Information asymmetry in mutual funds' sustainability communication and its effects on sustainable development

Gunnar Odenman & Filip Berger

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Supervisor: **Erik Melin, Swedish University of Agricultural Sciences, Department of Economics**
Examiner: Karin Hakelius, Swedish University of Agricultural Sciences, Department of Economics

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Faculty of Natural Resources and Agricultural Science
Department of Economics

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Abstract

Information asymmetry with regards to sustainable investments limits private investors' ability to make educated investment choices. This thesis explores how information asymmetry can materialize in the sustainability communication of five mutual funds through a qualitative content analysis of Key Investment Information Documents. The collected data is analyzed using a theoretical communication model that visualizes noise related to vocabulary, grammar and context - perpetuating information asymmetry in the fund companies' communication efforts. The results indicate that, although efforts are taken by the European Union to reduce information asymmetry within the financial sector through the Sustainable Finance Disclosure Regulation, information asymmetry still exists. An information asymmetry that may inhibit sustainable development, by impeding the ability of private investors to make sustainable investment choices. An issue that possibly could be minimized through stricter guidelines for the content of sustainability communication.

Keywords: Information asymmetry, communication, sustainability, noise, SFDR, sustainable financial disclosure regulation, mutual funds, KIID, key investor information document, qualitative content analysis, adverse selection

Sammanfattning

Informationsasymmetri relaterad till hållbara investeringar begränsar privata investerares förmåga att fatta hållbara investeringsbeslut. Denna uppsats utforskar hur informationsasymmetri kan materialiseras i fem fonders hållbarhetskommunikation genom en kvalitativ innehållsanalys av Key Investment Information Documents. Insamlade data är analyserad med hjälp av en teoretisk kommunikationsmodell som visualiserar brus relaterat till vokabulär, grammatik och kontext. Detta brus vidmakthåller informationsasymmetri i fondföretagens kommunikationsinsatser. Resultaten indikerar att informationsasymmetri fortfarande existerar. Detta trots att åtgärder har vidtagits av Europeiska unionen för att reducera informationsasymmetri inom den finansiella sektorn genom Förordningen om hållbarhetsrelaterade upplysningar. Informationsasymmetri som kan inhibera hållbar utveckling genom att hämma privata investerares förmåga att fatta hållbara investeringsbeslut. Ett problem som möjligen kan minimeras genom striktare riktlinjer för innehållet i hållbarhetskommunikation.

Nyckelord: Informationsasymmetri, kommunikation, hållbarhet, SFDR, sustainable financial disclosure regulation, fonder, KIID, key investor information document, snedvridet urval

Preface

This thesis would not be what it is if not for Erik Melin, our supervisor, who provided us with crucial guidance throughout the writing process. We would like to express our gratitude for your extraordinary commitment and support.

Thank you!

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Abbreviations

EU	European Union
ESG	Environmental, Social and Governance
HLEG	High Level Expert Group
KIID	Key Investor Information Document
SDG	Sustainable Development Goal
SFDR	Sustainable Financial Disclosure Regulation
UN	United Nations

1. Introduction

The first chapter provides an introduction to the thesis, including background information relevant for understanding the thesis' subject and a problematization leading up to the thesis' purpose and research questions. The delimitations made during the writing process are then explained, followed by a disposition of the thesis.

1.1. Background

When investment intermediaries, such as fund companies, incorporate sustainability criteria into their investment processes, it enables a shift in financial flows towards sustainable investments and sustainable development (European Commission 2017). There is however a growing indication that it can prove difficult for private investors to gain access to sufficient sustainability information from investment intermediaries in order to make educated investment decisions (Ammann et al. 2019). This has important implications for how sustainable investing is enacted in practice as private investors are unable to accurately compare mutual funds with regards to sustainability performance (European Commission 2018a).

According to the High Level Expert Group (HLEG) on Sustainable Finance appointed by the European Commission, there is a lack of transparency and consistency in how sustainability criteria are incorporated by investment intermediaries when making investment decisions on behalf of private investors (European Commission 2018a). Research posits that it is crucial for information to be accessible, reliable and comparable to similar information (Baldacci et al. 2017). This is because provision of such information facilitates reducing or avoiding *information asymmetry* (ibid), which is a state where one party has access to more or superior information than the other (Bergh 2018). Without directly comparable information on sustainability implementation by asset managers, private investors can not properly take sustainability into account when making investment decisions (European Commission 2018a).

As a response to the issues brought forward by the HLEG, the European Commission recently issued a proposal (European Commission 2018b), leading to the Sustainable Financial Disclosure Regulation (SFDR) being implemented on March 10th, 2021 (Regulation (EU) 2019/2088 p. 15). It is stipulated in the SFDR that the disclosure of sustainability risks and goals have previously not been uniformly regulated (Regulation (EU) 2019/2088, p. 2). Different standards regarding sustainability communication substantiate the difficulty of evaluating and comparing different mutual funds and can therefore skew investment decisions (ibid).The SFDR aims to standardize sustainability communication related to investment intermediaries and therefore make the funds more comparable regarding sustainability performance (Regulation (EU) 2019/2088, p. 3), while at the same time minimizing the imposed administrative burden on these intermediaries (European Commission 2017). With the new regulation, mutual funds are categorized based on the ambition of their sustainability work (Regulation (EU) 2019/2088, pp. 10-11). Funds whose holdings promote environmental or social aspects are categorized into Article 8-funds, while funds whose holdings have sustainable investments as their objective are categorized into Article 9-funds (ibid). According to an article in Dagens Industri (2021a) only four percent of the mutual funds from the large banks in Sweden live up to the highest standard introduced by the SFDR. Even some mutual funds with an explicitly communicated sustainability focus, which from here on are referred to as sustainability funds, do not reach the requirements of article 9 described in the SFDR (ibid). Moreover, there seems to be some ambivalence regarding the SFDR and its sustainability categorization, where boundaries are left up for interpretation by the fund companies themselves (Dagens Industri 2021b). This raises questions regarding how these sustainability funds differ in policy and communication, something that will be explored henceforth in this thesis.

1.2. Empirical problem

The SFDR introduces a framework which makes mutual funds' sustainability agenda more transparent (Regulation (EU) 2019/2088 p. 7). The regulation also unveils some irregularities when it comes to how mutual funds with an explicitly communicated sustainability agenda communicate sustainable fund management (Regulation (EU) 2019/2088 p. 3). This includes a lack of transparency and consistency regarding how sustainability factors are incorporated into investment decision processes (ibid). When there is a lack of transparency in the sustainability communication from asset managers, information asymmetry between fund companies and private investors is promoted (Baldacci et al. 2017). This could affect private investors investment decisions (Lemeunier 2020), and consequently

have an impact on financial flows towards sustainable investments (European Commission 2018a).

1.3. Theoretical problem

The implications of information asymmetry in the fund industry is a well-researched area (Chan & Covrig 2012; Kelly & Ljungqvist 2012; Tchamyou et al. 2018; Lemunier 2020). Quantitative studies have, for instance, investigated how information asymmetry affects the realized return and the expected return on investment, and how it relates to market timing (Tchamyou et al. 2018). Other studies focus on how information asymmetry affects mutual funds trades in foreign assets (Chan & Covrig 2012). Studies on how information asymmetry affects asset pricing have also been conducted (Kelly & Ljungqvist 2012). Yet other studies explore what effect information asymmetry could have on the mutual fund market when it comes to the distribution between actively - and passively managed funds (Lemeunier 2020). However, research has thus far seemingly overlooked employment of qualitative methods. Qualitative methods are particularly suited for the study of language and how it is perceived and understood differently by different people (Bryman & Bell 2013). The lack of qualitative research on information asymmetry within the fund industry is a gap that this thesis strives to fill by exploring how information asymmetry materializes through the communication of fund companies.

1.4. Purpose and research questions

The overarching purpose of this thesis is to explore the sustainability communication of mutual funds, bringing into light how information asymmetry materializes through communication. Further, this thesis also aims to shed light on the potential consequences that information asymmetry within the finance sector has on investment decisions and sustainable development.

The following research questions will be answered:

- In what ways could information asymmetry materialize in mutual funds' sustainability communication?
- How can information asymmetry in mutual funds' sustainability communication affect private investment decisions and sustainable development?

1.5. Delimitations

Several delimitations are made in the writing of this thesis. The delimitations include: studying Key Investor Information Documents (KIIDs) and no other forms of sustainability communication; limiting the selection of studied funds to those with a explicit sustainability focus; limiting the selection of studied funds to those with the highest Morningstar Sustainability Rating; limiting the number of studied funds to five. Detailed descriptions of the reasoning behind each delimitation are available in the third chapter of this thesis (see 3.4).

1.6. Disposition

The thesis begins with an introductory chapter including background, problematization, purpose and research questions. The introduction-chapter is followed by an exposition of the thesis' theoretical framework and then a chapter where the research process and methodology are described. After the method-chapter, the summary of the empirical data is displayed, followed by an analysis where the theoretical framework is incorporated as a lens from which to view the empirical data. After the analysis the findings are assessed in a broader sense in the discussion, linking the observations to the thesis' research questions. Lastly, the thesis is wrapped up with conclusions where the thesis' theoretical contribution is described as well as suggestions for future studies.

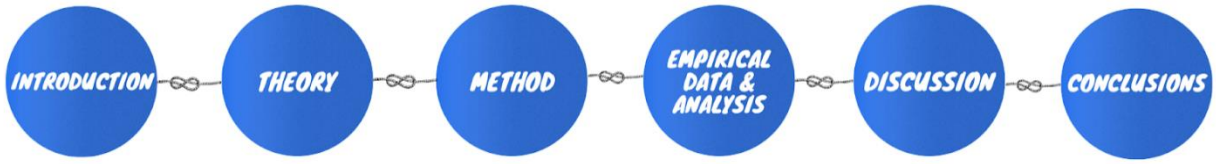

Figure 1. Own visualization of the thesis' disposition

2. Theory

In this chapter, relevant concepts and theories used in the thesis are presented. The concept of information asymmetry along with communication models deemed relevant are explored in order to develop this thesis' theoretical framework.

2.1. Information asymmetry

Information asymmetry is when two actors possess different levels of information regarding a particular situation (Akerlof 1970; Bergh 2018). From an economic point of view, this can be between a buyer and a seller (ibid). A degree of information asymmetry is most often the situation between two actors (Akerlof 1970). Without supervision and regulation, information asymmetry can lead to market failure and welfare loss as one of the actors is unable to evaluate an exchange properly (ibid). Less serious actors offering inferior goods and services can leverage their informational advantage to outcompete actors that offer goods and services of a higher quality and who do not exploit their informational advantage as much (Akerlof 1970; Mishra et al. 1998).

Adverse selection is one of the key problems that can arise as a result of information asymmetry (Akerlof 1970; Bergh 2018; Mishra 1998) and is thus a phenomenon that will be explored in this thesis. Adverse selection refers to a situation where an actor with an informational advantage leverages the advantage in order to benefit at the cost of another actor before an agreement between the two actors has been reached (Bergh et al. 2018; Mishra et al. 1998). A common example for illustrating adverse selection at play can be seen in the used car market. In the example popularized by Akerlof (1970), often referred to as *the Market for Lemons*, it is assumed that cars come in only two types, high quality or low quality. The general consumer cannot tell the difference unless they operate the car for an extended time (ibid). Once a car has been owned and used for a while, the owner now has an informational advantage over a potential buyer of the now used car (ibid). Because the buyer is unable to differentiate between a high quality and a low-quality car, both sell for a similar price (ibid). A used high-quality car sells for less than it is worth, and a low-quality car sells for more than it is worth (ibid). For this reason,

the owners of high-quality cars are less likely to sell, and the used car market is flooded by low quality cars (ibid).

2.2. Communication

There are multiple models for describing communication. Communication that in this study consists of mutual funds' sustainability agenda communicated through fund fact sheets intended for private investors. Since this type of communication is linear, that is, from a sender to a receiver (Jonsson 2017), there are a few specific models that are of special interest for the thesis and thus they will be presented below.

The mathematical theory of communication, a model of linear communication theorized by Shannon & Weaver (1949) stipulates a relevant and to this date influential framework (Jonsson 2017). The model was originally aimed for telecommunication, but has since publication in 1949, also been used to describe communication in a broader sense (Jonsson 2017). The model focuses on linear communication of a message from an information source though a transmitter, thereafter, reaching a receiver (Shannon & Weaver 1949). The model also incorporates the concept of *noise* which could affect the signal between the transmitter and receiver (ibid). In this thesis, noise is defined as what disturbs the effectiveness of the communication, therefore perpetuating the information asymmetry between the fund companies and private investors. More specifically it is what, in the fourth chapter of this thesis, is referred to as *ambiguous vocabulary*, *ambiguous grammar* and *insufficient context*, in the mutual funds' sustainability communication.

Shannon & Weaver's model constitutes a relevant framework when it comes to linear communication. In this thesis, nevertheless, the main concepts of *Sender*, *Message*, *Channel* and *Receiver* from David Berlo's *SMCR-model* (Jonsson 2017) are used instead of Shannon & Weaver's concepts of *Sender*, *Encoder*, *Channel*, *Decoder* and *Receiver* (1949) – this because Berlo's concepts are deemed more appropriate. First and foremost, this owes to Berlo's model breaking down different aspects that could affect the effectiveness of linear communication (Jonsson 2017). In contrast to Shannon & Weaver's mathematical model, Berlo focuses more on the qualitative aspects that could affect the effectiveness of the communication (ibid). The qualitative aspects described by Berlo include the sender's or receiver's *communication skills*, *attitudes*, *knowledge*, *social system* and the *content*, *elements*, *treatment*, *structure* as well as *code* of the communicated message (ibid).

Although Berlo provides a framework that could prove useful when describing mutual fund communication in this study, the model has certain limitations in the here established research context. For instance, Berlo assumes that effective communication requires that the sender and receiver have access to equal amounts of information and have the same frame of reference (Jonsson 2017). This could make the model difficult to operationalize within the frame of this thesis, as one could argue that there always exists at least some information asymmetry between the sender and the receiver in communication in practice. In addition, Berlo emphasizes that the receiver has a fundamental role in making successful communication possible, while not considering the responsibility of the sender in making the message understandable for the receiver (Flensburg 2009). Since our focus in this thesis is on the message, employment of an additional model, more extensively covering this element, is deemed necessary.

Based partly on the model by Shannon & Weaver, and the model by Berlo, Per Flensburg introduced *An enhanced communication model* in 2009. In contrast to the models by Shannon & Weaver and Berlo, Flensburg's communication model focuses more on the content of the communicated message than on the communication process (Flensburg 2009). Moreover, in Flensburg's model there is a distinction between information and knowledge, where knowledge is defined as information with enough context to bring meaning to the receiver (ibid). Flensburg also breaks down communication to its building blocks like binary sequences and data format, but what is deemed relevant for this study is the parts of his model relating to information, content and knowledge (ibid). As explained by Flensburg, there has to be some structure for data to become information (ibid):

> Up to now we have transferred characters. In order for them to make sense we first have to put them together in words. We thus add structure in order to form words. The noise is reduced by using a specific vocabulary that is a predefined set of allowed words. (Flensburg 2009, p. 34)

What is relevant for this thesis is that a predefined vocabulary is, in the quote above, interpreted as reducing noise (Flensburg 2009). However, Flensburg's model does not elaborate on noise being the consequence of ambiguous vocabulary (ibid). The concepts of structure and noise from Flensburg's model are deemed relevant for this thesis, and therefore added to our own theoretical framework. Nevertheless, our theoretical framework will focus more on noise being the consequence of ambiguity and add depth to the consequences of noise itself.

Another element of relevance in Flensburg's communication model is the concept of *meta-data* (Flensburg 2009). Meta-data is according to Flensburg's model how information becomes content (ibid). Information, as defined by Flensburg, constitutes structured data, while content is defined as information structured with regards to grammar (ibid). Noise is in terms of meta-data reduced through explicit

descriptions of the grammar used, or by use of common everyday grammar (ibid). This concept is significant for our study since the structure of sentences in the mutual funds' communication, for instance vague sentences of sustainability policy, could be interpreted as meta-data noise.

Lastly, Flensburg's model describes how content needs context for it to be understood by the receiver (Flensburg 2009). In linear communication it is therefore, according to Flensburg's model, important to use examples to be able to transfer knowledge through a message (ibid). In this thesis, context is provided by the fund companies. This is enacted by providing examples in the KIIDs of the mutual funds' sustainability policy et cetera. According to Flensburg's model, this is a requirement for making the information understandable for the receivers, which in this case are private investors (Flensburg 2009). The noise regarding this concept of knowledge transfer is when the sender does not supply enough context to enable understanding of the content for the receiver (ibid).

Context is a relevant topic regarding the aforementioned theory of information asymmetry. Providing enough context is a way to reduce noise (Flensburg 2009), i.e. minimization of the information asymmetry between the sender and the receiver. The concept of context is therefore employed henceforth.

2.3. Theoretical synthesis

In developing this thesis' theoretical framework, the main building blocks from Berlo's model are used, more specifically the elements of *Sender, Message, Channel and Receiver* (Jonsson 2017). Our synthesis elaborates on the *Message*-element supported by concepts from Flensburg's model (Flensburg 2009). However, a few changes are made to simplify the concepts introduced by Flensburg. Flensburg's concept of *structure* is changed to *vocabulary*, more specifically defined as what words are used in the communication (ibid). *Meta-data* is changed to *grammar*, which in more detail refers to how sentences are formed (ibid). The concept of *context* described in Flensburg's model is also added, which refers to providing examples (ibid). Lastly, Shannon & Weaver's concept of *noise* (Shannon & Weaver 1949) is used to describe factors that could have a negative effect on the effectiveness of communication, more specifically *ambiguous*

vocabulary, *ambiguous grammar* and *insufficient context.* Our theoretical synthesis is visualized in Figure 2.

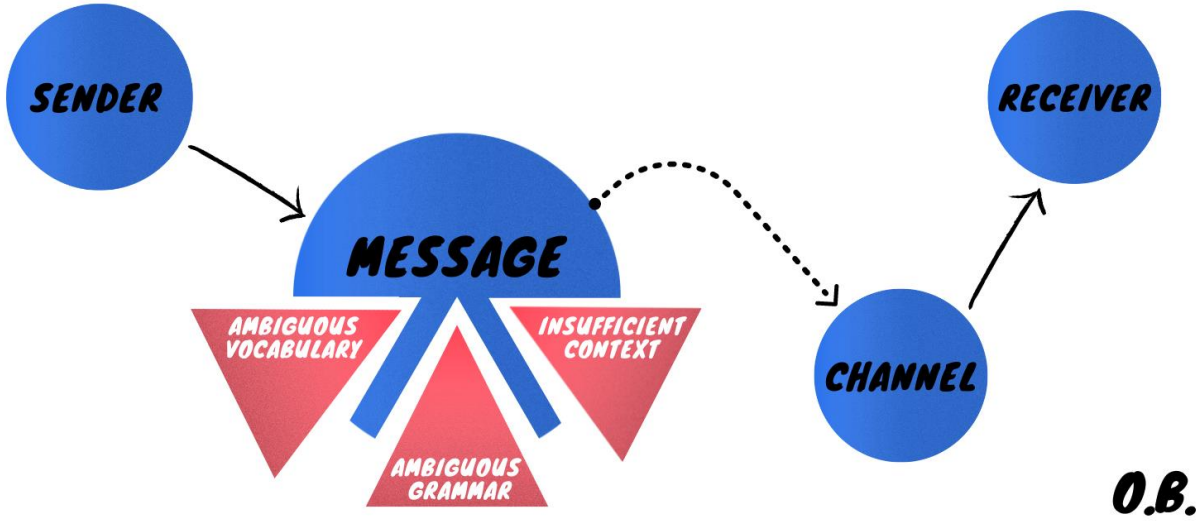

Figure 2. Own visualization of the thesis' theoretical framework

3. Method

In chapter three the research process and methodology of this thesis is described. The chapter includes the ontological and epistemological position of the authors, the inductive approach taken, how the literary review was conducted, data sampling, data gathering, qualitative content analysis and the authors' critical reflections throughout the work process. By describing the thoughts, assumptions, and work process of the authors as thoroughly as possible a higher level of dependability can be achieved (Bryman & Bell 2013). This is because it better enables the reader to judge if the results were acquired in a correct manner (ibid). Thorough descriptions also increase the transferability of the thesis as it enables the reader to better judge if the results are transferable to other contexts than the one studied in this thesis (ibid).

3.1. Ontological and epistemological position

We, the authors, share a constructionist view on ontology that has inevitably shaped this thesis. A constructionist ontology stipulates that human social interaction is inherently linked to the subjective reality of individuals and is infinitely nuanced and ever changing (Bryman & Bell 2013). As the constructionist view implies that there does not exist an objective truth that can describe social behavior we strived to create knowledge on how *information asymmetry* (Akerlof 1970; Bergh 2018; Mishra 1998) may materialize in the Swedish fund market through an interpretivist epistemology. An interpretivist epistemology means that knowledge about social interaction is always subjective and affected by the subjectivity of the observed, and the observer (Bryman & Bell 2013). We acknowledged this throughout our writing process, and the effects it has on knowledge creation. Even though we strived to create knowledge that was applicable to other situations than the specific ones we have studied, the knowledge generated through our research was, in essence, of subjective nature.

3.2. Inductive approach

The relationship between theory and data can be either deductive or inductive (Bryman & Bell 2013). The study conducted here utilized an inductive approach. An inductive approach involves positing a question without initially being limited by theory. One gathers and analyzes data that might be relevant for answering the posited question. After data analysis, theory is generated (ibid). Sustainable development is something we wanted to contribute to, and this affected the formulation of our original question. Sustainable development is, by our definition, the ability to meet the needs of the current generation of humanity without compromising future generations' ability to meet their needs. We also have an interest in the finance sector as we believe the different services offered in this sector play a fundamental role in directing where the resources of society go. Our interest in sustainable development and the finance sector lead us to question how platforms used by private investors show the laymen investor what is, and what is not, a sustainable investment. What is shown affects our personal investment decisions; thus, we reasoned that this also might affect where other private investors decide to place their investments. This, in turn, led us to initiating the literary review and data gathering process.

3.3. Literary review

Because the researcher often must cast their net wide during the initial data gathering of an inductive process, the researcher might reiterate the original questions asked based on the generated theory (Bryman & Bell 2013). It follows that the researcher also might gather more specific data in order to answer the reiterated questions (ibid). The theory is in turn adjusted based on the new data (ibid). The process of continuous reiteration can be repeated several times (ibid). As per the inductive nature of this thesis, our literary review was conducted in several stages. The initial literary review was broad in the sense that it included both peer reviewed articles, to see what research had been previously conducted on the subject, as well as newspaper articles and industry magazines, to get a sense of the ongoing discourses regarding sustainable investments. Including a wide array of sources aided us in growing our understanding of the terms and concepts used in discussions on the subject. This understanding in turn enabled us to start formulating our own theory and further specify our research questions. The peer reviewed articles were obtained using a combination of databases, search engines and recommendations from other scholars. The databases used include Web of Science, Scopus and Econlit, while the search engines include Primo and Google Scholar. Search terms used in the initial literary review include, but are not limited to "Sustainability rating", "Sustainable", "ESG", "Environmental", "Social",

"Governance", "Finance", "Funds", "Mutual funds" and "Investment". The initial literary review raised questions on how the expertise of investment intermediaries is transferred, or fails to be transferred, to the private investor. The Key Investor Information Document (KIID) was identified as one of the, as the name implies, key tools used by asset managers to transfer this information to the private investor. The concepts of information asymmetry and communication theory were in turn identified as a potential lens from which to view and understand these new, more specific questions and so a second literary review was conducted with a focus on these concepts.

3.4. Data sampling

The purpose of the KIID is to communicate the necessary information needed to evaluate a mutual fund and make an informed investment decision (Swedish Investment Fund Association 2020). The KIID should also deliver information in a concise manner that is easy to understand (ibid). We therefore judged that the KIID of funds would be a relevant source of data for the purpose of answering our research questions.

3.5. Data Gathering

There are many different sources of communication from mutual funds that contain sustainability communication that could have been studied to answer the research questions of this thesis. A delimitation was made to only study KIIDs as this document is mandatory for mutual funds to make available for private investors and follows a given format (Commission Regulation (EU) No 583/2010, p. 1), making it a easily accessible source of data that also enabled comparisons of similar forms of communication. A more in-depth analysis may have been possible if a more detailed document was chosen for the content analysis other than the KIID. This in turn might have come at the cost of comparability that the format of the KIID affords. The KIID was nevertheless deemed suitable for fulfilling the purpose of the thesis.

In order to gather data that included sustainability communication we chose to look at the KIID of mutual funds that have an explicitly communicated sustainability focus, i.e. funds that include sustainability keywords in their name or product descriptions. We define sustainability keywords as terms that we, through our literary review and previous studies, subjectively have come to associate with sustainability. Some examples of sustainability keywords include "Green", "Sustainable", "Clean", "Ethical" and "ESG". Being limited by time, and thus

unable to analyze all the KIIDs of funds with an explicit sustainability focus, the selection of KIIDs was further narrowed down by only selecting mutual funds that have the highest Morningstar Sustainability Rating (five out of five). The Morningstar rating has remained one of the most recognized and well used ratings used to communicate how well the holdings in a fund mitigates ESG-risks (Gerrans, 2006; Sastry, 2020). The reasoning behind looking at KIIDs of mutual funds with this rating was that we did not want any potential difference in communication to be the result of comparing the communication of an obviously less sustainable fund with a more sustainable one. For practical reasons we limited ourselves to choosing five KIIDs to study. More examples of noise with regards to sustainability communication would possibly have been found if more KIIDs were analyzed. This could in turn have added additional nuance to our discussion, but would also have required more time. We chose KIIDs from different fund companies rather than from a single company for two reasons. The first was logistical in the sense that it was difficult to find a single fund company that had five funds meeting the aforementioned criteria. Analyzing communication from a single fund company would have been interesting as it would presumably have yielded a deeper insight into how that particular company communicates. The second reason for opting for a wider description with five different companies was to enable us to make comparisons between different cases. We then chose the first five funds that fulfilled all our selection criteria.

3.6. Data analysis – Qualitative content analysis

We opted for a qualitative content analysis as the method for analyzing our data. It can prove difficult to visualize themes and patterns in qualitative data that answer one's research questions purely by reading a text as it is (Linneberg & Korsgaard 2019). A content analysis has proved to be a useful tool for us to structure and view our qualitative data and to more easily answer our research questions. Our method of choice is however not without its drawbacks. A content analysis involves several steps where the data is broken up and viewed from different perspectives by a researcher (Erlingsson & Brysiewicz 2017; Linneberg & Korsgaard 2019). This is both a strength and a weakness of the method (Erlingsson & Brysiewicz 2017). This is because every step of interpretation by the researcher introduces some level of subjectivity (ibid). Moreover, performing a content analysis correctly can prove difficult, especially for novice researchers (Erlingsson & Brysiewicz 2017; Linneberg & Korsgaard 2019).

3.6.1. Getting to know the text

We began our analysis by reading the KIIDs several times in order to form an overarching impression of the data and to see if we could identify any patterns at this stage. Our qualitative content analysis did not have distinct phases that started and ended at given times, i.e. it was not a linear process. All parts of the content analysis were reiterated several times by both authors for the purpose of minimizing subjectivity and increasing confirmability. Confirmability describes how easy it is to confirm that the researcher has not intentionally colored results with their personal values and experiences (Bryman & Bell 2013).

3.6.2. Dividing into meaning units

After the initial readings we broke up the texts into what we judged to be separate meaning units. The resulting meaning units were either a full sentence, part of a sentence, or several continuing sentences grouped together. A meaning unit is a part of the text that carries one distinct message (Erlingsson & Brysiewicz 2017). Some researchers advocate for condensing the meaning units by removing words that do not contribute to the distinct message (Erlingsson & Brysiewicz 2017) while some researchers do not (Linneberg & Korsgaard 2019). The argument being that by removing words that do not change the message it is easier for the researcher to analyze the remaining text and see patterns (Erlingsson & Brysiewicz 2017). We decided not to condense the meaning units as it would potentially introduce more subjectivity into the analysis. Condensing the meaning units would involve us having to interpret what is and what is not an essential part of each meaning unit. Preventive measures could be taken to minimize subjectivity by constantly being aware of how our previous knowledge and experiences affect our interpretations. These measures include revisiting every meaning unit to make sure that no vital part was left out and by letting as many people as possible evaluate the condensing process to get more, and hopefully overlapping, interpretations. The only way to eliminate subjectivity in this part of the analysis was by not condensing the meaning units.

3.6.3. Coding

Next, we coded the meaning units. Coding is the act of describing a meaning unit with a short description or label (Erlingsson & Brysiewicz 2017; Linneberg & Korsgaard 2019). The coding process fulfilled several purposes. The first purpose was to analyze patterns and gain a deeper understanding of the data. This was done by going through the data again from a different perspective than by simply reading the text. Coding also made specific parts of our data easier to identify and retrieve for use in later stages of the work process. At this stage we started to identify

differences in the words used to describe how the funds incorporate sustainability, i.e. differences in sustainability communication keywords (see Table 1).

3.6.4. Categorizing

After we deemed the coding to be at a satisfactory level, we started to categorize the codes. A category is a collection of codes that share a pattern or connection (Erlingsson & Brysiewicz 2017). Categorizing filled similar purposes to that of coding but on a higher level of abstraction. That is, to view the data from yet another perspective, see patterns and organize the data. The categories acted as a form of index for the codes that simplified the retrieval of specific data units even further. Categories like *Objectives*, i.e. what the aims or purpose of a fund is, and *What the fund excludes*, i.e. what the fund avoids investing in, were established (see Appendix 1-5). This further visualized differences in what the funds aim to achieve and how (see Table 1).

3.6.5. Establishing themes

Once our categories were in place, we started to identify themes, i.e. patterns based on our research questions and the literature we had read. We observed irregular clarity regarding sustainability communication in the KIIDs and connected these irregularities to the concept of *noise* used by Shannon & Weaver (1949). We then further identified three types of themes, *ambiguous vocabulary, ambiguous grammar* and *insufficient context* inspired by the message components used by Flensburg (2009). This resulted in the theoretical synthesis elaborated on in the second chapter of this thesis (see 2.3). A selection of quotes exhibiting the identified themes were then chosen to illustrate our results (see Table 1).

4. Empirical data & analysis

This chapter includes empirical data based on a content analysis of mutual funds' descriptions of *Objectives and investment* policy, gathered from the funds' Key Investor Information Document (KIID). The content analysis can be viewed in full in Appendix (1-5), while this chapter provides a summary of observations relevant to the thesis. Thereafter, examples of information including *noise* (Shannon & Weaver 1949) are described through the lens of the thesis' theoretical framework (see Figure 2) in the analysis.

4.1. Empirical data

A content analysis was conducted of the sustainability funds of this thesis: SEB Green Bond Fund (referred to as SEB), Nordea Global Climate & Environment Fund (referred to as Nordea), RobecoSAM Smart Energy Equities (referred to as Robeco), Fidelity Funds Sustainable Eurozone Equity Fund (referred to as Fidelity) and Blackrock Sustainable Energy fund (referred to as Blackrock). The entirety of the content analysis can be found in Appendix 1-5. A summary of the content analysis can be viewed in Table 1 where key observations are described: The mutual fund's objective, how sustainability is defined, keywords related to sustainability and illustrative quotes that exemplifies different kinds of noise. The SFDR-classification of each fund is also included in Table 1 to set the funds' communicated objective into the perspective of the funds' SFDR-article, where article 9 for example requires funds to have sustainable investments as their objective (Regulation (EU) 2019/2088 pp. 10-11).

The content analysis unveiled differences in how the selected fund companies communicated their sustainability agenda. Despite the fact that four of the five selected mutual funds are classified as article 9 funds, only two of the selected funds communicate that sustainable investments is their objective - Robeco and Nordea (Robeco 2021a; Nordea 2021a).

The fund companies also differ regarding what sustainability aspects they refer to when defining sustainability. SEB describes environmental and social aspects, using keywords such as "climate", "environment" and "human rights" (SEB

2021a). In contrast to SEB, an economic aspect was identified in Robeco's KIID, where a UN SDG including economic growth is mentioned (Robeco 2021a). Since Robeco is a mutual fund with a focus on energy industries, the keywords used to describe environmental sustainability (ibid) are narrower than the keywords used by SEB (SEB 2021a). SEB uses "water purification", "clean transport" and "waste management" to describe different industries (ibid), while Robeco describes "decarbonization" through "reliable, clean and affordable energy" (Robeco 2021a). Blackrock, who just as Robeco has an explicitly communicated energy focus, only mentions environmental sustainability aspects (Blackrock 2021a). Nonetheless, Blackrock provides less detail in the KIID regarding what type of sustainable energy the fund invests in (ibid). Blackrock defines sustainable energy as "alternative energy and energy technologies", while referring to the funds' prospectus for further information (ibid). Nordea, similarly to Blackrock, does not mention any social dimensions of the sustainability definition (Nordea 2021a). Nordea also, like Blackrock (Blackrock 2021a), uses concepts on a high abstraction level, with keywords such as "climate", "environmental impact" and "growth", while referring to the prospectus for further information (Nordea 2021a).

To display examples of how information asymmetry may materialize in communication, a selection of illustrative quotes is shown in Table 1. Quotes with vague word-choices are labelled *ambiguous vocabulary*, quotes with unclear sentences as *ambiguous grammar* and quotes with a lack of examples as *insufficient context*. The quotes are analyzed in detail in the analysis (see 4.2).

Table 1. An overview of key observations from the content analysis

Fund	SEB Green Bond Fund	RobecoSAM Smart Energy Equities	Nordea Global Climate & Environment Fund	Fidelity Funds - Sustainable Eurozone Equity Fund	Blackrock Sustainable Energy Fund
SFDR-classification	Article 9 (SEB 2021b)	Article 9	Article 9	Article 8 (Fidelity International 2021b)	Article 9 (Blackrock 2021b)
Objective	"The fund aims to increase the value of your investment by outperforming the benchmark, while meeting specific sustainability criteria"	"The fund's objective is to achieve a better return than the index" "The fund has sustainable investment as its objective within the meaning of Article 9 of the European Sustainable Finance Disclosure Regulation"	"The fund's objective is to provide shareholders with investment growth in the long term and create positive environmental impact" "The fund has sustainable investment as its objective as per Article 9 of the EU Sustainable Finance Disclosure Regulation (SFDR)"	"The fund aims to provide long-term capital growth with the level of income expected to be low"	"The Fund aims to maximise the return on your investment through a combination of capital growth and income on the Fund's assets"
Sustainability aspects	Environmental, social,	Environmental, social, economic	Environmental, economic	Environmental, social	Environmental
Sustainability communication keywords	Climate, wind farms, water purification, clean transportation, waste management, good governance, sustainable development, anti-corruption, human rights, environment, nuclear weapons, tobacco, alcohol, gambling	Reliable energy, clean & affordable energy, article 9, economic growth, decarbonization, electrification, UN SDGs, ESG, controversial behaviour, weapons, tobacco, palm oil, fossil fuel, coal, labour conditions	Climate, environmental impact, renewable energy, resource efficiency, growth	Climate change, water & waste management, biodiversity, product safety, human rights, uranium, mining, nuclear power, coal, oil, fracking, fossil fuel, carbon intensity	Sustainable energy, alternative energy, energy technology, ESG, ESG rating, coal, oil, gas

Illustrative quotes	"The fund aims to increase the value of your investment by outperforming the benchmark, while meeting specific sustainability criteria" (insufficient context) "Positive aims to identify companies with a good governance that contributes to sustainable development" (insufficient context)	"The strategy integrates sustainability criteria as part of the stocks selection process and through a theme specific sustainability assessment" (insufficient context) Part 1: "The portfolio is built on the basis of an eligible investment universe…" (ambiguous vocabulary) Part 2: "...that includes companies whose business models contribute to the thematic investment objectives" (insufficient context) "...applies an exclusion list basis controversial behavior, products (including controversial weapons, tobacco, palm oil and fossil fuel) ..." (ambiguous grammar)	"In actively managing the fund's portfolio, the management team focuses on companies that develop climate- and environment-friendly solutions, such as renewable energy and resource efficiency, and that appear to offer superior growth prospects and investment characteristics" (insufficient context)	"The fund adopts a Sustainable Focused strategy under which a minimum of 70% will be invested in shares of companies that maintain sustainable characteristics" (insufficient context) Part 1: "The fund complies with a principle-based exclusion framework which includes norm-based and negative screening of sectors, companies..." (insufficient context) Part 2: "... practices based on specific ESG criteria to be determined by the Investment Manager from time to time" (ambiguous vocabulary) "The fund has the freedom to invest outside its principal geographies, market sectors, industries or asset classes" (insufficient context) "The Investment Manager will, when selecting investments for the fund and for the purposes of monitoring risk consider the Index as the Index constituents are representative of the type of companies the fund invests in" (ambiguous grammar)	"The companies are rated by the Investment Adviser (IA) based on their ability to manage the risks and opportunities associated with the sustainable energy theme and their environmental, social and governance (ESG) risk and opportunity credentials" (ambiguous grammar)

4.2. Analysis

For the KIID to fulfill its purpose, the information provided should enable investors to obtain information with enough detail and clarity to be able to make an informed investment decision (Commission Regulation (EU) No 583/2010 pp. 4-5). When a mutual fund's communication is lacking clarity and detail, it could be argued that the specific KIID does not fulfill its purpose. In the content analysis (Table 1), different types of noise are identified that arguably contribute to *information asymmetry* (Akerlof 1970; Bergh 2018; Mishra 1998). The types of noise found include ambiguous vocabulary, ambiguous grammar and insufficient context (see 2.3). The examples of noise from KIIDs are summarized in Table 2 below.

Table 2. A selection of illustrative quotes used in the analysis

Fund	SEB Green Bond Fund	RobecoSAM Smart Energy Equities	Nordea Global Climate & Environment Fund	Fidelity Funds - Sustainable Eurozone Equity Fund	Blackrock Sustainable Energy Fund
Ambiguous vocabulary		"The portfolio is built on the basis of an eligible investment universe…"		"... practices based on specific ESG criteria to be determined by the Investment Manager from time to time"	
Ambiguous grammar		"...applies an exclusion list basis controversial behavior, products (including controversial weapons, tobacco, palm oil and fossil fuel) ..."			"The companies are rated by the Investment Adviser (IA) based on their ability to manage the risks and opportunities associated with the sustainable energy theme and their environmental, social and governance (ESG) risk and opportunity credentials"
Insufficient context	"The fund aims to increase the value of your investment by outperforming the benchmark, while meeting specific sustainability criteria" "Positive aims to identify companies with a good governance that contributes to		"In actively managing the fund's portfolio, the management team focuses on companies that develop climate- and environment-friendly solutions, such as renewable energy and resource efficiency, and that appear to offer superior growth prospects and investment characteristics"		

	sustainable development"				

When it comes to formulating an easy-to-understand message, the selection of vocabulary influences the effectiveness of the communication (Flensburg 2009). Several examples of ambiguous vocabulary are found in the content analysis (Table 2). The first example is from the fund RobecoSAM Smart Energy Equities:

> The portfolio is built on the basis of an eligible investment universe… (Robeco 2021a)

The quote includes the phrase "investment universe", which, in the authors' experience, is a concept typically used by investment professionals – not private investors. As such, the above quote constitutes an example of when a concept is used that is not deemed suitable for private investors, which possibly contributes to information asymmetry. Another example of ambiguous vocabulary is found in the KIID of Fidelity Funds Sustainable Eurozone Equity Fund:

> ... practices based on specific ESG criteria to be determined by the Investment Manager from time to time. (Fidelity International 2021a)

In the quote above, the selected phrase "time to time" is used to describe when the investment manager determines the ESG criteria used for negative screening (exclusion of companies). Not only does the sentence suggest that the ESG criteria used is not decided, but the phrase "time to time" may also make it difficult, in the author's perspective, to interpret when and how these ESG criteria are decided. The quote may thus exemplify ambiguity in communication, possibly contributing to information asymmetry.

At the same time as word selection has an impact on the effectiveness of communication, the word order according to grammar also plays a role in ensuring an effective message transfer (Flensburg 2009). The following examples of ambiguous grammar used by the mutual funds are found in the KIIDs. The first one is from RobecoSAM Smart Energy Equities:

> ...applies an exclusion list basis controversial behavior, products (including controversial weapons, tobacco, palm oil and fossil fuel) ... (Robeco 2021a)

Here, the use of "basis" may introduce noise in the sentence in the form of grammatical ambiguity. This is because the sentence does not seem complete. One possible interpretation is that "based on" is the intended word selection, another being that the sentence simply is missing a word similar to "including" after "basis". Both suggestions link the examples to "exclusion list", a link that is currently missing. Another example of ambiguous grammar is found in the KIID by Blackrock Sustainable Energy Fund:

> The companies are rated by the Investment Adviser (IA) based on their ability to manage the risks and opportunities associated with the sustainable energy theme and their environmental, social and governance (ESG) risk and opportunity credentials. (Blackrock 2021a)

In the above quote, the authors of this thesis argue that it may be difficult, interpreting, who "their" refers to. Who one refers to in the above sentence could, for instance, be either "the companies" or "the Investment Adviser" – this may make it difficult to conceive who's ability to manage risk is being described. Thus, the above quote constitutes another example of noise, more specifically in the form of ambiguous grammar, arguably contributing to information asymmetry.

Vocabulary and grammar are not the only elements that impact the effectiveness of communication (Flensburg 2009). To enable investors to obtain sufficient information to make an informed investment decision, context in the form of examples also plays a vital role (ibid). In this thesis' empirical data a few examples of noise in the form of insufficient context are found. The first example is from the KIID of Nordea Global Climate & Environment Fund:

> In actively managing the fund's portfolio, the management team focuses on companies that develop climate- and environment-friendly solutions, such as renewable energy and resource efficiency, and that appear to offer superior growth prospects and investment characteristics. (Nordea 2021)

In this sentence, Nordea's objective of creating a positive environmental impact (Nordea 2021) is specified in more detail. However, what "superior investment characteristics" refers to is not specified, arguably making the context insufficient. Insufficient context was also found in another sentence from SEB Green Bond Fund:

> Positive aims to identify companies with a good governance that contributes to sustainable development. (SEB 2021a)

In the quote above, "good governance" is mentioned as something they look for while screening for companies in which to invest. Without providing any examples of what "good governance" is, the phrase arguably lacks sufficient context. Noise in the form of insufficient context is however not only found in SEB's communication, but also in the following sentence from the KIID of Fidelity Funds Sustainable Eurozone Equity Fund:

> The fund complies with a principle-based exclusion framework which includes norm-based and negative screening of sectors, companies… (Fidelity International 2021a)

In the quote above, Fidelity describes its exclusion framework as "principle-based" and that it includes "norm-based and negative screening". However, what norms

the exclusion is based on is not exemplified in the communication, which therefore could be argued to provide noise (Shannon & Weaver 1949) through insufficient context.

Concludingly, several quotes are found in the content analysis (Table 2) that can be argued to induce noise (Shannon & Weaver 1949) in the form of ambiguous vocabulary, ambiguous grammar and insufficient context. These quotes exemplify how noise can materialize in a communicated sustainability message. The noise acts as an obstacle, impacting the effectiveness of communication (Shannon & Weaver 1949) between the sender and the receiver (Jonsson 2017) – i.e. the fund company and the investor, thus perpetuating information asymmetry (Akerlof 1970; Bergh 2018; Mishra 1998) between the two.

5. Discussion

In this chapter, the results of the analysis are discussed more broadly, elaborating on this thesis' contribution to the research field of information asymmetry and the mutual fund industry.

5.1. Materialization of information asymmetry

This thesis shows how *information asymmetry* (Akerlof 1970; Bergh 2018; Mishra 1998) can materialize in the Swedish fund sector by displaying examples of *noise* (Shannon & Weaver 1949) in the form of *ambiguous vocabulary*, *ambiguous grammar* and *insufficient contex*t in five sustainability funds' KIIDs. In sum, the results indicate that information asymmetry, which previously has been identified as an issue by the European commission (2018a), still remains an issue related to sustainable investments, even after the SFDR has come into force. The results have theoretical value for how information asymmetry may be perceived in future studies of private investments. Information asymmetry is complex, and even when mainly focusing on the communicated message in this thesis, three types of noise were identified. Namely, noise contributing to information asymmetry through vocabulary, grammar and context (see 4.2).

Moreover, the results are of value in several other respects. First, displaying how information asymmetry is enacted illuminates that there is a lack of consensus to what acting sustainably actually means in practice in the field of capital management of mutual funds. An issue that the SFDR aims to alleviate (Regulation (EU) 2019/2088 p. 2-3), but as indicated by the results of this thesis, has yet to resolve. Additionally, the results show that there is a distinction regarding the amount of detail provided by the fund companies in the sustainability communication, making comparison based on sustainability aspects difficult. Similarly, to establishing a consensus of a sustainability definition, SFDR also aims to simplify comparison between funds on the basis of sustainability (Regulation (EU) 2019/2088, p. 3). Nevertheless, our results indicate that further regulation may still be needed to make sure KIIDs are transparent and adequate for comparison.

Thus, although the SFDR may prove to be a step in the right direction, the authors conclude that further strengthening of the policy may be needed. First, based on our results, we argue that future policymaking must consider more detailed guidelines regarding the content of sustainability communication. The authors argue that these stricter guidelines should apply to KIID, since the KIID can be argued to be the most accessible, and therefore most commonly used document by private investors. The stricter guidelines could include a requirement of providing examples of sustainability criteria considered in the investment process (inclusion-/exclusion list) and a mandatory description of which sustainability aspects the fund's investments reflect (environment, social & economic). An updated version of SFDR with more strict guidelines may add administrative burden to the fund companies, a burden which the EU previously has informed that they aim to minimize (European Commission 2017). The authors, nonetheless, argue that a stricter SFDR may be needed to ensure transparency, in order to minimize information asymmetry.

5.2. The effects of information asymmetry on sustainable development

Information asymmetry within the fund industry impedes the private investor's ability to make educated choices (European Commission 2018a). As the results of this thesis indicates, this is still an issue when it comes to sustainability communication. A condition for effective communication is comparable information (Baldacci et al. 2017), that is when there is a clear distinction between sustainable and less sustainable investment choices. Efficient information transfer is important for enabling educated choices by society at large and has the potential to enact great positive change (Baldacci et al. 2017). This could be argued to include working towards sustainable development. However, since information asymmetry may still exist within the sustainability communication of mutual funds, communication is still not as effective as it could be. Namely, the sustainability communication does not provide enough transparency to enable comparison based on sustainability. When investors, based on mutual funds' communication, lack the opportunity to distinguish between different levels of sustainability, this may affect the market at large. Lemeunier (2020), for instance, shows how information asymmetry regarding economic performance can shape the mutual fund market. Lemeunier (2020) shows how *the Market for Lemons* example by Akerlof (1970) and *adverse selection* can apply to the mutual fund market when it comes to information asymmetry regarding economic performance. A similar argument could be made regarding sustainability performance of mutual funds. That is, if mutual funds with different levels of sustainability performance are

indistinguishable to the general investor and both are communicated to be sustainable, they will likely receive similar amounts of fund flows, leading to a misallocation of funds. According to *the Market for Lemons* (Akerlof 1970), such a misallocation could lead to an influx of less sustainable funds on the market, which in turn would have a negative impact on sustainable development.

6. Conclusions

Concludingly, the thesis shows how *information asymmetry* materializes in five selected mutual funds through *noise* related to the fund companies' sustainability communication. The noise observed was categorized into three different categories based on how the communicated message contributes to information asymmetry: *ambiguous vocabulary*, *ambiguous grammar* and *insufficient context*. The results show that information asymmetry still exists after the SFDR has come into action. Information asymmetry in mutual funds' sustainability communication still impedes private investors' ability to make educated decisions that in turn could negatively impact sustainable development through *adverse selection* in the mutual fund market. Thus, the results point to a need for an updated SFDR. The conclusion of this thesis is that stricter guidelines may be needed if information asymmetry is to be mitigated.

For future studies, other factors contributing to information asymmetry than those related to a communicated message may be explored. This includes studying aspects related to the sender, such as culture among investment professionals regarding the language used in communication. Additionally, possible incentives linked to fund companies maintaining information asymmetry could be explored. Moreover, future studies in information asymmetry exploring other industries, such as donation-based organizations, may be interesting from a research perspective, enabling a comparison between different industries.

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Appendix 1

Appendix 1: Content analysis - SEB Green Bond Fund			
Meaning unit	**Code**	**Category**	**Theme**
The fund aims to increase the value of your investment by outperforming the benchmark, while meeting specific sustainability criteria	Aims to outperform benchmark while meeting sustainability criteria	Objective	Insufficient context
This actively managed fund invests globally, mainly in green bonds with a sustainable profile that have a beneficial effect for the environment and the climate, in activities such as wind farms, water purification plants, clean transportation, sustainable agriculture, and waste management.	Invests mainly in Environmentally & climate friendly bonds	What the fund includes	
At least 80% of the bonds in the portfolio are green bonds	A minimum of 80% are green bonds	What the fund includes	
We compare the fund's return to Bloomberg Barclays MSCI Green Bond Index 1-5 years, a multi-currency green bond index	MSCI Green Bond Fund index is the benchmark index	Benchmark	
The majority of the fund's holdings are constituents of the benchmark, but they differ in weight	Similar to benchmark index in holdings	Benchmark	
The fund's investment strategy does not aim to restrict how much the fund's holdings deviate from its benchmark	Fund can deviate from benchmark index	Benchmark	
Deviation, measured as tracking error, will likely be medium compared to other fixed income funds	Deviation from index similar to other funds	Benchmark	Ambiguous vocabulary
The fund applies positive as well as negative screening	Positive and negative screening	Method	
Positive aims to identify companies with a good governance that contributes to sustainable development	positive screening - find good governance	What the fund includes	Insufficient context
Negative excludes companies that breach international norms regarding labour, anti-	Excludes companies breaching labour-,	What the fund excludes	

corruption, the environment and human rights	anti-corruption-, environment- and human rights- norms		
The fund does not invest in companies that produce or sell controversial weapons, participate in the development of nuclear weapon programmes or produce nuclear weapons	Controversial weapons and nuclear weapons are excluded	What the fund excludes	
The fund follows specific exclusion criteria regarding companies whose business activities involve weapons, tobacco, alcohol, cannabis for non medical use, commercial gambling and pornography.	Weapons, tobacco, alcohol, non-medical cannabis, gambling and pornography are excluded	What the fund excludes	
Additionally, the fund does not invest in companies that extract coal, gas or oil.	Coal, gas and oil extraction are excluded	What the fund excludes	
The fund manager performs a sustainability risk as well as a credit risk assessment prior to investing.	Sustainability and credit risk are analysed	Method	
The fund follows the management company's sustainability policy when making investments. Our sustainability policy is available on https://sebgroup.lu/policies.	Follows SEB’s sustainability policy	Investment policy	
Recommendation: this fund may not be appropriate for investors who plan to withdraw their money within 3 year(s).	Not recommended for short term investors	Recommendations	

Appendix 2

Appendix 2: Content analysis - RobecoSAM Smart Energy Equities			
Meaning unit	**Code**	**Category**	**Theme**
RobecoSAM Smart Energy Equities is an actively managed fund that invests globally in companies that provide competitive and sustainable solutions to the growing need for reliable, clean & affordable energy supply.	Invest in solutions for reliable, clean & affordable energy	What the fund includes	
The selection of these stocks is based on fundamental analysis	Fundamental analysis is used	Method	Insufficient context
Benchmark: MSCI World Index TRN	MSCI World Index TRN is benchmark	Benchmark	
The fund's objective is to achieve a better return than the index	Objective is to outperform benchmark	Objective	
The strategy integrates sustainability criteria as part of the stocks selection process and through a theme specific sustainability assessment	Sustainability criteria are taken into account based on themes	Method	Insufficient context
The portfolio is built on the basis of an eligible investment universe that includes companies whose business models contribute to the thematic investment objectives	Portfolio built on eligible investment universe, including companies based on business themes	What the fund includes	Ambiguous vocabulary Insufficient context
The assessment regarding relevant SDGs uses an internally developed framework about which more information can be obtained via the website www.robeco.com/si.	SDG-assessment is based on own framework	Method	
The fund has sustainable investment as its objective within the meaning of Article 9 of the European Sustainable Finance Disclosure Regulation	Sustainable investment is the objective	Objective	
The fund furthers the decarbonization of the global energy sector through investments in clean energy sources, energy efficient products	Invest in low carbon energy	What the fund includes	

and infrastructure and by the electrification of the industrial, transportation and heating sectors.			
This is done by investing in companies that advance the following UN Sustainable Development Goals (UN SDGs): Affordable and Clean Energy goal, Decent work and economic growth, Industry, innovation and infrastructure, Sustainable cities and communities, Responsible consumption and production and Climate action	Supports energy transition by investing in companies that advance SDG goals	What the fund includes	
The fund integrates ESG (i.e. Environmental, Social and corporate Governance) in the investment process,...	Integrates ESG in investment process	Method	
...applies an exclusion list basis controversial behavior, products (including controversial weapons, tobacco, palm oil and fossil fuel) while avoiding investment in thermal coal, weapons, military contracting and companies that severely violate labor conditions, next to voting and engaging	Excludes companies involved in weapons, tobacco, palm oil, fossil fuel, thermal coal, military & labor violations	What the fund excludes	Ambiguous grammar
The majority of stocks selected will be components of the Benchmark, but stocks outside the Benchmark may be selected too.	May pick stocks not part of Benchmark	Investment policy	
The investment policy is not constrained by a benchmark but the fund may use a benchmark for comparison purposes	May use benchmark for comparison purposes	Investment policy	
The fund can deviate substantially from the issuer, country and sector weightings of the Benchmark. There are no restrictions on the deviation from the Benchmark	Not restricted to benchmark weightings	Investment policy	
The Benchmark is a broad market weighted index that is not consistent with the sustainable objective of the fund.	Benchmark index not linked to sustainability objective	Benchmark	

Appendix 3

Appendix 3: Content analysis - Nordea 1 - Global Climate and Environment Fund			
Meaning unit	**Code**	**Category**	**Theme**
The fund's objective is to provide shareholders with investment growth in the long term and create positive environmental impact.	Financial and environmental goals	Objective	
In actively managing the fund's portfolio, the management team focuses on companies that develop climate- and environment-friendly solutions, such as renewable energy and resource efficiency, and that appear to offer superior growth prospects and investment characteristics.	Focus investments on climate, environment and growth.	What the fund includes	Insufficient context
The fund mainly invests in equities of companies from anywhere in the world.	Global investments	What the fund includes	
Specifically, the fund invests at least 75% of total assets in equities and equity-related securities.	Invests >75% in equities	What the fund includes	
The fund will be exposed (through investments or cash) to other currencies than the base currency.	Exposed to other currencies	Risk	
The fund may use derivatives and other techniques for hedging (reducing risks), efficient portfolio management and to seek investment gains.	Derivatives and other techniques may be used	Method	
A derivative is a financial instrument which derives its value from the value of an underlying asset.	Value of derivative comes from underlying asset	Explanation	
The use of derivatives is not cost or risk-free.	Derivatives involve risks and costs	Explanation	
The fund has sustainable investment as its objective as per Article 9 of the EU	Sustainability objective	Objective	

Sustainable Finance Disclosure Regulation (SFDR).			
Further information regarding the way the fund's sustainable investment objective is achieved is available in the fund's prospectus and accessible via nordea.lu.	More information about objective in prospectus	Objective	
The fund is subject to Nordea Asset Management's responsible investment policy.	Follows Nordea's responsible investment policy	Investment Policy	
Nordea Asset Management conducts a thorough due diligence on external data vendors to clarify applied methodologies and verify data quality.	Due diligence on external data vendors	Investment Policy	
However, as the regulation and standards of non-financial reporting is rapidly developing data quality, coverage and accessibility remains challenging -...	Transparency is challenging as regulations change	Transparency	
...especially for smaller companies and less developed markets.	Transparency is extra challenging in small companies and less developed markets	Transparency	
Any investor may redeem its shares in the fund on demand, on a daily basis.	Daily trade	Investment policy	
This fund may not be appropriate for investors who plan to withdraw their money within a period of 5 years.	Inappropriate for short term investments	Recommendations	
While the fund compares its performance against the MSCI World Index (Net Return), it may freely select the securities that it will invest in.	Not constrained by MSCI World Index benchmark	Benchmark	
The risk characteristics of the fund's portfolio may bear some resemblance to those of the benchmark.	Risk similar to benchmark	Benchmark	
This share class may pay out distributions once a year after the annual general meeting of the shareholders.	Pays out to shareholders yearly	Investment Policy	
The fund is denominated in EUR.	Share class in Euro	Share class	
Investments in this share class settle in GBP. EUR/GBP fluctuations may lead the performance in GBP of the share class to significantly deviate from the fund performance in EUR.	Affected by fluctuations in GBP	Share class	

Appendix 4

Appendix 4: Content analysis - Fidelity Funds - Sustainable Eurozone Equity Fund			
Meaning unit	**Code**	**Category**	**Theme**
The fund aims to provide long-term capital growth with the level of income expected to be low.	Capital growth is objective	Objective	
The fund will invest at least 70%, normally 75% in shares of companies in countries which are members of the Economic and Monetary Union (EMU) and denominated in Euro.	>70% invested in EMU	What the fund includes	
The fund adopts a Sustainable Focused strategy under which a minimum of 70% will be invested in shares of companies that maintain sustainable characteristics .	>70% invested in sustainable characteristics	What the fund includes	Insufficient context
On an ongoing basis, the fund will consider a wide range of environmental and social characteristics such as climate change mitigation and adaptation, water and waste management, biodiversity, product safety, supply chain, health and safety and human rights.	Considers environmental & social characteristics	What the fund includes	Ambiguous vocabulary
The fund seeks to promote these characteristics by adhering to the Fidelity Sustainable Family Framework.	Seeks to promote sustainability by following policy	Investment Policy	
The fund complies with a principle-based exclusion framework which includes norm-based and negative screening of sectors, companies, practices based on specific ESG criteria to be determined by the Investment Manager from time to time.	Negative screening based on ESG criteria	What the fund excludes	Ambiguous vocabulary Insufficient context
In addition, the Investment Manager will exclude investment in issuers with a MSCI ESG rating below ‘’A’’, having exposure to adult entertainment, gambling, uranium mining, nuclear power plant operators or producers of key nuclearspecific products, the nuclear power industry, coal mining, oil sands, fracking, fossil fuel extraction, coalfired	Exclusion of issuers with MSCI ratings below “A”	What the fund excludes	

power generation, or with high carbon intensity (over 500 tonnes of CO2 per $1m sales, Scope 1 & 2).			
The fund has the freedom to invest outside its principal geographies, market sectors, industries or asset classes.	May invest outside principal areas	Investment policy	Insufficient context
The fund may invest in assets directly or achieve exposure indirectly through other eligible means including derivatives.	Use of derivatives and other techniques	Method	
The fund can use derivatives with the aim of risk or cost reduction or to generate additional capital or income, including for investment purposes, in line with the fund's risk profile.	Use of derivatives and other techniques	Method	Ambiguous grammar
The fund will aim to have a lower carbon footprint compared to that of the MSCI EMU Index (Net) (the ''Index'').	Lower carbon footprint than benchmark	Benchmark	
The fund is actively managed.	Active management	Investment Policy	
The Investment Manager will, when selecting investments for the fund and for the purposes of monitoring risk consider the Index as the Index constituents are representative of the type of companies the fund invests in.	Will consider the index when selecting investments	Method	Ambiguous grammar
When monitoring risk, the Investment Manager references the Index for the purpose of setting internal guidelines. These guidelines represent overall levels of exposure relative to the Index and do not imply that the fund will invest in the Index's constituents.	References the index when monitoring risk	Investment Policy	Ambiguous grammar
Where the fund invests in securities that are included in the Index, its allocation to those securities is likely to differ from the Index allocation.	Investments may differ from index	Benchmark	
The Investment Manager has a wide range of discretion with regards to the investment selection and may invest in companies, sectors, countries and security types not included in the Index in order to take advantage of investment opportunities.	Investments may differ from index	Benchmark	
It is expected that over long time periods, the fund's performance will differ from the Index. However, over short time periods, the fund's performance may be close to the Index, depending on market conditions.	Performance may differ from index	Benchmark	
The fund's performance can be compared to the Index.	Index used as benchmark	Benchmark	

Income earned by the fund is accumulated in the share price.	Earnings accumulate in share price	Investment policy	
Shares can usually be bought and sold each business day of the fund.	Daily traded	Investment policy	

Appendix 5

Appendix 5: Content analysis - Blackrock Sustainable Energy fund			
Meaning unit	**Code**	**Category**	**Theme**
The Fund aims to maximise the return on your investment through a combination of capital growth and income on the Fund's assets	Maximizing return is the objective	Objective	
The Fund invests globally at least 70% of its total assets in the equity securities (e.g. shares) of sustainable energy companies	>70% of assets in sustainable energy	What the fund includes	
Sustainable energy companies are those which are engaged in alternative energy and energy technologies as described in the prospectus	Sustainable energy = alternative energy & energy technologies	Explanation	
The companies are rated by the Investment Adviser (IA) based on their ability to manage the risks and opportunities associated with the sustainable energy theme and their environmental, social and governance (ESG) risk and opportunity credentials	ESG-risk rating performed by IA	Method	Ambiguous grammar
The Fund will not invest in companies that are classified in the following sectors (as defined by Global Industry Classification Standard): coal and consumables; oil and gas exploration and production; and integrated oil and gas.	Excludes coal & consumables, oil & gas	What the fund excludes	
The Fund adopts a "best in class" approach to sustainable investing	Adopts "best in class" sustainability approach	Investment Policy	
This means that the Fund selects the best issuers (from an ESG perspective) for each relevant sector of activities (without excluding any sector of activities)	Selects best ESG-issuer per sector	Investment policy	
More than 90% of the issuers of securities the Fund invests in are ESG rated or have been analysed for ESG purposes	>90% of issuers are ESG rated/analysed	What the fund includes	

The Fund may gain limited exposure to issuers that that do not meet the sustainable energy and/or the ESG criteria.	Limited exposure to non-sustainable issuers	Risk	
The IA may use financial derivative instruments (FDIs) (i.e. investments the prices of which are based on one or more underlying assets) for investment purposes in order to achieve the investment objective of the Fund, and/or to reduce risk within the Fund's portfolio, reduce investment costs and generate additional income	May use derivatives	Investment policy	
The Fund may, via FDIs, generate varying amounts of market leverage (i.e. where the Fund gains market exposure in excess of the value of its assets)	Leverage may be generated via FDIs	Investment policy	
Any ESG rating or analysis referenced above will apply only to the underlying securities of FDI's used by the Fund.	Ratings of FDI companies do not apply	Investment policy	
The Fund is actively managed	Active management	Investment policy	
The IA has discretion to select the Fund's investments and is not constrained by any benchmark in this process	Not constrained by benchmark	Benchmark	
The MSCI All Countries World Index should be used by investors to compare the performance of the Fund	MSCI All Countries World Index is benchmark	Benchmark	
The weighted average ESG rating of the Fund will be higher than the ESG rating of the MSCI ACWI after eliminating at least 20% of the least well-rated securities from the MSCI ACWI	Fund's ESG rating higher than benchmark	Benchmark	
Recommendation: This Fund may not be appropriate for short-term investment.	Not recommended for short term investments	Recommendation	