Tampere University of Applied Sciences

The path to committing to the SBTi

A case study on SaaS company Transporeon

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ABSTRACT

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As the reality of climate change becomes increasingly apparent, companies have been pressured to reduce their environmental impact. This has led to internal commitments and ambitions that are, however, difficult to verify and may not always be aligned with scientific data. Consequently, the Science Based Targets initiative, or SBTi, was created aiming to drive change, by guiding and verifying companies' commitments in alignment with the Paris Climate Agreements. Since then, it has rapidly gained traction within companies worldwide in all sectors. German SaaS (Software as a Service) company Transporeon is among these adherents and is the subject of this thesis.

Specifically, this thesis aims to pave a path for Transporeon to reach and set its targets while acting as a guide or inspiration for its peers. This will be done by analysing the reasons that brought Transporeon to join the SBTi, determining the best target setting methodologies and actions to reach, as well as outlining the main issues and critiques that the initiative attracts from both companies and environmentalists.

Through interviews and analysis of data, the thesis will conclude that the SBTi is a good option for a number of SaaS companies and that Transporeon can succeed within the SBTi through a number of target-setting and reduction methods. The validity of the critiques will be acknowledged, emphasizing the importance of not overstating the initiative's impact. However, it is concluded that the extensive coverage of the SBTi could indeed lead to significant reductions in CO_2e emissions if companies are to uphold their commitments.

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Key words: science based targets initiative, transporeon, software as a service, corporate emissions, sustainability, climate change, paris agreements, cop21

CONTENTS

ABBREVIATIONS AND TERMS (choose one or other)

SBTi Science Based Targets initiative

SaaS Software as a Service

IPCC Intergovernmental Panel on Climate Change

GHG Green House Gas

REC Renewable Energy Certificate

Greenwashing: Untrue, misleading or overstated environmental claims

LEED Leadership in Energy and Environmental Design

1 INTRODUCTION

With record temperatures being reached daily (Climate Copernicus 2023), and the threat of climate change becoming increasingly evident, it has become difficult for companies to escape their environmental responsibilities. Research suggests that 100 companies still in activity today, have contributed to as much as 52% of overall GHG emissions between the industrial revolution and 2015, and to 70.6% of global industrial emissions in the same time period (Griffin 2017,5), leading to increasing pressure from the public and a demand for further action and accountability. As a response, numerous companies have resulted to publicising commitments and initiatives, but these promises are difficult to verify, and often have no scientific base, (Haffar & Searcy 2018,9), leading to many companies being accused of green-washing and lying to their customers.

This lack of accountability is what lead to the creation of the Science Based Targets initiative, often referred to by its abbreviation SBTi. The SBTi certifies and verifies companies' commitments to reducing their emissions in line with the Paris Climate Agreements and has rapidly gained popularity within companies worldwide in all sectors. (SBTi About us n.d.)

Amongst these companies a relatively recent addition is German based platform company Transporeon (SaaS) established in Ulm in the year 2000 (Transporeon n.d.). Since then, the company has rapidly grown and has established itself as one of the largest companies in its' industry.

Based on these facts and observations, the thesis will have the aim to answer the following question: How can Transporeon meet its SBTi emission reduction commitments, considering challenges faced and providing insights for other companies in the industry?

The question will be answered by analysing the company's emissions, the targets available and how they can reach them. Furthermore, the thesis will examine the aspects that led Transporeon to sign the SBTi and the critiques of the Science Based Targets initiative. This thesis is intended to act as a guide and potential inspiration for other companies in the sector, which wish to follow the same path or are interested in becoming part of the SBTi, as well as a guide to target setting and reaching for Transporeon.

1.1   Transporeon

Transporeon is a transportation management platform that connects all different parties along the logistics supply chain for the self-proclaimed purpose of: "Bringing transportation in-sync with the world". With a network of over 1400 shippers and retailers and more than 150,000 carriers and logistics service providers, Transporeon enables 110 000 daily transports, and manages roughly 55 billion euros of freight yearly. By syncing all different parties Transporeon can use its tools to provide a smooth, efficient connection, minimising costs, time losses and reducing empty truck miles. Furthermore, with its' carbon emission dashboard Transporeon can enable its clients to get visibility on their impact and reduce it (Transporeon 2023,10-11). When asked to describe Transporeon its' CEO (at the time of interview) Stephan Sieber says: *"We are a digital freight platform in essence. We facilitate the full process between people who have a freight problem and people or organizations who can solve a freight problem. When I say facilitate the whole process it includes: bringing those business parties together, matchmaking and also the full execution of the process until the services are paid and settled. […] wherever there is volatility, high fragmentation, high dynamics, obviously a digital platform like Transporeon can provide most value."*(Appendix 1, 2)*.

Since their creation in the year 2000 the German company founded in Ulm, has grown substantially and is expected to gain 190 million euros in revenue in 2023 with a 25% year-on-year increase (Trimble 2022,1). This has led the company to to employ over 1400 employees globally across 25 countries, and four continents (Transporeon 2023,10).

In April 2023 Transporeon was acquired by US company Trimble Inc. (Trimble 2023,1) in a transaction valued at €1.88 billion (Trimble 2022,1). Trimble Inc. is an American software, hardware, and services technology company which works in a variety of industries ranging from agriculture to transport, to construction and geospatial with the goal of "Transforming the way the world works" (Trimble n.d.).

1.2   The Science Based Targets initiative (SBTi)

The Science Based Targets initiative is a partnership between Carbon Disclosure Project (CDP), the United Nations Global Compact, the World Resources Institute (WRI) and the Worldwide Fund for Nature (WWF) designed for companies to

align their carbon reduction targets with global reduction ambitions. It is a voluntary program, which allows to set both long-term Net-Zero goals and short-term goals aligning with a 50% reduction in emissions by 2030 and Net-zero emissions by 2050. As of December 2023, this program counts over 6500 companies of all sizes and includes large corporations such as Ikea, Nestlé and Coca-Cola among others. (SBTi About us n.d.)

The SBTi is based on the agreement signed during the 2015 COP21 often known as the Paris agreement. This agreement which was signed by 196 parties and entered into force in 2016, details a commitment to limiting global warming to 1.5°C above pre-industrial levels. This is based on the recommendations of the UN's Intergovernmental Panel on Climate Change (IPCC) to avoid the worst consequences of climate change (UNFCCC 2023). In fact, the IPCC clearly outlines how impactful minimal temperature changes can be, by comparing major consequences of 1.5°C warming with 2°C warming. According to their latest report failing to reach 1.5°C and therefore attaining a 2°C increase could expose 200 million more people to drought, double the number of heatwaves in Southern Africa, and increase floods by 30% among numerous other consequences (Boehm & Schumer 2023).The IPCC also clearly states that current trajectory points towards a failure in reaching the COP21 objectives, with a 50% chance of failure, and that 2°C is also at-risk meaning consequences may be even more dramatic. (Lee & Romero 2023)

The SBTi requires all its voluntary adherents to follow the same process to be an official participant. The first step is signing the commitment letter. This letter has been signed by Transporeon in December 2022 and accepted by the SBTi in the January 2023 (Transporeon 2023,52-53). By signing it the company commits to reducing its emissions in line with the SBTi, however at this stage it is not yet defined what the targets are and if they are short or long-term. This is decided in the next stage which consists in target development. The timeline to develop the targets is 2 years and Transporeon currently finds itself in this phase. While the targets are not available publicly the company is reported as committed on the SBTi website and it will be shown if they fail to consequently submit their targets for approval. Once submitted and approved, the targets are visible and can be published on all company platforms. Finally, the company must work towards the targets with yearly updates to ensure that these are met. (Figure 1)
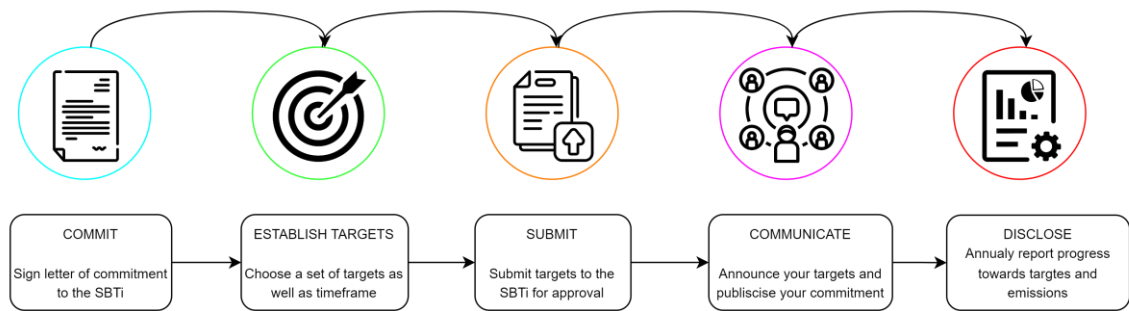
Figure 1: SBTi process, Based on SBTi How it works, n.d., Enzo James, 2023

Companies joining the SBTi must align their carbon accounting with the GHG emissions protocol (SBTi Corporate Manual 2023,9). This means categorising emissions in three separate sections known as: Scope 1, 2 and 3. Scope 1 encompasses emissions that are produced as a direct consequence of the companies' activities. This includes car fleet, which burns fuel directly, and company facilities. Scope 2 contains the indirect emissions from the generation of purchased energy consumed by the company. This means purchased electricity as well as heating and cooling of facilities. Finally, scope 3 is comprised by all indirect emissions produced by the companies' activities. This includes emissions from business travel, transportations of products, use and disposal of sold products, as well as emissions due to acquired services or goods. In total scope 3 includes 15 subcategories which are listed below. (Figure 2)
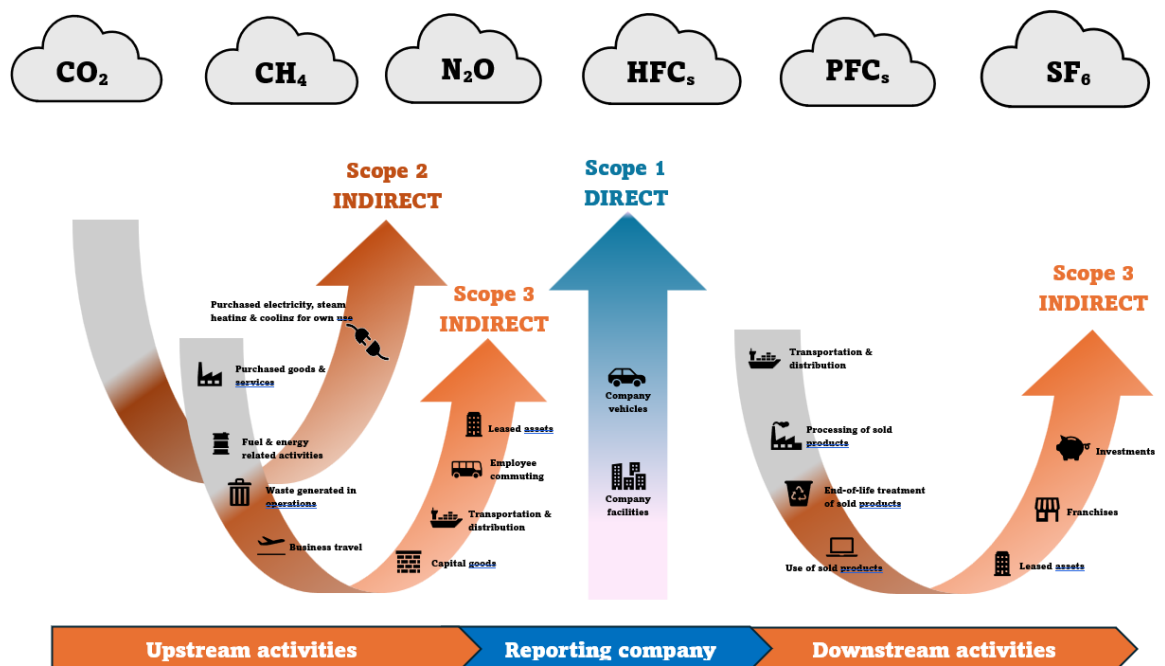

Figure 2: Scope 1,2 & 3, Based on Barrow et al.2013, 6, Enzo James, 2023

To set targets within the SBTi, companies must follow a specific procedure. For a majority of companies, targets must account for 95% of Scope 1 and 2 emissions and 67% of scope 3 emissions. (SBTi Corporate Manual 2023,14,21)

A variety of targets are offered for each scope and occasionally for specific categories, however, as of July 2022 companies must align with the 1.5C path, and the well below 2C path is no longer accepted. Targets are set from a base year to a target year. Base year will be the reference for emissions and must be chosen preferably as the last reporting year or the most indicative of the companies' emissions. Target year should be five to ten years after target submission for short term targets, while net-zero targets are typically chosen to be 2040 or 2050. The targets must be reached without the use of carbon offsets in a somewhat linear way, the reduction may not occur all in a single period. The specific targets per scope and based on timeline (short versus long-term) can be seen below (Table 1). Businesses have the option to establish targets specific to different categories or opt for a unified target encompassing all relevant scope 3 categories. Alternatively, they may decide to set a singular target that includes all emissions. Each approach to defining target boundaries comes with its own set of advantages and disadvantages. (SBTi Corporate Manual 2023,14-33)

This process outlines the regular procedure for most participants however outliers are present. Distinctions are made based on size and sector. For instance, small and medium sized companies (SMEs) are not tied to the same obligations as larger organisations (SBTi SMEs FAQ,2023). In addition, sector specific pathways must be followed for companies within the power, maritime and FLAG sectors. (SBTi FLAG Guidance,2023)

			Scope 1 and 2			Scope 3			
Near -term science - based targets	Method eligibility and minimum ambition	Target boundary	95% coverage of scopes 1 & 2			If scope 3>40%of total emissions :boundary to cover minimum 67%of scope 3			
		Target year	5-10years from date of submission (except maritime)			5-10years from date of submission			
		Method	Absolute reduction	Sector -specific intensity convergence	Renewable electricity (Scope 2 only)	Cross-sector absolute reduction	Sector-specifc intensity convergence	Supplier or customer engagement	Scope 3 physical and economic intensity reduction
		Eligibility and minimum ambition	•Minimum of 4.2% linear annual reduction (LAR)dependant on •Exception :FLAG pathway is 3.03%LAR	•Depends on sector and company inputs	•80% RE by 2025 •100% RE by 2030	•2.5%LAR	•Depends on sector and company inputs (SDA)	•e.g. 80%of suppliers by emissions by 2025	•7%year -on year (both options)
Long -term and net -zero science - based targets	Method eligibility and minimum ambition	Target boundary	95%coverage of scopes 1&2			90% coverage of scope 3			
		Target year	2050 or sooner (2040for the power sector and maritime)			2050 or sooner			
		Method	Absolute reduction	Sector -specific intensity convergence	Renewable electricity (Scope 2 only)	Cross-sector absolute reduction	Sector-specifc intensity convergence	Supplier or customer engagement	Scope 3 physical and economic intensity reduction
		Eligibility and minimum ambition	•90%reduction (cross sector pathway) •72%reduction for FLAG •Other sector pathways vary	•Sector/commodity pathways vary	•100% RE	•90%reduction (cross -sector pathway) •72%reduction for FLAG sector •Other section pathways vary	•Sector/commodity pathways vary	•Methods are not eligible for long -term SBTs	•97%reduction (both options)

Table 1: Target Setting, Based on SBTi Getting started guide 2023,7, Enzo James, 2023

2   Scope & Methods

2.1   Scope

The entire scope of emissions ranging from scope 1 to scope 3 is considered. The emissions are calculated by consultancy South Pole based on Transporeon data for two reporting years 2019 and 2021. These two years are used due to 2019 being the baseline and 2021 being the most recent reporting year to date. Impact of acquired entities was estimated by South Pole. These additional entities are ControlPay in 2019 and Supply Stack and Logitone in 2021 (Transporeon internal documents 2022). For emission reductions only purchased goods and services, business travel and use of sold products categories from scope 3 are considered, while the entirety of scope 1 and 2 are still relevant. Target setting is formulated based on short term targets with a 2019 base year and a 2030 target year. This approach is based on Transporeon own admissions in their most recent ESG report (Transporeon 2023, 28). The 2019 baseline is not recalculated based on additional entities although this may be necessary in the journey towards 2030 targets (SBTi criteria 2023, 17).

2.2   Methods

The study is based on both quantitative and qualitative data. Qualitative data is obtained in the form of interviews of Transporeon representatives, a Transporeon customer, and an author /climate activist. This data is mainly used to better understand the reasons that brought Transporeon to sign the SBTi and to give a critical outlook on the initiative. Quantitative data is used in the form of Transporeon's emissions, targets available and actions to reduce emissions. The reduction for each scope was quantified using the following methods:

- Scope 1

Calculations were made using 2019 as reference and based on absolute contraction of 46.2%. The total amount of cars was calculated with data from Transporeon plus the assumed 20% increase from additional entities. This brought total amount of cars to 96. As the location of the vehicles from additional entities was unknown it was assumed they were distributed in the same configuration as Transporeon fleet. Emissions were also assumed to be spread evenly across all vehicles. Finally, vehicle type was assumed to remain the same from

2019 to 2030 with no changes in efficiency or emission intensity. Using these assumptions vehicles reduction was calculated using the following formula:

$$\%Reduction\ of\ fleet = 1 - \left[\frac{\left(\text{Targeted } CO2_{e2030}/CO2_e per\ vehicle_{2019}\right)}{n°cars_{2019}}\right] * 100 \quad (1)$$

In addition to the reduction of vehicles, the impact of reducing mileage was explored. Once again, the same assumptions as previous were used from 2019 to 2030. However, for this calculation the projected number of vehicles by 2030 was assumed to be 210 cars based on internal discussions (Transporeon internal documents 2022). Through this assumption the number of kilometres per vehicle to achieve 2030 absolute reduction targets was calculated using the following formula:

$$Authorised\ mileage\ per\ vehicle_{96\ cars} = \frac{\text{Targeted } CO2_{e2030}/g_{CO2e/Km}}{n°\ of\ vehicles_{2019}} \quad (2)$$

$$Authorised\ mileage\ per\ vehicle_{210\ cars} = \frac{\text{Targeted } CO2_{e2030}/g_{CO2e/Km}}{210} \quad (3)$$

$$\%Reduction\ mileage = 1 - \left[\frac{Authorised\ mileage\ per\ vehicle_{210\ cars}}{Authorised\ mileage\ per\ vehicle_{96\ cars}}\right] * 100 \quad (4)$$

The last option taken into consideration was fleet electrification. The impact of a fully electric fleet was calculated based on an assumed EV efficiency of 0.15kWh/km across all vehicles. This value was considered as constant although EV efficiency tends to fluctuate based on various factors such as temperature. Emissions intensity for diesel vehicles was established at 120g/ km and petrol at 120.7g/km using European Environmental Agency data (EEA 2021) and also considered as constant. Emissions from the supposed EVs was calculated based on grid emissions intensity data extracted from European Environmental Agency for each country where vehicles were located (EEA 2023). Once again, the vehicles were considered to be evenly distributed between selected countries from 2019 to 2030 and efficiency and vehicles for both EVs and diesel/petrol cars was considered to remain the same. By using this assumption, the emissions savings for a fully electric fleet in 2019 was calculated with the following formulas:

$$CO2_e\ EVs\ country\ X = \left(\frac{Diesel\ CO2_{e2019}}{gCO2_e/Km_{diesel}} + \frac{Petrol\ CO2_{e2019}}{gCO2_e/Km_{petrol}}\right) * 0.15 \frac{kWh}{Km} * CO2_e intensity_{country\ X} \quad (5)$$

$$\%Emissions\ savings\ EVs = \left(\frac{\sum CO2_e EVs\ from\ all\ countries_{2019}}{\sum CO2_e fleet_{2019}}\right) * 100 \quad (6)$$

Finally, to better understand the potential impact in terms of number of cars this number was calculated in accordance with 2030 absolute targets. For this calculation grid emissions were considered to remain constant from 2019 to 2030. In addition to get a better understanding of the potential impact of a reduction in grid emissions on the Transporeon fleet, a further calculation was made using European grid intensity emissions targets for 2030(EEA, 2023).

Number of vehicles allowance with same grid emissions:

$$Max\ n°\ of\ vehicles = \left. CO2_{e\,2030\ targets} \middle/ \left(\frac{\sum CO2_eEVs_{\,2019}}{n°cars_{2019}} \right) \right. \tag{7}$$

Number of vehicles allowance with 2030 targeted grid emissions:

$$CO2_e\ per\ vehicle_{2030\ grid} = \frac{\sum CO2_eEVs_{\,2019}*\left(\frac{CO2_{e\,int2030\ grid}}{CO2_{e\ int2019\ weighted\ avg\ grid}} \right)}{n°cars_{2019}} \tag{8}$$

$$Max\ n°\ of\ EVs\ 2030 = \frac{2030\ target\ emissions}{CO2_e\ per\ vehicle_{2030\ grid}} \tag{9}$$

- Scope 2

Reductions were calculated based on 2019 data. Exact calculations to reach 46.2% reduction were not shown due to the possibility of Renewable energy procurement targets. Emissions for each office were reported from SouthPole using data provided by Transporeon, with the exceptions of added entities which were estimated. Several approaches were taken in emissions reduction. The first approach taken was reduction in number of offices. For this, locations with under 10 FTEs were considered (Transporeon internal documents 2022). Emissions from these offices were then added together and percentage of scope emissions was calculated with the following formula:

$$\%CO2_ereduction_{offices<10\ FTEs} = 1 - \left(\frac{CO2_{e\,offices<10\ FTEs}}{\sum Scope\ 2_{2019}} \right) * 100 \tag{10}$$

The second approach taken was size reduction of offices. For this calculation it was estimated that the CO2e emissions intensity per square metre was constant and therefore:

$$\%Reduction\ in\ m^2 = \%\ Reduction\ in\ CO2_e \tag{11}$$

In addition to reductions, the possibility of switching offices was explored. The consequences of switching to LEED certified offices was analysed. To quantify the impact of this action, data was extracted from a paper showing 25% energy savings compared to typical buildings (Fowler, Kimberly, et al., 2010,12). Finally, the impact of switching to renewables was analysed and emissions savings were estimated using estimated average emissions for renewables of 50g/kWh (NREL 2021,3) and global averages of 450g/kWh (Our World in Data n.d.) in data:

$$\%CO2_{e\,savings\,renewables} = \frac{avg\,CO2_{e\,intensity\,global}}{CO2_{e\,intensity\,renewables}} \qquad (12)$$

- Scope 3 Business Travel

Several actions are proposed based on 2019 emissions. The first and prioritised action is reduction in number of flights. This action is quantified with the assumption that each flight has equal impact and therefore:

$$\%Reduction\,in\,n°\,of\,flights = \%\,Reduction\,in\,CO2_e \qquad (13)$$

In addition to reduction in number of flights, switching to trains is proposed. The percentage of the flights, which could be switched, is quantified through different criteria and data from Greenpeace as well as emissions impact. Finally, implementation of SAF is proposed and emission reduction is quantified through data.

- Scope 3 Use of Sold products & Purchased goods and services

Like other categories 2019 is taken as reference for emissions. Several actions are proposed however due to limited information, emission reductions are not quantified.

3   Why Transporeon committed to the SBTi

Joining the SBTi is a decision which should come with careful consideration and upon extensive reflection. The reasons to join the SBTi vary from company to company based on their size and sector. However, it goes without saying that customer satisfaction tends to be a major driver for all important decisions within a company.

This is no different for Transporeon. The German SaaS company acts as supplier to many of the largest global multinationals, with environmental footprints which far exceed Transporeon's individual impact. This has led many customers to committing to the SBTi, aspiring to slash their emissions in line with IPCC targets and customer expectations. This pressure can be seen mostly in direct-to-consumer goods, according to Head of Ecosystem at Transporeon Serge Schamschula, who says: *"From my understanding, the pressure to join the SBTi comes primarily from the end user, from the consumers, […] the closer a company is to its customers the more pressure they have to join the SBTi"*(Appendix 1,1) While this may lead to the conclusion that Transporeon may not have to join, due to their loose ties to end-consumers, the pressure often trickles down to the supply chain in a trajectory that Serge likes to call the "Domino effect": *"The average company finds less than 20% of their emissions in scope 1 and scope 2, so what they can impact. The other 80% of their emissions are scope 3, so not in their own hands. What they need for that is the cooperation of their suppliers and customers, it's as simple as that"* (Appendix 1,1). This statement is further reflected in the CDP "Global supply chain report 2020" where it is stated that on average scope 3 emissions are 11.4 times higher than scope 1 and 2 emissions (CDP 2021,5), as well as in declarations from a major retailer and Transporeon customer who declares: *"We don't own any fleet apart from some exceptions […], so we rely on third party logistics providers and on carriers and that's why we cannot go through this transition by ourselves. We can only do it by definition by gathering all the concerned stakeholders around the same table"* (Appendix 2). This pressure is exercised using sustainability benchmark portals such as EcoVadis or through targets implemented within the SBTi such as supplier engagement.

Confronted with this reality it is difficult for Transporeon to detach itself from the looming presence of Science Based Targets. However, it has to be said that the

SBTi could be seen as more of an opportunity than a pressure induced obligation, as Serge jokingly explains: *"Has there been a customer who came with the gun in his hand and said, if you don't commit to the SBTIs, we will drop business as of tomorrow? No, not that"* (Appendix 1, 1). The SBTi may be a chance to attract further clients and edge past the competition, as is agreed upon by 55% of respondents in a 2018 SBTi survey (Dexter 2018). This seems to demonstrate that sustainable targets have now become a way to evaluate preferred partners and as declared by Transporeon CEO (as of the interview) Stephan Sieber: *"For about 200 years there were two KPIs: quality and cost. There is now a third KPI in the mix and that is sustainability. And that KPI will not go away anymore. The importance of that KPI will further increase very soon. That KPI will have an equivalent importance to the other KPIs."* (Appendix 1,2-3). It remains to be seen how long before it goes from opportunity to obligation as customers become more demanding and their targets approach. As the Transporeon customer explains: *"When we run tenders or when we need to decide which partner, we need to work with, it's not anymore only about cost and service level, like it was maybe in the past, but sustainability is absolutely a third priority having the same level of importance of the two other ones. This is why, we absolutely appreciate and actually request that even our suppliers are working in any similar process. It's also important that they follow the same rules when they calculate the co2 reduction. In the end, we need to talk the same language."* (Appendix 2).

Signing the SBTi may also alleviate strain from other areas as well. This was reported by 35% of survey respondents which declared increases in regulatory resilience (Dexter 2018). For Transporeon this is seen more as a welcomed addition than a driver to action, however with upcoming CSRD it may have its benefits sooner rather than later, as reported by Chief Compliance Officer Eckhard Rautenberg: *"At the time of taking the final decision to sign the SBTi commitment letter (i.e., Dec 2022), the new legislation on Corporate Sustainability reporting (EU CSRD) was already on the horizon, but not yet published or not being implemented into respective national law. Transporeon will fall into the scope of the EU CSRD by the FY 2025 with a reporting obligation in 2026. However, the bigger pressure is definitely coming from our big (shipper) customers, that are all global US, UK and DE stock listed corporations"* (Appendix 1, 4). This seems to confirm

the statement made by Corporate Sustainability manager at Trimble Duncan Williams who states: *"I think the private sector is moving ahead quicker than government regulations are catching up. So really what we've seen is that there's pressure in the private sector from customers from investors to say "Hey, what are you doing as a company? "That pressure really is driving companies to want to report"* (Appendix 3). This is also reflected in the 22 000% increase in companies which committed in fossil fuel divestment between 2015 and 2020 according to the IISD (IISD 2020).

Company culture is also seen as a major factor in joining the SBTi. With a dynamic and young staff environmental progress is part of the company philosophy as Stephan explains: *"It is important for us as a company. We employ a lot of young people. Our average age is 35 and that is a generation that rightfully asks their employers to also take care of these aspects of our society of our business our economy, and that was just something that both for us as a company and for us also as a solution provider there's a really good fit and it helped us a lot to come up with creative products with projects that people want to engage in"*(Appendix 1,3). In a wider sense, the whole brand and image of Transporeon is consistent with a company which has established itself as a driver towards sustainability through its' platform and messaging. With tools such as the carbon emissions dashboard and a general mission to make logistics more efficient, in a very critical area in terms of emissions, it may only be logical to be part of such an initiative, as Serge says: *"Transporeon is arguing that they are the ideal and needed partner to make the business for our customers more efficient and more sustainable. So, what's the alternative?"* (Appendix 1,2).

Ultimately the choice to join the SBTi seems like a natural step in Transporeon's journey, further pushed by an ease of execution which makes it a no-brainer as Stephan explains: *"The conclusion back then was that there's things we can do which we think make a lot of sense, and we actually also think are very adequate and very reasonable if we do them, and those things almost felt like no brainer activities for us. At the same time, we also realized that if we do these things, we would basically be pretty much in line with the SBTi and their guidelines, so why not then also sign up for it?"* (Appendix 1,4).

4   Transporeon's emissions

4.1   Scope of emissions

As previously mentioned, when looking at emissions it is required to divide them in scope 1,2 and 3, but there is also a subdivision for scope 3 emissions. A total of 15 categories are present within scope 3, ranging from purchased goods and services to investments made by the company. For Transporeon of these 15 categories only 8 are relevant mainly due to its product being entirely digital. In fact, having no physical product allows the company to bypass transport, processing and disposal of its product and cut out what is often a significant source of emissions (Category 9,10 & 12). This does not however entitle Transporeon to not consider its' use of sold product emissions, as using the platform will create emissions through kWh of electricity. Furthermore, due to the operational control of its' leased assets (car fleet) this aspect is considered in scope 1, while no franchises, investments and downstream leases are made within the company (Categories 8,13,14 & 15) (Table 2).

Scope	Categorisation	Relevance
Scope 1	Emissions from own activities & energy resources	Relevant
Scope 2	Emissions from external energy supply	Relevant
Scope 3	Cat.1-Purchased Goods & Services	Relevant
Scope 3	Cat. 2-Capital Goods	Relevant
Scope 3	Cat. 3-Fuel & Energy Related Activities	Relevant
Scope 3	Cat. 4-Upstream transporation & Distribution	Relevant
Scope 3	Cat.5-Waste generated in operations	Relevant
Scope 3	Cat. 6-Business travel	Relevant
Scope 3	Cat.7-Employee Commuting	Relevant
Scope 3	Cat, 8-Upstream lrased assets	Not Applicable
Scope 3	Cat. 9-Downstream transporation & distribution	Not Applicable
Scope 3	Cat 10- Processing of sold products	Not Applicable
Scope 3	Cat. 11-Use of Sold Products	Relevant
Scope 3	Cat 12-End-lite treatment of sold products	Not Applicable
Scope 3	Cat. 13-Downstream leased assets	Not Applicable
Scope 3	Cat, 14 Franchises	Not Applicable
Scope 3	Cat 15-Investments	Not Applicable

Table 2: Scope of emissions at Transporeon, Based on Transporeon 2022 ESG report 2023, 48, Enzo James, 2023

4.2 Data quality

Data was collected from Transporeon and provided to consultancy SouthPole. The data gaps were estimated, mainly for the acquired entities, where sufficient data was not available. Data quality improved from 2019 to 2021 with 40% of the overall company data being estimated in 2019 (Transporeon internal documents 2022), while estimations for 2021 are shown in the table below (Table 1). Emissions were calculated in the following ways:

- Scope 1: Data for Transporeon was provided using the fuel cards. Entities impact estimated based on FTEs.
- Scope 2: Data provided by Transporeon for offices. Entities data estimated based on FTEs
- Purchased goods & services: Emissions calculated using spend. Data gaps estimated by South Pole.
- Business Travel: Data provided by Transporeon travel management team. Gaps estimated by South Pole.
- Use of Sold Products: Calculation based on number of active users, time spent on platform (estimated by Transporeon), kWh of energy used during use of platform and consequent impact (estimated by South Pole).
- Other categories: Emissions reported based on data provided by Transporeon. Data gaps estimated by South Pole.

Column headers: Ulm, Mannheim, TP Remote, Kempten, Berlin, Mönchengladbach TP, Venice, Spolka Remote Italy, Krakow, Spolka Remote Poland, Spolka Remote Ukraine, Iberia Remote, SAS Remote, Paris, Madrid, ApS Remote, Fort Washington, TP US Remote, TP Russia Remote, Singapore, Kiev, Breda, Woburn, LogitOne IN, LogitOne BE, Campinas, Mönchengladbach CP, Supply Stack

Scope	Category	Subcategory
Scope 1	Stationary combustion	
Scope 1	Mobile Combustion	
Scope 1	Fugitive Emissions	
Scope 2	Electricity	
Scope 2	Heating	
Scope 3	Purchased Goods and Services	Cloud Providers
Scope 3	Purchased Goods and Services	Water
Scope 3	Purchased Goods and Services	Paper
Scope 3	Purchased Goods and Services	Other Consumables
Scope 3	Purchased Goods and Services	External Consultants
Scope 3	Capital Goods	
Scope 3	Fuel and Energy-Related Activities	Refer to associated Scope 1 and 2
Scope 3	Upstream Transportation	
Scope 3	Operational Waste	
Scope 3	Business Travel	Air
Scope 3	Business Travel	Staff Car
Scope 3	Business Travel	Taxi
Scope 3	Business Travel	Train
Scope 3	Business Travel	Accommodation
Scope 3	Employee commuting	Commuting
Scope 3	Employee commuting	Working from home
Scope 3	Use of Sold Goods	

Table 3: Data quality 2021, Based on Transporeon internal documents 2022, Enzo James, 2023

4.3 Emissions overview

The overall emissions for Transporeon reached 6482.9 tons in 2019 for an average of 6.7 tons of CO2 per FTE. This number lowered significantly in 2021 as emissions decreased to 5625.1 tons in 2021 and 4.6 tons per FTE (Table 2) This change in tons per FTE was most likely due to an increase in staff and mostly the effects of the COVID-19 pandemic which slashed the emissions in many categories, such as business travel which decreased tenfold. Nonetheless, the growth of the company did reflect in some categories such as purchased goods and services and use of sold products which are strictly connected to business growth. As the 2021 data was severely conditioned by COVID-19, and travel is expected to grow as restrictions are lifted (Transporeon internal documents 2022), we will consider the five hotspots as scope 1, scope 2, scope 3 purchased goods and services, business travel and use of sold products. These five categories covered 89% of emissions in 2019, and 83% in 2021(Table 2).

Category	Sub-Category	2021 tCO2e	2019 tCO2e
Scope 01		**308,5**	**536,1**
Mobile Combustion	Diesel	247,9	476,0
	Petrol	57,9	59,4
	Hybrid	2,7	0,0
Fugitive Emissions	Refrigerants	0,0	0,6
Scope 02		**586,8**	**1024,5**
Heating	Market-based	345,8	701,4
	Location based	252,7	475,5
Electricity	District Heating	240,9	323,1
Scope 03		**4729,8**	**4922,3**
Cat.1-Purchased Goods & Services	Cloud Provider	10,3	37,5
	External Consultants	1955,2	1789
	Other Consumables	55,8	89
	Paper	1,5	1
	Water	1	1
Cat.2- Capital Goods	IT Hardware	296,9	84,9
Cat. 3- Fuel & Energy Related Activities	Diesel	60,3	129
	Petrol	16,2	-
	Hybrid	3,2	0
	Market Based	77,7	146
	Heating	36,2	34,8
Cat. 4- Upstream transportation & Distribution	Freight	0,1	0
Cat.5- Waste generated in operations	Incineration	24,1	199
	Recycling	6	2
Cat. 6- Business travel	Air Travel	104,7	959
	Ground Travel	9,1	52,6
	Accommodation	11,2	63,9
Cat 7- Employee Commuting	Commuting	43,9	96,9
	Work from Home	326,2	27
Cat. 11- Use of Sold Products	Software	1690,1	1209,9
Total Footprint		**5625,1**	**6482,9**
Key Performance Indicators			
FTEs		1234	970
Tco2E/FTE		4,6	6,7

Table 4: Transporeon emissions, Based on data from Transporeon ESG report 2022,50-51, Enzo James, 2023

4.3.1 Scope 1

All emissions in scope 1 are due to the company car fleet which was comprised by 80 cars in 2019 and grew to 91 in 2021(Graph 1). This is tied to the substantial increase in employee base from 2019 to 2021. However, the number of cars does not include the addition of the acquired entities fleet, a number which was estimated by SouthPole based on FTEs. For both 2019 and 2021 a majority of the fleet was located in Germany, where the headquarters and most employees were located. In 2019 the entire fleet was comprised by diesel and petrol cars (90% diesel and 10% petrol), while 2021 saw the addition of a small portion of EVs and hybrid vehicles (71% petrol, 18% petrol, 9% electric and 2% hybrid) (Graph 1). Scope 1 emissions comprised 34% of scope 1 & 2 emissions for both 2019 and 2021, while they were 8% of total for 2019 and 5% for 2021. (Table 4)
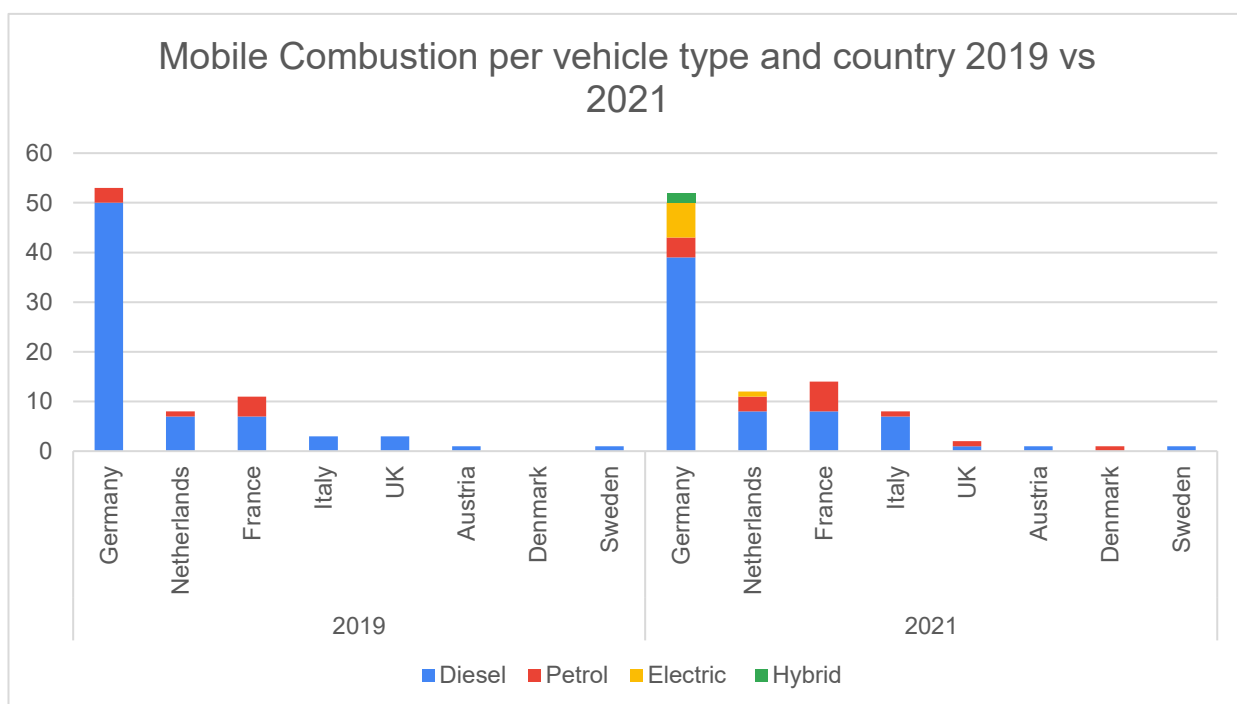

Graph 1: Mobile Combustion per vehicle type and country 2019 vs 2021, Based on Transporeon Internal documents, 2023

4.3.2 Scope 2

Scope 2 emissions came from the numerous office locations of the Transporeon group. Once again due to the recent nature of the additional entities at the time of calculation, numbers were only provided for Transporeon offices and estimated for the rest. The number of Transporeon offices increased from 15 offices in 2019 to 19 in 2021. This would have led to a substantial increase in CO2 impact if it

wasn't for the effects of covid, the switch to renewable energy in some of the premises and the Russia Ukraine war. The latter lead to a stark decrease of emissions in the Kiev office, which in 2019 was the 3rd largest emitter for both heating and electricity. Overall, these aspects caused a decrease of scope 2 emissions from 1024 tons in 2019 to 587 in 2021. Ulm and Krakow remained the highest emitters for both 2019 and 2021, with the Ulm headquarters emitting alone 60% of 2019 scope 2 emissions and 45% in 2021. (Graph 2)

A majority of emissions in both cases were caused by electricity over heating (68% in 2019 and 59% in 2021) which also saw the largest fall more than halving in two years. Scope 2 emissions were responsible for 16% of total emissions in 2019 which lowered to 10% in 2021, while they represented 66% of scope 1 and 2 accumulated emissions in both years. (Table 4)
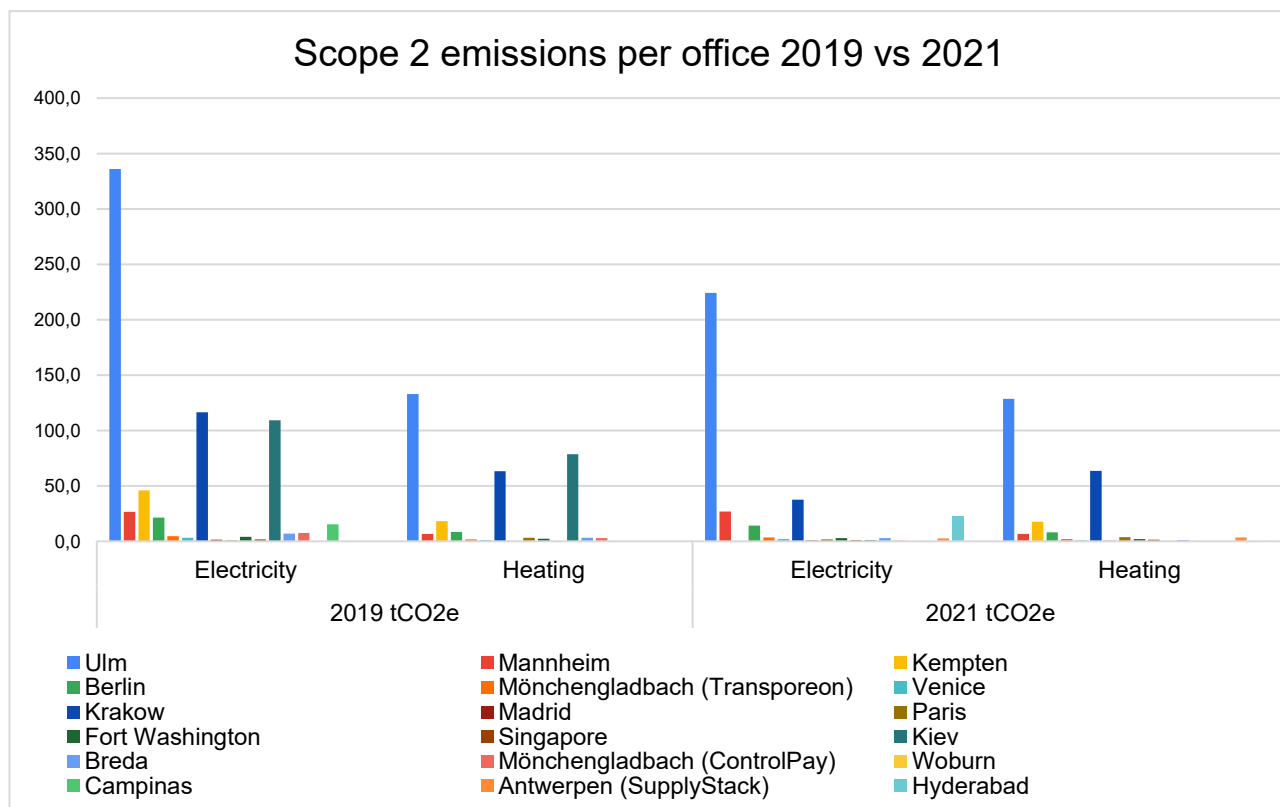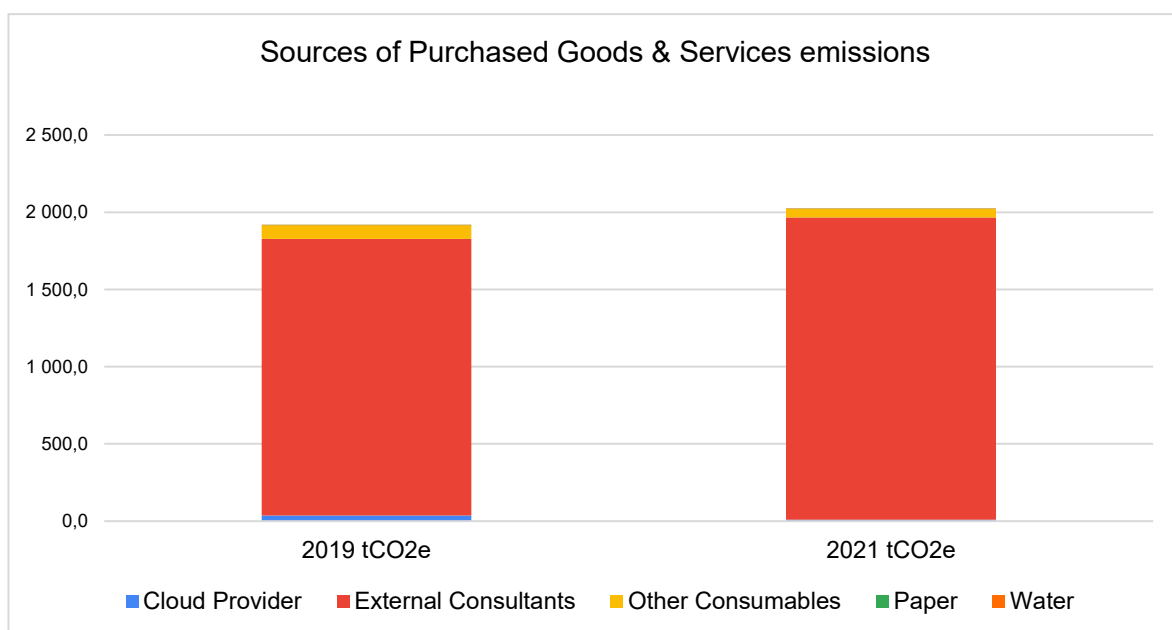

Graph 2: Scope 2 emissions per office 2019 vs 2021, Based on Transporeon Internal documents, 2023

4.3.3 Scope 3

Scope 3 emissions: Purchased Goods & Services

Purchased goods & services is the biggest contributor in terms of emissions for Transporeon. Alone it represented 30% of total emissions in 2019 a number which grew to 36% in 2021 (Table 4). This increase was due to both the growth in this category's emissions and the decrease of overall emissions. In fact, purchased goods and services was one of the few aspects which was unaffected by the COVID19 pandemic increasing from 1917 total tons in 2019 to 2024 tons in 2021(Table 4). It is important to note that this category is uniquely estimated via the spend of the company (Transporeon internal documents 2022) and therefore is tied to business growth and the consequent need for more services and goods. The split of emissions between different goods and services is shown in the graph below (Graph 3).

Graph 3: Purchased Goods & Services sources of emissions 2019 vs 2021, Based on Transporeon Internal documents, 2023

Scope 3 emissions: Business Travel

Business travel is often regarded as an essential aspect within multinational companies. Transporeon has multiple offices located in four different continents and has customers which are active across the whole globe (Transporeon 2023,10). This was reflected in its high travel activity and consequent emissions of 1075

tons in 2019 (Table 4). This amount was spread across flights, hotels, taxis and other modes of transport related to travel. However, an overwhelming majority of emissions in the category were related to flights for both 2019 (89%) and 2021 (84%) (Graph 4). Covid19 had the largest impact in this category with emissions decreasing tenfold between 2019 and 2021 (Table 4).
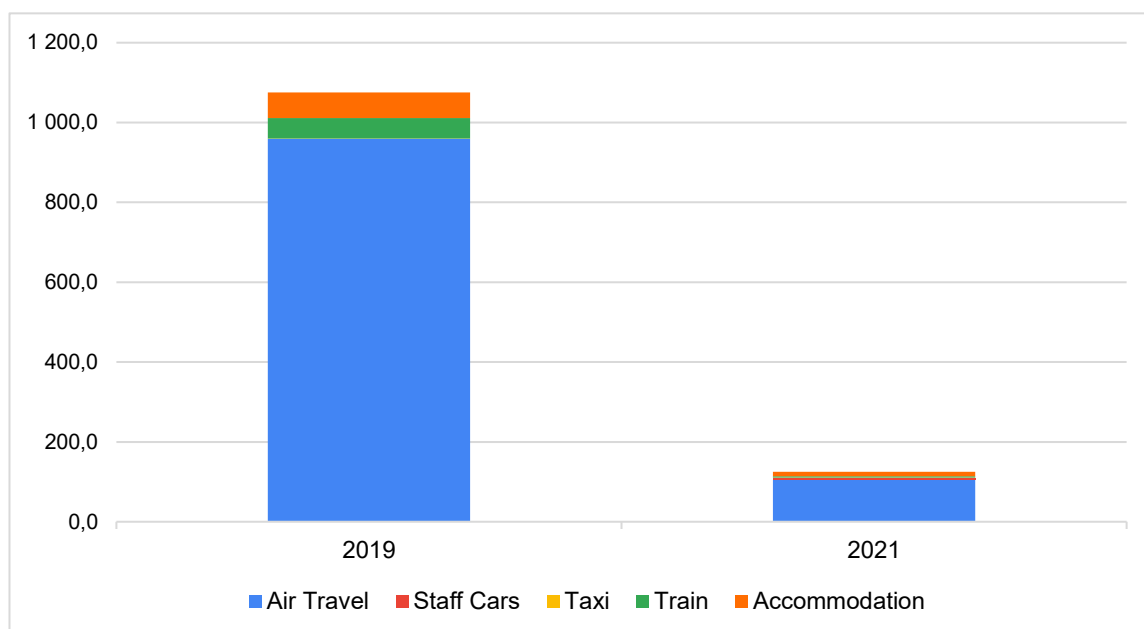

Graph 4: Business Travel sources of emissions 2019 vs 2021, Based on Transporeon Internal documents, 2023

Scope 3 emissions: Use of Sold Products

Perhaps one of the most unique challenges for Transporeon to calculate and reduce, the use of sold products category is the second biggest source of emissions for Transporeon after purchased goods & services. Just like purchased goods & services it was also unaffected by the covid 19 increasing from 1210 tons of CO_2e in 2019 to 1690 tons in 2021, and from 19% of the total to a considerable 30% (Table 4). This may ironically be good news for Transporeon as this category is partially based on the number of users (Transporeon internal documents 2022) and therefore is synonymous with a growing business. That being said due to the nature of the company it may be considered of significant importance when setting and reaching the SBTi targets and remains a difficult challenge.

Other scope 3 emissions

- Capital Goods: One of the largest remaining categories for Transporeon it is entirely consistent of IT hardware which is purchased both to run the company and for each employee (Transporeon internal documents 2022). Due to the increase in personnel and the increase in work from home, the emissions in this category have increased threefold going from 85 tons in 2019 to 297 tons in 2021(Table 4). While more impactful than business travel in 2021 it is not expected to be part of the five main hotspots in the future (Transporeon internal documents 2022) but its rapid growth should be monitored and considered in the future.

- Fuel & Energy-related activities: Due to its' relation to scope 1 and 2 emissions, this category follows a similar trend to our first two hotspots, decreasing due to the covid19 pandemic. The sum of this category emissions was 310 tons in 2019 and 194 tons in 2021. (Table 4)

- Upstream Transportation distribution: For Transporeon this category is relatively unimpactful. In fact, due to the digital nature of Transporeon products this category is entirely due to the distribution via post, of IT equipment to employees (Transporeon internal documents 2022). While it has grown due to the increase in capital goods it remains as low as 0.1 tons in 2021(Table 4).

- Employee commuting & Work from home: Both inputted in the same category these two aspects have an inverse relationship. In fact, the increase of work from home due to the covid 19 restrictions led to a substantial decrease in commuting to offices. Since 2019 employee commuting emissions more than halved going from 97 tons to 44 tons, while work from home emissions skyrocketed from 27 tons to an impressive 362 tons in 2021.This number makes it larger than both business travel and scope 1 in 2021. (Table 4) That being said, similarly to capital goods, even with work from home becoming the norm, it is still not expected to remain as one of the main hotspots in successive years (Transporeon internal documents 2022) and therefore remains of lower priority, although it may need careful monitoring to ensure it does not become a problem for Transporeon.

5   Transporeon target Setting

5.1   Scope 1 & 2

The target setting process for scope 1 and 2 is straightforward and remains the same for most participants. Due to its' direct nature to companies' activities, either through direct emissions or use of energy it only allows for targets which have a direct impact on emissions regardless of company growth or any other external factors. For this reason, absolute contraction in line with 1.5C is the only acceptable target for the entirety of scope 1 and scope 2 as of July 2022. This methodology entails a yearly absolute reduction of 4.2% yearly for companies with a base year of 2020 or earlier which is the case for Transporeon. In fact, with a base year of 2019 and a target year of 2030 Transporeon would have a target of 46.2% using this methodology. This reduction can be set individually for scope 1 and 2 or in a combined manner across both scopes. The combined approach is more flexible and allows compensating excessive emissions in one category with larger reductions in the other. (SBTi Corporate Manual 2023,14-16)

While absolute reduction is the only acceptable methodology across the whole of scope 1 and 2, one more target is allowed for the use of electricity. It cannot however be used across the entirety of scope 2 as according to the SBTi manual "companies should model heat and steam-related emissions as if they were part of their direct (i.e., scope 1) emissions" This method is the renewable energy procurement target which entails procuring 80% of electricity from renewable sources by 2025 and 100% by 2030. (SBTi Corporate Manual 2023,14). Examples of companies using each target variation can be seen below (Table 5).

Scope 1 & 2 targets			
Target options	Companies adopting these targets	Company sector	Referenced Target
Absolute Contraction	Apotea	Food sector	Apotea commitsto reduce absolute scope 1 and 2 GHG emissions 25.2% by 2025 from a 2019 base year.
	Avaya	Software & Services	Avaya commits to reduce absolute Scope 1 and Scope 2 GHG emissions 50% by FY2030 from a FY2020 base year.
Absolute Contraction+ Renewable Energy Procurement	Trimble	Construction and Engineering	Trimble commits to reduce absolute scope 1 and 2 GHG emissions 50% by 2030 from a 2019 base year. Trimble also commits to increase annual sourcing of renewable electricity from 0% in 2019 to 100% by 2025.
	Atlassian Corporation Plc	Software & Services	Atlassian Corporation commits to reduce absolute scope 1 and 2 GHG emissions 50% by FY2025 from a FY2019 base year. In addition, Atlassian commits to increase annual sourcing of renewable electricity from 15% in FY2019 to 100% by FY2025

Table 5: Scope 1 & 2 targets with examples, Data extracted from SBTi: Companies taking action, Enzo James, 2023

5.2   Scope 3

Due to the indirect nature of the emissions in this category the SBTi offers a more lenient approach to scope 3 target setting with multiple options being available. For Transporeon the specific targets are:

- Absolute contraction (reduced ambition and 1.5°C pathway)
- Intensity targets (economic and physical)
- Engagement targets (supplier or customer)

Absolute reduction is considered the highest level of commitment and is often well appreciated by environmentalists. Since July 2022 the SBTi has determined the minimum ambition is now 1.5°C upgraded from the previous well-below 2°C. This has affected absolute contraction for scope 1 and 2, however when it comes to scope 3 the same rules do not apply. As of 2023 the SBTi allows short-term scope 3 absolute targets to align with a more lenient 2.5% yearly reduction for base years earlier then 2020 (Table 1) simplifying reductions in an area where emissions are particularly hard to affect. For Transporeon this means a minimum 27.5% reduction with base year 2019 and target year 2030. This reduction can be applied to specific categories or the entirety of scope 3 emissions. Companies with higher ambitions may choose to encompass the entirety of their emissions in an absolute contraction target. This however entails following the 1.5C pathway with a 4.2% yearly reduction for companies with base years earlier than 2020. (SBTi Corporate Manual 2023,22-33). Examples of companies using each target variation can be seen below (Table 6).

Scope 3 targets: Absolute Contraction			
Target options	Companies adopting these targets	Company sector	Referenced Target
Absolute Contraction reduced ambition across 1 or more categories	AB Volvo	Electrical Equipment and Machinery	Volvo Group commits to reduce absolute scope 3 GHG emissions from use of sold construction equipment 30% by 2030 and from use of sold industrial & marine engines 37.5% by 2034 from a 2019 base year
	Dolby Software	Software & Services	Dolby commits to reduce absolute scope 3 GHG emissions from fuel-and-energy-related activities and business travel 30% by FY2030 from a FY2019 base year
Absolute Contraction reduced ambition across the whole scope	GEA Group	Construction and Engineering	GEA Group also commits to reduce absolute scope 3 GHG emissions 27.5% by 2030 from a 2019 base year.
	Wolters Kluwer N.V.	Software & Services	Wolters Kluwer also commits to reduce absolute scope 3 GHG emissions 30% by 2030 from a 2019 base year.
Absolute Contraction increased ambition across whole inventory	Apple, Inc.	Technology Hardware and Equipment	Apple, Inc. commits to reduce absolute combined scope 1, 2 and 3 GHG emissions 62% by FY2030 from a FY2019 base year. Apple also commits to continue annually sourcing 100% renewable electricity through FY2030.* *The target boundary includes biogenic emissions and removals from bioenergy feedstocks.
	SAP	Software & Services	German multinational software corporation SAP commits to reduce total scope 1, 2 and 3 GHG emissions 40% by 2025, using a 2016 base year.

Table 6: Scope 3 absolute contraction targets with examples, Data extracted from SBTi: Companies taking action, Enzo James, 2023

Intensity targets are made on the basis of decreasing emissions in relation to a certain unit, at a minimum required rate of 7% annually (compounded) or 55% for Transporeon from 2019 to 2030. They are ideal for rapidly growing businesses, however, may lead to absolute emissions increases and are less credible than absolute commitments. They are categorised in two sections: economic and physical. This distinction refers to the aspect considered in relation to emissions reduction. For economic intensity, also referred to as GEVA (GHG emissions per value added) the reduction relates to emissions per value added (profit). GEVA reduction targets are suitable for sectors with stable product prices and emissions tied to company growth. For physical intensity the reduction refers to emissions in relation to a specific physical aspect which can range from FTEs (Full Time Employees), number of items sold, square meters to any other physical aspect which has a relation to emissions. It is typically better suited to companies with a singular product. For both economic and physical intensity, several variables can lead to apparent changes in carbon intensity that are not linked to its emissions, but rather to external factors. (SBTi Corporate Manual 2023,23).

Examples of companies using each target variation can be seen below (Table 7). Intensity targets heavily rely on growth and in the absence of it may lead to more ambitious reductions than the absolute contraction counterpart. This is due to the reduction being double the 27.5% absolute reduced ambition. However, intensity targets remain more feasible at above a 4.5% yearly growth rate, therefore they may be considered as optimal for Transporeon with revenue growth rates esti-mated at 25% for 2023 (Trimble 2022,1) and employee base expected to double by 2030 (Transporeon internal documents,2022).
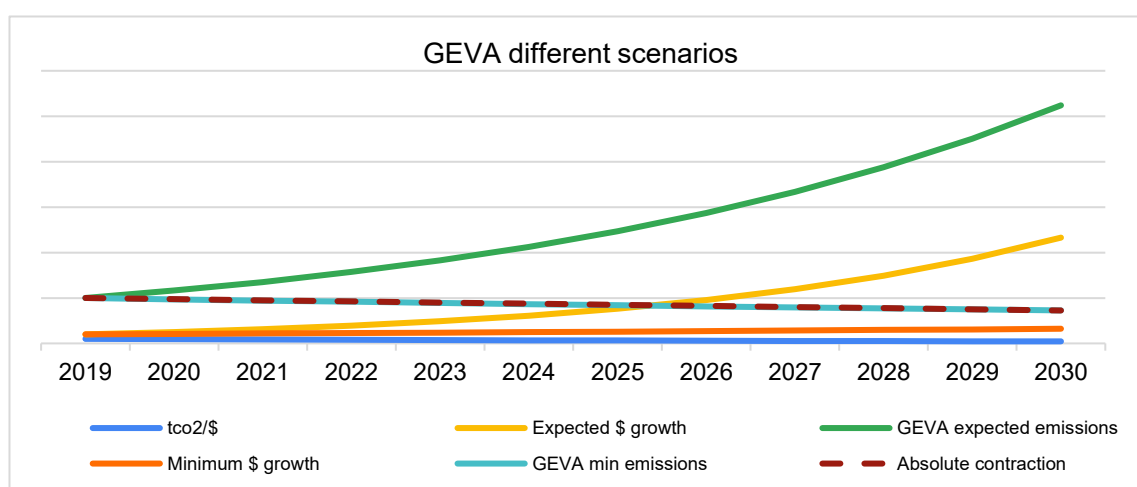
Graph 5: GEVA different scenarios, Data based on Trimble investors website, Enzo James, 2023

Scope 3 targets: Intensity Targets			
Target options	Companies adopting these targets	Company sector	Referenced Target
GEVA across 1 or more categories	ASOS plc	Retailing	ASOS plc commits to reduce absolute scope 3 GHG emissions from purchased goods and services and upstream transportation and distribution 58.2% on a per million pound value by FY2030/31 from a FY2018/19 base year. ASOS plc also commits that 66% of its suppliers covering purchased good and services will have set SBTs by FY2025/26.
	Autodesk	Software & Services	Autodesk also commits to reduce scope 3 GHG emissions from purchased goods and services, fuel and energy-related activities, business travel, and employee commuting 55% per dollar of gross profit by FY2031 from a FY2020 base year. Autodesk commits that 26.5% of its suppliers by emissions covering purchased goods and services and business travel, will have science-based targets by FY2027
GEVA across the whole scope	AutoScout24 GmbH	Retailing	AutoScout24 also commits to reduce scope 3 GHG emissions 52% per EUR value added within the same timeframe.
	Delivery Hero SE	Software & Services	Delivery Hero commits to reduce absolute scope 1 and 2 GHG emissions 50.4% by 2032 from a 2022 base year. Delivery Hero commits to reduce scope 3 GHG emissions 58.1% per million euros of gross profit by 2032 from a 2022 base year.
Physical Intensity across 1 or more categories	LPP S.A	Retailing	LPP S.A also commits to reduce scope 3 GHG emissions from purchased goods and services 51.6% per unit purchased by FY2030 from a FY2021 base year. LPP S.A further commits that 21% of its suppliers by emissions covering upstream transportation and distribution and upstream leased assets, will have science-based targets by FY2027.
	Capgemini SE	Software & Services	Capgemini SE commits to reduce absolute scope 3 purchased goods and services GHG emissions 50% by 2030 from a 2019 base year. Capgemini SE further commits to reduce scope 3 business travel and employee commuting GHG emissions 55% per employee within the same timeframe
Physical Intensity across the whole scope	Arcadis NV	Professional Services	Arcadis also commits to reduce scope 3 GHG emissions from fuel and energy related activities, business travel, and employee commuting 74% per full time employee by 2035 from a 2019 base year
	Globant	Software & Services	Globant commits to reduce scope 3 GHG emissions 55% per employee by 2030 from a 2019 base year.

Table 7: Scope 3 intensity targets examples, Data extracted from SBTi: Companies taking action, Enzo James, 2023

Engagement targets within the Science Based Targets initiative (SBTi) focus on engaging committed companies' supply chains in climate action by adhering to SBTi principles. These targets can be set either on supplier side or customer side and have the benefit of shifting the responsibility of emissions to the party directly producing it, as well as a lower need for data. They require an ability to influence or change your supply chain which is why supplier engagement is more commonly chosen than customer engagement. (SBTi Corporate Manual 2023,24-25) However, with a customer base of large multinationals, often part of the SBTi (Transporeon internal documents,2022) customer engagement may still be a valid option for Transporeon. The specific rate of engagement is chosen based on spend or emissions produced and must ensure that the required 67% coverage of scope 3 emissions is respected (SBTi Corporate Manual 2023,24). For Transporeon this would entail engaging 70% of the category chosen by emissions in climate action. This rate may change if Transporeon chooses to apply both customer and supplier engagement targets.

Scope 3 targets: Engagement Targets			
Target options	Companies adopting these targets	Company sector	Referenced Target
Supplier Engagement	Trimble	Construction and Engineering	Trimble also commits that 70% of its suppliers by emissions covering purchased goods and services and capital goods, will have science-based targets by 2026
	Ubisoft Entertainment	Software & Services	Ubisoft Entertainment also commits that 67% of its suppliers by spend covering purchased goods and services, capital goods, and upstream transportation and distribution, will have science-based targets by 2026
Customer Engagement	Unipart Group	Air Freight Transportation and Logistics	Unipart Group commits that 75% of its suppliers by emissions covering purchased goods and services and upstream transportation and distribution will have science-based targets by 2027. Unipart Group commits that 75% of its customers by emissions covering use of sold products will have science-based targets by 2027.
	Accedo	Software & Services	Accedo Broadband AB commits that 50% of its customers by emissions covering use of sold products, will have science- based targets by FY2027.

Table 8: Scope 3 engagement targets examples, Data extracted from SBTi: Companies taking action, Enzo James, 2023

6   How to reduce Transporeon emissions

6.1   Scope 1

Scope 1 is a significant and direct source of emissions for Transporeon. To reduce at the rate required Transporeon will have to make significant changes to its' car fleet. This may come in the form of one of four options:

- Fleet reduction
- Mileage reduction
- Fleet electrification

Fleet Reduction is seemingly the most direct way to reduce emissions and would simply entail reducing the number of cars in line with the 46.2% decrease by 2030. It is reliant on Transporeon taking a different approach to their company car offering, which is currently in line with reaching 210 cars by 2030 for the whole Transporeon group (Transporeon Internal documents, 2022). To achieve this goal, it is important to reduce the number of employees eligible for cars, and of those eligible increase the number of people choosing car allowance over the company car. This is a unique challenge which requires immediate action to change the direction of the trend currently being created. As of 2019 Transporeon emissions were produced by a total of 80 cars split between diesel and petrol vehicles. A further 20% of emissions were estimated based on FTE for Control Pay which was added to the entities in the same year (Transporeon Internal documents, 2022). Based on these estimates Transporeon fleet would have to go from an estimated 96 cars (80 from Transporeon and 16 from Control Pay) in 2019 to 51 cars in 2030 (Formula 1), under the assumption that the cars are of the same type, have the same mileage and emissions per mile as the models in 2019. This decrease is significant and may lead to discontent among employees. Having said that it also does not take into account the rising trend in electric vehicles and the increase in efficiency amongst future cars, which would decrease emissions and allow a larger fleet than estimated.

Similarly to the reduction in number of vehicles, reducing mileage per vehicle may be a viable direct approach to reducing overall emissions in line with the 46.2% target. This may allow an increase in the overall number of cars, although any

significant rise may lead to an insufficient number of miles per vehicle. Nonetheless, 2021 exhibits the possibility of reducing emissions while increasing number of vehicles by decreasing mileage, almost reaching the 2030 targets (Table 4). This however may not be a sustainable model as reaching the targets while having a fleet with 210 cars would entail reducing mileage by 75.4% (Formula 4) rendering the benefit of a company car basically null.

Seeing that these options both run into the problem of fleet increase, it may be logical for Transporeon to turn their attention to electric vehicles. Often regarded as the future of mobility, many companies have already turned to them for their fleet through the EV100 initiative (The climate group n.d.). The benefits of EVs in emissions reduction vary based on the country of use and the energy mix in the grid. In Transporeon's case the fleet is spread amongst different countries all in the EU with the highest number being located in Germany (Graph 2). This distribution is estimated to result in a 67% decrease in emissions for an all-electric fleet in 2019 compared to Transporeon's reported emissions in the same year(Formula 6). While this reduction could enable Transporeon to meet its emission targets even with an expanded fleet, it might fall short of the expected total of 210 cars by 2030, reaching approximately 158 vehicles instead (Formula 7). This number does not consider the expected improvements in efficiency of EVs, as well as the reduced impact of the grid by 2030. In fact, targets set by the EU for grid emissions in 2030 may allow Transporeon to go well over the 210 cars if reached, allowing for up to 320 electric vehicles (Formula 9). Finally, it is important to consider that fully electrifying the fleet may lead emissions to shift from scope 1 to scope 2 (Barrow et al. 2013,81).

6.2 Scope 2

Heating and electricity contribute a substantial amount to the total footprint and although emissions substantially decreased from 2019 to 2021, almost reaching potential absolute contraction goals (Table 4), it would be advised to take action in order to reach scope 2 targets. The potential actions are the following:

- Reduction in number of offices
- Reduction in offices size
- Switch to more efficient facilities
- Switch to renewable energy

When it comes to reducing number or size of offices this action may be triggered from Transporeon's newly adopted work from home policy. Offices in countries with low employee base could be considered as unnecessary and lead to closure. That being said the impact from this action may lead to little benefits, with offices with lower than 10 employees contributing as little as 17.8 tons in 2019 (Transporeon internal documents,2022) or less than 2% of total scope 2 emissions (Formula 10). Therefore, it may be more logical to consider size reduction of the largest locations.

This can be done by taking advantage of reduced attendance in office following work from home measures and adopting a rotational model where employees book their offices on certain days. This could lead to significant emission and cost reductions for the largest offices such as the Ulm headquarters. With over 5000 square meters (Transporeon internal documents,2022) and by far the largest impact, reducing its' size could have a notable impact on overall scope 2 emissions. While consumption of heating and electricity may not be strictly proportional to the size of premises one could imagine that reducing the Ulm headquarters size by half could lead to up to 50% savings for the Ulm headquarters (Formula 11) and up to 30% savings across the whole of scope 2 as of 2019(Graph 2). Furthermore, this strategy can then be applied to multiple locations increasing energy savings and reducing emissions. However, this option may be problematic as the employee base grows if a return to the offices is reinstated and may require relocation even if successful.

This need for relocation could be seen as an opportunity to switch to more modern efficient premises. Transporeon already boasts an LEED certified office in Krakow (Transporeon internal documents, 2023), and switching more offices to modern locations may enable to reduce emissions. While these locations often come at a higher price, with a reduced need for space Transporeon could see the benefits of relocation without a substantial effect on financials. It is hard to estimate how much this initiative would reduce emissions, and it has to be evaluated on a case-by-case basis, however studies have estimated that LEED buildings may produce up to 25% energy savings compared to typical buildings. (Fowler et al. 2011). Furthermore, these locations may be more apt to hosting renewable energy systems, further increasing emissions reductions.

Switching to sustainable sources of energy may be done in line with absolute emissions reduction or sustainable procurement targets. For absolute reduction, using renewable energy has been shown to substantially reduce emissions from electricity use with emissions reduction estimated to be up to 90% for renewable energy in 2019 compared to the average global grid emissions intensity (Formula 12). Alternatively implementing renewable energy may be done in the prospect of renewable energy procurement targets in line with achieving 100% renewable electricity by 2030. These options would enable Transporeon to account for the largest contributor to scope 2: electricity (Graph 2), however they fail to encompass heating. This could potentially be remediated by switching traditional heating to electric, however it may lead to significant cost increases and most likely to the need for relocation of several offices. In the same way implementing renewable heating systems may be complicated as Transporeon offices are often rented and installing a heating system is not within the realm of possibilities (Transporeon internal documents,2022). Therefore, renewable energy may not be by itself the one solution to fulfilling scope 2 targets, but it remains an excellent tool in the path to reaching Transporeon's goals, both for its high impact and its high feasibility. In particular, the possibility of implementing renewable electricity through the purchase of Renewable Energy Certificates (RECs) from third party providers, without needing to produce the energy on location makes it an excellent option for rented locations (Transporeon internal documents,2022).

6.3   Scope 3

Purchased goods and services is the most impactful category (Table 4) and one of the most challenging to reduce. For Transporeon it is currently estimated entirely based on spend (Transporeon internal documents,2022) and is expected to grow as the company increases its' business activity. However, actions can be taken to decrease emissions such as:

- Decrease spend.
- Switch to more sustainable suppliers.
- Improve data.

Decreasing spend is the most direct path to reducing emissions. Having less suppliers would entail lower emissions, and this can be done for some unnecessary or redundant goods or services. However, purchases often go through a careful

analysis and it is hard to imagine that they could be decreased to the point of making any significant impact. In fact, as the company grows it is more likely that the amount spent on suppliers will increase, with other aspects such as inflation also enabling growth. Switching to more sustainable partners would seem like the logical next step in striving to reduce emissions in this category, but as of today, this would most likely not have an impact, as emissions are based on spend and not on data provided by the suppliers (Transporeon internal documents,2022). In fact, with sustainability often leading to a premium this may have the opposite effect to the one desired. To change this Transporeon could obtain supplier specific data which would give better visibility on the impact of suppliers and enable Transporeon to make more informed decisions. Transporeon can facilitate the improvement of data with actions such as: Supplier surveys, contract clauses and collecting more details on suppliers' work. In alternative, Transporeon may choose to focus on engaging their customers in climate action through the SBTi. This may give less visibility into absolute emissions changes but could lead to reaching engagement targets with low data required.

Business Travel

Of the Scope 3 hotspots business travel is the one which saw the highest decrease between 2019 and 2021 (Table 4). While this is primarily due to the restrictions put in place during the pandemic the almost tenfold decrease shows the potential in large emissions reduction. To fuel this reduction several actions can be taken such as:

- Reducing business travel in favour of online meetings
- Substituting flights with trains
- Implementing the use of Sustainable Air Fuel (SAF)

Reducing business travel is the first and most logical step in pursuing absolute reduction targets. The covid19 pandemic has shown that businesses can thrive while reducing business travel and many report that while business travel is expected to rise it may never go back to pre-pandemic levels (Caputo et al. 2023). This pivot has come in favour of online meetings which also have significant financial advantages. Nevertheless, to avoid a "return to normal" several initiatives can be taken within Transporeon and its' approach to travelling. One initiative

which could take place is decreasing internal travel especially by air. In fact, between 2019 and 2021 the share of internal travel compared to customer related travel has increased substantially overtaking its' counterpart (Transporeon internal documents, 2023). While this is due to the restrictions put in place during the pandemic, it may reflect a future in which online customer interactions overtake physical meetings. This decrease should also be reflected in the internal meetings as they entirely depend on employees. A second action which may ensure reaching the targets is installing a business travel carbon budget. This mirrors the already present financial budgeting of travel but with a focus on GHG emissions. Employees may choose to travel within their budget, however it would decrease annually reflecting the targets set within the SBTi. This action would ensure only essential trips are taken and could be a gradual approach to the problem. However, it may lead to discontent among employees.

Whilst decreasing travel overall should be prioritised it is clear that air travel is the main culprit of Transporeon's high footprint (Graph 4). Due to the German company's business footprint a majority of flights are within Europe and considered as short haul (less than 1500km) (Transporeon internal documents 2022). It therefore stands to reason that train travel may be a valid alternative. In 2019, a significant percentage of intra-EU short-haul flight routes had train alternatives available. Specifically, 31% of the top 150 routes and 29% of the top 250 European routes could be travelled by train in less than 6 hours. These percentages further increased to 49% and 43% when adding to the criteria direct night trains, and journeys involving a night train and taking less than 12 hours in total. Shifting towards trains over planes for short haul flights could reduce combined CO_2 emissions by 5 times on the same route, this number may go as high to 80 times when considering non CO_2 related emissions (GreenPeace 2021).
These emissions savings could be seen by maximising train travel, either outright substituting trips to train travel or offering a more pragmatic hybrid approach with both train and air travel.

Finally, SAF may be an unconventional yet effective way to reduce business travel emissions. As of 2023 purchase of Sustainable Air Fuels is considered as an accepted reduction measure from the SBTi. Similarly, to RECs by acquiring SAF the fuel is put into circulation and used on flights leading to up to 80% in

CO2e in comparison to traditional fuels (Wyman 2023). This reduction is attributed to Transporeon as if they were flying with the alternative fuel therefore creating a lower footprint. This alternative is on the rise but still fairly uncommon due to the limited amount of fuel produced in circulation. This option should be seen as a last resort to reaching targets, both in relation to its' high cost and the critiques it has suffered (Gibbons & Bowersox-Johnson 2023).

Use of Sold products.

Reducing emissions from use of sold products is most likely the biggest challenge among all categories. In fact, due to the strict ties to customers this category is a sensitive topic and one which is not typically positively associated with reduction. While changes in grid emissions may, in time, reduce emissions intensity in this category (EEA 2023), overall emissions are expected to increase as the company grows. Therefore, decisive action is needed such as:

- Limit/ Reduce Growth.
- Change customer base to more sustainable companies.
- Improve data.

While businesses typically embrace growth, "de-growth" has rapidly established itself as a concept to stop the worst consequences of climate change. For Transporeon this would mean stopping or even reversing the growing number of customers, therefore inevitably reducing its impact. However, Transporeon might argue that their service benefits sustainability as it improves efficiency and visibility in one of the world's most polluting industries. It therefore remains unlikely that Transporeon will choose to reduce in this way. Similarly choosing more sustainable customers may also be outside the realm of possibilities. The reasons for this are twofold: first and foremost, this would hurt company growth and customer relationships, secondly Transporeon may argue that its' impact is most suited to companies with unsustainable practices. In fact, due to the nature of Transporeon's product the biggest impacts of the platform may be seen in companies with the most inefficient practices. It therefore stands to reason that this option may not be ideal for the company. The last and best suited option is improvement of data. While this action may not in itself reduce emissions, as any significant improvements in data or methodology may lead to re-baselining, it could lead to more informed choices in terms of emissions reduction. This could

in term mean changes to the platform to reduce its' consumption of data on customer laptops or decreased time spent on platform for a purchase. Finally gaining visibility on customers could lead to decreases in emissions with many customers pivoting towards green energy at a faster pace than grid emissions, and many laptops becoming more efficient in their use of energy. This increase in visibility may be granted through the use of tools such as customer surveys and questionnaires. Finally, in the absence of the possibility to obtain data Transporeon may choose engagement targets although this may be difficult due to low influence on customer decisions.

7   Difficulties and critiques of the SBTi

While the reasons that brought Transporeon to commit to setting science-based targets may be used by other companies to instruct their choices, obstacles it has encountered may be equally helpful to encourage decision making and prepare companies wishing to follow the same path. The journey to the SBTI is riddled with issues which are often similar for most participants. In particular scope 3 seems to be universally agreed upon as the biggest obstacle all along the process. This is despite 96% of companies with released targets including scope 3 as part of their target coverage (SBTi 2022 monitoring report 2023,8). These difficulties can be found in 3 phases across scope 3: Data collection and estimation of emissions, target setting and finally target delivery.

For the first phase 86% of companies cite difficulties in collecting data, mainly from suppliers, (only 6% of companies use supplier specific emissions factors), while 45% of respondents cite difficulties in interpretation of GHG emissions standards guidelines. These issues in data collection and emissions calculation have led 70% of respondents to re-baseline their emissions due to changes in methodology or emissions factors. For target setting 90% of respondents define the target setting as challenging, while for target delivery 50% report being behind in reaching their scope 3 targets. In particular, purchased goods and services and use of sold products are cited as the main obstacle to reaching targets set, with 81% of respondents considering the ability to influence suppliers as the biggest difficulty. This main issue is then followed by the cost of decarbonization (61% of respondents) and inability to track process due to low access to primary data (59%). (SBTi Catalysing value chain decarbonization 2023,5-7,14)

While these issues describe general problematics around scope 3 for participants, they closely mirror the largest issues encountered by Transporeon with both purchased goods and services and use of sold products having the biggest impact on emissions and the least amount of primary data (Table 3 & 4). Furthermore, interpretation of GHG emissions standards guidelines may also be agreed upon by Transporeon with questions arising along the SBTi process on the relevancy for Transporeon of use of sold products emissions (Transporeon internal documents, 2023). Indeed, use of sold products is considered by the SBTi as optional when tied to indirect-use-phase, however it would seem that

Transporeon's case ties to direct-use-phase as per the GHG emissions protocol (Barrow et al. 2013,114). That being said it is of note that of the 100 companies in the software and services sector that have set targets under the 1.5C updated SBTi baseline only 6 specifically mention use of sold products in target setting, further putting under question the relevancy of this category for Transporeon (SBTi Companies taking action 2023).

Other than problematics directly derived from companies experience general issues from environmentalists around the credibility of the initiative may be influent in companies' decision to join the SBTi. Some have highlighted the need for improved transparency, consistency, and comparability of targets, particularly in the context of calculating scope 3 emissions (Giesekam et al. 2021,17-18), while others have raised concerns about the evaluation of SBT methods, suggesting a more comprehensive approach and the need for principles to guide effective methods (Chang et al. 2022,7). These criticisms have in common the need for improved visibility and an assurance in terms of respect of the boundaries set by the Paris targets. In particular, target setting in scope 3 has been called under question for its' more lenient approach with analysis showing that if all companies were to choose the least ambitious intensity targets the IPCC goals would be vastly overshot (Bjorn et al. 2021,11-13). Furthermore, general scepticism around set targets being reached, especially long-term, is widely regarded as an issue for a completely voluntary initiative, with Strategic consultant and author George Marshall admitting: *"Long-term targets and commitments by companies and by governments do not necessarily mean anything. They are they are points in the future and on climate change as a whole […] it's the same in every company sector, so I guess the bottom line on this is what I don't believe that these companies are going to achieve their targets."* (Appendix 4,1) George goes on to further underline scepticism on net-zero commitments being met with George explaining: *"Reducing your first 20% is easy. Reducing your first 50% is hard but possible. Going beyond that becomes really tricky. The final 20% is extremely problematic. I think, probably in many ways, almost impossible"* (Appendix 4,1). These concerns ultimately bring George to conclude that while the SBTi is "still supportive of business as usual" and its' impact should not be overstated. On the other side, he acknowledges the maturity of the initiative and its good intention,

praising its' enforcement of its' rules with the choice of removing companies such as Amazon from the initiative (Rives 2023) upon failed targets. (Appendix 4,1-2)

Others are however less complimentary in their opinion of the SBTi with Trexler and Schendler calling it a "costly distraction" upon its creation claiming it would only account for a "infinitesimal share of global emissions" (Marland et al. 2015). These declarations may hold some truth with analysis showing that only 2 of the 100 top emitting companies still in activity are part of the initiative (SBTi Companies taking action 2023). These companies are reported from the CDP to account for 70% of industrial emissions from the industrial revolution to 2015 the equivalent of 923 billion tons between 1854 and 2015 (CDP 2017,5) a far cry from Transporeon's measly 6482 tons as of 2019 (Table 4). It is however of note that all of these companies are in the energy sector and the SBTi has decided against accepting oil and gas companies until specific sector pathways are set (SBTi oil & gas n.d.). This cautious approach may seem like a big gap in the initiative however George Marshall expresses his support for the choice citing fears of the SBTi excessively relaxing its' targets in favour of a larger adherence to the initiative. (Appendix 3)

However, it is worth noting that due to 90% of the emissions from these companies being from scope 3 and mainly use of sold products, there may still be a role to play for companies outside this list in limiting the effects of climate change. In fact, as of 31st of December 2022 the SBTi covers 2 billion tons of emissions in scope 1 and 2 emissions, with objectives to cover 10 000 companies, 5 billion tons of CO_2e and $20 trillion of the global economy with approved 1.5°C targets by 2025. (SBTi progress report 2022).

8 DISCUSSION

While Transporeon's journey within the SBTi has just begun, its commitment to such an initiative can be an example to follow for much of the industry. The reasons that lead Transporeon to sign the SBTi, which range from reputational benefits to competitive advantage, may not be unique to the German company within its sector, as is reflected by the over 300 services and software companies committed within the initiative (SBTi Companies taking action 2023). However, it goes without saying that in order to be an example Transporeon needs to fulfil its' targets and promises. The next step to do this is target setting. This aspect is pivotal and offers different options all with different advantages for the German company. Having analysed Transporeon's footprint a few options present themselves as most beneficial.

Scope 1 and 2 provide the most ambitious and strict framework in regard to target setting. Absolute contraction, compliant with 1.5°C IPCC targets, is the only option to encompass the entirety of emissions within these two scopes. Only one exception is present for scope 2 electricity where targets may be set around Renewable Energy Procurement, in line with 100% green electricity by 2030. This provides a less data intensive, more viable alternative for many companies but is considered as less credible. (SBTi corporate manual 2023, 14-16).

In regard to actions needed to reach SBTi targets more options present themselves and the complexity is increased. Scope 1 actions suggested revolve around fleet or mileage reductions, as well as, possible fleet electrification. The primary focus for Transporeon should be fleet electrification as this would allow the most flexibility. This is further supported by 2030 EU grid emissions intensity targets (EEA, 2023) which if achieved may allow Transporeon to comfortably reach the expected fleet increase (Formula 9). However, it is recommended that the company additionally push towards reductions in fleet and mileage putting them in line with current trends towards electric cars, decrease in grid emissions and a decreased need for company related traveling. This combination of actions would give Transporeon the best chance of reaching their targets however with a fully electric fleet emissions may shift to scope 2 electricity. (Barrow et al. 2013, 81)

For scope 2 several actions could lead to a reduced impact. These actions revolve around: Reduction in number of offices and office size, switch to more efficient buildings and finally switching to renewable electricity. Once again, a combination of actions may provide the best results, with reduction in size of offices and switch to renewables providing the biggest possible impacts, followed by switch of offices to LEED premises. Due to high impact of scope 2 electricity (Table 4) and the likely addition of scope 1 emissions with fleet electrification (Barrow et al. 2013, 81), it may be advisable to prioritise procurement of renewables in line with targets for scope 2 electricity, rather than absolute reductions.

Having established scope 1 and 2 targets, scope 3 targets pose a bigger challenge. The options are various and have their pros and cons. While absolute contraction is regarded as the most robust and in line with IPCC targets, it is difficult to achieve for a growing company and may lead to failure. Supplier and customer engagement are great to shift responsibility on companies producing emissions but are not as robust and entail having a large influence on suppliers and/or customers (SBTi corporate manual 2023, 26-27). Finally, intensity targets are ideal for Transporeon's expected growth but are the least environmentally robust and rely on growth predictions being fulfilled.

Having seen these options, it is for Transporeon to weigh level of commitment with risk and feasibility. However, due to the expected growth of the company and the direct relation to the two most impactful categories (purchased goods & services and use of sold products) to this growth, it may not be advisable to adopt a global absolute reduction approach. For these two categories intensity or engagement targets may be better suited. In particular, use of sold products may benefit from an intensity reduction target. Due to the nature of Transporeon's business and the high revenue growth projected (Trimble 2022,1) GEVA is advised. Customer engagement remains an option but is not advised due to the low influence on customers. However, engagement targets remain a valid approach for supplier emissions. Actions leading to reductions remain limited in these two categories, but it is suggested for Transporeon to improve data quality to gain better visibility on reductions possible, as well as move to more sustainable partners.

For business travel the highest level of commitment is more feasible with absolute contraction, however a physical or economic intensity target may guarantee the highest chance of success. Either way it is advised for Transporeon to take action to reduce emissions from travel through reductions of flights and use of trains whenever possible. SAF may be used as a last resort, but this is not advised due to high costs and low credibility within the environmental community. (Gibbons & Bowersox-Johnson 2023)

Having outlined the possibilities for targets setting and the reasons for joining at Transporeon it remains to be seen whether this path may be viable across other SaaS companies. In particular, obstacles and issues within the initiative may deter willing participants. Critiques of the project range from internal, through participants, to external from environmentalists and sceptics. Complications in scope 3 for data collection, emissions estimations, target setting and reaching may be primary motives for companies to choose not to join (SBTi Catalysing value chain decarbonization 2023,5-7,14). In alternative, critiques on the true impact of the initiative and its low credibility may reduce the potential benefits cited (Appendix 3; Bjorn 2021; Marland et al.2015; Chang 2022; Giesekam 2021). However, with coverage in 2022 encompassing 2 billion tons of emissions in scope 1 and 2 emissions and objectives to cover 10 000 companies, 5 billion tons of CO_2e and $20 trillion of the global economy by 2025, the impact of the initiative may still hold substantial value for companies joining and for reaching IPCC targets.

9 CONCLUSIONS

The conclusions obtained from the analysis of case study Transporeon in its commitment to the SBTi may differ from reader to reader. Some may question the true value of joining for other SaaS companies, the impact of the initiative, as well as the possibility of Transporeon setting credible reachable targets.

It is reasonable to conclude that joining the SBTi may be an excellent option for many SaaS companies. The substantial opportunities derived from this choice may be attractive to many entities. Furthermore, with increasing pressure and the rise of sustainability as a "third KPI", companies may find value in joining before environmental commitments go from opportunity to obligation, either through customer or legislation induced pressure.

In addition, after thorough analysis there is reason to consider that Transporeon can honour its commitment to the SBTi through several different pathways. These pathways, especially for scope 3, vary in credibility and feasibility and it is for Transporeon to weigh these two aspects against each other.

For scope 1 it is recommended that Transporeon formulate the following target: Transporeon commits to reducing combined scope 1 and 2 emissions by 46.2% from 2019 to 2030. Transporeon also commits to increasing renewable energy procurement to 100% by 2030. To reach it, Transporeon is recommended to switch to a fully electric fleet while also reducing number of cars and mileage in scope 1. For scope 2 it is recommended to switch to smaller, more efficient offices while maintaining commitments to renewable energy procurement with the use of RECs.

For Scope 3 more options present themselves which remain valid but decrease from most ambitious to least in the following order:

- Transporeon commits to reducing business travel 27.5% from 2019 to 2030, engaging 70% of suppliers by emissions in Science Based targets and reducing use of sold products emissions 55% per added value in $ in the same time period.

- Transporeon commits to reducing business travel 27.5% from 2019 to 2030 reducing overall use of sold products and purchased goods & services emissions 55% per added value in $ in the same time period.

- Transporeon commits to reducing overall business travel, purchased goods & services and use of sold products emissions 55% per added value in $ from 2019 by 2030.

The needed actions to reach each of the set targets decrease in relation to the reduced ambition, however due to the nature of the initiative and the nature of Transporeon as a "sustainable" company the highest feasible level of commitment is advised. To honour these targets, it is recommended for Transporeon to decrease number of flights and switch to trains whenever possible, applying a policy which limits flying in line with a carbon emission budget. It is advised to prioritise reduction of internal flights. Furthermore, to meet the targets set, it is essential for Transporeon to engage and switch suppliers in line with 70% engagement targets, while improving data in use of sold products to inform emission reduction actions. Emissions may however still increase, due to the two largest categories not being covered by absolute reduction targets.

This leads into the critiques that many environmentalists have on the true impact and credibility of the Science Based Targets initiative, which paired with scope 3 issues on the project may lead to companies not joining. However, while the impact of the initiative should not be overstated or come at the peril of needed legislation, the substantial coverage of the SBTi has the potential to contribute to significant CO2e reductions if companies are to comply to their commitments and can ultimately be seen as a step in the right direction.

Looking into the future it may be of interest to see how the SBTi journey continues at Transporeon after the April 2023 acquisition by SBTi validated company Trimble Inc. It remains to be seen if Transporeon will pursue its journey or join forces to integrate Trimble targets however both companies show great optimism regarding the path ahead with Corporate Sustainability Manager at Trimble Inc Duncan Williams declaring: "*I think Transporeon is a great fit for Trimble internally certainly and externally for what we can do in sustainability. It is to be determined on what's going to happen in that space. But yeah, I can see only positive things.*" (Appendix 4)

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APPENDICES

Appendix 1. Transporeon internal interviews

Interview 1: Serge Schamschula

Enzo James: *"How can we support our customers in support within the SBTi?"*
Serge Schamschula: "*On a very neutral level companies, which have committed to science-based targets need to rely on the cooperation with other companies which are working on science-based targets or equivalent, and this is no big surprise. In the meantime, the average company finds 20% of their emissions in scope 1 and scope 2, so what they can impact. The other 80% of their emissions are scope 3, so not in their own hands. What they need for that is the cooperation of their suppliers and customers, it's as simple as that. Therefore, on the long run, if a company doesn't want to drop out of the science-based targets or resign, they have no alternative than to push their own suppliers to commit to science-based targets and decarbonize accordingly. In that sense, if Transporeon wants to be a significant supplier of the industry, I don't see the alternative. We can debate if it was needed yesterday today or tomorrow, but I have no doubts at all it's needed."*

Enzo James: *"Where is pressure to join the SBTi coming from?"*
Serge Schamschula: *"From my Understanding the pressure to join the SBTIs comes primarily from the end user, from the consumers. This is from what I see, the closer a company is to its customers the more pressure they have to join the SBTi. For example, fast-moving consumer goods are obviously pretty close to the customers. Retail has been slightly ignored people don't think retailers like Carrefour or Tesco when they buy the product, they think more about the brand they choose to buy or not to buy. But we can see also from discussions with shippers that it's primarily fast-moving consumer goods. Then, the entire value chain after that, in a process which I call the domino effect."*

Enzo James: "*Would you say customers have applied pressure?"*
Serge Schamschula: *"I would say that it's primarily global large organizations, where this is a subject. Has there been a customer who came with the gun in his hand and said, If you don't commit to the SBTIs, we will drop business from as of tomorrow. No, not that."*

Enzo James: "*Would you say the SBTi is needed for Transporeon?*"

Serge Schamschula: "*Transporeon is arguing that they are the ideal and needed partner to Make the business for our customers more efficient and more sustainable. So, what's the alternative?. We can debate as of when but we cannot debate the yes or no. This is a no-go. It's part of the mission statement and it's just a consecutive action that we have signed the sbtis. To not deviate from our own mission statement to that extent.*"

Interview 2: Stephan Sieber

Enzo James: "*How would you define Transporeon in a few words? What is Transporeon as a company?*"

Stephan Sieber: "*We are a digital freight platform in essence. We facilitate the full process between people who have a freight problem and people or organizations who can solve a freight problem. When I say facilitate the whole process it includes: bringing those business parties together, matchmaking and also the full execution of the process until the services are paid and settled. Our main focus is the trucking industry on the one side. That's the most dynamic the most fragmented part of the transportation industry. And wherever there is volatility, high fragmentation, high dynamics, obviously a digital platform like Transporeon can provide most value.*"

Enzo James: "*How do you think the future of logistics looks in term of environmental sustainability? And what is Transporeon s role in it?*"

"*So look, I am firmly convinced and I conviction on that hasn't changed, it's probably just a little bit the timeline that has changed because of those observations in the last nine months, but I'm firmly convinced that going forward, after managing logistics for about 200 years there were two KPIs: quality and cost. There is now a third KPI in the mix and that is sustainability. And that KPI will not go away anymore. The importance of that KPI will further increase very soon. That KPI will have an equivalent importance to the other KPIs. I don't think that it will ever be the only KPI we will pay attention to right it will always be a bit of a balance. Now the role that Transporeon plays in this game is very similar to the role we play in the traditional 2 KPIs. If I have to boil down our value proposition to customers then it is creating optionality and we are giving optionality to our customers. for*"

themselves decide based on those three KPIs how they want to weigh those KPIs how they want to weight those attributes. Do they want to go for the lowest emission type of transport regardless of the cost. Do they want to go just for the cheapest way and don't pay any attention on sustainability and quality or do they want to find some sort of a balance between those three KPIs and frankly, not surprisingly I think all companies will go for a balance between those three KPIs. This is probably also changing depending on market situation, depending on size of a customer order, eccetera. But having that optionality, having on one side the transparency, the knowledge, the visibility about how the data looks like and then also understand what options are there to drive it in one or the other direction and execute those options that has a massive value in my opinion. That's the value we are creating and hence, I am sure we will be a player in that role, in that game and I'm also convinced that at some point in time customers are willing to share some of the value that they are pulling out of this functionality. Hence we will have a chance to also make a business with it."

Enzo James: *"Why has sustainability become important for Transporeon?"*
Stephan Sieber: *"It's twofold as I said, we predominantly deal and play in the trucking industry and obviously, trucks burn a lot of fossil fuels and because of the fragmentation and the dynamics in the market, it also tends to be a part of the transportation industry, that is less optimized and less efficient. So there's a lot of waste, too much waste. Hence, it enjoys an increasing importance for our customers. The second aspect it is important for us as a company. We employ a lot of young people. Our average age is 35 and that is a generation that rightfully asks their employers to also take care of these aspects of our society of our business our economy, and that was just something that both for us as a company and for us also as a solution provider there's a really good fit and it helped us a lot to come up with creative products with projects that people want to engage in and it overall has been a good investment for us as a company and then there is a personal aspect, right?For me as a CEO and for our system management team, we wanted to address the need for more sustainability certainly on the ecological side, but there are other aspects of sustainability that we are also taking care of. We have a fairly comprehensive ESG strategy and ESG reporting that we've put into the company and I feel more for a company of our size taking good action on these topics."*

Enzo James: *"So in December of last year TP joined the SBTi. Why did Transporeon take this commitment and what impact does it have on the company and the customers?"*

Stephan Sieber: *"We looked at our emissions and even more at the measures we can take or we could take in order to: on the one side start to get a more accurate measurement and then on the other side, once we have this in place, also a reduction of the emissions. The conclusion back then was that there's things we can do which we think make a lot of sense, and we actually also think are very adequate and very reasonable if we do them, and those things almost felt like no brainer activities for us. At the same time, we also realized that if we do these things, we would basically be pretty much in line with the SBTi and their guidelines, so why not then also sign up for it? The less pragmatic approach is that we were reaching out to external companies, specifically one external agency, and asked for help. Because as a small company, we don't have many people in our organization that do our own sustainability as a full mandate, and hence we were reaching out to external organizations, trying to learn as much as we could, and trying to follow some best practices. For me SBTi is not only an initiative that you commit to, it's also a set of best practices from other companies that you can benefit from, so it's not only that we put ourselves under pressure to do something, we're also getting a lot of help by being part of such an initiative and by applying the same standard like all the companies around us."*

Interview 3: Eckhard Rautenberg

Enzo James: *"Was the possibility of climate legislation a part of the decision making or is it a hidden benefit?"*

Eckhard Rautenberg: *"At the time of taking the final decision to sign the SBTi commitment letter (i.e., Dec 2022), the new legislation on Corporate Sustainability reporting (EU CSRD) was already on the horizon, but not yet published or not being implemented into respective national law. Transporeon will fall into the scope of the EU CSRD by the FY 2025 with a reporting obligation in 2026. However, the bigger pressure is definitely coming from our big (shipper) customers, that are all global US, UK and DE stock listed corporations, ("blue chips") and requesting their suppliers (such as Transporeon) mandatorily to support them in reaching their climate goals and to adhere to the SBTi."*

Appendix 2. Transporeon customer interview

Enzo James: *"How important is it to engage your suppliers in action in regard to the SBTi, and why is it important for you that your suppliers reduce their emissions?"*

Customer: *"As simple as that, I mean we don't own any fleet apart from some exceptions in UK for example but all the rest is outsourced. So we rely on third party logistics providers and on carriers and that's why we cannot go through this transition by ourselves. We can only do it by definition by gathering all the concerned stakeholders around the same table, but I'm thinking also about fuel and energy providers, I'm also thinking about organizations trying to advocate for greener logistics solutions. So, we have a quite broad panel of external stakeholders we deal with on a regular basis, in order to make it happen to create the right ecosystem and to get the solutions off the ground. So, cooperation is absolutely key and one more point cooperation with peers also means with other shippers which is also absolutely relevant. We basically are all facing the same issues, the same challenges, sometimes roadblocks and we all have very similar goals and targets. And this journey is new for everyone. So, cooperation, a kind of pre-competitive cooperation, if you want, is absolutely relevant and could only bring benefits in my point of view to everyone."*

Enzo James: *"I don't believe you have any Supply engagement targets from what I can see it's only absolute contraction, but would you say that for a supplier to have signed the SBTi gives them a competitive edge over other suppliers for you?"*

Customer: *"When we run tenders or when we need to decide which partner, we need to work with, it's not anymore only about cost and service level, like it was maybe in the past, but sustainability is absolutely a third priority having the same level of importance of the two other ones. This is why, we absolutely appreciate and actually request that even our suppliers are working in any similar process. It's also important that they follow the same rules when they calculate the CO_2 reduction. In the end, we need to talk the same language."*

Appendix 3. Corporate Sustainability manager at Trimble Duncan Williams interview.

Enzo James: *So why was signing SBTi so important for Trimble and maybe also why is it different from other initiatives? What makes it a good fit for Trimble?*

Duncan Williams: *"I hate to say it whilst sitting in the private sector, but I think the private sector is moving ahead quicker than government regulations are catching up. So really what we've seen is that there's pressure in the private sector from customers from investors to say "Hey, what are you doing as a company?" That pressure really is driving companies to want to report and it's difficult as an international company. The science-based Target fits well for us you don't have to go and try and use various countries regulatory standards to report so it was important for us to show people what we're doing, and it was a good fit for us and ties well back to the science."*

Enzo James: *"How can Transporeon support Trimble and it's sustainability journey obviously regarding the SBTi, but also in a general sense?"*

Duncan Williams: *"Yeah, so we always talk about sustainability internally at Trimble and externally.Internally is what I manage and I think I'm hopeful that Transporeon technology can help us with things like tracking our shipping and freight. We'll see what comes out of that. So that'd be internally and then externally, Trimble is looking into sustainability solutions and Transporeon has some sustainability modules available for the transportation. So that's exciting in both regards. I think Transporeon is a great fit for Trimble internally certainly and externally for what we can do in sustainability. It is to be determined on what's going to happen in that space. But yeah, I can see only positive things.".*

Appendix 4. Strategic consultant and author George Marshall interview

Enzo James: *"What do you think about targets set by companies joining the SBTi?"*

George Marshall: *"Long-term targets and commitments by companies and by governments do not necessarily mean anything. They are they are points in the future and on climate change as a whole. The history of that has been an a real abject failure to deliver on targets by everybody. So there's progress and they say well we're not as far as we would like, but let's look at how good the progress is and the reality is the progress is very very weak. I think it's the same in every company sector, so I guess the bottom line on this is what I don't believe that these companies are going to achieve their targets."*

Enzo James: *"What would you say to companies that are making progress towards targets set?"*

George Marshall: *"Reducing your first 20% is easy. Reducing your first 50% is hard but possible. Going beyond that becomes really tricky. The final 20% is extremely problematic. I think, probably in many ways, almost impossible".*

Enzo James: *"What are your impressions of the SBTi?"*

George Marshall: *"My impression, I have to be careful here because I don't know enough, but my impression is the people who are organizing the SBTi are doing it with my comments in mind and that the integrity of the measure is something which is important to them. I think removing Amazon and other companies supports this and is a great move in that direction. However I think what we need to be careful about the claims we can make for what it can deliver So first of all, yes good. It's good for companies to come together, but they do this for there's pressure so let's not make grandiose assumptions and overstate the impact it has. I think that companies that are involved in serious emissions like for transportation sector i, like parts of manufacturing particularly heavy industry, they can't make the targets and so they will need other measures they will need legislation. They might need compensation. They might need new technology. When people see*

something like SBTi it becomes a tool in this wider political narrative game and that's what worries me. So people saying look companies can deliver! Look at this progress! Look at how far we're moving! And I see this also of course in the SBTi which also wants to make these claims. Look at the billions and billions that are involved in this initiative over the supporting this so great! They want to talk themselves up. Everybody wants to talk it up. I'm currently right now writing a book on the psychological responses to climate change. I'm researching this whole issue of glass half full glass half empty of how the competition between our optimism and pessimism And SBTi sits within that conversation as something that is saying look yes, things are bad and it's serious, but look at how much progress we have. And I like hope and I like optimism, but I'm afraid it's part of a wider narrative game. As I said, we need to be very we need to be very very careful of that."