Course: SMMM40
Term: Spring 2022
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Examiner: Anette Svingstedt

Latest developments in sustainability reporting:
How the TCFD framework shapes the understanding of climate risks

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Master's thesis

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Professor Hervé Corvellec, for his valuable suggestions, queries, and constructive feedback that have contributed immensely to the writing of this thesis. Your candidness, dedication and guidance will stay with me forever.

I would like to thank my mother and my godmother for their unconditional love and support. It is because of your undismayed trust that I have continuously challenged myself. Finally, I would like to thank my closest friends for their encouragements, attention and for the protection that they have showed along my personal journey. I am extremely lucky to have you in my life.

Helsingborg, 2022/05/17

ABSTRACT

This thesis explores how the latest trends in sustainability reporting are shaping the understanding of climate-related risks. Having the Task Force on Climate-Related Financial Disclosures (TCFD) framework as a proxy, this thesis focuses on the double materiality perspective, namely on how new disclosures are related not only to organizational efforts in lowering emissions, but on disclosures based on a climate-scenario analysis wherein companies are stressing the impacts of climate-related risks on their infrastructure and operations in the same time. The aim of the study is to provide insights on how organizations are understanding climate-related risks through the double materiality perspective, how they integrate these risks in their future strategies, and if strategies are coordinated - in the same sector. Having the relational theory of risk as a lens, this study addresses the construction of risk through narratives. The empirical material consists of aviation companies' reports that have included the disclosures against the TCFD requirements, from which themes have emerged. These themes are related to how organizations can be both an object at risk as well as a risk object. By revising the relation theory of risk, the analysis showcases how companies construct sequences of risk objects, in an attempt to develop knowledge and agency. Moreover, two final themes will be presented that emphasize the industry's response not only to risks, but to fears. The fears that have been identified to drive future engagements are the fear of a regulated market and the fear of a growing environmental awareness to which companies, in unison, reconstruct in opportunities.

Keywords: sustainability reporting; TCFD; relational theory of risk; risk communication; environmental risk communication; risk construction; climate-related physical risks; transition risks; aviation industry.

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1. INTRODUCTION

1.1 Sustainability Reporting

Climate change has become one of the greatest threats facing the world today. The Brundtland Report (UNWCED, 1987) in 1987 highlighted the need to promote a global sustainable development, but the urgency has not been acknowledged in the business society at the time (Kolk, 2005; 2010). Businesses were firstly interested in economic and social responsibility, which has become an emerging doctrine, to be named as Corporate Social Responsibility (Steensen & Villadsen, 2019). Corporate Social Responsibility (CSR) has also been associated with the obligation of businessman to pursue those policies, to make those decisions, or to follow the lines of action which are desirable in terms of the objectives and values of our society (Carroll & Shabana, 2010). In the early stages in the 1970s, the center of discussion around CSR was touching upon social responsibility, responsiveness and performance and evolved up to 2000's around business ethics and business legitimacy (Carroll & Shabana, 2010). Companies wanting to disclose their CSR strategy had to pursue goals beyond their legal responsibilities as they struggled to develop reputation (Gray et al., 1995; Carroll & Shabana, 2010). Early studies emphasize that organizations reported symbolic assurance since it preserved their flexibility and resources in order to be consistent with social values and expectations (Ashforth & Gibbs, 1990). Such views were argued to be mostly related to corporate management perspectives, concerned about the success of the company (Gray et al., 1995).

Organizations were criticized to link their practices to financial performance and business fulfillment (Carroll & Shabana, 2010). In this regard, CSR has been argued to be more than a social value led model (e.g., for non-economic reasons), namely a business case model based on purely economic reasons (Kotler & Lee, 2005). CSR reporting was argued to add legitimacy to a business (Suchman, 1995; Deegan, 2002; Morsing & Schultz, 2006), in research and practice (Mori Junior et al., 2014), wherein organizations seek to ensure that they are operating within the society's changing norms (Brown & Deegan, 1998). However, since sustainable development became the objective that businesses had to follow, it started to offer competitive advantage and a superior customer value (Bocken et al., 2014). Nonetheless, environmental concerns were emphasized of not being in the spotlight of organizational responsibility

(Ingham & Havard, 2015), although this was one of the objectives of reporting (Caroll, 1979). Therefore, CSR evolved to more specific disclosures, namely Environmental, Social and Governance (ESG) reporting, due to the recognition of various interdependencies between organizations and the societal and natural environment (Hörisch et al., 2014).

After CSR, ESG was also criticized to be a rhetorical strategy to construct legitimacy for market capitalism (La Torre et al., 2020; Lains, 2020) with nothing substantive to say about accountability or sustainability (Milne and Gray, 2012). As a major problem, in reporting companies were scrutinized to lack the understanding of their interdependencies, especially with the natural environment (Talbot & Boiral, 2018), since the process is based on the information provided by the organization itself (Dillard and Vinnari, 2019). However, numerous frameworks and initiatives have been developed to make the process understandable and easier for organizations (Harris, 2020; D'Aquila, 2018; Hörisch et al., 2014; KPMG, 2017). Under CSR, ESG, corporate citizenship or simply under sustainability reporting (Biondi et al., 2020; Roca & Searcy, 2012), companies provide explanations for how they meet sustainability challenges (Schaltegger, 2003). Nonetheless, it is still a debatable topic since there is still a degree of reluctancy towards the relevance of the information in such reports (Bartels et al., 2016; Searcy & Buslovich, 2014). Scholars have mainly criticized financial and non-financial reports, e.g., sustainability reports, for not being valuable sources of information when it comes to sustainability indicators and information diversity, failing to assess a company's long-term value creation (Boesso, 2003; O'Dwyer & Unerman, 2020).

Organizations are currently under a lot of pressure to motivate and explain how they create value over time (Vitolla et al., 2019, Sierra-García et al., 2015). Even with changing norms, corporate sustainability disclosure has been disputed to be just a façade (Cho et al., 2015), mainly used by companies to seek approval for operations (Ching & Gerab, 2017) from different groups of stakeholders (Deegan & Blomquist, 2006; Roca & Searcy, 2012) that may have different opinions about how the organizations should operate (Freeman, 1984; Deegan & Blomquist, 2006). Organizations were criticized to disclose information that would maintain their support, instead of contributing to society as a whole (Deegan & Blomquist, 2006). Sustainability reporting has also been scrutinized to be a mean by which organizations portray themselves in a beneficial light (Jones, 2011; Font et al., 2016), consequently legitimizes their actions in society (Laine, 2005). This was brought to attention by findings in variations of how sustainability is defined (Boiral, 2013), and measured (Talbot & Boiral, 2018), by companies

in different industries or even in the same industry (Bhatia, 2012; Hooper & Greenall, 2005, Cowper-Smith & Grosbois, 2011; Karaman et al., 2018; Bartels et al., 2016), where information doesn't seem to be comparable, which led to more ambiguity (Searcy & Buslovich, 2014; Font et al., 2016).

Presently, in the light of climate action's urgency, investors need more information to understand the relationship between climate change and investment risk (Arvidsson & Dumay, 2021). Shareholders such as particularly large investment institutions and pension funds are mobilizing internationally to motivate corporate action on climate change (O'Dwyer & Unerman, 2020). For example, Morningstar increased its sustainability funds and more than doubled investments to €120bn in 2019 (Flood, 2020), McKinsey states than more than a quarter of assets managers seek to integrate sustainability principles (van Steenis, 2020) and Blackrock announced investment policy to address the risks attached to global warming (Henderson et al., 2020), although it voted against climate resolutions previously and invested preliminary in fossil fuels corporations (Henderson et al., 2020). With the new focus, a problem exists in the lack of high-quality information upon which to base their decision (van Steenis, 2020). Multiple non-financial reporting frameworks, guidelines and standard are causing confusion, and new research focused on how organizations are engaged in strategic thinking and prepare for future scenarios is lacking (O'Dwyer & Unerman, 2020; Arvidsson & Dumay, 2020).

1.2 ESG reporting and TCFD framework

ESG factors continues to drive corporate reporting and performance (Adams, 2017). Under the threat of climate change, new regulations have supported measures of adapting and mitigating it, such as EU Directive (EU, 2014), in line with European Green Deal goals of reaching carbon neutrality by 2050 (European Commission, 2019). However, research has previously shown that climate risks are rarely introduced in decisional processes (Johnson et al., 2021) which makes mitigation strategies, once again, questionable. ESG reporting was criticized to provide information for "green investments" of how they are lowering their environmental impacts (Schaltegger, 2003; Milne & Gray, 2012), but only as a symbolic engagement (Cho et al., 2015; Boiral, 2013). Sustainability was scrutinized to be applied holistically with companies balancing needs for profit (Lacoste, 2016). Sustainability reporting was also argued to be a

story told in order to create a company's identity and sensemaking. On the other hand, a story of commitment and effort would not be complete without the story of progress and achievement (Abrahamson & Baumard, 2008). This has raised concerns if organizations actually understand environmental risks, and if they have any future mitigation strategies (Andersson & Arvidsson, 2021) which has informed my aim of study first.

Sustainability reporting was also linked to increased public awareness through reflexivity arising from corporate actions (Unerman and O'Dwyer, 2007). With an increased focus on environmental perspective and the urgency to act and mitigate climate change, a new framework has been developed, namely the Task Force on Climate-Related Financial Disclosures (TCFD). Companies are mandated not only to act on mitigating climate change, but to comprehend how climate-related risks are affecting their large spectrum of operations as well and how could they build resilience (O'Dwyer & Unerman, 2020). This perspective encourages the concept of double materiality (TCFD, 2017), a concept that recognizes that companies must take responsibility and manage the potential adverse impacts of climate change, which is yet to be explored, and of great interest as to how it may change the understanding of risk cultures in organizations (O'Dwyer & Unerman, 2020). The concept of double materiality as well as the perspective of the TCFD framework have informed my aim of study second.

1.3 Risk in TCFD framework

TCFD framework encourages companies to map the physical and transitional risks that are likely to affect many business models through severe disruptions in supply chain and destruction of assets, for example (TCFD, 2017). Physical risks are related to higher temperatures scenarios which increase the incidence of extreme weather conditions and natural disasters that finally will affect the firm (Barro, 2015). Transition risks are related to how the company responds to climate change (Andersson & Arvidsson, 2021). But what makes the TCFD special is that it aims to provide the dependencies to which the corporation is exposed (Humphrey et al., 2017), instead of providing information only on the corporation's actions towards its stakeholders (Unerman, 2020). This is done through scenario planning, from short to long term analysis (O'Dwyer & Unerman, 2020), based on effects of increased temperatures from scientific evidence found in the IPCC reports. TCFD encourages companies to map their

risks and opportunities flowing from the change of climate with an emphasis on organizational assets (TCFD, 2017). Since it was stressed that a low-carbon economy could turn assets into liabilities (Bos and Gupta, 2019), yet with market and reputational risks currently at stake (O'Dwyer & Unerman, 2020), opportunities are to be created for a net zero transition following the state of the climate (Duke et al., 2019; O'Dwyer & Unerman, 2020).

TCFD was also recommended by the World Economic Forum as an aligned reporting template for climate-risk reporting under the "Planet" pilar (WEF, 2020). Being a new framework, research based on qualitative methods that will contribute to both academia and practice on how financial disclosures on climate-related risks are potentially changing the organizational culture of risk is lacking (Anderson, 2019). Scholars emphasized a context-specific study is required to analyze practices of climate risk management that TCFD encourages (Labelle and Rouleau, 2017; Palermo et al., 2017; Ford et al., 2020), as well as possible research on powerful narratives that may communicate anticipation and preparation for future changes (Haigh, 2019).

Another research gap that picked my interest is represented by a need for understanding how climate-related risks are to be conceived and constructed (Hall et al., 2015), especially when global warming can be portrayed differently in such scenarios (TCFD, 2017). It has been asserted that uncoordinated efforts to a low carbon economy could translate into further substantial disruptions to the economic, social, political and technological environments of companies (Carney, 2005; Santos et al., 2019; Andersson & Arvidsson, 2021). As investors and asset managers are becoming more interested in financing sustainability-related projects, risk communication can play a major role in reporting and steer decision-making.

1.4 Risk communication and the relational theory of risk

It was emphasized that production and diffusion of narratives about the possibility of negative events (e.g., climate-related risks) is influencing planning, action, intentionality and decision-making (Slovic, 1999). On the other hand, risk also emerges whenever and only when someone perceives the possibility of someone or something being harmed (Campbell, 2006). Similarly, what it is to be perceived as a negative event is contingent on what is considered to be of legitimate worth (Jonas, 1984). Risk understandings and conceptions express what is to be aimed for, care for, and feel a responsibility to achieve (Jonas, 1984). Moreover, studies of risk

perceptions are focusing on risk trade-offs that can be made between perceived risks and perceived benefits (Starr, 1985).

Risk has been further stressed to be a semantic creation that occurs within a communication context. Developed by Boholm and Corvellec (2011), the relational theory of risk emphasizes that a relationship is built between a risk object and an object at risk, when the former is threatening the latter. The relationship is a situated cognition of how a person constructs the risk object with what is considered valued and protected, established through a narrative (Corvellec, 2010). Here, actions and decisions to act are born, and moral orders of blame and governmentality follow (Boholm & Corvellec, 2011). Moreover, risk communication was stressed to be highly important in stabilizing the relationship so that these practical outcomes and engagements are finally obtained (Boholm & Corvellec, 2011).

The relational theory of risk was revised with a perspective on the observer that may not have all the external information to even perceive risk, mainly due to risk being a part of a complex external environment (Christofferson, 2018). In this external environment, risk can be hardly understood, and in this situation in can be regarded as a danger (Christofferson, 2018). On the other hand, the context from which an observer understands risk is also important, since it can derive from a social context where it is collectively constructed (Boholm & Corvellec, 2011), such as an organization (Pérezts & Picard, 2015), with the potential of this perceptions to affect the relationship between objects and distort future actions (Boholm & Corvellec, 2011). In this regard, I found the relational theory of risk to be a relevant theory that could be applied especially when addressing environmental risks.

Climate related-risks will soon play a major role in companies' future strategies, and the importance of their perception, communication and neglection informed further my aim of study. Since companies are now more than ever using sustainability reporting to disclose their corporate strategies, I was curious on newly TCFD framework and current narratives that may depict how organizations construct risk relations and what engagements are obtained. Therefore, I will present my research aim and questions in the next subchapter.

1.5 Research Aim and Questions

The aim of my study was first informed by sustainability reporting critiques regarding environmental disclosures. Previous research has stressed different perspectives on why and how organizations are engaging in sustainability reporting as it was touched upon previously in my introduction. Stressing the urgent need for climate action, my interest was directed to the environmental perspective, mainly on climate-related risk disclosures, and how future mitigation strategies are considered. Since newly developments in sustainability reporting are trying to attract organization to report better on climate-related risks, I was curious on how the latest framework on sustainability reporting, namely the Task Force on Climate-Related Financial Disclosures (TCFD) could influence this process. Because the TCFD is emphasizing the double materiality perspective and has an innovative approach to highlight the dependencies of organizations with the climate, it was recognized to have the potential to help organizations understand risks to a great degree, potential that is yet to be explored. Such potential informed my aim of study second. Thirdly, I had also taken into account the current research that emphasize a need for understanding how climate-related risks are narratively conceived and constructed and I have chosen to conduct my analysis through the lens of the relational theory of risk, developed by Boholm and Corvellec (2011). The theory problematizes the complex construction of risk with what is to be valuable for the observer, emphasizing a semantic association between objects, established through narratives, having the potential to further steer practices and decisions to act.

The last element that informed my aim of study was the previous research that stressed the importance of coordinated effects towards a low-carbon economy (Santos et al., 2019; Andersson & Arvidsson, 2021). My question was therefore formulated to include all the mentioned interests. The following research questions are investigated to accomplish my aim:

RQ1: How do companies understand climate-related risks through the double materiality perspective?
RQ2: How do companies respond to climate-related risks and how are they integrating them in their future strategies?
RQ3: Are their future strategies coordinated and how do they contribute to society at large?

The research is aimed at contributing to the current knowledge-to-action gap in the field of sustainability. I have chosen to investigate my questions within a specific service sector,

namely the aviation industry. Being one of the service industries that is highly scrutinized in terms of their vague disclosures as well having one of the highest carbon-intensive footprints, the aviation industry was chosen as a case study in my research. Whilst TCFD framework is yet to be explored by accounting and finance academic literatures (O'Dwyer & Unerman, 2020), this thesis focuses on a social science perspective by using a document analysis method of TCFD reports and their delimitation. My theoretical framework and methodology will be detailed in the next chapters.

1.6 The Structure of the Thesis

The subsequent chapters are structured as follows. In the second chapter, I will present my theoretical framework, I present the previous research connected to my aim of study and emphasize my adapted theory and concepts that I employ to break down and analyze my empirical material. In the third chapter, I present my methodology. In the fourth chapter, the analysis of the findings will be presented. Furthermore, I will discuss how my analysis is contributing in addressing the research aim and questions, draw relevant conclusions and finally reflect on the implications of this study to society as a whole and on areas of possible future research.

2. THEORETICAL FRAMEWORK

2.1 Environmental communication

Sustainability reporting has been subject to considerable criticism when communicating about environmental aspects and governance. It was contested to be a marketing tool by which companies can seek better image and legitimacy (Cho et al., 2010; Laine, 2005), linked with stakeholders' interests to seek approval for operations (Ching & Gerab, 2017) from different groups, such as lobby groups as a major source of pressure upon social and environmental operating practices (Deegan and Blomsquit, 2006), whilst similar criticism raised questions about the agency of organizations related to which interests are they acting upon (Karaman et al., 2018).

Stakeholders have been highlighted in the literature on environmental communication in direct relation with companies' tendency to present an idealized image and conceal negative aspects of their performance (Boiral, 2013; Cho et al., 2010), due to the fact that such information will decrease the value of the company to its respective stakeholders (O'Dwyer et al., 2005). To protect their image, companies may engage in impression management strategies (e.g., apologies, excuses and justification) when their reputation and legitimacy is threatened (Talbot & Boiral, 2018), and react using neutralization techniques to protect themselves that deny responsibility and enhance positive aspects (Cho et al., 2010). Stressing positive disclosures to report conflicting situations is a case of window-dressing to improve reputation highlighted as what CSR, ESG or sustainability reports can actually represent (Bhatia, 2012; Jones, 2011; Chu et al., 2013; Font et al., 2016).

Balanced with the widespread cases of missing data, lack of consistency in information, methodologies used and the absence of external verification of results (Kolk et al. 2010), reporting sustainability was showed as symbolic (Cho et al., 2015; Boiral, 2013). Organizations frame their strategies through the lens of business case wherein beliefs and norms remain little different from business-as-usual (Norman & MacDonald, 2004; Carroll and Shabana, 2010), which may be grounded in weak and not in a strong sustainability (Stål & Bonnedahl, 2016), asking if whether businesses can operate in the constrains of the capitalism system whilst ensuring all members of humanity have access to environmental services and their life support systems (Milne & Gray, 2012). Norman and MacDonald (2004) conclude that organizations

are very rarely producing reports which provide information about their social and environmental issues to the same extent and quality as the financial ones. Others state that reporting and performance are not the same (Deegan, 2002; Dumay et al., 2019) or that a causal link between sustainability and financial performance is inconclusive (Carroll and Shabana, 2010).

Social and environmental scholars and practitioners emphasized that companies' disclosers are tightened to responsible decisions that will have to follow (Dillard and Vinnari, 2019). In this regard, what is to be communicated needs to be acted upon. Scholars continuously stressed the societal and ecological aspects and the interdependencies between the organization and the societal and natural environment (Hörisch et al., 2014). According previously to Stern (2007) Review, if society didn't start to act immediately, the estimated damage could rise to 20% GDP loss taking into account a wider range of risks and impacts. On the other hand, the report is mentioning that prevention might be better than cure, wherein the cost of action was anticipated at around 1% of global GDP each year.

The increased interest in climate-related risks among regulators in recent years is a sign that such risks are still poorly understood amongst actors in industries and financial markets (Andersson & Arvidsson, 2021). Investors and asset owners seek to integrate sustainability principles in their future strategies (van Steenis, 2020). Nonetheless, companies have been criticized to use sustainability broadly, for impression management or legitimacy purposes (Boiral, 2013). Recognizing the urgency of mitigating climate risks has been an issue in the past, but with today's societal goals of reaching net zero emissions, such topics are harder to be ignored (Andersson & Arvidsson, 2021). Companies are pressured by voluntary or mandatory reporting policies to start contributing on mitigating climate change, but low performance has been detected (La Torre et al., 2020). On the other hand, the impact of climate change on a company's business and strategy was stressed to be the most useful for decision-making, but the lowest reported (Dumay et al., 2019). With a new reporting framework that emphasizes this double materiality, especially the financial implications of climate-related risks and dependencies, relevant information may be provided to help encourage the flow of finance for sustainable investments (O'Dwyer & Unerman, 2020), through ESG investments funds, for example (Andersson & Arvidsson, 2021).

Risk communication may become critical for activating risks a ccounts that will match current state of knowledge and correspond to the situation at hand. Corvellec (2011) has mentioned how communication regarding risk is paramount to steer practices, and Boholm and Corvellec (2011) explain through their relational theory of risk how this communication is regarded through the eyes of an observer who defines what is at risk and what is valuable. Through the observer's perception, a risk construction takes place where actions and strategies are considered. Therefore, I have chosen this theory in order to further address the double materiality perspective and I will explain the theory in detail below.

2.2 Relational theory of risk

Risk has been argued to be something that we define in terms to what is valuable. This dualism relationship has been stressed to be representative for our society because a concept of risk for example, has to exist to make sense of what is valuable in the first place. Boholm and Corvellec (2011) developed a relational theory of risk, as a social phenomenon, based on the semantic association between two complementary objects, one being a risk object (RO) and the other one the object at risk (OaR). The risk object is something identified as dangerous, based on characteristic traits and moreover, on acknowledge laws, forming its identity. The object at risk is to be endowed with a value that is considered at stake. But here, it takes a broader form, of something that is held to be of worth (Boholm & Corvellec, 2011). However, objects at risk are constituted around traits such as value, loss, vulnerability, and need for protection, and usually they are designed to last. Nonetheless, these objects cannot exist without the help of an observer's perception, who accounts for what is valuable and what is at risk. Boholm and Corvellec (2011) mention that the perceptions of an observer are paramount to constitute what is risk and what is the be valued, and these are subtended by viewpoints, interest, assumptions and concerns. Therefore, the authors emphasize that the observer establishes a relationship of risk between these two objects, that encapsulates the properties the observer considers prominent. This further means that the relationship is a social construct where "semantic associations between objects" (p. 180) are made.

An object at risk becomes a risk object only to an object at risk as an observer's social construct, and how the observer thinks the risk object may interact and what harm will produce. Therefore, the authors stress the relationship of risk is (1) contingent, because it hypothesized

imagined unfavorable conditions of risk that might occur if certain conditions are met, (2) causal, because it is grounded in what threatens the object at risk, why and how, and (3) bound to action and decision to act, since risk is conditioned by a modern will to act and decide upon conditions of uncertainty. These, however, may be hypothetical or imagined conditions, established through plots, where their identities are created. Through a risk management regime, these models and characteristics are perpetuated as part of social practices, that further introduce moral orders or blame (Douglas, 1992) and a corresponding order of governmentality (Boholm & Corvellec, 2011).

It was similarly argued that how these objects are articulated, negotiated and formed is part of a language in discourse in different domains. Boholm and Corvellec (2011) stress that an observer's perception is influenced by discourses in such a way that the objects can change position, which finally distort and remodel the relationship of risk. Therefore, it becomes a complex causal relationship, since a single phenomenon, for example, can simultaneously be regarded as a RO, as an OaR, by observers operating assumptions (Boholm & Corvellec, 2011).

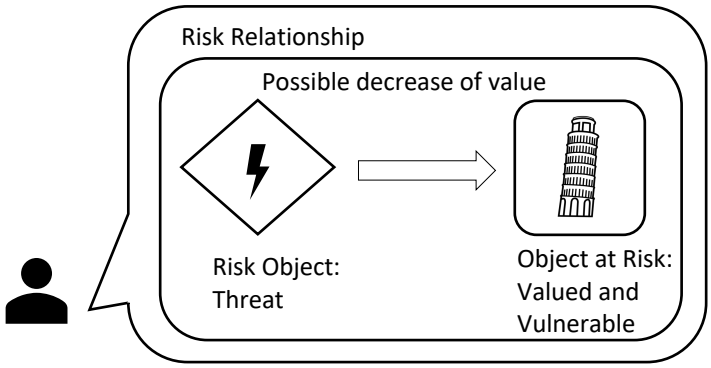

Figure 1: A relationship of risk

The relational theory of risk however received some critiques regarding the attention given to the observer without taking into account the complexity of the external environment as well, where risk may not be perceived at all. In this case, Christoffersen (2018) has argued that the relationship with external environment is based on danger instead of risk.

Emphasizing Luhmann's (1979) suggestions between risk and danger, Christoffersen (2018) states that observers may be situated outside of a cognition state, where risk may be not even perceived at all, a state which he defined as a danger. Only when observers have increased their knowledge and options for mitigating danger, the relationship can evolve from one based on

danger towards one based on risk. When it evolves, observers develop the capacity to act through precaution, preemption, preparedness, or other anticipatory actions (Christoffersen, 2018, p. 1238). What is interesting in this critique is that Christoffersen (2018) mentions the observer's trust in the case of a relationship of risk. The observer has to trust the RO in a matter of being mitigated, otherwise the RO might still remain on a level of danger. Consequently, if the object is not to be trusted, then it could be excluded from the perceived attention of the OaR (Christoffersen, 2018). Hence, the refined theory of risk will imply; (1) threatening danger objects, (2) valuable vulnerable objects in danger, (3) relationship between (1) and (2) based on cognition of causal relationships in a person who is unable to mitigate the relationship. Nonetheless, if this person has options for a mitigation, then the relationship of risk emerges. The inclusion and exclusion are important to a great extent, especially in the case of environmental concerns.

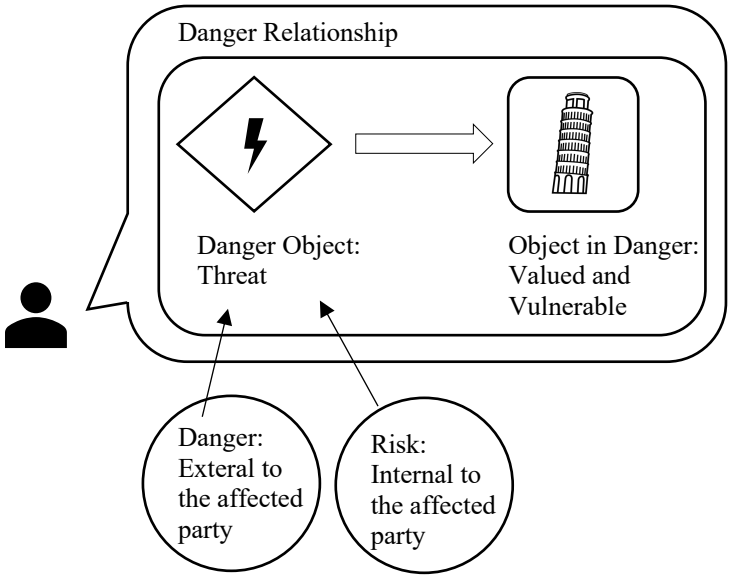

Figure 2: A relationship of danger

Regarding environmental concerns, scholars had other interesting inputs when introducing the environment as an object in relationships of risk. As the relational theory of risk is emphasizing, what is valuable may derive from what the observer values as well (Boholm & Corvellec, 2011). This means that it can derive from a cognitive mediation that is individually or collectively constructed. As the authors emphasize, this can happen in an organization, institution etc. where discourses are institutionalized, steering and driving action. Nonetheless, other scholars argue that, if this mediation is an imposed behavior around a normative or regulative framework, for example, observers are usually to choose a comfort zone, even when confronted with a risk situation. Pérezts and Picard (2015) have found that observers as part of

organizations are constrained by its ambiguous forces and don't act to external requirements, such as regulations, remaining in their comfort zone. Nonetheless, if these forces are ambiguous, they create black holes where deviant behaviors might appear (Shadnam & Lawrence, 2011).

Performing a risk approach of compliance was emphasized by Pérezts and Picard (2015) to require a profound understanding and incorporation of logic and requirements behind regulations at hand and regulated activities, which will subsequently influence comfort zones. This is stressed as paramount for the analysis employed for this thesis, because it includes a new framework of understanding climate-related risks and compliance with its requirements. Such framework is special since organizations disclose in relation to what they understand as valuable and at risk. For example, disclosures are part of their reports which further influence shareholders, stakeholders and society as a whole, the communication of such risk is regarded as critical. The perspective of the significance of risk communication is elaborated in the next section.

2.3 Relational theory of risk in risk communication

Conventional risk communication has been debated to reside with experts, such as policymakers and regulators (Àrvai, 2007). This may happen when they are taking a normative stance and promote safety, good governance and human well-being, whilst paying respect to individual freedom and choice (Boholm & Corvellec, 2011). However, a limitation of this model is that it has little or no resonance to what people experience, believe, or care about (Mairal, 2003; Wynne, 1992). This type of communication has proven to be less efficient to this extent than it was expected to be. Accordingly, communication can be improved by paying more attention to personal preferences and values (Wardman, 2008). Personal preferences and values, on the other hand, are connected to a social context that has a decisive role when assessing the object of value (Slovic, 1993; Boholm & Corvellec, 2011).

A relational theory of risk is embedded in a communicative context, and it depends, as mentioned, by the observer's perception. As these perceptions are rooted in a social context within which relationships of risk are articulated (Gregersen, 1993), they influence the design of objects (Boholm & Corvellec, 2011). Boholm and Corvellec (2011) mention how, in risk communication, careful attention is to be given to the characteristics of a social context, from

where communication starts towards whom is receiving it. To communicate risk, a model of communication has to exist, such as a code – a universal model of communication (Renn, 2008). The model renders words have meaning in themselves and they travel by means of speech or writing, implying an understanding between sender and receiver. In this manner, the code is to be shared (Boholm & Corvellec, 2011). Similarly, Druckman (2004) stated that the way the message or the issue is framed can cause individuals to focus on specific components that become accessible and foster action.

Organizations can also be seen from a social context perspective that influence the design of objects. Risk communication requires that organizations share a code with their audiences. However, Boholm and Corvellec (2011) show that organizational social context (e.g., culture) can alter a code of communication, in this case by attenuating risks and signs of risk of emerging disasters or even avoid and silence risk as a communicative tool, thus hampering the management of risk. Taking the example of Oreskes and Conway (2010), Boholm and Corvellec (2011) stress that companies use the probability given by scientific knowledge to turn climate change' threats to obsolete if it hasn't been absolutely proven by scientific evidence that such risks would affect the natural environment. Organizations can alter the critical signals of emerging disasters and created conditions for disclamatory risk communication. In other examples, companies can also take a no-risk approach to these phenomena, right after new scientific evidence was brought forth, hence pointing to intentional no-risk communication (Boholm & Corvellec, 2011). Such practice can be dangerous because it can prevent the audience to have access to what may be a risk to begin with.

In communicating risk and uncertainty, another example are the first three IPCC reports assessments, through which formal expressions of uncertainty have been avoided and scenario-based projections of possible futures have been used instead (Pidgeon & Fischhoff, 2011). The fourth IPCC assigns explicit likelihoods (IPCC, 2007), since behavioral research has emphasized that people need clear numeric expressions of uncertainty in order to not struggle with words ambiguity (Wallsten & Budescu, 1995). In Stern (2006) reviews, perspective has changed from taking the debate of whether there is such thing as global warming, towards directly analyzing the expected costs and benefits of taking action (Dietz et al., 2007). Framing climate decisions in terms of costs, risks and uncertainties of different opinions has been proven to lead to more decision-making (Pidgeon & Fischhoff, 2011).

Other research points out that clear, respectful messages can steer constructive practices in expressing viable ways to act (Risbey, 2008). Such messages can motivate climate scientists as well as different audiences, create trust between audiences and expert communities (Pidgeon & Fischhoff, 2011), leading to effective social oversight and governance structures (Renn, 2008). Nonetheless, information alone is not ensuring wise climate-related decisions. Pidgeon and Fischhoff (2011) argue that well-informed collectives can be paralyzed when they realize that their members have conflicting goals. There is a need for this type of communication to be done well, wherein experts can provide better and more consistent communication for decision making in high-quality and in a more relevant form (Pidgeon & Fischhoff, 2011). Following this reasoning, Gregory and Failing (2002) have concluded that agreement is a high quality and relevant attribute of a structural dialogue.

Audiences are active parts of risk communication and how they make sense of word choices, information and commitments depends on contextual variables (Boholm & Corvellec, 2011). As stressed by previous research in environmental dimensions of ESG reporting, there's a need for a better communication and understanding that will not support uncertainty. With investors and asset managers being currently one of the most important shareholders focusing on sustainable investments, it is paramount for sustainability reporting to provide relevant and timely information on climate change threats, so that practical outcomes and engagements are obtained (Dumay, 2020). In the case of climate-related risks, a dilemma expressed was how uncertainty associated with various actions and policies can be communicated in a way that will be easily understood by other experts as well as different audiences, and used by decision makers to help them make choices in line with technical factors and the companies' own values (Gregory & Dieckmann, 2013).

2.4 Chapter Summary

Having had the inputs from the relational theory of risk regarding organizations social context, the thesis will explore what type of approach do companies take in the same sector. For the purpose of analyzing the construction of risk and the strategies employed, a case study of the aviation industry has been emphasized. Risk will be analyzed from a communication perspective based on narrative and contextual variables. Because this thesis takes into account previous research stressing the importance of coordination, the perspective of a sector specific

study which would reveal what companies in the same industry regard as valuable and as a risk strongly picked my interest.

This thesis in exploring the way climate-related risks are communicated in sustainability reporting using the TCFD framework, the latter being based on framing climate decisions in terms of costs, risks and uncertainties of possible futures. Drawing from Boholm and Corvellec (2011) relational theory of risk, climate-related risks will be analyzed in a dualism with what is valuable (e.g., the object at risk) for organizations. This has been deemed important for the construction of risk. However, using Christoffersen (2018) inputs, the thesis will also explore if the climate-related risks disclosed in the climate-scenario analysis are part of future strategies, and moreover, if these strategies are coordinated. The next chapter will present my methodology for collecting and analyzing my empirical material.

3. METHODOLOGY

3.1 Research design: context

Sustainability reporting is a mean of communication with a range of stakeholders about a corporation's impact on society, the natural environment and economy (O'Dwyer & Unerman, 2020). The focus of TCFD framework is on climate-related risks and climate-scenario analysis, companies having to report against four dimensions that are comprised in the framework; governance, strategy, risk management, measures and targets. Climate related risks are central to these disclosures and are used to further explain a firm's means of resilience in the face of various scenarios (TCFD, 2017).

A risk communication approach towards an analysis of new disclosures has been taken. In communicating risk, a relationship of risk is formed based on the risk object and the object at risk. Such relationship is contingent on the social context of the observer interpreting risk (e.g., the organization). However, it is not just about the agency and perception of the observer, but about the trust on how to mitigate risk as well (Christoffersen, 2018). Going back to the refined theory of risk, if not properly understood, risk could only be regarded as a danger and left behind (Christoffersen, 2018). Taking issue with the contention of climate-related risk disclosures in TCFD framework, what risks may be included or left behind from the climate scenario analysis towards the strategy of mitigating or adapting to climate change is worth further research. A limitation of this approach is that TCFD emphasizes the organization as an object at risk as a starting point. However, interpreting climate risks in terms of costs has been mentioned to be a better approach (Pidgeon & Fischhoff, 2011), therefore it is to be explored if having the financial assets as well as the organizational reputation at risk could improve the communication on climate-related risks.

3.2 Research method

The importance of reaching an agreement on climate scenarios in order for coordinated effects to be considered has also been touched upon, mainly because a chaotic transition towards low carbon economy can cause substantial disruptions to a firm's entire ecosystem and to a major part of the economy related to supply chain (Andersson, 2020). In this reasoning, this thesis

will explore how climate scenarios are understood in the same service sector. The method employed for depicting such disclosures is document analysis of secondary data coming from sustainability reports that are disclosing against the TCFD framework. The research design is hence a qualitative content analysis focused on a thematic content. As documents reflect and construct social reality for what they exclude and include (Bryman, 2012), and the decision on what to record in a document is always influenced by what is happening in the social, political and economic environment (Rose, 2012), this type of analysis has been chosen for rendering what are the risks expressed by organizations when they are confronted to a climate-scenario analysis, are such risks part of their strategies, and are these strategies coordinated or not in their future scenarios.

Bryman (2012) is stating that, in a document analysis, categories emerge out of data in an inductive way and, moreover, that a thematic analysis may depict groups of meaning from an author towards the audience. This means that documents are to be seen as the site of image itself, and the context where communication takes part (Bryman, 2012). In this reasoning, I have selected a document analysis as my research method, and sustainability reports of aviation companies as my empirical material. This specific industry was chosen mainly because of a need for a sector basis research, and moreover because of the controversies around aviation companies' sustainability reporting and practices, their substantial environmental footprint and as one of the service industries with the highest environmental impact, mentioned by IPCC reports and included in the TCFD framework. The TCFD framework underlines the importance of the transport sector, of which the air transport is part of (TCFD, 2017). Since transport sector was not initially included in the Paris Agreement, maritime and air transport sectors were not required to reduce their GHG emissions to fight against climate change (David & Giordano-Spring, 2021), hence the need of carrying out more precise reporting to facilitate understanding of extra-financial reports. In the same year of 2015 when the Paris Agreement was signed, at COP21, the intent was to limit the increase in global warming to 2°C (David & Giordano-Spring, 2021). However, since then, international air transport traffic has increased and GHG emissions coming from the air transport have amplified (David & Giordano-Spring, 2021). The next section will present the aviation industry and the controversies regarding sustainability reporting and future strategies that were claimed in previous research.

3.3 Case study: Aviation industry

The aviation's contribution to climate change and the result of GHG emissions is widely recognized (Gössling & Peeters, 2007; Hooper & Greenall, 2005; Chan & Mak, 2005). Total aviation fuel use is increasing each year by 3% (Abeyratne, 2003). IPCC reports also concluded that increase in emissions due to projected growth won't be fully offset by the reduction achieved through technological advancements (IPCC, 2019), and indicates show that the impact on climate change from air transport could be highly more significant since aircrafts emits gases, in addition to carbon dioxide, directly into stratosphere – a more sensible region of atmosphere (IPCC, 1999). At higher altitudes, fuel is more toxic for environment than at ground level (Keller, 2001). Air transport also affects air quality around airports, more pollution being added from ground transport, maintenance activities, noise, construction sites and power units etc., that finally translate into negative effects on biodiversity, as well as acidification of ecosystems together with resource and waste production issues (Abeyratne, 2003; Hooper & Greenall, 2005; Daley et al., 2008; Larsson et al., 2018).

In terms of sustainability reporting, most of the companies in aviation industry are using the Global Reporting Initiative (GRI) standards (D'Aquila; 2018; Hooper & Greenall, 2005; KPMG, 2017), with 85% of sustainability reports complying with it (Karaman et al., 2018). While some studies show that GRI has ensured better comparability between reports (Karaman et al., 2018) others criticize the framework and claim that compliance with GRI means to select narrower boundaries in defining influence and control over significant sustainability issues but in a shorter term (Ringham & Miles, 2018). Referring to indicators, variations were found in how they are defined (Hooper & Greenall, 2005), measured (Chen and Lin, 2009), regarding fuel efficiency (Chan & Mak, 2005), only hindering sector comparability. This called for the need to define materiality on a sector specific basis (Eccles et al., 2012). Even earliest contribution in sustainability reports' research of Hooper and Greenall (2005) and Chan and Mak (2005) have shown no clear trend growth in performance. Other studies of aviation's industry sustainability reports stress the motivation of aviation companies based on contradictions with the environment and on an ambiguity between words and actions (Brown & Fraser, 2006), on discourses of promotion, goodwill and self-justification (Bhatia, 2012), on identified themes of social and environmental dimensions of CSR such as employee well-being and engagement, diversity, social equity and community well-being and economic prosperity (Cowper-Smith & Grosbois, 2011), and reputation and brand value (Kuo et al., 2016).

Cowper-Smith and Grosbios (2011) concluded in their study of fourteen airlines, that only two airlines reported the same two goals – those of reducing carbon emissions and of reducing aircraft noise – and the rest differed. All other initiatives were supported by four out of ten airlines, which consequently called for more standardized information in areas of responsibility and practice. Karaman et al. (2018) and Kuo et al. (2021) also observed that sustainability reporting doesn't seem to impact aviation companies' financial performance, calling for action from the guidance sector, since guidance can promote transparency and best practice (Karaman et al., 2018). Consequently, Lehman and Kuruppu (2017) emphasize the socially constructed nature of sustainability reports and their rhetorical purposes, Font et al. (2016) the portraying of organizations in a way that is beneficial for them, and Zieba and Johansson (2022) stress that airline companies are often seen to pursue legitimacy through various strategies, as part of which they may instrumentally manage and deploy suggestive symbols to gain acceptance and control, concluding that airlines did not disclose their environmental impacts.

In the case of sustainability reporting communications, scholars have alleged that reports do not provide explanations for how company meet environmental goals (Schaltegger, 2003), whilst others were reluctant towards the relevance of the information in it (Bartels et al., 2016; Searcy & Buslovich, 2014). As companies were deprived of compulsory sustainable reporting in terms of social and environmental accounting for many years, environmental accounting is, to a great extent, part of a voluntary disclosure literature. Using voluntary CSR guidelines, that Carbon Disclosure Project (CDP) was successful in encouraging institutional investors to disclose detailed information on their climate change-related activities (David & Giordano-Spring, 2021). However, Kolk et al. (2008) conclude that neither the level of disclosure on carbon emissions nor the more detailed carbon accounting provides particularly information in this stage for investors or policy makers. Critiques have emphasized that some important attributes were ignored in the creation of CDP standards, such as the requirement that the information is comparable, understandable and reliable (Stanny, 2018).

In terms of the most used framework for sustainability reporting in the aviation industry – Global Reporting Initiative (GRI) - this framework is not limited to disclosing only greenhouse gas emissions, but it touches upon many topics related to ESG matters. Boiral (2013) stresses that a large number of significant negative actions carried out by companies were not published in the sustainability reports, which is contrary to the principles of GRI as "balance,

completeness and transparency". Milne and Gray (2012) concluded that, despite the good initiative, it lacks institutional and government support and that institutions are too evasive in their disclosures. Vinnari and Laine (2017) documented that environmental accounting lacks shared meaning of definitions on environmental risks. Airline companies feel reluctant to increase awareness on the environmental harms of flying (Dodd & Yengin, 2021), for example, and there is growing scrutiny from society on the impact of air transport on climate change (David & Giordano-Spring, 2021). Academia has begun to examine sustainability reporting in the context of airlines surprisingly late, and no comprehensive reviews of its respective developments have been made so far (Zieba & Johansson, 2022). The industry still has a lack of common understanding of how to define and measure sustainability, which has led to inconsistent practices (Zieba & Johansson, 2022). In conclusion, this thesis will explore how companies communicate environmental issues such as climate-related risks when they, this time, are confronted with the effects of climate change on their own businesses and are disclosing against a framework focused on science-based targets.

3.4 Collection of Empirical Material – TCFD in use

The aviation industry was selected because it is one of the service industries that started to comply with TCFD reporting framework because of its high environmental footprint (TCFD, 2017). This aspect was of paramount importance when deciding on the industry and on the reports to further analyze. The other aspect was, as it was stressed before, related to the controversies around the practices employed by the aviation industry, as well as its scrutinized sustainable strategies and the multiple critiques addressed throughout the years. Moreover, the need for a sector basis research on sustainability reporting was also taken into consideration.

3.5 Sampling techniques

The first step was to search for the aviation companies that are reporting against TCFD framework in the last years. The sample was chosen in regards to the existence of some sampling frame, e.g., TCFD reporting framework, therefore a purposive sampling technique was employed. Using TCFD database of supporters, as well as Google Search, 16 airline and/or transportation companies in industrial and transportation sector – airline industry were found, part of this database and stated as complying with the requirements of TCFD.

In order to find the specific disclosures, a research in the companies published reports has been deployed. It was observed that airline companies started to integrate their reporting into one Annual Report, or that they publish climate-related disclosures in ESG reports. Some of them, as per disclosing against TCFD framework requirements, enlisted separated TCFD reports. The latest published reports were selected in order to address an up-to-date analysis. On the other hand, selecting the latest reports increased the chances on the inclusion of climate-scenario analysis, that just started to be implemented by companies (O'Dwyer & Unerman, 2020). The reports addressed the last financial years, e.g., 2021 or 2020, or they were mentioning activities and performance related to 2019-2020 timeframe. They were all written in English therefore language was not a barrier. In order to confirm their authenticity, validity and credibility mentioned by Bryman (2012) of these public sources of information, the reports were downloaded from the airlines' official websites and checked to be signed by the companies themselves. However, the representativeness was an issue because, once downloaded and checked, only eight of the companies were disclosing using the TCFD framework and the affiliated climate-scenario analysis. Therefore, only these eight reports were selected for proceeding with the document analysis.

The eight companies remained to be considered even if other characteristics came about in this stage. one of them being the companies' geographical location. This was not a requirement, in the sense that companies were not selected due to their location but on the contrary. As mentioned previously, it was emphasized and scrutinized that global coordination may be an important factor for climate risks communication and scenario analysis and, for that reason, the location of the companies remained global. The second characteristic was that companies were listed in the database as being part of either industrial sector or transportation sector of the airlines industry. Therefore, as a part of the airline industry, they were considered for the next steps of my analysis. The final eight companies that were selected in the sampling process are: American Airlines, China Airlines, Lufthansa, EasyJet, International Airlines Group (IAG), Japan Airlines, RyanAir, and JetBlue.

Table 1: Airline companies that have been selected due to TCFD implementation

Company	Sector	Industry	Location	Region	Date	TCFD
Air France-KLM Group	Industrials	Airlines	France	Europe	Jan-20	NO
Air New Zealand	Industrials	Airlines	New Zealand	Asia Pacific	Aug-19	NO
American Airlines	Transportation	Airlines	United States	North America	Aug-21	YES
ANA HOLDINGS INC.	Industrials	Airlines	Japan	Asia Pacific	Mar-19	NO
China Airlines	Industrials	Airlines	Taiwan	Asia Pacific	Sep-18	YES
Deutsche Lufthansa AG	Transportation	Airlines	Germany	Global	Apr-21	YES
easyJet plc	Transportation	Airlines	United Kingdom	Europe	Dec-21	YES
Finnair Oyj	Transportation	Airlines	Finland	Europe	May-21	NO
International Airlines Group	Industrials	Airlines	United Kingdom	Europe	Dec-17	YES
Japan Airlines Co., Ltd.	Transportation	Airlines	Japan	Asia Pacific	Feb-21	YES
JetBlue	Industrials	Airlines	United States	North America	Jun-17	YES
Qantas Airways	Industrials	Airlines	Australia	Asia Pacific	Dec-17	NO
Ryanair	Transportation	Airlines	Ireland	Europe	Nov-21	YES
Scandinavian Airlines System SAS	Transportation	Airlines	Sweden	Europe	May-21	NO
The Virgin Group	Industrials	Airlines	United Kingdom	Europe	Jun-17	NO
Transat/Air Transat	Transportation	Airlines	Canada	North America	Jun-21	NO

3.6 Data analysis

Document analysis as a method was selected due to the availability of data from the airline companies. Other methods were considered at the beginning of my research as well, e.g., interviews or email surveys however, because of the difficulties of interviewing or responding to email surveys from the managers in charge of sustainability strategies and reporting in the companies selected, they have not been incorporated in the research methodology. Standing only with document analysis, the first step that I have taken was to become familiar with the context within which documents are generated whilst getting acquainted with a small number of documents, as it was mentioned by Bryman (2012). Since the author emphasized around six-ten documents to be enough for a thematical analysis (p. 559), the eight sustainability reports were considered to be sufficient to start the analysis.

Table 2: The specific reports of airline companies with whom the analysis started

Company	**Specific Reports**
American Airlines	ESG Report 2019-2020
China Airlines	TCFD Report 2021
Deutsche Lufthansa AG	TCFD Report 2020
easyJet plc	Annual Report 2021
International Airlines Group	Annual Report 2021
Japan Airlines Co., Ltd.	Annual Report 2021
JetBlue	ESG Report 2019-2020
Ryanair	Annual Report 2021

Giving an example from Altheide (2004), Bryman (2012) is stressing that an initial read through the text data is necessary, continuing with dividing the text into segments and label the information using a coding procedure. These codes can be collapsed into themes, whilst the researcher is constantly revising these themes and categories that are distilled from this examination, with the aim of being systematic and analytic, but not rigid (Bryman, 2012). After this examination, codes can be reduced and they can be collapsed into five-seven themes that are relevant and creative as per finding some final results (Bryman, 2012). As these documents are materials of secondary data, my approach as an interpretivist was to apply an open coding, by using the inputs mentioned by Bryman (2012). The labeling of the text was conducted by identifying the frequency of words, differences and similarities, that could finally simplify and form a thematic analysis. In conclusion, the thematic analysis involved a systematic qualitative methodology (Flick, 2014).

Drawing on relational theory of risk, the emphasis when going through the next steps was to follow the companies' narratives against the TCFD requirements, through the lens of the relational theory of risk. The theory addresses the object at risk and the risk object as in a contingent relationship established through narratives (Boholm & Corvellec, 2011). The thematical analysis considered the dynamic by which a risk object affects and modifies the object at risk. According to the theory, organizations find themselves bound to action and engaged in strategies to act when the object at risk is threatened (Corvellec, 2010). As this theory was also adapted by Christoffersen (2018), the thematic analysis employed foregrounds if risks are included in the mitigation and adaptation strategies of airline companies as well. Christoffersen (2018) argued that this inclusion or exclusion may point out if companies do relate to risks with uncertainty and anxiety or if they are actually willing to take anticipatory

actions. In terms of climate-related risks, it has been more than stressed that urgent action has to be taken when referring to the state of our society and on its climate dependency (Andersson & Arvidsson, 2021). I will be exploring the communication of climate-related risks in sustainability reporting related narratives, that may bound aviation companies to take action when they are using the TCFD framework.

My analysis is, therefore, conducted through the TCFD framework and its categories as well, which are; (1) risks related to transition to a low-carbon economy, and (2) risks related to physical impacts of climate change (TCFD, 2017). When using TCFD framework, companies report both physical and transition risks against four dimensions: governance, strategy, risk management and measures and targets. Governance informs how the organization mobilize itself to monitor climate-related risks and opportunities, and strategy details how climate-related risks are affecting the organization in short, medium or long term (David & Giordano-Spring, 2021; O'Dwyer & Unerman, 2020). This means that an organization has to explain how is building resilience against these scenarios. On the other hand, risk management describes how companies identify, assess and manage climate-related risks, whilst measures and targets are used to practically calculate their mitigation strategies against GHG emissions disclosures (David & Giordano-Spring, 2021). The Figure below is explaining these dimensions.

Figure 3: The four reporting dimensions of the TCFD framework

Because I was particularly focused on my research questions and wanted to provide answers on how companies understand these risks, how they construct and include them, I have focused on analyzing the narratives coming from the dimensions of governance, strategy and risk management, without taking into consideration measures and targets. This was imperative for creating themes through the open coding procedure. I will present a Coding Table which

summarizes the TCFD categories and sub-categories, the themes that have emerged using the relational theory of risk (RTR) and the final themes that subsequently answer my research questions. This Table will facilitate the reading of the next chapter regarding the analysis of the findings.

Table 3: Coding Table – Overview

<table>
<tr><th>TCFD climate-related risks categories</th><th>TCFD climate-related risks sub-categories</th><th>Themes emerging from RTR</th><th>Final themes</th></tr>
<tr><td>Climate-related physical risks</td><td>Physical risks</td><td rowspan="5">Company as the OaR

Company as the RO</td><td rowspan="5">Fear of new regulated markets affecting neoliberal mechanisms

Fear of a growing environmental awareness</td></tr>
<tr><td rowspan="4">Climate-related transition risks</td><td>Policy risks</td></tr>
<tr><td>Technology</td></tr>
<tr><td>Market</td></tr>
<tr><td>Reputation</td></tr>
</table>

3.7 Ethical considerations

Because of my aim of study, my thematical analysis has been conducted as objective as possible. Therefore, I have conducted my analysis through the lens of the relational theory of risk and let themes be generated from the companies' disclosures. The text was divided into categories and subcategories and, as Bryman (2012) is mentioning, categories and variables may initially guide the study, but others are also allowed and expected to emerge during the process (p. 559). In the next step of the analysis, I have let subcategories to emerge and I have compared disclosures between the eight companies.

From my own positioning as a researcher, I have let the data speak for itself and not let myself be biased by previous conceptions and scholarly results in sustainability reporting. My findings will be presented and detailed in the next chapter.

4. ANALYSIS OF THE FINDINGS

4.1 Chapter Overview

This chapter presents a thematic analysis of my findings based on considerations discussed in my methodology. The analysis is emphasizing the themes that have emerged from climate-related risk disclosures by drawing on relational theory of risk as a lens, and the concepts discussed in my theoretical framework to break down my empirical material. The importance of the relational theory of risk will be deemed highly relevant for showcasing the double materiality if the TCFD framework. The first theme identified is foregrounding risk where the company is the object at risk, my results actually showing how the airlines are not affected by one, but by a sequence of risk objects that distort the relationship of risk. The other theme is highlighting the company as the risk object, where they are not acting as a risk, but seeing themselves as opportunities, with the great potential of becoming the risk object itself. Then, relating to integrating these constructions into their strategies of mitigation or adaptation, two final themes unfolded, that describe distinctive threats that companies still need to understand, but on the same time who steer their analogous future practices: *Fear of new regulated markets affecting neoliberal mechanisms* and *Fear of a growing environmental awareness.*

4.2 Companies reporting according to TCFD framework

The construction of risk from a double materiality perspective is stressing, by referencing the TCFD guidelines, that companies should disclose how climate-related risks impact company's business and operations, as well as how companies themselves impact society and the environment (TCFD, 2017). Failures of decarbonizing the economy will expose businesses to potentially significant risks from the physical impacts of climate change and the transition to net zero carbon economies will expose businesses to a variety of risks, marked as transition risks, e.g., regulatory, market or reputational risks (TCFD, 2017). Nonetheless, they may also present valuable opportunities for a zero-carbon economy (Duke et al., 2019). In order to assess such risks and opportunities, TCFD is based on a climate-scenario forecasting in which companies model a number of plausible future global warming scenarios and report accordingly (TCFD, 2017).

After such analysis has been made, companies have to incorporate the risk information into their management processes, which might be a challenge in terms of identifying, problematize and address such scenarios (O'Dwyer & Unerman, 2020). Climate-scenario analysis may help companies to translate physical risks into financial impacts, potential impacts on business performance in order to develop mitigation and adaptation strategies (TCFD, 2021). As mentioned before, I have been particularly interested in how risk is constructed and communicated along this framework, emphasizing the research gap that mentions a need for an area of research which will investigate how such forecasting shifts risk cultures in organizations and what implications these might have (Ford et al., 2020), how climate risks are constructed and reported upon (Hall et al., 2015), or how climate change risk is conceived and managed (O'Dwyer & Unerman, 2020).

I was drawing on the relational theory of risk developed by Boholm and Corvellec (2011) to guide the analysis and show how risk objects are constructed, how they are forming relationships of risks, when companies act an object at risk, and as a risk object. In order to do so, I had to follow the theory's principles and deconstruct the risk elements that rest on notions of value, harm and contingent causality (Boholm & Corvellec, 2011). First theme that has emerged is related to how companies are portraying themselves as the object at risk, affected by both physical risks, as well as transition risks.

4.3 Company as the OaR

The company as the Object at Risk has been identified both related to climate-related physical risks and to transition risks (see Table 3 on page 27). I will present how this theme emerged by firstly addressing the climate-related physical risks, and then the transition risks.

4.3.1 Climate-Related Physical risks

According to the guidelines of the framework, climate-related physical risks are categorized as physical risks, which are further split into *acute*, if they are already occurring or if they will occur in short term, and *chronic* if their effects will be expected in the medium and long-term (TCFD, 2017). Climate-scenario analysis has to be conducted using the IPCC reports and the Representation Concentration Pathway (RCP) emissions scenarios, which guides the

understanding of complex climate effects for mainly four thresholds of increased temperatures, e.g., from 1.5°C to 6°C rise (TCFD, 2017). Physical risks are identified by taking into consideration the severity of weather events, e.g., hurricanes, flooding, etc. On the other hand, it was also stressed that these scenarios are not intended to allow a corporation to identify the challenges, risks and opportunities at different levels of global warming, but that they rather serve as "powerful narratives to help anticipate and prepare for future changes" (Haigh, 2019).

The theme emerged from the disclosures related to the effects of increased temperatures. Seven out of eight companies have identified these risks as linked to the possible severity of extreme weather events, by using keywords such as 'hurricanes', 'flooding', 'wildfires' and 'rainstorms', 'droughts', 'water stress', or 'rising sea level'. Some risks were identified by all seven companies, whilst others were disclosed only by a few. In all the cases, the risks types, e.g., acute and chronic, were described in a succinct manner or, to some extent, they were not described at all. Some examples are:

> The CCRS work highlighted the acute and chronic physical risks that could impact our business. In summary, these related to the increased impact to our business from severe weather like flooding, snowstorms etc.
> (EasyJet Annual Report, 2021)

> Individual risk scenarios were modelled to assess the various mechanisms through which physical hazards (e.g. extreme temperatures, water stress, floods, and storms) impacts easyJet, including disruption to operations and to market demand. A middle-of-the-road scenario was chosen – Representative Concentration Pathway (RCP4.5) – noting that there is limited variability in physical risks across different RCPs within the near to mid-term time horizon (20 years).
> (EasyJet Annual Report, 2021)

EasyJet has identified such risks only as physical risks, without mentioning the categories of risk such as 'acute' or 'chronic'. Different definitions seem to emerge from other reports as well. Conversely, Japan Airlines is using the terminology of acute and chronic physical risks, but is not giving examples. They are only offering the outline of their impact, which is defined as 'Operations and Demand':

> Operations: The effects against flight operations of changes in precipitation, weather patterns, and extreme weather events have already become apparent in some areas, and may continue over the medium to long-term.
> Demand: The outbreak of pandemic in infectious diseases caused by changes in ecosystems due to increase in average temperature, has the potential to affect air transport operations in the medium to long-term.
> (Japan Airlines Annual Report, 2021)

Similarly, American Airlines is very succinct in their examples:

Acute: The risk of increasing severity of weather events
Chronic: The risk of longer-term changes in weather patterns
(American Airlines ESG Report, 2019-2020, p. 23-24)

For each site, we considered the likelihood and implications of acute risks, such as extreme weather events, and chronic risks, such as sustained increased temperatures. We looked first at historical trends and impacts, including changes between 1990 and 2018, and then at projections for 2035 and 2060.
(American Airlines ESG Report, 2019-2020, p. 21)

IAG, on the other hand, is explaining risks through 'acute weather events', or 'chronic changes', offering more details:

Potential low resilience to increased frequency of acute weather events such as high winds, fog events, storms, turbulence, sustained extreme heat events or a stronger jet stream could increase operating costs by increasing delays, fuel burn and requiring additional cooling and maintenance costs above planned spend.
(IAG Annual Report and Accounts, 2021)

Chronic changes in weather and physical impacts of climate change such as flooding, drought, forest fires, heat waves, algal blooms, coral bleaching, rising sea levels and reduced snow cover in ski destinations could make certain destinations less desirable and impact customer demand.
(IAG Annual Report and Accounts, 2021)

IAG's examples related to 'chronic changes' were not disclosed by other companies, such as 'coral bleaching'.

In other occasions, more information about physical risks is given when companies had to state their mitigation strategy when affecting by climate risks financial impact. This is extracted from American Airlines, IAG and Lufthansa similar approaches. For example, American Airlines is divulging:

Climate change will pose a number of threats to the aviation industry, especially as increases in severe weather alter operations, affect flight planning, and impact fuel supply throughout the supply chain.
(American Airlines ESG Report, 2019-2020)

> Our operations depend on the supply of jet fuel at reasonable prices, and much of this fuel is sourced from the Gulf of Mexico. Severe storms in the region will threaten our supply as climate change causes these storms to become more severe.
> (American Airlines ESG Report, 2019-2020)

In Lufthansa's narratives, more examples of climate risks seem to have been given for a short-term scenario, e.g., acute physical risks, and not for a long-one, e.g., for chronic risks, wherein only 'higher average temperatures' are mentioned. Their statements continue:

> In a preliminary analysis, Lufthansa Group has identified both potential chronic and acute physical risks. Chronic physical risk, such as a higher average temperature, can potentially lead to lower passenger and cargo loads due to aircraft performance restrictions. For example, temperature-related take-off weight limitations and /or the need for increased fuel up-lift to cope with unexpected weather-related rerouting due to more frequent and severe thunderstorms might reduce the available payload on those flights.
> (Lufthansa TCFD Report, 2020)

> Acute physical risk can potentially impact aircraft during take-off and landing as well as en-route. An increased number of local thunderstorms, stronger surface winds, more frequent fog conditions and heatwaves, more frequent cyclones and atmospheric turbulences could affect passenger comfort and safety as well as induce large-scale re-routings or flight cancellations.
> (Lufthansa TCFD Report, 2020)

Moreover, Lufthansa's TCFD report disclosures are not complete, since they are referencing repeatedly another report, e.g., their CDP Report, for additional information. Therefore, I had to analyze the content of this report as well and, interestingly, I have encountered contradictions in the descriptions coming from CDP, compared with the TCFD one. For example, in the TCFD Report Lufthansa is mentioning that *"Acute physical risk can potentially impact aircraft during take-off and landing as well as en-route"* as shown before. On the other hand, in the CDP Report they are dismissing such risks, as not having the potential to jeopardize the business:

> Acute physical risks like isolated extreme weather events (e.g. cyclones, hurricanes, or floods) don't have the potential to jeopardize LHG business, because LHG focuses on diversifying its operations through a global network. (Lufthansa CDP Report, 2020)

In conclusion, to a large extent, companies' definitions of physical risks were not aligned. More than that, airlines companies have selected different time horizons and different RCPs, which can further question their future coordination. In the next table, I summarized them with the purpose of showing how they differ:

Table 4: The disclosures related to climate-related to physical risks

Companies	Physical Risks	
	Acute	**Chronic**
Easy Jet	flooding, snowstorms	extreme temperatures, water stress
Ryan Air	-	-
JetBlue	increasing severity of extreme weather events such as hurricanes, typhoons, wildfires and rainstorms	rising temperatures and sea levels
American Airlines	turbulence, sea level rise, increased temperatures, increased precipitation, extreme temperatures, flooding, cyclonic events and extended drought at 10 critical sites in US and UK	extreme heat – sustained increased temperatures rising sea levels, increasing temperatures and changes in precipitation
IAG	high winds, fog events, storms, turbulence, sustained extreme heat events or a stronger jet stream	chronic changes in weather and physical impacts of climate change such as flooding, drought, forest fires, heat waves, algal blooms, coral bleaching, rising sea levels and reduced snow cover in ski destinations
Lufthansa	an increased number of local thunderstorms, stronger surface winds, more frequent fog conditions and heatwaves, more frequent cyclones and atmospheric turbulences could affect passenger comfort and safety as well as induce large-scale re-routings or flight cancellations.	temperature-related take-off weight limitations and /or the need for increased fuel up-lift to cope with unexpected weather related rerouting due to more frequent and severe thunderstorms that might reduce the available payload on those flights
Japan Airlines	changes in precipitation, weather patterns, and extreme weather events have already become apparent in some areas, and may continue over the medium to long-term.	infectious diseases caused by changes in ecosystems due to increase in average temperature, has the potential to affect air transport operations in the medium to long-term.
China Airlines	Increased frequency and intensity of extreme weather events affect the normal operations of flights (torrential rain, buoyancy, sea level rise)	extreme weather events may cause supply chain interruptions and companies must increase inventory in response

Next, I will present the time-horizons and the RCP (Representative Concentration Pathway) from IPCC that companies have selected:

Table 5: The disclosures related to the selection of time-horizons and RCPs

Company	RCP	Time-horizons
American Airlines	8.5	Short 0-2y; Medium 2-15y; Long-term 15-30y
China Airlines	2.6 and 8.5	Short 2021-2023; Medium 2024-2025; Long-term 2026-2030
Deutsche Lufthansa AG		Short 0-1y; Medium 1-3y; Long-term 3-6y
easyJet plc	4.5	Short 0-1y; Medium 1-5y; Long-term 5-20y
IAG	3.5. and 1.5	Short 0-2y; Medium 2-5y; Long term - greater than 5y
Japan Airlines Co., Ltd.	below 2 and 4°C	Short 2021-2025; Medium 2026-2030; Long-term 2031-2050 FY
JetBlue	4.5 and 8.5	Short 1-3y; Medium 3-10y; Long-term 10-30y
Ryanair	-	Currently reviewing, including 2°C scenario

As can be depicted from the disclosures analyzed related to physical risks, companies have communicated different definitions and examples of risk. More than that, their climate-scenario analysis has been based on different time-horizons and on different RCPs, which can lead to a misunderstanding of future climate-related effects and on companies' strategies to mitigate or adapt to them. Since the relation of risk can be seen as a plot conveying that the risk object could affect and modify the object at risk (Boholm & Corvellec, 2011), in this case, the risk objects are the climate risks. Companies perceive themselves as affected by the effects of physical risks, as it can be deducted from the usage of the terms; 're-routings', 'cancelations', 'reduce payload', 'weigh-load limitations', 'delays', 'fuel burn', 'increased fuel-up lift', 'additional cooling', 'disruptions to operations', 'market demand'. These narrations denote that airline companies take the positioning of an object at risk, but the risk object does not seem to be understood. Climate-related risk definitions and examples differ along the same sector and information is also lacking. Additionally, it is rendered that companies currently just started to conduct climate-scenario analysis and they still need to or they will constantly work on understanding such effects.

Lufthansa Group plans to conduct a quantitative analysis of at least two scenarios in the near future, looking into transition and physical risks and opportunities and quantifying financial implications.
(Lufthansa CDP Report, 2020)

Continuing to work closely with IATA and other industry bodies to better understand e.g. the impacts and locations of turbulence and how the business can mitigate these.
(IAG Annual Report and Accounts, 2021)

TCFD-aligned scenario analysis to better understand potential physical impacts of climate change in future, and the potential locations of this e.g. more turbulence on transatlantic flights, fires in Meditteranean destinations, and hurricanes in the Caribbean
(IAG Annual Report and Accounts, 2021)

Beginning in 2020, climate-related issues will be a standing agenda item for committee meetings and included in all quarterly updates.
(American Airlines ESG Report, 2019-2020)

This is in line with what Christoffersen (2018) have stressed, wherein the lack of information on risk objects may illustrate the complexity of the external environment because observers, i.e., the companies, don't express knowledge or agency, denoting a relation of danger, instead of risk. Previous research has also emphasized the lack of shared definitions on environmental risks (Vinnari and Laine, 2017), which has led to inconsistent practices (Zieba & Johansson, 2022).

Additionally, in the TCFD reports that have been analyzed, in various instances companies express concern when linking the effects of risk to their operations and infrastructure.

IAG disclosure related to chronic physical risks:

Reduced flying to chronically climate-affected destinations.
(IAG Annual Report and Accounts, 2021)

Chronic changes in weather and physical impacts of climate change such as flooding, drought, forest fires, heat waves, algal blooms, coral bleaching, rising sea levels and reduced snow cover in ski destinations could make certain destinations less desirable and impact customer demand.
(IAG Annual Report and Accounts, 2021)

Similarly, JetBlue is stating:

We minimize revenue loss by redeploying flights to other Caribbean destinations in the wake of infrastructure damage from a localized storm or hurricane.
(JetBlue ESG Report, 2019-2020)

IAG links the effect of weather events to a destination image, that could finally affect the operation of flights. JetBlue, likewise, is considering redeploying flights if the Caribbean destinations are damaged by such events. Therefore, there are two or more risk objects, such

as (1) climate risks, (2) affecting a destination, (3) affecting a perception about a destination, or another resource found in that destination, that finally (4) influence negatively the operations of flights, with the object at risk, e.g., 'profitability' remaining the same. This complex causality can be understood as a chain of dangerous events which further distorts the relation of risk. In the next diagram I present this sequence.

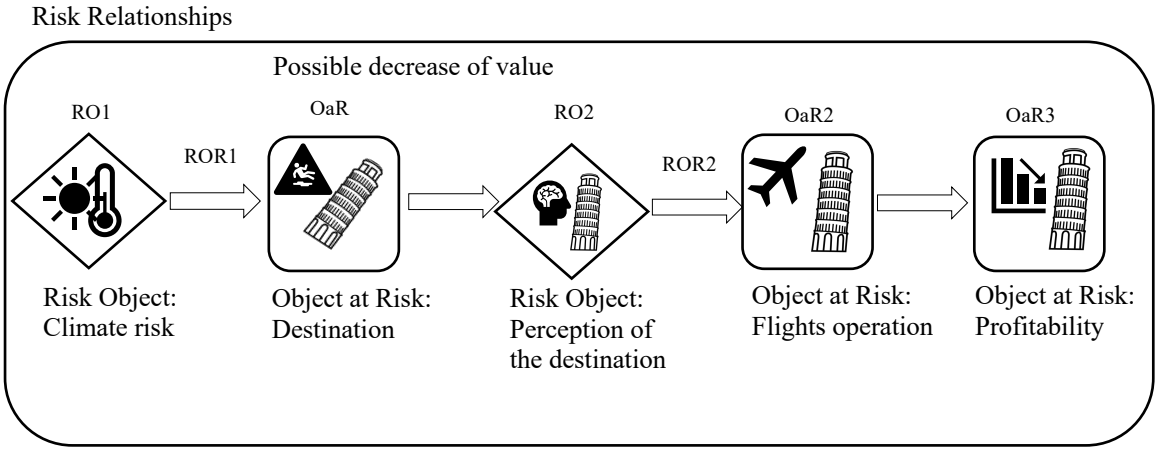

Figure 4: Sequence of climate-related physical risks relationships

Keeping these findings as very insightful, the thematical analysis suggests further meanings that have been depicted in a new set of risks where the company is seen as the object at risk but, this time, affected by the transition risks, which are to be presented next.

4.3.2 Climate-Related Transition Risks

After presenting the climate-related physical risks that affect the organization, I will now present the transition risks that affect the organization and their sub-categories (see Table 3 at page 27). Transition risks are defined by TCFD framework guidelines as Policy and Legal Risks, Technology Risks, Market Risk, or even Reputation Risk (TCFD, 2017, p. 5). In short, companies report on the risks and opportunities that low-carbon innovations imply, how their markets may be affected by such a transition, as well as how maladaptation to this economy would damage their organizational reputation (TCFD, 2017). My thematical analysis shows that airline companies have identified four main transition risks in regards to their future strategies and governance. Analyzing these respective sections of their reports along with having the relational theory of risk used as a lens, I could render all these risks as affecting the

company in every time scenario disclosed, which has made the company the object at risk, as will be elaborated next.

4.3.2.1 Policy Risks

The theme related to Policy Risks was identified due to all companies' disclosures on the risk at which they will be exposed to if impacts of the proposed regulations, additional taxes, fees associated with carbon emissions or increased costs for new equipment will soon materialize. It has derived from keywords such as 'carbon pricing', 'policy asymmetry', 'extra regulations', 'regulation', 'non-CO2 effects'.

JetBlue is describing such risks as addressing climate change and a transition to a low-carbon economy:

> Existing and emerging regulations and legal requirements aimed at addressing climate change and the transition to a low carbon economy.
> (JetBlue ESG Report, 2019-2020)

Lufthansa exemplifies more, by giving examples of policy risks such as 'carbon pricing', 'aviation taxes', 'energy efficient standards', 'stronger policy on rail'. They are presenting these risks as affecting their operational costs.

> Increasing climate regulation like carbon pricing, energy efficiency standards as well as aviation (and fuel) taxes may lead to increasing expenditures for new airplanes and higher operational costs.
> (Lufthansa TCFD Report, 2020)

As an effect of carbon pricing:

> Increases in carbon unit prices above planned levels, or unplanned exposure to carbon pricing, could mean increasing operating costs. (Lufthansa TCFD Report, 2020)

In a similar way, EasyJet is also narrating on the consequences of increased taxation:

Increased taxation – i.e. future policy measures and regulation to tackle the impact of aviation on climate change could impact easyJet's business if they impose limitations and cost on how easyJet operates and the services it can provide (i.e. pertaining to a climate transition risk).
(EasyJet Annual Report, 2021)

Transitions risks are exemplified by American Airlines as well, as they have been mostly identified in all reports:

Potential financial and operational impact of proposed regulations, additional taxes or fees associated with carbon emissions or increases in cost associated with enhanced or new equipment (aircraft or ground equipment) that would be necessary to comply with proposed regulations in the near and medium term.
(American Airlines ESG Report, 2019-2020)

Airlines state the compliance with Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). This scheme has been developed in 2016 as a global regime of market-based measured to compensate GHG emissions coming from international air transport and stabilize the levels starting from 2020 (David & Giordano-Spring, 2021). Participation is voluntary however (IATA, 2019). Due to Covid-19 pandemic, the level of 2022 will be considered since it has been assumed that in this year the level of emissions will normalize as before (Zieba & Johansson, 2022).

Nonetheless, CORSIA compliance seems to be used as per minimizing the risk object 'carbon pricing':

Offset projects around the world are used for CORSIA compliance and voluntary IAG and customer offsetting. 2021 net emissions are reduced by 0.42 MT due to compliance with the UK, Swiss and EU ETS in addition to voluntary offsetting by Group airlines and passengers.
(IAG Annual Report and Accounts, 2021)

We implemented voluntary reporting efforts to minimize transition risk and cost of potential requirements.
(JetBlue ESG Report, 2019-2020)

We identified an opportunity to recognize our customers' interest in offsetting the carbon emissions from their flights with us.
(American Airlines ESG Report, 2019-2020)

Carbon offsetting programme and use of the New Engine Option (neo), which produces 15% fuel saving compared to the Current Engine Option (ceo). easyJet has identified carbon pricing mechanisms as a transition risk. (EasyJet Annual Report, 2021)

It can be seen how companies state they are participating in CORSIA scheme to 'minimize transition risks' and 'costs of potential requirements' by also additionally 'engaging in offsetting these emissions for their 'customers', which are seen as 'opportunities'.

The risk object is contingent on unfavorable accounts where taxes might increase the conditions of risk. Drawing from the relational theory of risk, these can be related to what Boholm and Corvellec (2011) mentioned as the imagined unfavorable conditions of risk that might occur, which steer companies to take action and decisions. In this specific situation, such unfavorable possible risk conditions might affect other risk objects for companies, that finally impact the object at risk. According to Lufthansa, policy risks have the potential of distorting competition. Due to EU ETS regulation, only European airline companies might be more affected by increased taxes. As they put it:

The EU ETS has already led to a distortion of competition due to higher cost related to EU regulation, which would be exacerbated by the aforementioned measures.
(Lufthansa TCFD Report, 2020)

Risks could increase significantly with geographically constrained or heterogeneous regulation across countries/regions.
(Lufthansa TCFD Report, 2020)

Competitive pressure and higher fuel costs impose a material risk that older and less efficient airplanes will have to be retired earlier than originally planned, resulting in an impairment of their residual value.
(Lufthansa TCFD Report, 2020)

In this case, Lufthansa reveals that risks such as regulations can affect only specific markets of specific regions, with the potential of affecting competition, which also can affect the same object at risk. Therefore, there is another risk object that can be added to a sequence of policy risk, e.g., competition. The sequence is presented in the next diagram:

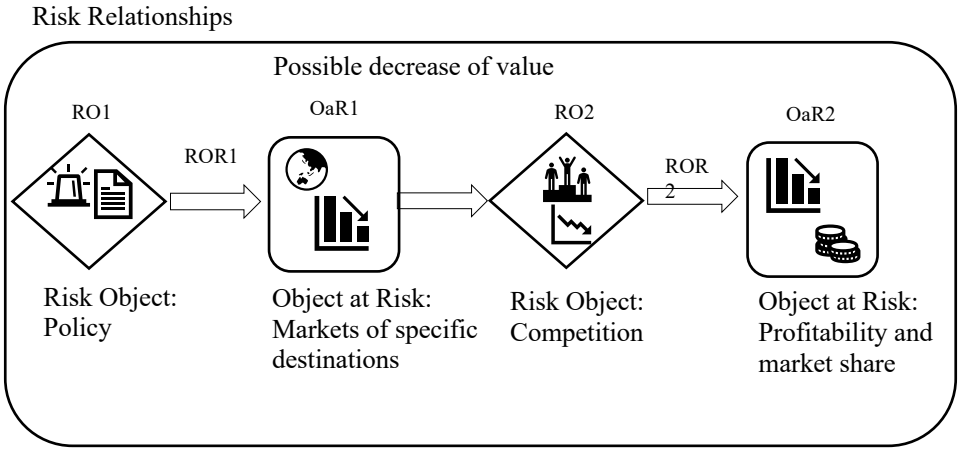

Figure 5: Sequence of policy transition risk relationships

4.3.2.2 Technology Risks

Another risk that is a part of transition risk is technology risk. When referring to technology risks, accounts based on aircraft innovation, retrofits, lower emission sources of energy, fleet renewal, sustainable aviation fuel, or partnerships for developing new technologies were transpiring. It can be added that, when comparing to other risks, technology risks are more detailed in the airline companies' reports.

JetBlue is disclosing their technology risks and the strategy they are focusing on:

> Introducing over 155 new fuel-efficient aircraft across two new aircraft types, both of which will bring dramatic improvements in per-seat emissions, which we will strategically introduce over the coming years to replace older aircraft and adapt to our changing operational needs.
> We have invested in electric and hydrogen fueled aircraft startup companies, to help us more easily and efficiently transition to alternative fueled aircraft in the future.
> These partnerships allow us insight as these emerging zero-emission industries develop and access to favorable pricing and supply when introduced to market.
> (JetBlue ESG Report, 2019-2020)

Similarly, Japan Airlines highlights keywords as 'equipment renewal', sustainable aviation fuel (SAF), with some concerns regarding short supplies of such innovative technologies:

> Fuel-efficient aircrafts: In the short to medium-term, the steady implementation of the equipment renewal plan is expected to contribute to the achievement of CO2 reduction targets.

SAF*1: In the short to medium-term, there are concerns about supply shortages and high procurement costs due to delays in development and dissemination.
(Japan Airlines Annual Report, 2021)

These narratives illustrate how the previous risk object, e.g., regulation, and its interlinked adaptation strategy, e.g., reducing carbon emissions, is mitigated through specific solutions, such as fuel-efficient aircraft, sustainable aviation etc. In this case, technology could have been an opportunity but it is seen as a risk in case its availability becomes a problem. Extracting from Japan Airlines disclosures, concerns are mentioned in regards to "supply shortages and high procurement costs". High prices are to have an impact on the object at risk, represented here as 'income' and 'expenditure':

In the medium to long-term, there are concerns that the high prices of SAF and hydrogen fuel, which require large quantities of fuel to be purchased, will have an impact on income and expenditure.
(Japan Airlines Annual Report, 2021)

Next, American Airlines constructs the relation of risk based on the object at risk 'market share' and 'profitability' threatened by:

The risk to our business is that we are late to adopt a new technology that could improve our fuel efficiency and reduce our costs, thereby putting our products and services at a disadvantage to those of our competitors, reducing our market share and profitability.
(American Airlines ESG Report, 2019-2020)

In conclusion, the company's value is represented by 'market share' and 'profitability' which may be affected if such technological advancements are not implemented on time, making 'time' as well as 'availability' the actual risk objects. Technology innovation was seen as a solution to mitigate another risk object, e.g., policy risks, therefore as an object at risk, but it became a risk object due to its possible constraints regarding development and implementation conditions. This is in accordance with Boholm and Corvellec (2011) relational theory of risk, revealing how objects can switch positions by observer's operating assumptions, hence distorting the relation of risk.
In the next section I will present the next type of transition risks that have emerged.

4.3.2.3 Market risks

The market risks have been identified by all companies as a transition risk related to changes in consumer behavior. In the reports analyzed, market risks are classified as a long-term risk, with the potential of changes in consumer behavior.

JetBlue is narrating regarding 'changes in consumer behavior':

> Changes in consumer behavior leads to reduced revenue and demand for flights and other carbon-intensive forms of travel.
> (JetBlue ESG Report, 2019-2020)

American Airlines is also specifying market risks as a 'change in customers' perception':

> If customers perceive that we are not aware of and acting to reduce the contribution of our operations to climate change, they may choose to fly with another airline, reducing our profitability and market share.
> (American Airlines ESG Report, 2019-2020)

On these accounts, risk objects are constructed by an association with changes that could happen in customers perception, which could further influence 'profitability'. Market risks are, however, classified as long-term risks leading, again, to a potential reduced revenue.

Next, IAG is describing market risks in connection with ESG-conscious customers, along with perceptions of aviation industry's CO2 progress and the viability of offset projects:

> Lost revenue due to corporate or leisure passengers reducing flying, or travelling with other airlines perceived to be greener.
> Additional compliance costs under UK and EU ETS or CORSIA programmes, or increased costs associated with use of voluntary offsets.
> (IAG Annual Report and Accounts, 2021)

EasyJet is referring to market-risks as 'changes in consumer sentiment':

> Market price risk: increase in fuel price, foreign exchange rates, carbon prices and inflation rates.
> (EasyJet Annual Report, 2021)

Market risks as an RO are constructed, interestingly, by consumers' perceptions on carbon intensive industries, that will consequently influence the company's 'profitability' and

‘credibility’ as object at risk. Next, a final theme will be presented concerning transition risks, namely the Reputational Risks.

4.3.2.4 Reputational Risks

Interestingly, reputational risks have emerged from similar accounts as other transition risks, e.g., additional taxes and fees, and changes in consumers behavior. Nonetheless, what specifically defined this theme were the keywords; ‘flight-shame’, ‘lack of attention to changing norms’, ‘investors sentiment of the ESG agenda’, ‘loss of customers’, ‘reputational damage’, and ‘brand value’.

In the sections related to reputation risks, IAG is stating:

> More restrictive policies, loss of customers or funding, or industry-wide reputational impacts.
> 2030 SAF commitment. This could also lead to reputational damage.
> (IAG Annual Report and Accounts, 2021)

Therefore, it appears that a chain of risk objects can be even larger in this regard, since (1) market risks are contributing to (2) a loss of customers finding, which leads to (3) reputational damage. On the other hand, reputational damage can also be inflicted by stakeholders’ perception on environmental awareness, not just by consumers. China Airlines gives examples for reputational damage both coming from stakeholders’ preferences, as well as from consumers:

> (…) stakeholders increase their environmental awareness and advocate that air transportation be replaced by land transportation.
> (…) consumers pay attention to the development of low-carbon tourism.
> (China Airlines Climate-Related Financial Disclosure Report, 2021)

Next, Lufthansa is mentioning more keywords related to reputational risks, as it can be depicted from their statements:

> A perceived lack of action by the LHG or industry in general could result in increasing loss of reputation and a shift of consumer attitude and demand. (Lufthansa TCFD Report, 2020)

Likewise does JetBlue:

> Damage to brand value and loss of customer base from shifting public sentiment about climate change. Reduced customer demand due to increased "flight-shaming" because of the industry or airline's carbon intensive reputation. (JetBlue ESG Report, 2019-2020)

From this perspective, 'flight-shaming' can affect 'customers demand', as per generating a 'loss of customer base'. Hence, there are possible three risk objects which can be affiliated with reputational risks, affecting the object at risk, here represented by 'brand value'. I present this sequence in the next diagram.

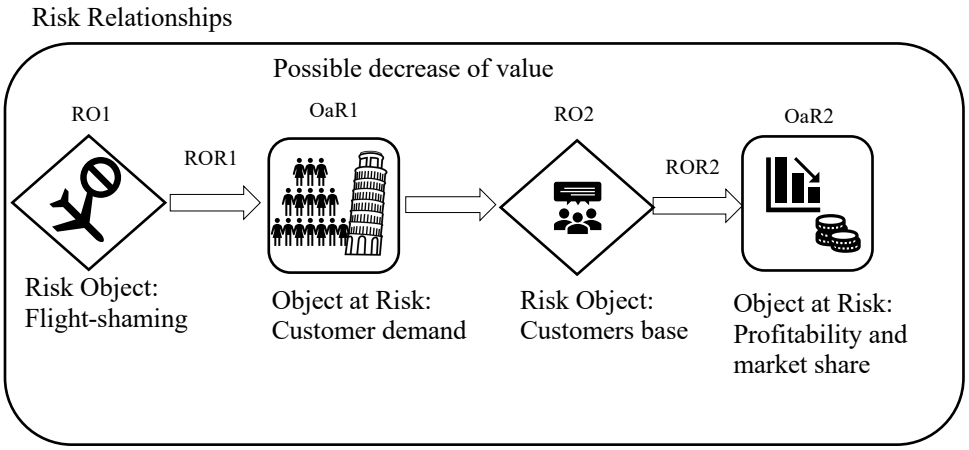

Figure 6: Sequence of reputational risk relationships

Emerging from companies' narratives, if reputational risks such as 'flight-shame', 'consumer behavior', 'shift in demand', 'investors sentiment in the ESG Agenda' will materialize in the nearest future, they may affect the company's OaR. On the other hand, as narrated by airline companies, such risks have the potential to modify the OaR, i.e., brand value, influencing the final OaR – 'profitability' and 'market share'. The way they influence is by distorting the brand value towards encompassing other 'values' such as 'sustainability performance', with the final OaR remaining just the same. Boholm and Corvellec (2011) emphasized that RO and OaR change positions due to observer's perceptions to finally remodel the relational theory of risk. On the other hand, my analysis showed that transition risk objects not only change positions, but companies can construct a whole risk sequence that will finally affect the OaR. This can be in line with Christoffersen (2018) critique regarding the relational theory of risk, stressing the transfer between danger to risk. As Christoffersen (2018) puts it, the transfer may be a response

from anxiety to fear, with the aim of mitigating risk. Interestingly, in my analysis, the first risk objects forming the sequence were not very well understood by companies, since companies expressed concern regarding, for example, carbon pricing, increased taxation, availability of technology, or customers perception. This occurred in the case of climate-related physical risks as well, with companies expressing neither knowledge or agency, having a clear lack of such understanding. Next, I will showcase if companies perceive themselves, this time, as risk objects, how and when.

4.4 Company as the RO

Following the relational theory of risk, another theme has been identified with companies as the risk object. The sections of the reports related to both categories of climate-physical risks and to transition risks (see Table 3 at page 27) have been analyzed and, along the narratives, airline companies were stating that they are a part of 'a carbon-intensive industry'. Although companies do not directly mention themselves as being a risk, they have stated their industry as 'carbon-intensive'. This theme is highly relevant in order to explain if companies understand climate-related risks through the double materiality perspective. Therefore, it is important to showcase if companies understand how they affect the natural environment as well. The relational theory of risk wherein objects are changing positions is terms of the observers' assumptions (Boholm & Corvellec, 2011) has been used, and the company as a risk object theme emerged based on keywords such as 'carbon intensive reputation', 'carbon-intensive forms of travel', 'large quantities of greenhouse gases', 'pressure and duties to lower emissions'.

Examples from JetBlue's Report:

> Reduced customer demand due to increased "flight-shaming" because of the industry or airline's carbon intensive reputation.
> (JetBlue ESG Report, 2019-2020)
> Changes in consumer behavior leads to reduced revenue and demand for flights and other carbon-intensive forms of travel.
> (JetBlue ESG Report, 2019-2020)

China Airlines acknowledges the aviation industry as emitting large quantities of greenhouse gases:

> The aviation industry emits large quantities of greenhouse gases and faces a staggering amount of pressure and duties for reducing carbon emissions. They include the three-phase carbon reduction goals and four-pillar strategy (technology improvement, operational efficiency, infrastructural efficiency, and effective economic measures) proposed by the International Air Transport Association (IATA)
> (China Airlines Climate-Related Financial Disclosure Report, 2021)

Aviation as the industry having a high carbon footprint can be assessed in narratives where companies only displayed the strategy of mitigating risk, avoiding to mention themselves as a risk but still implying it:

> Aviation; only industry that will soon have a global scheme in place to reduce emissions even further. From 2024 onwards, a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).
> (Ryan Air Annual Report, 2021)

It can also be outlined how they are mentioning they are a risk, however in a positive light:

> Aviation is the most efficient form of mass point-to-point transport, accounting for approximately 2.8% of CO2 emissions. (Ryan Air Annual Report, 2021)

> This simple change in operational behavior provides a substantial opportunity to decrease both costs and emissions, since electric power is less carbon intensive.
> (American Airlines ESG Report, 2019-2020)

This type of reporting has been stressed by previous research of Bhatia (2012), Jones (2011), Chu et al. (2013), Font et al. (2016), Cho et al. (2010) as a form of denying responsibility and enhancing positive aspects. Interestingly, in the reports I have analyzed, it can also be correlated with positive aspects of previously risk objects. Japan Airlines is referring, in this regard, to customers' preferences:

> A certain degree of improvement in customer preferences is expected by responding to the diversification of customer needs for low-carbon, environmental conscious products and services over the short to long term. It could also create new revenue streams by creating new businesses such as next generation Air Mobility.
> (Japan Airlines Annual Report, 2021)

Here, Japan Airlines acknowledges a 'change in customers preferences for low-carbon products and services' as a positive aspect. It is enticing to depict this profile of risk as a moral order of blame, as Boholm and Corvellec (2011) have previously stressed, that here is bringing opportunities in the sense of 'new revenue streams' as stated by Japan Airlines.

Companies also reference the 'need to transition to a low-carbon' economy. EasyJet puts it like this:

(…) we recognize the need for our industry to transition to a low-carbon operation which is why we are collaborating in several partnerships.
(EasyJet Annual Report, 2021)

Instead of portraying themselves as a risk object, companies disclose they have joined a number of initiatives to be a part of a future low-carbon economy. This emerged from a number of examples that are found in every report analyzed:

A range of fuel and carbon saving initiatives, for instance operating flights at high load factors, flying point-to-point and using only one engine when taxiing on the ground.
(EasyJet Annual Report, 2021)
Target – to achieve a 10% reduction in carbon dioxide emissions per passenger kilometre on our flights by 2022, compared to a 2016 baseline figure.
Race to Zero, a global UN-backed campaign to achieve net zero carbon emissions by 2050.
(EasyJet Annual Report, 2021)

We support the Paris Agreement to limit global temperature rise to less than 2°C and we welcome the current global ambition of limiting warming to 1.5°C and the European focus on setting 'Net Zero' targets.
We support IATA's 2050 target of an aviation sector that emits a net 50% less CO2 against 2005 levels.
(Ryan Air Annual Report, 2021)

Minimise fuel and energy consumption to limit our emissions of greenhouse gases and pollutants impacting air quality.
We hereby commit to reducing our emissions rate to below 60 grams of CO2 per passenger km by 2030, which is 10% lower than our current rate and 30% lower than the average of the four other biggest European airlines.
(Ryan Air Annual Report, 2021)

Decarbonizing the industry seem to be a priority, as it can be deducted from American Airlines as well:

> It is essential for American Airlines to do our part in decarbonizing the aviation industry in order to limit the impacts climate change may have on our business.
> (American Airlines ESG Report, 2019-2020)
> American endorsed the International Civil Aviation Organization's (ICAO) Carbon Offset and Reduction Scheme for International Aviation (CORSIA) that was adopted in 2016.
> (American Airlines ESG Report, 2019-2020)

In a similar way, IAG is disclosing how they are working on reducing non-CO2 impacts:

> Working through trade association SA and research partnerships with the RAeS to identify actionable solutions to reduce non-CO2 impacts.
> Working to accelerate wider industry progress through trade associations, by supporting new commitments and roadmaps to net zero emissions at national, regional and global levels, building momentum for a net zero target at ICAO in 2022.
> Average Group fuel efficiency is forecast to be below 90g CO2/pkm in 2022 and on track for the 2025 target of 80g CO2/pkm. IAG remains committed to the 2025 target.
> 2021 net emissions are reduced by 0.42 MT due to compliance with the UK, Swiss and EU ETS in addition to voluntary offsetting by Group airlines and passengers.
> (IAG Annual Report and Accounts, 2021)

However, it is not defined what are the impacts of CO2, just that they are, and that IAG supports 'the industry's progress' to net-zero emissions, which means this is a progress to a higher position where such impacts are mitigated. The risk object is therefore the aviation industry as having CO2 impacts, constructing a risk relation with a valuable object here as a 'progress to net-zero emissions'.

Paths are considered to reach a low-carbon economy, as companies clearly mention:

> In addition to "JAL Green Operations" to reduce CO2 emissions in daily operations, promoting collaboration across the entire industry, including air traffic control agency, airlines, and airport operators.
> Regarding the reduction of CO2 emissions from aircraft, its scenarios by 2050 are considered, referring to the latest study materials by ICAO and IATA.
> (Japan Airlines Annual Report, 2021)

The qualitative scenario analysis Lufthansa Group conducted based on the IEA ETP 2020 Sustainable Development Scenario revealed that aviation is a growth sector even in a well below 2°C world. ETH Zurich have developed innovative methods for removing CO2 from the atmosphere and, together with water and concentrated sunlight, convert it into a synthesis gas that can be used to generate fuel.
(Lufthansa CDP Report, 2020)

(…) carbon reduction paths of ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and IATA.
(…) using sustainable aviation fuel to satisfy ICAO's carbon reduction requirements and respond to carbon reduction policies of foreign countries
(China Airlines Climate-Related Financial Disclosure Report, 2021)

After analyzing through the lens of the relational theory of risk, it can be discerned how the design of the risk object takes place when the company is the risk object. Boholm and Corvellec (2011) and Christoffersen (2018) emphasized the double act of selection and exclusion and, together with the relational theory of risk in risk communication, it is fascinating to render how airlines have portrayed themselves in order to avoid disclosing the environmental effects of CO2's impact. This issue in environmental reporting in ESG has been mentioned by many scholars before, such as Cho et al. (2010) stressing the neutralization techniques companies use to protect themselves, because this type of communication may decrease the value in the eyes of the stakeholders (O'Dwyer et al., 2005), therefore presenting an idealized image (Boiral, 2013; Cho et al., 2010) for which they can legitimate their actions in society (Laine, 2005). As my analysis continued, I have encountered other two major themes that might explain why companies portray themselves as such, and chose to include in their selection only narratives related to their future engagement in reaching a low-carbon economy. These motives are based on final threats airlines are nonetheless exposed at, namely the Fear of new regulated markets affecting neoliberal mechanisms and the Fear of growing environmental awareness.

4.5 Fear of new regulated markets affecting neoliberal mechanisms

This theme has been assessed in companies' accounts related to a reduction of CO2 emissions to reach a low-carbon economy. As I have introduced previously, airlines have been declaring their commitment in different initiatives such as ICAO, compliance with CORSIA or EU ETS. However, when stating the consequences of risk imposed by regulations, they have all stressed concerns regarding the high prices that regulation will entail on carbon emissions:

Increased fuel costs due to taxes or carbon pricing on fossil fuels and fossil manufacturers.
Increases in costs due to rising fuel costs caused by the disruptions in the supply chain.
(JetBlue ESG Report, 2019-2020)

(…) potential financial and operational impact of proposed regulations, additional taxes or fees associated with carbon emissions or increases in cost associated with enhanced or new equipment (aircraft or ground equipment) that would be necessary to comply with proposed regulations in the near and medium term.
(American Airlines ESG Report, 2019-2020)

Increases in carbon unit prices above planned levels, or unplanned exposure to carbon pricing, could mean increasing operating costs.
(IAG Annual Report and Accounts, 2021)

(…) cost incurring from market price changes in the EU Emissions Trading Scheme (ETS) regulation and the upcoming CORSIA compensation scheme.
(…) emissions related costs will increase
(Lufthansa CDP Report, 2020)

In the medium to long-term, along with the strengthening of CO2 emissions regulations in each country, it is possible that the cost of purchasing CO2 credits will increase due to the rise in carbon prices.
(Japan Airlines Annual Report, 2021)

Regulatory demands increase demand for carbon rights/offsetting credits, and increased carbon prices.
(China Airlines Climate-Related Financial Disclosure Report, 2021)

Clearly, airlines are mentioning ‘regulatory demands’ as translating into ‘high carbon prices’. To respond to such risks, they are further stating in their mitigation strategies:

Today there is little SAF being produced and it is very expensive. We must participate in the market for SAF and find innovative ways to expand both the supply and demand for SAF.
(American Airlines ESG Report, 2019-2020)

Proactively seek opportunities in new markets to be better positioned in a lower-carbon economy.
(JetBlue ESG Report, 2019-2020)

We are proactively setting multi-year contracts for low-carbon services such as sustainable aviation fuel and verified carbon offsets, in anticipation of emerging sustainable policy to minimize regulatory risks and compliance cost in a low-carbon economy.
(JetBlue ESG Report, 2019-2020)

Therefore, the keywords ‘proactively’, ‘seek opportunities’, ‘innovative ways’, denote a real engagement in stabilizing the price for sustainable aviation fuel, since currently there is a high cost for this type of resource. More strategies are considered:

Today there is little SAF being produced and it is very expensive. We must participate in the market for SAF and find innovative ways to expand both the supply and demand for SAF.
(American Airlines ESG Report, 2019-2020)

Higher operational cost and lower margins could also result from mandatory sustainable aviation fuel quotas which is more expensive than conventional fuels.
(Lufthansa CDP Report, 2020)

Lobby the industry, government, and academia to create a development strategy for domestic sustainable aviation fuel. (China Airlines Climate-Related Financial Disclosure Report, 2021)

It can be deducted that companies will focus on expanding supply and demand for sustainable aviation fuel, with the primary aim of lowering its price. On the other hand, JetBlue has emphasized that an increase in demand will actually raise the prices even more:

“An increase in demand increases cost for sustainable aviation fuels, carbon offsets, and low emissions aircraft technology.”
(JetBlue ESG Report, 2019-2020)

These statements are portraying an engagement in strategies where prices would be minimized. Keywords such as ‘must participate in the market for SAF’, ‘expand both supply and demand’, ‘lobby the industry, government, and academia’ are paramount for how this theme emerged. They are next to be found in the IAG’s report as well:

IAG staff chairing the SAF Delivery Group of the JZC, lobbying for a price stability mechanism to reduce risks to investors of scaling up SAF supply and securing UK Government support to incentivise 10 per cent SAF in 2030.
An effective IAG SAF procurement strategy to secure early supply and minimise price-related risks.
(IAG Annual Report and Accounts, 2021)

Furthermore, some companies have defined this action plan as 'aggressive', as it can be depicted from the next narratives:

(…) we are well positioned to handle transition risks due to our emissions reduction plans, fleet renewal strategy, and aggressive pursuit of sustainable fuels technologies. Our primary transition risk is increased fuel costs due to policies that may price or regulate markets.
(American Airlines ESG Report, 2019-2020)

Due to the nature of the air transportation business, direct emissions from aircraft account for approximately 99% of the JAL Group's total CO2 emissions. Therefore, the Group will first focus on reducing CO2 emissions from aircraft, it will also set aggressive targets in reducing CO2 emissions from ground facilities and take sincere measure.
(Japan Airlines Annual Report, 2021)

Focused criteria for growth. Ryanair believes it will have opportunities for continued growth by: (i) using aggressive fare promotions to stimulate demand.
(RyanAir Annual Report, 2021)

Hence, these narratives that are accompanied by such powerful keywords indicate a strategy design which is the subject to a threat for a regulated market where the carbon costs will increase. Interestingly, the design is similar. Other strategies in response to future regulations' costs look similar as well:

Continue to perform replacement and renewal of high-energy-consuming facilities.
(China Airlines Climate-Related Financial Disclosure Report, 2021)

(…) resource efficiency, i.e. the use of more efficient aircraft which help to reduce our fuel burn, carbon compliance and other direct costs.
(…) reducing future direct costs by supporting technological step change.
(EasyJet Annual Report, 2021)

Increased costs to transition existing assets such as the air fleet to more efficient models.
(JetBlue ESG Report, 2019-2020)

Furthermore, we are working to reduce emissions of carbon dioxide (CO2), nitrogen oxides (NOx), carbon monoxide (CO), hydrocarbons (HC), and other substances emitted by aircraft in order to prevent air pollution.
(Japan Airlines Annual Report, 2021)

It can be deducted from these narratives that 'efficiency' is another keyword, which here is related to 'efficient aircraft', 'resource efficiency', 'efficient models'. Companies emphasize the importance of efficiency for their current fleet, as well as investing in new efficient models. Nonetheless, these responses to risk are still based on the same object at risk, e.g., 'profitability', as it can be seen in the statements of Japan Airlines, likewise:

> Operation/aircrafts: Reduction of CO2 emissions and increase in profit due to improvement of fuel efficiency are expected through ingenuity in daily operations and technical innovation of aircrafts, and improvement of infrastructure including technological innovation of air traffic control in short to long term.
> (Japan Airlines Annual Report, 2021)

It is seen how the strategies are similar for most of the companies. The risk object in all cases is the regulation's development, as it was previously stated in the transition risks. To this threat, companies respond by stating they will be lobbying the government, academia, investors, for a price stability in a future low-carbon economy. Some are portraying this strategy as aggressive, in order to pursue measures to stimulate demand. But the narratives are sometimes contradictory when it comes to expanding supply and demand and the effects that this will have on the price for sustainable aviation fuel, as an example. The theme was identified as a 'fear' since Christoffersen (2018), in refining the relational theory of risk, has defined fear as having a definite object, e.g., when one is often relating to a well-defined risk relationship. By evolving from an anxiety state, fear is a response that constructs the relationship in a more definite way, through anticipatory actions (Christoffersen, 2018; Anderson, 2010). It is interesting, however, how companies had constructed this relationship when the risk object is the regulated market. Next, I will present the final theme to which companies seem to be aligned as well, the Fear of a growing environmental awareness.

4.6 Fear of a growing environmental awareness

Companies' statements have been previously analyzed to respond to the fear of regulations by wanting to raise demand. On the other hand, it can be depicted how in their statements companies are emphasizing that customers may already prefer environmental-conscious products:

> (…) consumers pay attention to the development of low-carbon tourism.
> (China Airlines Climate-Related Financial Disclosure Report, 2021)

Demand: A certain degree of improvement in customer preferences is expected by responding to the diversification of customer needs for low-carbon, environmental conscious products and services over the short to long term. It could also create new revenue streams by creating new businesses such as next generation Air Mobility. (JetBlue ESG Report, 2019-2020)

Companies also mention stakeholders' preferences as well:

(…) stakeholders increase their environmental awareness and advocate that air transportation be replaced by land transportation.
(China Airlines Climate-Related Financial Disclosure Report, 2021)
(…) international stakeholders now pay closer attention to the disclosure of non-financial information on corporate ESG (environmental, social and corporate governance) performance.
(China Airlines Climate-Related Financial Disclosure Report, 2021)

Another company is referring to a growing awareness:

A growing awareness of climate change may persuade customers to buy tickets from companies/airlines with a good performance track on climate change and sustainability.
(Lufthansa CDP Report, 2020)

Nonetheless, Lufthansa is describing the 'growing awareness of climate change' that 'may persuade customers', not that the company is influencing it. To which they state their strategy:

A perceived lack of action by the LHG or industry in general could result in increasing loss of reputation and a shift of consumer attitude and demand.
(Lufthansa TCFD Report, 2020)

Hence, the 'lack of action could result in increasing loss', Lufthansa here implying that it has to pay attention to 'consumer attitude and demand'. Moreover, JetBlue is also focused on paying attention to 'consumer demand' as they state in their own words:

We continuously monitor consumer demand and expectations, procurement, and strategy development to anticipate market shifts.
(JetBlue ESG Report, 2019-2020)

Another important keyword is good environmental reputation:

> Positive perceptions and reputations enhances increased demand of a company's products and services, which in turn gives the opportunity of increased production capacity and investment opportunities.
> (Lufthansa CDP Report, 2020)

On the same time, the same airline is mentioning that clients have a limited willingness to pay for environmental products:

> Due to intense cost competition and as of today a limited willingness of customers to pay for environmentally friendly flying, it will be crucial to turn sustainability measures into value contributing business cases as a sound foundation.
> (Lufthansa TCFD Report, 2020)

In other cases, is just the opposite, since clients are choosing a company's performance:

> Continue to offer our customers an easy-to-use voluntary mechanism to offset the carbon cost of their journeys.
> (RyanAir Annual Report, 2021)

> Since April 2020, Ryanair has enabled its customers to double their voluntary carbon offset contribution from €1 to €2 per booking. This voluntary customer carbon off-set scheme has raised €3.5m so far, with more than 4% of our customers having contributed.
> (RyanAir Annual Report, 2021)

Here it is depicted how RyanAir offers this solution of a 'good performance' as a voluntary mechanism, individualizing the responsibility. This finding is in line to what Christoffersen (2018) expressed, namely that it is a problem to attribute harm to individuals according to an abstract notion of choice, when the responsibility should be placed on the harmful party.

This theme is emphasizing the growing environmental awareness that is threatening the current object at risk. As Christoffersen (2018) mentioned, fear is a response to a danger wherein anticipatory actions are considered. It is, therefore, a fear that companies experience here, since they state they are taken anticipatory actions to support the growing awareness of their clients. As previously analyzed, reputational risks and changes in consumers behavior were regarded as risks. However, because companies respond in aligned anticipatory actions to mitigate them without actually understanding them completely at the moment, a fear may be depicted that is

triggering their actions. Companies are also stating that they are even ‘monitoring customer preferences’, therefore this fear is also driving their future strategies. All these important findings will be summarized in the next chapter.

5. DISCUSSION AND CONCLUSIONS

In the previous chapter I have presented a thematical analysis of my empirical material and the findings that have emerged from this material. In this chapter, a discussion is presented along my core findings on how my findings respond to my research question, and why these will be relevant.

5.1 Discussion of Findings

The broad aim of my study was to research how TCFD framework shapes the understanding of climate-related risks, through the double materiality perspective, how companies respond to them and what future strategies are considered. To accomplish this aim, I have employed a document analysis of airline companies' reports that disclosed against the requirements of TCFD framework, and conducted my analysis to answers to three questions, which have been identified as lacking in the previous research. The first question referred to how are climate-related risks understood through the double materiality perspective, the second one questioned how companies respond and how they integrate these risks in their strategies and, the third one addressed the strategies coordination and how will they affect society at large.

The thematical analysis has been conducted through the lens of the relational theory of risk which deemed to be highly relevant in answering these questions. The TCFD framework was also regarded as a paramount reporting framework that was emphasized to help monitor progress of business activities towards global objectives, since it is stressing both perspectives on how a company can lower its emissions, as well as how it can build resilience against climate change effects that will affect its infrastructure and operations (O'Dwyer & Unerman, 2020). This reporting is included in the science-based movement because the TCFD recommendations are supported by a scientific background of the IPCC reports (David & Giordano-Spring, 2021). The IPCC provides analysis of direct and indirect emissions by economic sector which, in turn, enables TCFD to focus on dominant emissions-producing sectors (David & Giordano-Spring, 2021), one of them being the aviation industry (TCFD, 2017). Nonetheless, TCFD has a voluntary nature reporting basis and it is mostly applying normative pressure to add up to the coercive one coming from specific laws or regulations (David & Giordano-Spring, 2021). This approach was highlighted to raise the companies' awareness towards their climate

dependencies which is a unique empirical and theoretical landscape for sustainability research (Andrew and Baker, 2020). This new perspective on reporting has its limitations when conducting research because the TCFD framework, as other frameworks used for reporting, has a guidance for companies to use, hence a positioning from where themes are emerging, e.g., the already classified types of risks that companies may detect when conducting their climate-scenario analysis. Nonetheless, I have used the relational theory of risk developed by Boholm and Corvellec (2011) to guide me through the thematical analysis and focus on the double materiality perspective which I have been particularly interested in. Therefore, I will present my findings as follows.

Addressing the first question, the results show that, when a company is the object at risk, it can be influenced both by climate-related physical risks and by transition risks to a low-carbon economy. However, when it comes to physical risks, companies have had different examples and definitions of how they will be affected by climate change and, to the extent that these risk disclosures are a product of a climate-scenario analysis based on IPCC reports, it was enticing to see that the climate-scenario analysis was based on different time-horizons by companies in the same sector. Therefore, this has denoted a clear lack of understanding of the risk object and the complexity of the external environment. Previous research has also emphasized the lack of shared definitions on environmental risks (Vinnari and Laine, 2017), which has led to inconsistent practices (Zieba & Johansson, 2022). In regards to transition risks, companies had a better and aligned understanding of what transition risks are and how they could affect their industry, which were summarized in policy, technology, market and reputational risks, each being a risk object in itself, but always affecting the object at risk ‘profitability’ and ‘market share’. Moreover, my analysis showed that, it is not just a risk object affecting an object at risk, as Boholm and Corvellec (2011) emphasized, but rather it is a sequence of risk objects that can lead to a final risk object, e.g., market or reputational risks. Not only that, but the first risk objects in the sequence were not clearly understood, since companies expressed concerned in relation to, for example, carbon pricing, increased taxation, availability of technology or customers perceptions. This may be in line to what Christoffersen (2018) previously stressed, namely that a risk that is not understood may be a danger, and observers may try to make a transfer from a danger to a risk by increasing their knowledge and options.

Interestingly, when the narratives were analyzed as the company being the risk object, it can be discerned that companies have portrayed themselves in a positive light to avoid disclosing

the environmental impacts of their carbon emissions. This issue in ESG reporting has been encountered before and it was mentioned by scholars such as Cho et al. (2004), stressing the neutralization techniques companies use to protect themselves, Boiral (2013) and Cho et al. (2010) who emphasized the portraying technique of an idealized image, by Laine (2005) and Lains (2020) whose critiques shed light as per how sustainability reporting is used to legitimize companies actions in society and by O'Dwyer (2011) who stated that companies may also implement this type of communication to maintain their value in the face of different stakeholders. The double act of exclusion and inclusion has also been emphasized strongly in the relational theory of risk by Boholm and Corvellec (2011) and Christoffersen (2018), the later actually stressing the importance of exclusion and how problematic it may be, since it renders that the observer doesn't understand risks by not possessing knowledge and neither agency to further mitigate them.

Next, to answer my second question, namely how companies respond and how they integrate these risks in their strategies, in the case of physical risks, my analysis showcased companies as not including these risks in their future strategies. The sequence of climate-related physical risks (see Figure 4, page 36) emphasized that a risk object, such as climate-related physical risks, could affect an important destination, to affect the perception of the destination, to further influence the flights operation, that finally affect the object at risk, e.g., 'profitability' and 'market share'. In the case of transition risks, I had, likewise, to study a chain of risks that have been now created. The results show that companies responded to the first risk objects in the subsequent sequence by trying to develop capacities of understanding, nonetheless distorting the relationship of risk. For example, technology innovation was seen as a solution to mitigate another risk object, e.g., policy risks, but being in a chain of risk objects due to its possible constraints regarding development and implementation conditions (see Figure 5, page 40). This finding is in accordance with Boholm and Corvellec (2011) relational theory of risk, revealing how objects can switch positions by observer's operating assumptions. However, in this case, there are more risk objects in the sequence that switch positions according to observer's interests. The construction of risk was therefore RO1-ROR--OaR/RO2 --ROR2--OaR2. In another example, market risks were constructed, interestingly, by consumers' perception on carbon intensive industries, that will consequently influence the company's profitability and credibility as objects at risk. In the case of policy and reputational risks, policy developments with the potential of increased carbon taxes as well as reputational risks represented by keywords such as 'flight-shame', 'changed consumer behavior' and 'shift in demand', were

observed to affect the object at risk, e.g., 'brand value', influencing the final object at risk, e.g., 'profitability' and 'market share'. Hence, it can be deducted that a possible sequence of objects at risk could also exist.

Lastly, to answer my final research question wherein companies' strategies are aligned, the airline industry proved to be aligned to a large degree in terms of their future engagements. Companies emphasized the engagement to pursue technology innovations, in the form of efficient aircrafts, sustainable aviation fuel, fleet renewal, partnerships for developing new technologies etc., some companies even portraying this strategy as 'aggressive'. They have also expressed their will, because of the high costs of sustainable aviation fuel and the possible constrains on the availability of technology, to contribute to a price stability by lobbying the government, academia, investors etc. The narratives differed sometimes when explaining the strategy of 'supply' and 'demand', but most companies seemed to have agreed that supply and demand have to be raised in order to compete in a low-carbon economy. These insights have led towards two final important themes that represent the fears that actually may drive airline companies' future strategies, and these are: Fear of new regulated markets affecting neoliberal mechanisms and Fear of a growing environmental awareness.

Christoffersen (2018) stressed that fear has a definite object, e.g., when one is often relating to a well-defined risk relationship, which companies, in this case, seem to get involved in. By evolving from an anxiety state, fear is a response that constructs the relationship in a more definite way, through anticipatory actions (Christoffersen, 2018; Anderson, 2010). Because it was argued in my thematical analysis that the relationship of risk was constructed with the risk object being the future regulations, to which companies responded in unison to pursue measures in "anticipation of emerging sustainable policy to minimize regulatory risks and compliance cost in a low-carbon economy", a fear that drives future engagements has been identified to be linked with regulated markets, affecting neoliberal mechanisms. It is important to mention that the objects at risk remained 'profitability' and 'market share'. It is also questionable how airline companies will adapt to a regulated market by creating a new market based on lower prices, and how this strategy may be different from the current mechanisms of the neoliberal markets.

The final theme that, likewise, has been identified as a fear, is the fear of a growing awareness that is threatening the same object at risk, e.g., 'profitability' and 'market share'. Airlines stated

that they are taking anticipatory actions to support the growing awareness, “monitor customer preferences”, since a “lack of action could result in increasing loss”, whilst others took issue with the contention that they have to raise the clients’ awareness for “sustainability values”, in some cases even individualizing the responsibility, which could show how companies transform their own fears in market opportunities. Similarly, Christoffersen (2018) reflected that it is a problem to attribute harm to individuals according to an abstract notion of choice. It is questionable how providing a choice of an externality to the audience translates into taking responsibility for mitigating climate change.

5.2 Conclusions

First, it is possible to conclude that companies in the same sector still don’t express an understanding of environmental risks, even when such climate-related physical risks are affecting their own infrastructure and operations. A lack of understanding was shown in my analysis regarding their dependencies with the environment, since companies didn’t define similarly the effects of climate change and they have chosen different time-horizons to focus their climate-scenario analysis on. Hence, this may be a great issue in terms of tackling climate change, especially since companies don’t seem to include these risks yet in their future strategies. This can also be regarded as a deficient communication that could affect investors and asset managers and owners since their current approach is to consider long term perspectives for capital allocation and make informed decisions. Through the TCFD framework, and with the help of the relational theory of risk, my findings stress that what seem to be more valuable for organizations is still a strong approach to balance needs for profit, as it was previously emphasized by Lacoste (2016) as well. Companies responded to the object at risk identified by ‘profitability’ and ‘market share’, by including in their future strategies, this time, transition risks to a low-carbon economy. In a coordinated dynamic, airline companies narrated that they will pursue technological innovations to lower their carbon emissions, some portraying these strategies as ‘aggressive’, to even recognizing they started to lobby different institutions so that they could already implement them.

Because I was interested in how risks are constructed and further integrated in future strategies, by revising the relational theory of risk developed by Boholm and Corvellec (2011), I can also conclude that organizations are building these strategies as a response to a sequence of risks that affects their objects at risk. Here, the availability of technology as well as the high cost for

sustainable aviation fuel were stressed to be possible constraints associated with technological innovations. But what could be deemed highly important is that companies are considering these anticipatory actions because they are afraid of a *Fear of a new regulated market affecting neoliberal mechanisms* as well as of a *Fear of a growing environmental awareness* - the final themes deduced in my analysis. These fears are shown to drive future engagements, engagements that proved to be coordinated in this matter.

The TCFD framework is focused on the concept of double materiality, namely on how organizations are both considering climate-related risks to affect their organization, as well as how they will lower their environmental impact in order to reach a low-carbon economy. It was previously emphasized that uncoordinated effects could translate into further substantial disruptions (Carney, 2005; Santos et al., 2019; Andersson & Arvidsson, 2021), however, my analysis shows that transition risks are coordinated due to the fact that airlines are collectively answering to fears that are threating their objects at risk. As companies are stating in their reports, the airline industry will be affected by policy risks. The actions to be taken to minimize these risks are not only similar, but even coordinated in such a way that supply and demand are to be raised so that companies can survive in a future low-carbon economy. Therefore, it may be concluded that TCFD framework has helped organizations understand their transition risks, since the messages related to transition risks were similar. Nonetheless, companies have still portrayed their actions in a positive light and have not disclose themselves as a risk object, a case that was previously stressed as a window-dressing technique, to only improve a company's reputation (Bhatia, 2012; Jones, 2011; Chu et al., 2013; Font et al., 2016; Talbot & Boiral, 2018). Disclosure requirements, in this regard, may hamper the effective management of climate risks' impacts, with possible negative effects on the environment and to our society.

5.3 Theoretical, practical and social implications of the analysis

Finally, through the lens of the relational theory of risk, I have identified the coordinated transition strategies of airline companies as relationships of risk which may depict a cognitive mediation collectively constructed, happening in an industry where, as Boholm and Corvellec (2011) mentioned, discourses are institutionalized to steer and drive action. As the authors also emphasized, such mediation is communicated through narratives that further influence audiences through their components. In this communication, I have depicted positive narratives

and neutralization techniques for climate-related physical risks disclosures, which seemed to attenuate risks and signs of risks of emerging disasters. Oreskes and Conway (2010) suggested in previous studies that such practices in communication may be aimed at avoiding and silencing risks, hampering the management of risk. Because disclosures are part of a communication which influences shareholders, stakeholders and society as a whole, the communication of such risks is regarded as critical.

Nonetheless, I have also identified coordinated effects towards a low-carbon economy through the transition risks. However, these effects may have the potential to alter the future regulated market, hence it will be questionable how companies will survive and how will they influence the economy. Lains (2020) argued previously that financial practitioners may not just frame discourses and practices to link supply and demand, but they could actively contribute to how market practices evolve in the first place, in which the concept of ESG plays a major role to enable apparent harmonization of moral concerns and financial forms of moral valuation. Attention, therefore, is needed to the discourses in the ESG reports and, most importantly, in the TCFD disclosures. Lastly, it was asked if businesses can operate in the constrains of the capitalist system whilst ensuring all members have access to environmental services and life support systems (Milne & Gray, 2012). For our society as a whole, it is to be seen if, by being limited to a specific pile of resources and operate within the carbon credits system, businesses will comply respectively.

5.4 Directions for Future Research

In the light of what has been achieved in previous research and what is contributed through the thematical analysis employed in this thesis, there are yet more studies to be done in the field of sustainability reporting. The following issues were beyond the scope of this study, but they can be future areas of research for scholars interested in these agendas.

As the mandatory disclosures requirements will be introduced by different organizations, future research can consider the changing trends and the particularities on which they arise. Moreover, it can touch upon the effects that such coercive power dynamics may have on their audiences.

Another area of research can pay attention to what is (in)voluntary disclosed and what remains undisclosed by companies in different sectors. Some frameworks were criticized to allow cherry-picking indicators to be reported against, therefore it will be worth engaging in studies which will determine how dilemmas based on urgency are identified and debated to be reported upon.

Finally, the existing body of knowledge could be further supplemented with future perspectives on TCFD framework and the role of standardization of scenarios, around scenario-based analysis.

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