

ESMA TRV Risk Analysis

ESG names and claims in the EU fund industry



ESMA Report on Trends, Risks and Vulnerabilities Risk Analysis

© European Securities and Markets Authority, Paris, 2023. All rights reserved. Brief excerpts may be reproduced or translated provided the source is cited adequately. Legal reference for this Report: Regulation (EU) No. 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/77/EC, Article 32 'Assessment of market developments, including stress tests', '1. The Authority shall monitor and assess market developments in the area of its competence and, where necessary, inform the European Supervisory Authority (European Banking Authority), and the European Supervisory Authority (European Insurance and Occupational Pensions Authority), the European Systemic Risk Board, and the European Parliament, the Council and the Commission about the relevant micro-prudential trends, potential risks and vulnerabilities. The Authority shall include in its assessments an analysis of the markets in which financial market participants operate and an assessment of the impact of potential market developments on such financial market participants.' The information contained in this publication, including text, charts and data, exclusively serves analytical purposes. It does not provide forecasts or investment advice, nor does it prejudice, preclude or influence in any way past, existing or future regulatory or supervisory obligations by market participants.

The charts and analyses in this report are, fully or in part, based on data not proprietary to ESMA, including from commercial data providers and public authorities. ESMA uses these data in good faith and does not take responsibility for their accuracy or completeness. ESMA is committed to constantly improving its data sources and reserves the right to alter data sources at any time. The third-party data used in this publication may be subject to provider-specific disclaimers, especially regarding their ownership, their reuse by non-customers and, in particular, their accuracy, completeness or timeliness, and the provider's liability related thereto. Please consult the websites of the individual data providers, whose names are given throughout this report, for more details on these disclaimers. Where third-party data are used to create a chart or table or to undertake an analysis, the third party is identified and credited as the source. In each case, ESMA is cited by default as a source, reflecting any data management or cleaning, processing, matching, analytical, editorial or other adjustments to raw data undertaken.

ISBN 978-92-95202-85-6, DOI 10.2856/909163, ISSN 2599-8749, EK-09-23-372-EN-C

European Securities and Markets Authority (ESMA)
Risk Analysis and Economics Department
201-203 Rue de Bercy
FR-75012 Paris
risk.analysis@esma.europa.eu

ESMA - 201-203 rue de Bercy - CS 80910 - 75589 Paris Cedex 12 - France - www.esma.europa.eu

Investor Protection

ESG names and claims in the EU fund industry

Contact: Julien.Mazzacurati@esma.europa.eu¹

Summary

Finance plays a key role in supporting the transition to a more sustainable economy. To achieve this, investor confidence and trust in the accuracy of ESG disclosures is necessary. With this in mind, greenwashing has become a major concern for policymakers around the world. Focussing on EU investment funds, we construct and exploit several unique datasets to examine the basis for these concerns. Using a novel dataset with historical information on 36,000 funds managing EUR 16 trillion of assets, we find that funds increasingly use ESG-related language in their names, and that investors consistently prefer funds with ESG words in their name. We then analyse the extent of ESG language across funds' regulatory documentation and marketing material, using a dataset of more than 100,000 documents available at the end of 2022. We find evidence of the fund industry adapting its ESG communication depending on the type of document – regulated or unregulated. Our findings support recent efforts by policymakers to ensure that EU funds' names and disclosures accurately reflect their activities.

¹ This article was written by Adrien Amzallag, Julien Mazzacurati and Natacha Mosson.

Introduction

The market for ESG investing is booming. Over the last three years, global sustainable fund assets tripled, reaching a record EUR 2.14 trillion in Europe at the end of 2022 (Morningstar, 2023). Following strong investor demand for ESG investment products in the EU, many fund management companies have responded by either launching new ESG investment products, or repurposing existing ones towards ESG-friendly investing.²

It is necessary that ESG investment products be attractive to investors, given the tremendous financial resources that will be needed to finance the transition towards a greener economy. It is thus crucial that investors have confidence in the fact that sustainable financial products offered to them are accurately described.

However, all else being equal, strong investor demand for ESG products also incentivise greenwashing behaviour among asset managers. Meaning that fund managers might seek to attract higher net inflows, by making (misleading, confusing or otherwise inaccurate) claims about the ESG profile of their funds with the aim of making them more attractive to final investors.³ The risk of greenwashing, especially in the financial industry, is becoming of increasing concern to regulators both in the EU and abroad (ESMA, 2022, 2023a and 2023b).

These developments raise several questions, which we explore in this article. In particular, how have fund names evolved in recent years in an ESG context, and what are the characteristics of funds making ESG claims?

There is currently no EU regulatory definition of an ESG investment product, although several industry and national fund labels exist (raising concerns about fragmentation).⁴ Data providers have also attempted to fill the gap, by creating their own labels to designate funds as 'ESG', 'low carbon', and so forth. However, these firms tend to have diverging views: the three largest fund

data providers agree that a fund is ESG in less than 20 % of cases (ECB, 2022).

The application of the EU Sustainable Finance Disclosure Regulation (SFDR)⁵ in March 2021 introduced definitions and disclosure requirements for funds promoting environmental and social characteristics (Article 8) and for funds with a sustainable investment objective (Article 9). These disclosure rules aim to provide transparency on the sustainability-related investment activity of funds. In contrast to an official label, however, they do not establish standardised requirements, criteria or thresholds to designate a fund as ESG compliant.

In the absence of EU ESG labels, some asset managers have begun to refer to the SFDR Articles 8 and 9 designations as proxy ESG labels. This misuse of legislation can lead to confusion among investors as to whether a fund is ESG or not, thus further reinforcing concerns over potential greenwashing (ESMA, 2023b).

In the absence of a commonly accepted and legally defined label, it is instructive to consider the use of ESG-related terms in fund names as a simple heuristic for whether a fund 'is' or 'is not' ESG. The name of a fund is '*a powerful marketing tool*⁶, and is arguably the first piece of information that fund investors receive, far ahead of standardised documents such as Key Investor Information Documents (KIIDs). ESMA further identified the misleading use of ESG terminology in financial product names as a possible greenwashing practice (ESMA, 2023a).

Fund names can misinform investors if the name is not aligned with the actual investment style of the fund (Allard et al, 2020). Indeed, there is evidence that some asset managers try to take advantage of 'hot' investment styles by changing the names of their funds, resulting in additional fund flows and despite no clear change in their financial performance (Cooper et al., 2005). Given recent market developments, ESG investment has arguably become one of the 'hottest' investment styles in the recent past, suggesting that investors may be influenced by

² See Financial Times, *ESG demand prompts more than 250 European funds to change tack*, 16 February 2021.

³ There is no single definition of greenwashing. However, the ESAs have come forward with a common understanding of greenwashing (ESMA 2023a).

⁴ See Novethic, [Overview of European sustainable finance labels](#), May 2022.

⁵ [Regulation \(EU\) 2019/2088 on sustainability-related disclosures in the financial services sector](#).

⁶ See '*ESMA launches a consultation on guidelines for the use of ESG or sustainability-related terms in funds' names*, statement by Verena Ross, 18 November 2022.

funds' ESG marketing efforts – although our analysis shows that only 5% of funds in our sample have added ESG words to their name. Espenlaub et al. (2017) also show that fund name changes are not always accompanied by corresponding portfolio adjustments reflecting the investment style suggested by the new name. Despite this situation, funds changing their name benefit from higher net inflows relative to funds that do not change their name. In contrast, El Ghouli and Karoui (2020) find that fund name changes to include ESG words tend to be associated with an increase in fund flows together with a higher portfolio turnover, suggesting substantial portfolio rebalancing.

Of course, adjusting fund names in the current, ESG-oriented investment environment can have various effects. If reflecting a legitimate sustainability claim, an ESG-related fund name can be a useful first selection indicator for investors trying to navigate within the diverse market of more than 36,000 UCITS investment funds on offer in Europe⁷. If, however, a fund name falsely suggests that the fund has a material ESG dimension, then investors would be deceived at an early and decisive point of the investment decision process.

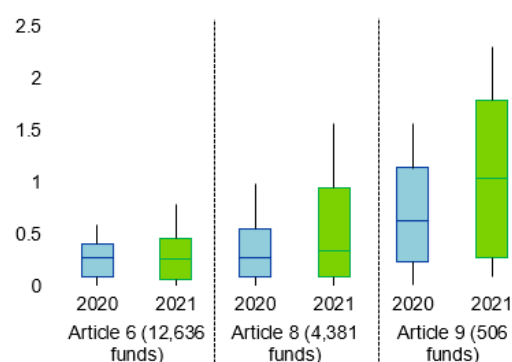
At the same time, there are currently no specific requirements for funds regarding the use of ESG-related terms in their names. This situation recently led ESMA to launch a public consultation on the introduction of minimum portfolio requirements for funds using ESG-related terms in their names.⁸

Beyond fund names, the introduction of SFDR disclosure requirements in 2021 was accompanied by an increase in sustainability-related claims made by funds in their regulatory and marketing documentation. Between mid-2020 and mid-2021, the share of ESG words in KIIDs increased substantially for funds disclosing under SFDR Articles 8 and 9 (Chart 1). Examples of these claims include an explanation of the environmental or social characteristics that a fund promotes, or a description of a fund's sustainable investment objective(s).

Furthermore, there is evidence that (regarding investee companies rather than funds) sustainability-related disclosures and claims can

affect firm value (Verbeeten et al., 2016). This effect indicates that at least some investors are paying attention to ESG-related claims. However, despite these findings and the trillions of euros involved, the nature and effect of these claims have been largely unexplored in the academic community in the context of investment funds.

Chart 1
Share of ESG words in KIIDs by SFDR fund type
Use of ESG words increased



Note: Share of ESG-related terms used in KIIDs as percentage of all words (excluding stop words). The SFDR fund type is as of mid-2021 and applied to mid-2020 and mid-2021 documents. Box edges are the 25th and 75th percentiles, box middle line is the 50th percentile, and additional lines (whiskers) illustrate the 10th and 90th percentiles.
Sources: Morningstar, ESMA.

This article aims to help understand this gap, by applying natural language processing (NLP) techniques to tens of thousands of documents produced by investment funds, both to meet regulatory requirements and for marketing purposes. The use of artificial intelligence in an ESG context is not new. For example, it has already been used to show the impact of corporate ESG reports on stock returns and to assess the value-relevance of specific ESG topics through topic modelling (Thewissen et al., 2023). It has also been used to show that firms cherry pick to report non-material climate risk information (Bingler et al., 2022). Complementing this work, our contribution lies in the application of NLP techniques to a unique dataset and, in doing so, the provision of unique insights into the ESG claims made by funds.

The remainder of this article is structured as follows. The next section provides greater detail on the terms used to identify ESG-related

⁷ EFAMA, [Quarterly Statistical Release](#), Q4 2022.

⁸ ESMA, [Consultation paper on Guidelines on funds' names using ESG or sustainability-related terms](#), ESMA34-472-373.

language in funds' names and documents. Next, we provide the outcomes of our analysis regarding fund names. We subsequently present results regarding ESG-related claims made by funds in their documents. Some concluding remarks and discussion of the next steps follow.

Identifying ESG terms

An assessment of ESG-related language in both fund names and documents cannot proceed without establishing a common reference point for assessing funds. With this in mind, we construct a list of ESG terms and phrases from a variety of sources, including:

- A list of 487 ESG terms created and made available by Baier, Berninger, and Kiesel (2020), based on a sample of 100 US regulatory filing (10-K) reports and proxy statements from the 25 largest companies (by market capitalisation) in the S&P 100 index, and subsequently cleaned and extended by Amzallag et al. (2022).
- A list of 1,479 ESG words and phrases created and made available by Mansouri and Momtaz (2022), based on applying machine-learning approaches to a set of documents made available by start-up companies during their fundraising campaigns (e.g. press releases, whitepapers, Github documentation, text on their own website and on others, such as Crunchbase).
- The key words and phrases in both the names and metrics of the 17 UN Sustainable Development Goals.⁹
- Key terms mentioned by the Global Impact Investing Network.¹⁰
- Specific words not included in the above that are mentioned in the SFDR and/or

Taxonomy Regulation, such as 'marine' and 'circular economy.'

- Additional phrases frequently used in the media or market reports related to sustainable investing, such as 'impact investing', 'net zero', 'carbon reduction', 'Paris-aligned' and 'climate transition'.

After assembling these lists of words and phrases across the different sources, we manually inspected them for possible ambiguities in the context of financial statements and strategies. For example, the phrase 'investment policy' appears in the ESG word list used in Amzallag et al. (2022) and would appear valid when considering language used by credit rating agencies in their press releases. However, in the context of investment funds, such a phrase is unlikely to be exclusively related to ESG topics.¹¹

We also inspected the list for false positives by examining results of a trial run on actual investment fund texts. This led to further reductions and consolidations of the E/S/ESG word list.¹² The present list thus reflects a combination of regulatory and policy sources, recent academic publications, well-known industry sources, and expert reviews to filter ambiguities in the context of text relating to finance (Loughran and McDonald, 2011).

Following this exercise, we retained 3,139 ESG words and phrases (Table 1).¹³ While, given the nature of the method, such a list can never be final or complete and we aim to refine it in the future, we are not aware of a more developed list of ESG terms at the time of writing.

An additional list of E/S/ESG words and phrases has been constructed for the universe of fund and benchmark names. This is necessary (i.e. the abovementioned E/S/ESG text list cannot be used) because investment fund names can sometimes contain abbreviations that would not be captured in the aforementioned list, which is

⁹ See <https://sdgs.un.org/goals>

¹⁰ See <https://thegiin.org>

¹¹ Similarly, the word 'sustainable' can be ambiguous in the context of investment fund communications: phrases like 'sustainable development' or 'sustainable finance' would indeed be associated with ESG considerations, while a phrase such as 'sustainable returns' could simply reflect purely financial considerations.

¹² We checked for grammatical false positives, such as the phrase 'this fund does not pursue an ESG objective'. If we were only to search for ESG terms, such a phrase would

be flagged as containing an ESG-related claim. However, the negative phrase 'does not' implies that no such claim is being made.

¹³ The actual ESG words and phrases that are searched for are far higher than the numbers presented in Table 1, since we allowed for common spelling variations in words. For example, the word 'urbanisation' is searched for according to both 'urbanisation' and 'urbanization' but is only counted once in the table.

based on unabbreviated words and phrases.¹⁴ A dedicated ESG terms list for fund names also enables us to expand our sample to include funds with non-English names (whereas the ESG text list is available in English only). Such a list is, to our knowledge, not available elsewhere.

This E/S/ESG names dataset is built by considering the legal names of investment funds and their benchmark for around 29,000 EU funds active as of July 2022. We then split these names into unique individual words (split on spaces): this amounted to around 15,100 words to review (and, ultimately, 1,236 words/phrases were retained). Several expert staff then manually reviewed each word, and assigned it to E, S, and/or G. Words that were not universally agreed to be about ESG were re-assessed to check

whether pairs of words could refer to ESG (e.g. 'net' if it is followed by 'zero' but not otherwise).

Table 1 summarises the list of ESG words and phrases for the name analysis and for the claims (i.e. text) analysis. The difference between the two primarily reflects ESG terms that are not actively used in fund names.¹⁵ Moreover, the cross-cutting nature of many ESG issues means that a clear, systematic delineation between the E, S and G pillars is not always possible. Reflecting this, as can be seen in the table below, some terms have been assigned to multiple topics, such as both E and S (e.g. 'national disaster') or both S and G (e.g. 'gender diversity'). The following section presents our results of analysing fund names using this list.

Table 1

Lists of ESG words and phrases used to analyse investment fund names and documents

Wide variety of ESG terms

Topic	Names list: # phrases	ESG fund names list: examples	Text list: # phrases	ESG text list: examples
E	451	water waste, net zero, carbon reduction	496	forest, climate change, biodiversity
EG	N/A	N/A	2	carbon washing
ES	11	green social, cleaner living	18	urbanisation, national disaster
ESG	512	ESG, better world, global impact	42	ESG, SRI, sustainable development
G	4	governance, selected controversies	1833	compliance, audit, oversight
S	221	equality, empowerment, humanity	690	elderly, immigration, malnutrition
SG	37	gender equality, human capital	58	impact washing, gender diversity
Total	1,236		3,139	

Note: The table displays the breakdown in number of ESG words/phrases per ESG topic used to search benchmark names for ESG language. Sources: Baier et al. (2020), Amzallag et al. (2022), Mansouri and Momtaz (2022), UN Sustainable Development Goals, Global Impact Investing Network, Morningstar, ESMA.

Fund names

Our fund names analysis considers all EU-domiciled investment funds investing in

transferable securities (UCITS) available via Refinitiv Lipper and in operation at some point between mid 2013 and mid 2023.¹⁶ Indeed, it would not be appropriate to use the latest-

¹⁴ For example, the abbreviations 'NZ' for 'net zero' and 'X FF' for 'excluding fossil fuels'.

¹⁵ The ESG fund names list was created after the construction of the ESG text list, in order to ensure that maximum consistency would exist between the two exercises. For example, we connected the two lists in such a way that ESG terms in the name list are, to the extent possible, 'mapped' to the corresponding term in the ESG text list. This subsequently enabled us to avoid double counting when examining fund documents (i.e. an

ESG term that appears in a fund name is automatically excluded from the count of any ESG terms in the fund document, to avoid the artificial increase in the number of ESG terms used in the fund document, because the fund name appears many times in the document being assessed).

¹⁶ The analysis focuses on UCITS funds given the size of the market, the particular relevance of these funds for retail investors, and the availability of in-house data on

available snapshot of EU funds as a basis for a historical analysis: funds can change their legal name over time, for example to take advantage of a given 'hot' trend (Cooper et al., 2005). At the same time, the fund name is central to understanding what drives the creation of ESG investment products, including whether they follow market patterns or, instead, influence them.

Despite the usefulness of carefully assessing investment fund names in the EU, to our knowledge, no investment fund data provider provides the necessary historical information – such details must be recovered manually. To achieve this, we recovered the 6-monthly snapshots of past downloads used to produce EU-wide analyses of investment funds in past ESMA publications, chiefly ESMA's twice-yearly Trends, Risks, and Vulnerabilities report and its annual report on the cost and performance of retail products.¹⁷ This information has been available from mid 2013.

In addition to the investment fund name in use at the time of each snapshot date, our dataset includes the fund's domicile, whether it is an exchange-traded fund (ETF) or an index-tracking fund, and the type of assets held by the fund (equity, bond, etc.). This information allows us to segment our data sample according to investment fund asset types, by focusing on the most prevalent types (equity, bond and mixed assets).

These accompanying variables also enable us to limit our focus on actively managed funds, for which the choice of name is likely to be more at the management company's discretion. This is in contrast to ETFs and index-tracking funds, the names of which typically reflect the basket or benchmark that is being tracked and, consequently, are less open to variation.

Table 2 provides some summary statistics on our data sample, using data from mid 2017 onwards.¹⁸ Overall, over 36 000 unique investment funds are assessed, with about

EUR 16 trillion managed (using the maximum portfolio size available for each fund across the snapshots). The largest fund asset types are equity, bond and mixed asset funds. In what follows, we restrict our sample to these three fund categories, which together account for 93 % of the actively managed sample (i.e. excluding ETFs and index-tracking funds).

Table 2
Dataset size (2017-2023)
EUR 16 trillion in assets included

Asset type	# unique funds across snapshots	Total AuM across snapshots	Avg. # funds per snapshot	Avg. AuM per snapshot
Equity	11,460	4,587	7,442	2,411
Mixed	10,491	2,678	6,616	1,491
Bond	7,524	3,352	4,771	1,760
Alt.	1,383	448	715	191
MMF	662	1,884	409	885
Other	118	11	70	4
Cmdty	64	15	36	6
R. estate	33	50	16	21
Passive	4,463	2,956	3,102	1,400
Total	36,198	15,981	23,177	8,169

Note: Based on data from mid 2017 onwards. The number of unique investment funds is calculated across all snapshots. 'AuM'=Assets under Management, expressed in billion euro. The total AuM is composed of the maximum AuM for each fund across the snapshots in which it is active. 'Alt' = Alternative funds, 'Cmdty' = Commodity funds, 'MMF' = Money market funds, 'R. estate' = Real estate funds. 'Passive' includes both ETFs and other index-tracking funds (passive funds are excluded from all the other rows).
Sources: Refinitiv Lipper, ESMA.

Chart 2 provides a first indication of the evolution in fund names over time, by displaying the share of investment fund names using ESG-related terms relative to all outstanding fund names in the data sample at each snapshot date. In 2023, a large majority of Article 9 fund names include an ESG word, compared to less than one third of

UCITS fund names. We also included funds from the United Kingdom (UK) in this sample, as the UK exited the EU on 31 January 2020 and our sample begins in 2013.

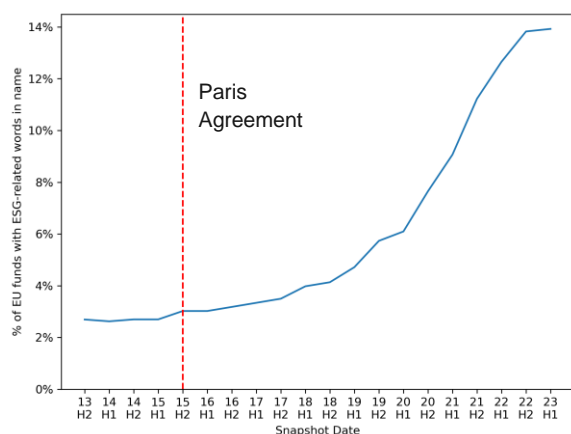
¹⁷ See <https://www.esma.europa.eu/esmas-activities/risk-analysis/risk-monitoring>

¹⁸ Prior to mid 2017, we did not have a clean identifier to check for duplicate values. This does not affect the conclusions of Charts 2 and 3 presented in this section, insofar as any duplicate share classes would also be

included in the denominator used to calculate percentages. The subsequent charts do not suffer from this data gap, as they were produced starting from mid 2017 onwards. Had the Lipper ID been available for previous snapshots prior to mid 2017, our total sample size would undoubtedly be even larger, in terms of unique funds and total AuM considered, given that, each year, some previously active funds close.

Article 8 fund names. More and more funds are including ESG-related language in their names, from less than 3 % in 2013 to roughly 14 % in early 2023 (in terms of AuM at this date: EUR 974 billion out of roughly EUR 6.8 trillion). While we are not claiming causality, the growth trend started in 2016 (i.e. soon after the 2015 Paris Agreement leading to the EU Green Deal). It has become exponentially positive towards the end of 2018 and up to the end of 2022. While it is too early to judge whether the trend is changing, a sharp slowdown in the first half of 2023 mirrors a broader decrease in new ESG investment product development in Europe.¹⁹

Chart 2
Evolution of ESG names across EU funds
ESG names increasingly popular

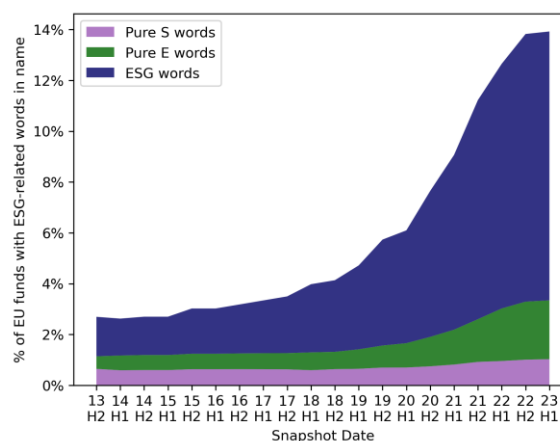


Note: Share of actively managed equity, bond, and mixed asset investment funds domiciled in the EU, the names of which include at least one ESG-related word, relative to all investment funds domiciled in the EU, at each specific snapshot date, in %. Each snapshot date contains a full sample of EU investment funds, with names extracted as at that particular date. Only primary share classes are included in the analysis. The vertical dashed line indicates the adoption of the Paris Agreement at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. Data not available for 2016H2 and 2017H1 and has been interpolated using data for 2016H1 and 2017H2.
Sources: Refinitiv Lipper, ESMA.

At its most basic level, the phenomenon of greenwashing requires a (misleading) sustainability-related claim to be made – otherwise one cannot claim to have been misled. Given the role played by fund names in influencing investors, the information displayed in Chart 2 confirms that, even if investors were never exposed to additional regulatory or marketing documentation, they are increasingly exposed to funds making ESG-related claims.

Chart 3 repeats the exercise above, but now highlighting the relative preference for ESG word categories among funds using ESG-related language in their name at each snapshot date. Interestingly, nearly all funds choosing to use ESG language in their name have chosen less specific ESG-related words, which have grown exponentially over the sample period. In contrast, more specific ‘E’ words have only become slightly more prevalent over the same period (particularly since 2019), while the share of funds using ‘S’ words in their name has changed little.

Chart 3
Evolution of ESG names across EU funds
Less specific ESG words used in names



Note: Cumulative use of ESG word types across actively managed equity, bond, and mixed asset investment funds domiciled in the EU, the names of which include at least one ESG-related word, relative to all investment funds domiciled in the EU, at each specific snapshot date. Each snapshot date contains a full sample of EU investment funds, with names extracted at that particular date. The three-word categories are mutually exclusive: for example, words deemed to be ‘E’ words are not included in words deemed to be ‘ESG’ words, and ‘ESG’ words are not included in ‘E’ words. Words originally tagged ‘S’ and ‘SG’ are mapped to ‘S’.
Sources: Refinitiv Lipper, ESMA.

This raises an interesting element from the perspective of greenwashing risks. Of course, there may be good reasons for a fund manager to prefer using less specific ESG words in their name, relative to more specific ‘E’ or ‘S’ words. For example, less specific words can enable a fund to be more flexible in terms of its asset allocation over time, and also to target a relatively more diversified portfolio. Nevertheless, it is also true that, if a fund were indifferent with respect to diversification and allocation flexibility, the use of more specific words would also make it easier for

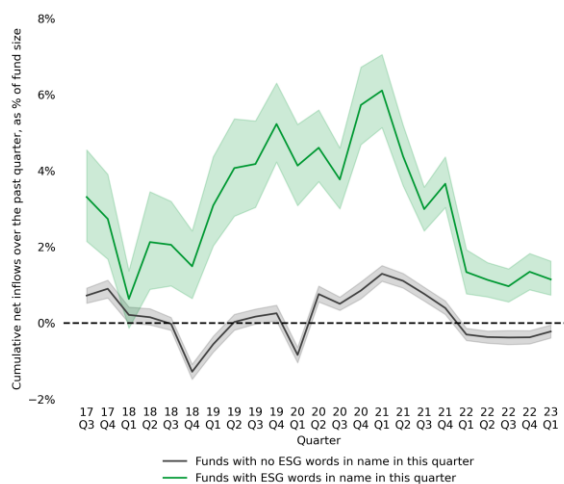
¹⁹ See Morningstar (2023).

investors to verify whether the fund portfolio is in line with the name.

These developments matter since investor demand for funds with ESG words in their name has consistently exceeded the demand for other funds over at least the past 6 years. Chart 4 illustrates the quarterly net flows into the two fund categories. The strong demand for these funds is in line with recent research highlighting the resilience of investor demand for ESG assets (Renneboog et al., 2008; Riedl and Smeets, 2017; Zerbib, 2019; Barber et al., 2021; Pástor et al., 2022). These results hold when controlling for the main asset class of the fund and geographical investment focus. The peak of the demand for funds with ESG words in their name appears to have been towards the end of 2020 and the beginning of 2021. Starting from mid 2021, investor demand returned closer to net flows for funds without ESG words in their name (though still higher than this latter group).

Chart 4 also points to the importance, from an investor protection perspective, of minimising the risk of funds engaging in greenwashing. Investors' strong and resilient demand for ESG investment products, coupled with the data quality and availability limitations to demonstrate 'ESG-ness' (NGFS, 2022), implies that funds with ESG words in their name have a particular responsibility to demonstrate the efforts they make to ensure alignment between their portfolios and their name.

Chart 4
Net inflows in EU funds with and without ESG names
High demand for funds with ESG names



Note: Net flows, relative to fund size, into actively managed equity, bond, and mixed asset funds domiciled in the EU, the names of which include at least one ESG-related word, relative to EU funds the names of which do not include any ESG-related word, at each specific snapshot date. Each snapshot date contains a full sample of EU investment funds, with names extracted at that particular date. Fund net flows are measured as the difference between inflows and outflows during the quarter in question, divided by the fund size (AuM) at the end of the previous quarter. The lines displayed are the mean value in each quarter (dark line within the coloured bands), while the coloured bands represent the 95 % confidence interval around the mean.
Sources: Refinitiv Lipper, ESMA.

Starting in mid 2017 these fund name snapshots also include standardised identifiers to permit tracking of the same fund over time (the Lipper ID and ISIN codes). As a result, we can carefully reconstruct the extent to which funds changed their name at any time from mid 2017 onwards.

Chart 5 shows the number of funds adding ESG words to their name since 2018: 1,356 in total (4.6% of actively managed equity, bond and mixed asset funds domiciled in the EU). When comparing Chart 4 with Chart 5, the sharp growth in the number of funds changing their name to add ESG words is clear – which took place particularly during the second half of 2021 and the first half of 2022. This followed the period of highest net inflows into funds with ESG words in their name during late 2020 and early 2021, supporting the view that funds respond to extra demand from investors by changing their names (albeit with a lag²⁰).

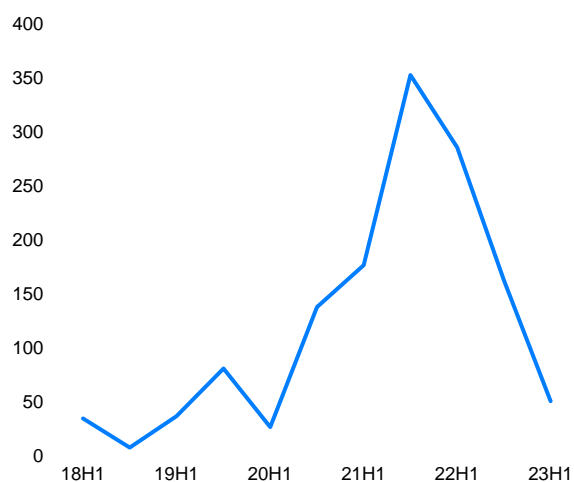
²⁰ This lag may reflect the necessary procedures for making these adjustments, including issuance of new documentation and updated registrations, or a choice

among funds to 'wait and see' in these relatively early years of ESG investing whether the trend continued to gather momentum.

At the same time, it appears that, starting from the first half of 2022 onwards, progressively fewer investment funds changed their name to include ESG words. In conjunction with Charts 2 and 4, this may signal that the rotation of investor portfolios towards ESG funds may have reached its peak (although demand remains strong as shown in Chart 4). The lower number of ESG funds launched in 2022 due to the broader economic and geopolitical context (Morningstar, 2023) suggests that fund managers may have turned generally more cautious. However, given that this information is only appearing in recent months, additional time (and further statistical analysis) is needed before such a conclusion can be made with the necessary degree of confidence.

As highlighted by past research (e.g. Cooper et al., 2005), it appears that funds react to trends by adjusting their image. It will be interesting to examine whether funds’ portfolios also evolved following the change of name (such as in investing towards more environmentally friendly assets, if the fund added an ‘E’ word to its name).

Chart 5
 EU funds including ESG words in their name
 ESG name changes peaked in 2021



Note: Number of actively managed equity, bond and mixed asset funds domiciled in the EU that have changed their name at each snapshot date to include at least one ESG word, relative to their name at the previous snapshot date. Only the primary share class is included in the analysis (i.e. one share class per fund).
 Sources: Refinitiv Lipper, ESMA.

Text-mining fund ESG disclosures

The name is not the only way a fund can stand out and signal its sustainability characteristics or investment objective. For example, funds may choose to communicate via marketing material, such as factsheets, or via their prospectus. In fact, EU funds are now required to provide such information – since the application of SFDR, funds promoting environmental and social characteristics and funds with a sustainable investment objective must disclose additional sustainability-related information.²¹ However, this information is available in text form in non-machine-readable documents and must be transformed in order to derive quantitative indicators.

With this in mind, we apply NLP techniques to examine the nature and extent of ESG disclosures in several major categories of fund documentation. We believe that the relatively high use of ESG language is a reasonable proxy for ESG claims, considering that extensive communication on ESG matters is likely to act as a signal towards ESG-oriented investors. To do this, we compiled an extensive set of fund documents as at December 2022, via Morningstar, including regulatory documents and marketing material (e.g. factsheets and announcements). We also obtained metadata on these documents, including the language, and the dates on which the document was made available and became ‘effective’.

We placed particular emphasis on the text included in KIIDs or Key Information Documents (KIDs). These mandatory documents are required by law (respectively under the UCITS Directive and PRIIPs Regulation) and aim to facilitate retail investors’ understanding of the product, its risks, possible performance, and costs. These documents are short (two or three pages maximum) and are particularly aimed at retail investors. In addition, KIIDs/KIDs are standardised, which facilitates the application of text-mining approaches.

We also considered the fund investment strategy, which provides a short overview of the fund’s objective while, at the same time, being legally-

²¹ For example, how any sustainability characteristics/objectives are met. Elsewhere, funds

tracking a benchmark index should explain how this benchmark is consistent with their objectives.

binding (since the strategy is made available via the fund prospectus).²² Lastly, the marketing material of a fund was also analysed. SFDR Article 13 requires that '*marketing communications do not contradict the information disclosed pursuant to [SFDR]*' (e.g. in regulatory documentation), but there are otherwise no EU regulatory requirements regarding the content or the formatting of these documents. They offer full flexibility to the management company to describe the fund, making them an interesting complement to the first two document types. However, these differences also imply that ESG words may serve a purpose other than describing the ESG strategy of the fund, for example enabling fund managers to provide ESG-related information across all their investment products (average portfolio ESG rating, carbon footprint, etc.).

Using the set of all English documents²³ available for EU-domiciled funds at the end of 2022, we examined roughly 17,000 investment strategies, 47,000 KIID/KIDs and 43,000 marketing documents.²⁴ For each document available, the share of ESG words is calculated. This is measured as the number of ESG words compared to the total number of words, excluding stop words.²⁵ Here again, we focused on the

most prevalent types of funds in the EU, in terms of asset type: equity, bond or mixed asset investment funds. This resulted in a sample of 12,629 funds managing EUR 5.8 trillion in assets as at the end of 2022.²⁶

We examined whether meaningful differences in the share of ESG words used in each document could be observed across the three document types, and across additional fund attributes.

There are good reasons to expect systematic differences in terms of ESG languages, across these three document types. For example, as discussed above, KIIDs/KIDs, the investment strategy and marketing material all have different characteristics in terms of length and freedom of content. They also display substantial differences in terms of the use of ESG language across our sample: while only 23 % of funds' investment strategies contain at least one ESG word, this percentage increases to 80 % for KIIDs/KIDs and even to 90 % for marketing documents (Chart 6).²⁷

²² The investment strategy is made available by Morningstar and is sourced either from the prospectus of the fund management company or, in the event of an update, from written communication received by Morningstar from the fund's asset management company. Morningstar does not translate the investment strategy from, for example, English to other languages or from other languages to English. The text must be provided in English either in the prospectus or via the management company directly. We did not perform NLP directly on fund prospectuses (e.g. to extract the investment strategy ourselves) as the majority of investment fund prospectuses cover multiple funds, which creates major challenges for the application of NLP techniques. We conduct a number of manual checks on the investment strategies made available by Morningstar, however, including removing suspiciously short investment strategies (below 11 words).

²³ The analysis focuses on English-language documents since the list of ESG terms used to scan documents only includes English words and phrases. The availability of English documents (66 % of the sample) is highest for funds domiciled in Ireland and Luxembourg, but below 20 % for funds domiciled in Italy, Portugal and Denmark. As a result, around 50 % of the funds in our sample are domiciled in Luxembourg, and 30 % in Ireland. The share of ESG words in English and non-English documents may differ, reflecting the specific characteristics of national markets. For example, the relative share of funds with ESG words in their name (in all languages) is relatively

smaller for funds without English documentation available.

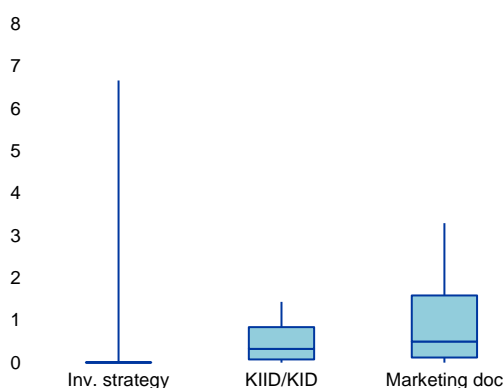
²⁴ These documents cover more than 18 000 investment funds. Two thirds of the funds have between one and four documents available (some funds have multiple KIIDs/KIDs and marketing documents available).

²⁵ If a fund has an ESG word(s) in its name, we do not count any appearance of that ESG word(s) in the associated document being examined. This is so that we focus on the management company's specific drafting choices for that fund, and so that we can avoid artificially high percentages of ESG words appearing merely due to the fund name being repeated multiple times in the document (as is often the case).

²⁶ Funds are domiciled in 15 different EU Member States, the sample is mainly composed of equity funds (50 % in terms of number, 54 % of AuM). 86 % of the funds are active funds (75 % if we consider the AuM). Finally, the sample is mostly composed of funds disclosing under SFDR Article 8 (48 % of funds, 56 % of AuM) and funds disclosing under SFDR Article 6 (47 % of funds, 39 % of AuM), as assessed by Morningstar. This split is representative of the broader sample of funds available for sale in the EU (see Morningstar, 2023).

²⁷ In addition, when investment strategies do contain ESG words, the share of those ESG words is higher compared with KIIDs/KIDs or marketing documents. This relates to the total size of the document (i.e. one or two sentences for investment strategies).

Chart 6
Share of ESG language in funds documents
Few strategies contain ESG language



Note: Share of ESG language in funds documents (in percentage) calculated as the number of ESG words compared to the total number of words, excluding stop words and words already included in the funds name. Box edges are the 25th and 75th percentiles, box middle line is the 50th percentile, and additional lines (whiskers) illustrate the 10th and 90th percentiles. Sources: Morningstar, ESMA.

Moreover, the correlation between the share of ESG words across each document type is positive but not perfect (50 % between the KIID/KID and strategy, 34 % between the KIID/KID and marketing document, and 24 % between the strategy and marketing document).

However, we also expect funds' characteristics to impact the use of ESG language and are interested in exploring whether the impact depends on the document type, especially between the regulatory documents (i.e. KIIDs/KIDs and investment strategies) on the one hand and non-regulated text (i.e. marketing documents) on the other. In particular, we anticipate that several aspects of funds may affect the extent of ESG word use:

- First, fund documentation is likely to include ESG words (in addition to any words appearing in the name itself) if the fund name contains an ESG word. A positive correlation between the inclusion of an ESG word in the fund name and the share of ESG words in the documents is then expected. If not, this would raise some concerns about whether the fund name accurately reflects the fund's activities and portfolio.

- Second, SFDR introduced disclosure requirements for funds promoting environmental or social characteristics (Article 8 funds) and for funds with an objective of sustainable investment (Article 9 funds). Therefore, the SFDR disclosure regime (either under Article 6, 8 or 9) is likely to significantly influence the share of ESG words in funds' documents. From an investor protection angle, we expect relatively less ESG language from Article 6 funds (across all document types), and relatively more claims from Article 9 funds, both in comparison with Article 8 funds.
- Third, we expect recently launched funds to include more ESG words in their documentation compared to older funds. This reflects the particularly large increase in investor demand for ESG funds in the past few years. Meanwhile, existing funds might be reluctant to update their documentation and add sustainability considerations given the need to explain their newfound strategy to investors, any legal fees involved with redrafting material, and any additional adjustment costs associated with rebranding.
- We also include additional controls: size (AuM), whether the fund targets retail or institutional investors, and asset class type (equity, bond or mixed). Fixed effects on fund domicile, asset management company, and geographical focus (in terms of investment strategy) are included.

The model is estimated through ordinary least square, with standard errors clustered at the asset management company level.²⁸ We establish four different models: one including all document types with dummy variables for each type (model 1), and three additional models focusing specifically on each document type (model 2: investment strategy, model 3: KIID/KID, and model 4: marketing).

Table 3 shows the results of the different regressions. As expected, the share of ESG words in the investment strategy and the KIIDs/KID is higher for funds with an ESG word in their name (models 1, 2 and 3). However, the relation loses its significance when looking at the

²⁸ Clustering by asset management company controls for the similarity of ESG language among funds from the same management company.

marketing documents (model 4). In other words, having an ESG-related term in the fund's name is not a driver of ESG word use in marketing documents.²⁹

Furthermore, as expected, the share of ESG words is strongly correlated with the SFDR disclosure regime: funds disclosing under Article 6 (i.e. funds without any sustainability characteristics) use fewer ESG words in all types of documents in our sample, compared with funds disclosing under Article 8. Conversely, the documents of funds disclosing under Article 9 contain more ESG language than the documents of funds disclosing under Article 8. Models 2 and 3 also confirm that more recent funds tend to use more ESG words in their regulatory documentation, in line with our expectations.

Elsewhere, the documents of equity funds typically include more ESG language than documents of mixed funds.³⁰ However, we do not find corresponding differences in the investment strategies and KIIDs/KIDs for bond funds (relative to mixed funds). This suggests that equity funds pursue a different communication strategy with respect to the use of ESG language compared to bond or mixed funds. One explanation is that

equity investment is perceived as facilitating engagement with investee companies, an important component of ESG investing.³¹

Interestingly, funds sold to retail investors³² are associated with more ESG claims in the KIIDs/KIDs compared with funds sold to institutional investors (model 3), but this effect does not exist for the investment strategy or the marketing material (models 2 and 4). It appears that funds that target retail investors use more ESG words in the documents created specifically to enhance retail investors' understanding of the fund. These same funds, however, do not make particular efforts (relative to institutional funds) in documents that are not standardised and those that are not regulated (i.e. the investment strategy and marketing material). This suggests that fund managers adapt their communication strategies to the types of readers. This highlights the importance of monitoring this type of communication channel from an investor protection perspective, and of ensuring consistency across different types of documentation.

²⁹ However, in some cases, the use of ESG language in the marketing material is intended for background (e.g. a template and generic table for all funds from the same management company) rather than making an ESG claim.

³⁰ This is in line with the relative prevalence of ESG names across fund types in our sample: 23 % of equity funds have an ESG word in their name, while this share decreases to 18 % for bond funds and 13 % for mixed

funds. Elsewhere, among the funds in our sample that include an ESG word in their name, 59 % are equity funds.

³¹ See Russell Investments, *ESG considerations in fixed income*, July 2021.

³² Funds are categorised as retail if all share classes are sold to retail investors. Conversely, funds are categorised as institutional if all share classes are sold to institutional clients.

Table 3

ESG disclosures regression analysis

ESG disclosures influenced by fund name and SFDR disclosure regime

	Dependent variable: % ESG words used in each document			
	<i>Model 1: All documents</i>	<i>Model 2: Inv. strategy</i>	<i>Model 3: KIID/KID</i>	<i>Model 4: Marketing doc.</i>
ESG name	1.269*** (0.148)	3.035*** (0.321)	0.245*** (0.049)	0.185 (0.165)
Age	-0.011*** (0.004)	-0.028*** (0.009)	-0.003*** (0.001)	0.007 (0.006)
Size	0.005 (0.016)	-0.009 (0.036)	0.009* (0.005)	0.002 (0.023)
Retail	0.095 (0.129)	0.006 (0.274)	0.092** (0.036)	-0.090 (0.129)
Passive	0.237 (0.220)	0.761 (0.543)	-0.067 (0.054)	-0.237* (0.122)
Asset class (Equity fund)	0.332*** (0.078)	0.636*** (0.176)	0.125*** (0.034)	0.206*** (0.069)
Asset class (Bond fund)	-0.019 (0.081)	0.128 (0.178)	-0.005 (0.029)	-0.148** (0.067)
Number of countries	0.016** (0.006)	0.022 (0.015)	0.002 (0.002)	0.016** (0.008)
SFDR (Art. 9)	1.559*** (0.189)	3.296*** (0.475)	0.498*** (0.075)	0.401*** (0.151)
SFDR (Art. 6)	-0.873*** (0.100)	-1.372*** (0.212)	-0.529*** (0.051)	-0.548*** (0.130)
Inv. strategy	5.838*** (0.336)			
KIID / KID	4.545*** (0.362)			
Marketing doc.	5.071*** (0.419)			
Intercept		10.51*** (0.794)	0.400*** (0.112)	0.506 (0.332)
Observations	17,614	7,226	6,103	4,285
R ²	0.418	0.485	0.673	0.660
Fund domicile F.E.	YES	YES	YES	YES
Asset ManCo F.E.	YES	YES	YES	YES
Geographical focus F.E.	YES	YES	YES	YES

Note: The dependent variable is the share of ESG words (excluding any ESG words appearing in the fund name) in each document. 'ESG name' is a dummy variable set to 1 if the fund name contains an ESG word. 'Age' measures the age of the fund (in years) from its oldest share class inception date up to the end of 2022. 'Size' is the log of fund net AuM at the end of 2022. 'Retail' is a dummy variable set to 1 if the fund does not target institutional investors, 0 if the fund targets institutional investors, and N/A in all other cases (e.g. the fund targets both investor types). This information is reported by funds to Morningstar. 'Passive' is a dummy variable set to 1 if the fund is passively managed. 'Asset class' indicates the asset categorisation of the fund (equity, bond, or mixed; the reference category in the regressions is mixed). 'Number of countries' is the number of countries in which the fund is available for sale (i.e. 'registered with the local regulator and the share class [is] marketed in that country'). SFDR indicates the disclosure regime under SFDR (either Article 6, 8 or 9, the reference category is Article 8) as assessed by Morningstar. 'Inv. strategy', 'KIID/KID' and 'Marketing doc' are dummy variables set to 1 if the document is the investment strategy, KIID / KID, or marketing material (e.g. a factsheet or an announcement), respectively. 'Geographical focus' indicates the fund's broad geographical focus as assessed by Morningstar. Domicile and asset management company fixed effects are included in all regressions. Standard errors are clustered at the level of each fund's asset management company. Significance levels are reported as follows: 0.01 (***), 0.05 (**), 0.1 (*).

Sources: Morningstar, ESMA.

Conclusion

The transition towards a greener economy will require substantial financial resources. To meet these investment needs, extensive private capital will be required. To ensure that ESG investment products remain attractive, it is crucial that investors have confidence that the sustainable financial products offered to them are accurately described.

Thus, as the popularity of ESG investments grows, so do the risks and importance of greenwashing. In addition to local damage to individual investors, greenwashing can have profound consequences for the overall investor community's confidence in the effectiveness of sustainability-related disclosure regimes, with negative follow-on effects on the necessary financing for transitioning economies to a more sustainable state.

Tackling greenwashing is one of the key priorities in ESMA's Strategy on Sustainable Finance, and in this respect our assessment of how investment funds signal themselves (via their name or via their documents) is an important first step in the detection and monitoring of potential greenwashing, given that greenwashing stems – first and foremost – from misleading, confusing, or inaccurate claims.

With this in mind, we constructed a comprehensive³³ list of ESG words and phrases, against which the ESG-related language used by funds can be measured and compared. In turn, this list – the most complete and up to date, to our knowledge – allows us to apply NLP techniques to several large text and numerical datasets spanning funds across the EU. This work is part of ESMA's on-going efforts to develop innovative analytical tools for supervisory and regulatory purposes, including with a view to identify and address potential greenwashing in the financial sector.

On that basis, we provide an analysis of the historical evolution of fund names from an ESG perspective. As discussed above, the name of a fund can be a source of greenwashing if the name does not reflect the fund's actual sustainability profile. We therefore leverage a novel dataset

containing the historical names of over 36,000 unique EU-domiciled investment funds, with about EUR 16 trillion of AuM, spanning from mid 2013 to mid 2023. We are not aware of any commercial data provider making such historical data available.

Our analysis demonstrates, first, that more and more funds include ESG terms in their names and, of the ESG terms included, funds prefer to include less-specific words (i.e. broad ESG words rather than more specific 'E' or 'S' words). In addition, since mid 2017, numerous investment funds have changed their name to add ESG words. At the same time, we find supportive evidence of high and consistent investor appetite for funds with an ESG-related term in their name, relative to funds without any ESG words in their name.

As funds can also signal their ESG-related objectives and aims via documentation, our analysis also investigates funds' regulatory (KIID/KID and investment strategy) and marketing disclosures. We have constructed a dataset consisting of more than 100,000 documents available as at the end of 2022 and covering more than 18,000 funds. To our knowledge, this represents the largest sustainability-related NLP assessment of EU fund documentation to date.

Second, our study shows that funds with ESG-related language in their name provide more extensive ESG disclosures (using additional words beyond the ones included in their name) in their investment strategy and KIID/KID than other funds. In addition, the share of ESG words found in the different types of documents is coherent with the SFDR disclosure type (i.e. Article 8 funds use more ESG words than Article 6 funds but fewer than Article 9 funds). Elsewhere, more recent funds and funds investing in equity are associated with more ESG language.

Third, funds sold to retail investors are associated with more extensive ESG language in the KIIDs/KIDs compared with funds sold to institutional investors, but this effect does not exist for the investment strategy or the marketing material. Thus, funds that target retail investors appear to make additional ESG claims in the documents created specifically to enhance retail investors' understanding of the fund. These same

³³ While, given the nature of the method, such a list can never be final or complete and we aim to refine it in the

future, we are not aware of a more developed list of ESG terms at the time of writing.

funds, however, do not make particular efforts (relative to institutional funds) in documents that are not standardised and regulated. This suggests that fund managers adapt their communication strategies to the expected types of readers, highlighting the importance of ensuring consistency across different types of documentation. It also highlights the importance of monitoring this type of communication channel, from an investor protection perspective.

Our findings support recent regulatory efforts – both in the EU and abroad – regarding disclosure requirements for investment funds. For example, the evolution of ESG language in fund names demonstrates the usefulness of ESMA's recent public consultation on guidelines to ensure fund names accurately reflect their portfolio from an ESG perspective. Moreover, the NLP-based assessment of ESG language used in various fund documentation demonstrates the benefit of standardised disclosures – in the form of templates – that are progressively becoming widely available, for example through SFDR.

A number of extensions can be envisaged with such work. First, an additional econometric analysis is necessary to support the conclusions of our work on fund names. Second, additional avenues can be explored in the context of assessing fund ESG disclosures, including an analysis of non-English documentation in order to better compare funds across the EU, as well as expanding the analysis to include the alternative investment fund market (i.e. non-UCITS).

Going forward, ESMA will continue to scale up the monitoring and supervision of greenwashing. NLP-based tools have the potential to greatly assist effective supervision across the EU, therefore ESMA will continue to monitor ESG-related disclosures, given the rapid growth and important role of the market for ESG investing.

References

- Allard, A-F., Krakow, N. J., and K. Smedts (2020), When Mutual Fund Names Misinform, Working paper, June.
- Amzallag, A., Levi, M., and Vasios, M. (2022), Text mining ESG disclosures in CRA press releases. *ESMA Risk Analysis Article*, February.
- Baier, P., Berninger, M., and Kiesel, F. (2020), Environmental, social and governance reporting in annual reports: A textual analysis. *Financial Markets, Institutions and Instruments*, 29, 93–118.
- Barber, B., M., Morse, A., and Yasuda, A. (2021). Impact investing. *Journal of Financial Economics*, 139(1), 162–185.
- Bingler, J. A., M. Kraus, M. Leippold and N. Webersinke (2022), Cheap talk and cherry-picking: What ClimateBert has to say on corporate climate risk disclosures. *Finance Research Letters*, Vol.47 Part B.
- Candelon, B. and J.-B. Hasse (2021), ESG-Washing in the Mutual Funds Industry? From Information Asymmetry to Regulation. *Risks* 9(11), 199.
- Cooper, M. J., H. Gulen, and P. R. Rau (2005), Changing names with style: Mutual fund name changes and their effects on fund flows. *The Journal of Finance*, 60(6), 2825–2858.
- El Ghoul, E. and A. Karoui (2020), What's in a (Green) Name? The Consequences of Greening Fund Names on Fund Flows, Turnover, and Performance. *Finance Research Letters*, Vol.39, March 2021, 101620.
- Espenlaub, S., I. Haq, I. and A. Khurshed (2017), It's all in the name: Mutual fund name changes after SEC Rule 35d-1. *Journal of Banking & Finance*, Elsevier, vol. 84(C), pages 123-134.
- European Central Bank (2022), *Climate-related risks to financial stability*, Financial Stability Review, Special Feature A, May 2022.
- European Commission (2022), [Request for input \[to the ESAs\] related to greenwashing risks and](#)

[supervision of sustainable finance policies](#), 23 May.

European Securities and Markets Authority (2022), Sustainable Finance Roadmap 2022-2024, 10 February.

European Securities and Markets Authority (2023a), Progress Report on Greenwashing, 31 May.

European Securities and Markets Authority (2023b), Report on Trends, Risks and Vulnerabilities, No.1.

Kumar A., Niessen-Ruenzi, A., and O. G. Spalt (2015), What's in a Name? Mutual Fund Flows When Managers Have Foreign-Sounding Names. *The Review of Financial Studies*, 28 (8), 2281-2321.

Loughran, T. and McDonald, B. (2011), When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks, *Journal of Finance*, Vol. 6, No 1, pp. 35–65.

Mansouri, S., and P. P. Momtaz (2022), Financing sustainable entrepreneurship: ESG measurement, valuation, and performance. *Journal of Business Venturing*, 37 (6).

Morningstar (2023), Global sustainable fund flows: Q1 2023 in review, 25 April.

Network for Greening the Financial System (NGFS) (2022), Final report on bridging data gaps. Technical document, July.

Pástor, L., Stambaugh, R. F. and Taylor, L. A. (2022). Dissecting Green Returns. *Journal of Financial Economics*, Vol.146(2), 403-424..

Renneboog, L., Ter Horst, J., Zhang, C., 2008. Socially responsible investments: institutional aspects, performance, and investor behavior. *Journal of Banking and Finance* 32: 1723–1742.

Riedl, A., Smeets, P. (2017). Why do investors hold socially responsible mutual funds? *Journal of Finance* 72: 2505–2550.

Thewissen J., Arslan-Ayaydin, Ö., and Shrestha, P. (2023). The thematic content of ESG reports: A topic modeling approach, University of Louvain Working Paper Series. Verbeeten, F., R. Gamerschlag and K. Moller (2016), Are CSR disclosures relevant for investors? Empirical evidence from Germany. *Management Decision* 54(6), 1359-1382.

Zerbib, O. (2019). The effect of pro-environmental preferences on bond prices: evidence from green bonds. *Journal of Banking and Finance* 98: 39–60.

