	Interview employee	D	We zijn heel erg te bang, heel lang te bang geweest dat dat hetgeen wat we aanbieden niet goed genoeg is. Plus wij zeggen altijd: doe maar normaal dan doe je al gek genoeg.	For a long time, we have been too afraid. All along we have been too afraid that what we offer is not good enough. Plus, we always say be normal and you'll be crazy enough.
18	Interview employee	D	In september, gaan wij opnieuw electric onder de aandacht brengen met wat nieuwe producten. Zeg maar een witte versie van die truck achter jou. Wat supergaaf is. Wat enorm veel aandacht gaat genereren.	In September, we are going to promote the electric truck again with some new products. A white version of this truck [at the back of the screen]. Which is super cool and will generate a lot of attention.
19	Interview employee	E	. Dus duurzaamheid en ook op het gebied van van, van sociaal, in financieel en met je mensen omgaan, zie je, is heel belangrijke mensen. En dus ook de de de arbeidsmarkt verandert. Het als je ziet hier in in de regio waar je natuurlijk, als je het hebt over mensen aannemen, heel veel last van een bedrijf als ASML, die op dat gebied ook wel veel verder zijn dan dan dan DAF met duurzame inzetbaarheid: graag ergens willen werken.	So, sustainability as well as treating your people socially and financially well. You see that it is very important for people and thus also for the labour market, which is changing. Here in the region, if you look at people, you will of course notice that a company like ASML is hiring a lot of people. They go much further than DAF in that field [sustainability]. Especially because of sustainable employability, people want to work there.
20	Interview employee	E	Heel veel mensen hier in productie die ook gewoon echt zeggen van ja kijk die truck die daar rijdt, daar heb ik stuurwiel van gemonteerd of zo weet je wel, (…) elke truck is een beetje van van de mensen die hem gebouwd hebben.	Many people here in the production also just say: "Yeah, look at that truck driving over there, I mounted the steering wheel on it", or something like that (...). Every truck is a bit of the people who built it.

21	Interview employee	E	Zijn wij duurzaam vanwege de regels die d'r zijn of externe omstandigheden waar wij niks aan konden doen zoals Corona en dus dat dat aspect van thuiswerken is niet omdat wij in onze ziel vinden dat dat bijdraagt aan duurzaamheid. Maar, daartoe werden we gedwongen door Corona.	Are we sustainable because of the existing rules or because of external circumstances that are beyond our control, such as Corona? And so that aspect of working from home is not because we believe in our heart that it contributes to sustainability. But we were forced to do so by Corona.
22	Interview employee	F	en let daar goed op, want alles wat je niet goed scheidt, dat kost a veel geld. En dan ja, belast het milieu. Daar wat ik er wel bij zeg: ja, je speelt met je eigen winstuitkeringen. (…) En dat is me het beste voor een hoop mensen wel een doorslag	Pay attention to that, because everything you don't separate well, that costs a lot of money. And by doing so, you are also burdening the environment. I do add then: " you are playing with your own profit": "Yes, you are playing with your own profit". (...) After all, that is the best argument and a decisive factor for a lot of people.
23	Interview employee	F	Nou, dat is een stukje milieu, maar ook een stukje. Kijk, als we elektrische trucks gaan verkopen moet je op een bepaalde service bieden. Ja, en als ik daar een motivatie waarom ik niet binnen die die reeds van wel dan zeg ik 200 kilometer zit in die leveranciers om die elektriciteit sorry elektrische trucks aan te schaffen en die naar DAF te komen, wetend dat ze hierbij kunnen laten zien.	Well, that's part of the environment, but also part. Look, if we are going to sell electric trucks, you also have to offer a certain service. And when I ask for a reason why I don't see those within DAF [charging stations]. Then I say sell to the ones that are 200 kilometres around it. To encourage suppliers to buy electric trucks and drive them to DAF, knowing that they can recharge here.
24	Interview employee	F	Ja, wij hebben een project dat duurzame inzetbaarheid en dat is bedoeld om de mensen gezond naar hun pensioen toe te leiden op een bepaald punt natuurlijk. En daar horen onder andere bij die dingen, want d'r gaan nu ook, moet dat stemmen op om bijvoorbeeld roken helemaal te verbieden op het terrein.	Well, we have a project called sustainable employability and it is designed to lead people to a healthy retirement. From a certain point, of course. That includes these things [employee wellbeing], for example, we are now going to vote to ban smoking altogether on the premises.
25	Interview employee	G	Ja, voor DAF zelf kan duurzaamheid wel belangrijk zijn door die, ja, alle vrachtwagens die rijden nou ook op diesel en der was den diesels schandaal geweest tijdje terug. En ik denk dat het daarvoor wel handig kan zijn om mijn imago te verbeteren, want en wij zitten nog de komende 10 jaar of 15 jaar of 20 jaar nog wel vast aan die diesel,	For DAF itself, sustainability may very well be important because of that scandal. All trucks run on diesel and there has been a diesel scandal a while back. So, I think it could be useful for that, also to improve their image. Because for the next ten, fifteen or twenty years, we will still be stuck with diesel.
26	Interview employee	G	Ja, dat zie ik ook bij ons op de werkvloer. (...) Maar daar heb ik nou elke ochtend gelijk een meeting van met alle processen samen zeg maar. En daar? Ja, dan zie je gewoon als productiviteit in rood komt dan gaan alle alarmbellen af en dan wordt daar op gefocust	I see that on the work floor as well. (...) Then, in the morning, I have a meeting of the people with all the processes together, so to speak. And there? You see, if productivity is in the red, then all the alarm bells go off and the focus is on that.
27	Interview employee	G	En wij proberen een manier te bedenken om zodat ze niet kapotgaat, en dan is het eerste wat dat wordt gezegd is ja, wat levert ons op? Wow, bijvoorbeeld er zijn hele grote plastic onderdelen side skirts. En die gaan iets van 20 keer per jaar kapot onderweg. En wij hebben hebben een idee bedacht om die verpakkingen iets te verbeteren zodat ze niet kapot gaan onderweg.	And we try to think of a way to prevent it from breaking down. The first thing that is said about it is "yeah, what's in it for us?" Wow, for example, there are these big plastic parts, side-skirts. And they are damaged about twenty times a year when they are on the road. We came up with an idea to improve the packaging a little, so they don't get damaged during the transport.

28	Interview employee	H	En dan niet alleen wat wij uitstoot, maar ook wa wat je d'rin stopt dus niet (...) tank to wheel. Zo, daar worden wij op afgerekend. Wat stop je in een tank van een voor te gaan wat komt d'ruit? En wij proberen ook een beetje te lobbyen om dat meer naar een well to wheel approach te krijgen. Dus wat heb je nodig aan energie om, bijvoorbeeld uh diesel of waterstof, te te produceren en hoeveel verstook je het dan? En om dat zo neutraal mogelijk te krijgen. Dus het is een stukje wetgeving die we volgen en een stukje bewustwording van die wetgeving wat er nog meer kan worden gedaan en hoe we daar nog verder naar kunnen gaan kijken.	And not only what we emit, but also what you insert, so not (...) tank to wheel. That is what we are judged on: what do you put in a tank to move forward and what comes out of it? We are also trying to lobby a bit to get this more towards a well to wheel approach. So, what do you need in terms of energy to produce, say, diesel or hydrogen? And how much do you use to burn it, and thus to make it as neutral as possible. It is therefore a piece of legislation that we are following and a piece of awareness of this legislation; what more could be done and how we could look into this further.
29	Interview employee	H	[Voor de toekomst], We zijn bezig met elektrische voertuigen, daar moeten bijvoorbeeld de batterij pakketten moet gerecoverd worden. Hoeveel haal je uit een gebruikte batterij en ga je voor hergebruik in batterijen? Dat zijn zaken die wij proberen door te pushen naar de naar de organisatie. Dus dat is vooral uh wat dat betreft product gerelateerd.	[For the future], we are working on electric vehicles, for example, the battery packs have to be recycled. How much do you recover from a used battery and are you going to recycle batteries? These are issues that we try to push within the organisation. So that's mainly product-related.
30	Interview employee	H	Dus we worden uh qua wetgeving ook wel gewoon die richting op gestuurd. En wij moeten gewoon zorgen dat onze klanten die producten krijgen en en mogelijkheden krijgen om hun targets in verduurzamen ook goed te kunnen vervullen. En liever wij dan Mercedes	Thus, legislation is simply steering us in that direction. And we just have to make sure that our customers get the products and opportunities they need to meet their sustainability targets. And rather us than Mercedes.
31	Interview employee	I	Want uiteindelijk, als wij veel voertuigen mogen maken omdat de markt daarnaar vraagt, is dat per definitie goed voor voor DAF Trucks. Dan hebben we als het goed is in onze bedrijfsvoering een een factor winst opgenomen waar we het natuurlijk ook voor doen. Ja. Dus dan heb je een gezonde bedrijfsvoering.	Because at the end of the day, if we are allowed to make a lot of vehicles because the market demands it, per definition that is good for DAF Trucks. In that case, if all goes well, we will have included a profit factor in our operational management, which is naturally what we do it for. In other words, we would have a healthy business.
32	Interview employee	I	Ja, intrinsieke motivatie van medewerkers zelf. Je hoort meer en meer, althans ik hoor meer en meer terug, waarom dat we nu pas starten met gescheiden afvalsystemen in kantooromgeving. Terwijl dat mensen dat thuis bij de gemeente eigenlijk al jaren doen.	Indeed, intrinsic motivation of employees, you hear it more and more. At least, I'm hearing more and more about why we are only now starting to separate waste systems in the offices. Whereas, at home people have actually been doing this for years due to the municipality.
33	Interview employee	I	Dus ja, waarom dan nu pas? Ja, omdat we nu de kennis en de en de kunde denken te hebben of of in ieder geval er ingaan investeren die te ontwikkelen om om daartoe te komen. Dus waarom doe je niet eerder wat je vandaag doet? Ja, ik denk dat het ook een kennisontwikkeling is en een een een bewustzijnsontwikkeling die je daarvoor nodig hebt.	So, why now? Well, because we think we now have the knowledge and the skills. Or at least are going to invest in developing them to reach that point. So why not do sooner what you are doing today? Because I think it is also a matter of developing a bit of knowledge and a bit of awareness. Development is what you need for that.
34	Interview employee	J	Kijk en wat natuurlijk wel zo is, kijk de automotive is natuurlijk een sector; ja dat is bestaat al al. Nou ja, goed al zo lang. Maar, kijk de automotive, ja zeg maar, bestaat al zo'n beetje honderd jaar. Ze zijn een van de eerste van de industrieën. Ja, en het is	Look and of course, the automotive industry is a sector, well it' s been around for a long time. But look, the automotive, so to speak, has existed for about a hundred years. It is one of the first industries. And it is of course, a rather (...) labour-intensive

			natuurlijk, een een vrij (...) arbeidsintensief proces. En ja goed, de gemiddelde arbeider, als ik dat zo mag noemen, dat zijn natuurlijk niet de mensen die het meest vooruitstrevend zijn; dat is altijd zo. Maar goed, we zitten natuurlijk in een relatief oude industrie als je t zo mag noemen met een modern product. (...) En ook een ander opleidingsniveau. Want (...) de maatschappelijke veranderingen die komen ook vaak vanuit studenten et cetera	process. (…) Anyway, we are of course a relatively old industry, if you can call it that, with a modern product (...) and also a different level of education. Because (...) the social changes often come from students etc.
35	Interview employee	J	Ook ten minste niet meer in het huidige DNA. Kijk in het verleden, toen DAF is opgericht door de van Doorne's dat waren natuurlijk wel, zeg maar willie wortels maar, om zo te zeggen. Dus dat waren een beetje uitvinder achtige types. (...) Paccar is heel conservatief. Dus en uiteindelijk, ja, die cultuur, ja, daar moet je dan in mee. En ik denk dat met name openbarend is, en dat heeft ook z'n voordelen: ze hebben een heel degelijk financieel beleid et cetera.	At least not in the current DNA. Look in the past, when DAF was founded by the Van Doornes, they were, of course, the Gyro Gearloose so to speak. Those were the inventor types. (...) Paccar is very conservative, and ultimately, well, that culture, you have to go along with it. And I think it is particularly revealing and that has its advantages. They have a very solid financial policy, etc.
36	Interview employee	J	Moet jij terug zeg maar in in CO2, dat hebben ze, dat zegt de wetgever nog niet. Paccar zegt dat inmiddels wel, dus in die zin, maar wat natuurlijk wel zo is is de maatschappij vraagt hier wel steeds meer naar [CO2 reductie]	Back to CO2, they do, but the regulators are not yet telling us that. Meanwhile, Paccar is saying that, so that's that. However, obviously, society is requesting more and more of it [CO2 reduction].
37	Interview employee	J	Ik hoef geen marktaandeel van 20 procent. Nee, dat zeggen ze niet. Nee, dat willen ze namelijk wel. En dat, dus effe als voorbeeld, (...) dus bij ons zit, zit het, het zit er zo in om alleen maar van ja geld gedreven bezig te zijn zeg maar. En ja, dat dat dat is, dat is de driver.	I do not need a 20 per cent market share. No, they do not say that. No, they do want that. And so, just as an example, (...) so for us it's about being money-driven, so to speak. And yes, that is the driver.
38	Interview employee	K	Maar als ik even een directeur [naam], directeur van DAF Operations, kijk. Die zet milieu steeds, wel meer bewuster op de agenda van het managementteam. Hij wil ook steeds meer bewust aandacht hebben voor het milieu. Zoals DAF daar wat meer mee bezig zijn, ook vanuit wet en regelgeving, met name vanuit wet wet en regelgeving, dat denk ik wel	But if I look at Director [name], the director of DAF Operations, he is putting the environment more and more deliberately on the agenda of the management team. He also increasingly draws attention to the environment. To ensure that we as DAF are a bit more involved in this, also from a legislative and regulatory point of view, I think.
39	Interview employee	K	Dat kunnen wij, we hebben in Eindhoven zou ik, ja, daar droom ik van als HR manager voor operations dat we in bepaalde functies [ergodynamische apparaten voor op de werkvloer] wat meer kunnen gebruik kunnen maken van dat soort elementen. Ja, in het kader van duurzaamheid en voor mensen een een werkklimaat creëren die ook gezond is en veilig is.	In Eindhoven, I would like to see that, as HR manager for operations, we could make more use of those kinds of elements [ergo dynamic devices on the work floor] in certain positions. In the context of sustainability and people, that is creating a working environment that is also healthy and safe.

40	Interview employee	L	Dat dat vinden ze misschien zelf wel. Je hebt natuurlijk zelf met je hebt zelf ook met de mensen gesproken die daar mee bezig zijn binnen DAF. Maar, ja, ik weet niet wat het is. Ik heb geen idee waarom dat niet op op grotere schaal gebeurt. Anders dan bij, ik zeg al, ik kom toch bij genoeg bij andere bedrijven binnen waar dat waar. Maar meteen als je binnenkomt is de uitstraling al anders. Dus waarom het niet? Het is niet zozeer dat we dat het op tegen zijn, ik zeg al, want ik denk dat niemand daar op tegen is, maar d'r wordt ook niet echt de focus opgelegd. Wordt ook niet echt als een soort, soort automatisme wordt dat d'rin gebracht? Nee zeker niet. En waarom? Ja, ik heb geen idee. Misschien dat we een Amerikaans bedrijf zijn die pure republikeins, puur republikeins gemanaged worden. Zou kunnen. Maar dat weet ik niet. Da's da's puur een idee wat ik heb.	They may think so themselves. Of course, you've spoken to the people who are working on this at DAF. But then again, I don't know what it is. I have no idea why it is not happening on a bigger scale, after all it is different from doing it yourself. I enter plenty of other companies where the feeling is different as soon as you walk in. So why is it not happening here? It is not so much that we are against it, because I think nobody is against it, but the focus is not really on it. It's not really something that's automatic? No, definitely not. And why? Well, I have no idea. Perhaps because we are an American company that is managed in a purely republican way. But I don't know. That is just an idea that I have
41	Interview employee	L	Maar het is voor ons denk ik meer de commerciële druk om te zorgen dat je zo'n [electric] auto kunt verkopen.	But I think for us it is more the commercial pressure to make sure that you can sell such an [electric] car.
42	Interview employee	L	We hebben, we doen wel wat initiatieven, maar in grote lijnen is dat niet iets wat bedrijfsbreed wordt uitgedragen en wat men probeert bij iedereen tussen de oren te krijgen. Dat is het zeker niet. Dus nou wat wat kleine projectjes maar en, je ziet dat zie je hier, als je op het terrein kijkt dan zie je geen geen windmolen, geen zonnepanelen en d'r wordt wel wat energie teruggewonnen in de test motorenfabriek.	We do some initiatives, but in general it is not something that is promoted company-wide nor is it something that is attempted to get into everyone's head. It certainly is not. So, it's just some small projects now. And you see, if you look here on the site, you don't see any windmills, no solar panels. Some energy is recovered in the test engine plant.
43	Interview employee	M	Want als we niet instappen dan verliezen we marktaandeel of wat dan ook.	Because if we don't get in, we will lose market share or whatever.
44	Interview employee	M	Dus dan moet je slimmer zorgen dat je je kosten onder controle hebt, dat je minder afhankelijk wordt van fluctuaties op de markt kosten technisch, goeie verstandhouding met je afnemers en je toeleveranciers. Dat je elkaar ook iets gunt, in de zin van ja, je kan je toeleveranciers wel afknijpen, maar als die op een gegeven moment failliet gaan, omdat jij zo weinig betaalt voor hun product, ja die is dat wel verstandig voor jouw eigen toekomst.	So, you have to be smarter and make sure you have your costs under control. If you become less dependent on market fluctuations, from a technical cost point of view, then your relationship with your customers and your suppliers improves. This also means that you grant each other something and in the sense that you can cut your suppliers off. But, if at some point they go bankrupt because you pay so little for their product, then you get in trouble yourself.
45	Interview employee	M	En dat doen juist die andere bedrijf niet en die hebben zelf zo'n fantastisch rapport. Ja, dus da- da- di-. Dan heb je daar die die die wisselwerking en dan nog zegt ze van ja, waarom zouden we doen? We verkopen er geen truc extra door. Dat was eigenlijk de basisgedachte zo van ja, maar waarom zouden we mooie verhalen schrijven? Maar de klant zit er niet op te wachten. En dan heb je toch wel dat dat wij meer business to business natuurlijk werken. En niet zozeer naar de klant toe, de consumer de burger, want die heeft uiteindelijk toch veel meer	And that's exactly what the other company doesn't do, and they have such a fantastic report. Then you have that interaction there and even then, she says," why should we do that? We are not selling any extra trucks." That was actually the main reasoning behind this: why should we write beautiful stories? The customer is not expecting it. Naturally, this makes it prevalent that we work more on a business-to-business basis. And not so much towards the customer, the consumer or the citizen, because ultimately, they have more

			macht, toch vooral bij bedrijven om dat wel voor mekaar te krijgen. Als je kijkt naar, ja, ik noem maar een bedrijf dan Campina, in de zuivel, ja die heeft ook fantastische rapporten. Maar daar is de consument best wel ja, content mee van, ja, als t dan per se moeten kiezen, nou en dan misschien toch Campina.	influence, especially with companies to get things done. If you look at Campina, a dairy company, they have some fantastic reports. The consumer is quite content with them, if they had to choose, then perhaps Campina.
46	Interview stakeholder	A	Ja, dat dat sowieso ja absoluut was. Dat is altijd natuurlijk. Da's op elk commercieel gesprek wat ik heb dan zeggen ze uiteindelijk toch van: ja, maar we willen kosten besparen. Ja, maar da's natuurlijk echt vanuit de open perspectief. Er zijn nog geen bedrijven die zeggen van: hey [bedrijf], kom maar, je mag 10% kost toevoegen. Nee, maar goed, da's toch punt waar we het net over hadden dat gaat wel komen een keer denk ik.	Yes, absolutely, that has always been the case. In every commercial meeting I have, they clearly say: right, but we want to save costs. But that's really from the open perspective. There are no companies yet that say, gee, you can add 10% to the costs. No, but anyway, that is what we were just talking about, and I think that it will change one day.
47	Interview stakeholder	B	Kijk, een duurzaam bedrijventerrein is ook een toekomstbestendig bedrijventerrein in de zin dat het ook aantrekkelijker wordt om te werken. En dat je dus talent aan je kunt binden of in ieder geval mensen graag bij jou komen werken omdat je een fijne omgeving zit. En dat heeft ook nog iets te maken met (...) duurzame inzetbaarheid van je medewerkers.	After all, a sustainable business park is also a future-proof business park in the sense that it also becomes more attractive to work in and that you can therefore attract talent or not. People will want to come and work for you because you have a nice environment. And that also has something to do with (...) the sustainable employability of your employees.
48	Interview stakeholder	B	Ja, en daarnaast is het ook gewoon een business model. Ik denk ik denk dat DAF en dat dat zijn ze volgens mij ook al wel doen. En je moet op een gegeven dat ook gewoon aan waterstof trucks en elektrische trucks en, want anders verkopen ze gewoon over 10 jaar niks meer.	Yes, and besides that it's also just a business model. I think DAF, and I think they are already doing that; you have to sell hydrogen trucks and electric trucks and whatnot at some point. Otherwise, they'll just disappear in ten years' time
49	Interview stakeholder	B	Of je in zo'n gebied op waterstof overgaat of dat je een volledig elektrificatie strategie omarmt zeg maar. En dat heeft ook heel andere implicaties weer voor het voor weet ik veel infrastructuur die daarbij hoort en waar je waarschijnlijk iets op zult moeten gaan doen.	Whether you switch to hydrogen in such an area or embrace a full electrification strategy, so to speak, has very different implications for the infrastructure involved. And you will probably have to do something about that.