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Measuring Emissions Profiles of Self-Proclaimed ESG ETFs

Initial findings and lessons for official statistics

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Understanding the investment strategy of self-proclaimed ESG[1] ETFs[2] is important for informed investing

IMPORTANCE
- Increasing interest in **ESG** investing
- Self-proclaimed "ESG" investments reached a market capitalization of **$1.7 trillion** in 2020 and continue to grow[1]

ISSUE
- **Increasing number** of self-proclaimed "ESG" ETFs
- Difficult to measure how they differ in terms of **sustainability strategy and metrics**
- Lack of transparency, **limited and scattered** information available

IMPACT
- **Critical information** for informed investment decisions and for policy-making

[1] ESG: Environmental, Social, Governance
[2] ETF: Exchange Traded Fund
[3] Jessop and Howcroft (2021)

Current evidence suggests incentives for ETFs to self-classify as "ESG"

📢 For **marketing purposes**, funds have an incentive to maintain a veneer of ESG engagement[1]

📰 **Anecdotal evidence** suggests that self-proclaimed ESG ETFs may still:

> ➢ be "*stuffed full of polluters and sin stocks*"[2]

> ➢ invest in companies "*not aligned with the goals of the Paris agreement*"[3], and

> ➢ not substantially differ from "traditional" funds[4]

📄 Findings in literature suggest that hedge funds exhibit **greenwashing behavior** while publically endorsing adherence to ESG standards[5, 6]

♻ Investors may not be able to adequately **estimate the expected impact** of ESG investments[7]

RESEARCH QUESTION

> ➢ How do self-proclaimed "ESG" ETFs carry out their **investment strategy**?

> ➢ I.e. do they choose "*best-in class*" assets per sector or do they divest from emission-intensive sectors?

> ➢ Does their strategy lead to a **consistently lower emission-intensity** in their holdings?

[1] Torres et. al (2012)
[2] The Economist (2021)
[3] Time (2021)
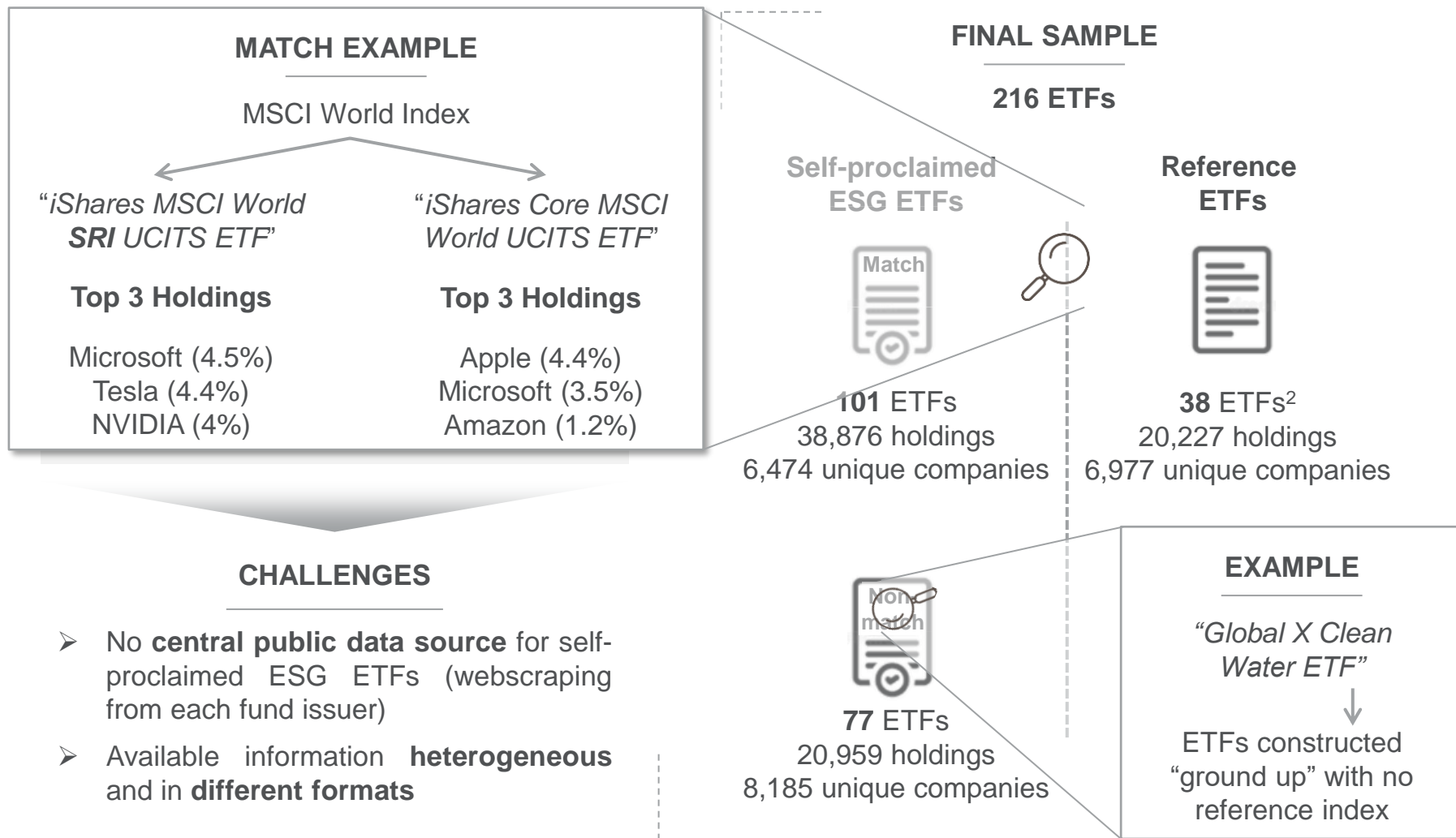[4] Barclays Research (2020)
[5] Liang, Sun, and Teo (2021)
[6] Tucker, K. P. (2021)
[7] Martin and Moser (2016)

Data for this study comes from ETF issuers and proprietary emission data

MATCH EXAMPLE

MSCI World Index

"*iShares MSCI World SRI UCITS ETF*" — "*iShares Core MSCI World UCITS ETF*"

Top 3 Holdings	**Top 3 Holdings**
Microsoft (4.5%)	Apple (4.4%)
Tesla (4.4%)	Microsoft (3.5%)
NVIDIA (4%)	Amazon (1.2%)

FINAL SAMPLE

216 ETFs

Self-proclaimed ESG ETFs — **Reference ETFs**

Match

101 ETFs
38,876 holdings
6,474 unique companies

38 ETFs[2]
20,227 holdings
6,977 unique companies

CHALLENGES

➢ No **central public data source** for self-proclaimed ESG ETFs (webscraping from each fund issuer)

➢ Available information **heterogeneous** and in **different formats**

Non-match

77 ETFs
20,959 holdings
8,185 unique companies

EXAMPLE

"Global X Clean Water ETF"

↓

ETFs constructed "ground up" with no reference index

[1] Institutional Shareholder Services (ISS) ESG climate core package, data as of March 2022
[2] The 38 reference ETFs serve as a benchmark for 101 self-proclaimed ESG ETFs. Reference ETFs can be identified whenever ESG ETFs are based on a large reference index (e.g., "MSCI Europe ESG Screened" is based on "MSCI Europe"). For the remainder of 77 self-proclaimed ESG ETFs, we cannot map a reference index, usually because these ETFs are constructed "ground up" and do not have a regular reference index.

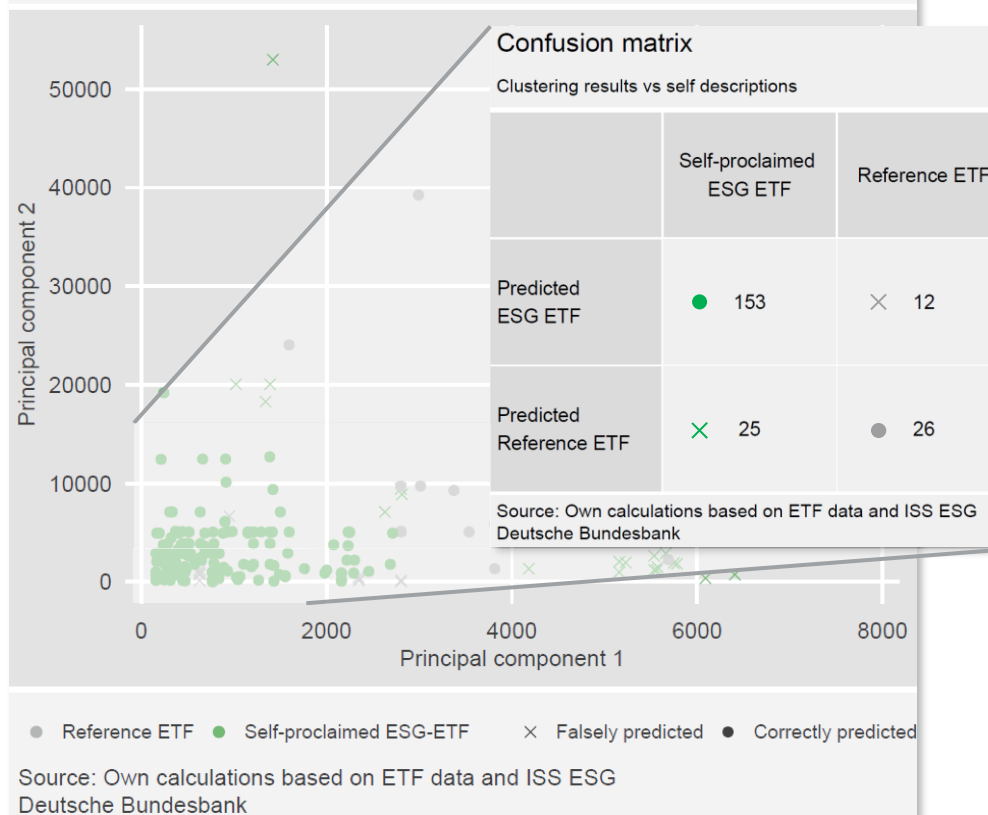# To mimic investor information, we cluster ETFs based on sectors and emissions

RESULTS

➤ We cluster using k-Means and a range of **features based on emissions, sectors,** best-in-class proxies, and fund-level variables

➤ Most informative features are **maximum scope 1 emission intensities** (not weighted) and the **ETF's age**

➤ **Sector composition doesn't seem to add much predictive value** (neither single nor aggregated using PCA**)

➤ Cluster classification is decent, however findings have some limitations***

kMeans clustering results
2 clusters, n = 216 (178 self-proclaimed ESG ETFs, 38 reference ETFs)*

Confusion matrix

Clustering results vs self descriptions

	Self-proclaimed ESG ETF	Reference ETF
Predicted ESG ETF	● 153	✕ 12
Predicted Reference ETF	✕ 25	● 26

Source: Own calculations based on ETF data and ISS ESG Deutsche Bundesbank

● Reference ETF　● Self-proclaimed ESG-ETF　✕ Falsely predicted　● Correctly predicted

Source: Own calculations based on ETF data and ISS ESG Deutsche Bundesbank

- Included variables in this graphic are "maximum holding's scope 1 emission intensity in fund" and "fund age". We try a wide range of predicted features and feature combinations including sector weights, average emission differences in fund holdings compared to sector averages, and others (details in Annex)
  ** PCA: Principal Component Analysis
  *** Limitations in the analysis include the variance of clusters depending on initial seed, an overrepresented majority class issue and more potential ESG variables on company-level to be considered

We compare emission intensities to further explore the drivers of incorrect cluster classifications

RESULTS

➤ Out of 101 self-proclaimed ESG ETFs that have a reference ETF, we identify **5** ETFs that have **higher average emission intensity** (AEI)* than their non-ESG reference ETFs

➤ For the remainder of **96 self-proclaimed ESG ETFs, we find their AEI to be lower** than their reference ETFs

➤ **Differences in AEI are significant** between self-proclaimed ESG ETFs and reference ETFs (p-value<.01)**

Average emission intensity comparison
Between self-proclaimed ESG ETFs (n = 101) with a known reference ETF (n = 38)
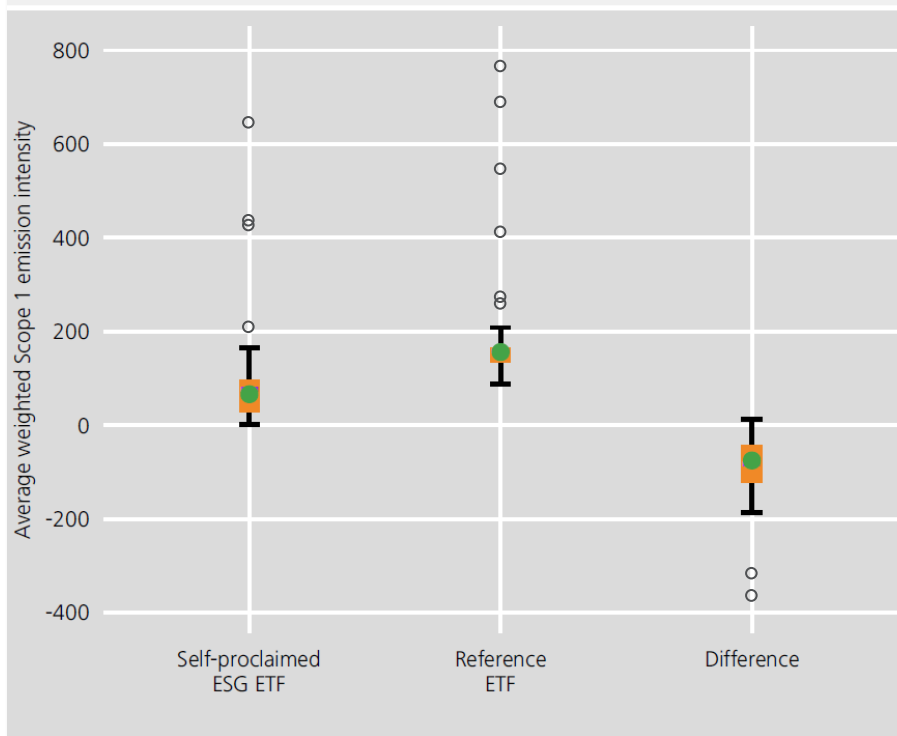
Source: Own calculations based on ETF data and ISS ESG
Deutsche Bundesbank

* Average emission intensity is the weighted sum of emission intensities of all holdings in a fund. Emission intensities are scope 1 CO_2 emissions as a fraction of company revenue
** Challenges for a t-test in our setting are that groups are not independent, reference group observations repeat themselves, degrees of freedom are thus not obvious to compute, and there is heteroscedasticity present. We consider a paired t-test, however other test settings similarly let us reject the null hypothesis that AEI between groups follows the same distribution

An analysis of sector composition suggests that funds reduce emissions by relocating capital across sectors

SECTOR COMPOSITION

➤ The most **dominant sector** in our sample is **manufacturing** (NACE C), followed by finance (NACE K) and information technology (NACE J)

➤ The **most emission intensive sectors** are **energy** (NACE D) and mining and quarrying (NACE B)

➤ Manufacturing has moderate emission intensity, while finance and information technology produce very little scope 1 emissions
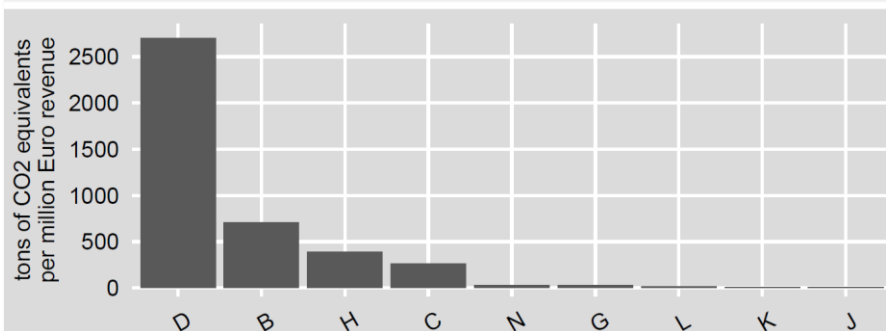

Average share of most important sectors
n = 139, out of which 101 self-proclaimed ESG ETFs and 38 reference ETFs
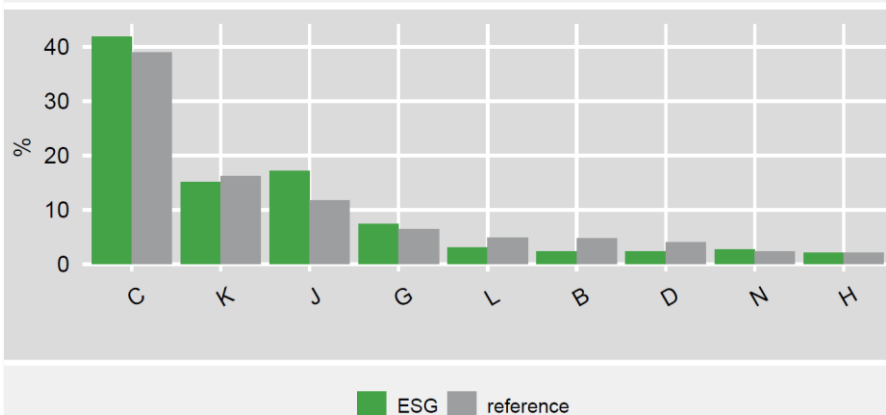
Legend: ESG (green), reference (grey)

Source: Own calculations based on ETF data and ISS ESG
Deutsche Bundesbank

Average emission intensity of most important sectors
n = 29,264 companies in the ISS universe

Source: Own calculations based on ETF data and ISS ESG
Deutsche Bundesbank

# ESG ETFs seem to reduce investments in emission-intensive sectors

SECTOR COMPOSITION

➢ Self-proclaimed ESG ETFs seem to **shift away from the two most emission-intensive sectors** towards the two least emission-intensive sectors

➢ Therefore, part of the **emission intensity difference** between self-proclaimed ESG-ETFs and their reference ETFs can be **explained by differences in sector composition**

➢ Within emission-intensive sectors, there is **little evidence for a "best-in-class" asset selection**

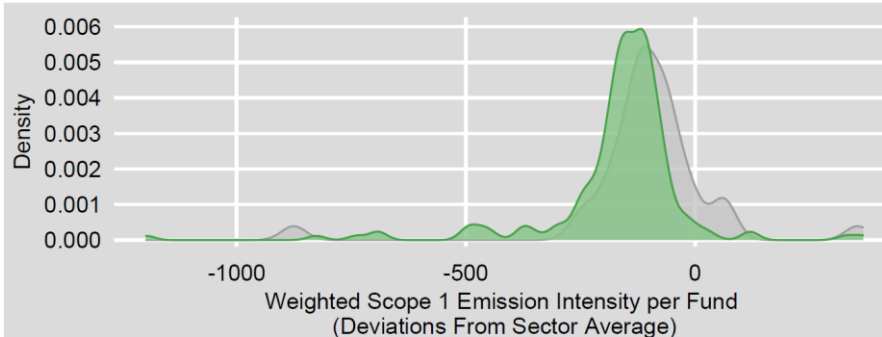### Average difference in sector shares

Difference between 101 self-proclaimed ESG ETFs and their respective reference ETFs
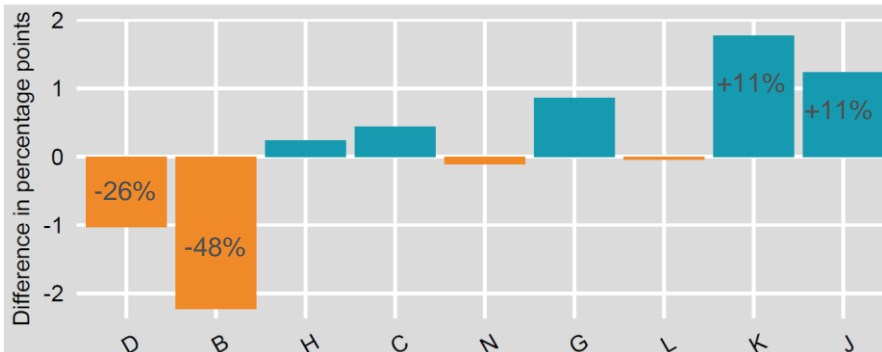
Source: Own calculations based on ETF data and ISS ESG
Deutsche Bundesbank

Deviations from sector average

Comparison between self-proclaimed ESG ETFs (n=178) and reference ETFs (n = 38)


Source: Own calculations based on ETF data and ISS ESG
Deutsche Bundesbank

Our results suggest that self-proclaimed "ESG" ETFs reduce emissions through a "sustainable sectors strategy"

Conclusions

1 CARBON FOOTPRINTS

➢ Self-proclaimed ESG ETFs seem to have **lower average emission intensities** than their reference ETFs

➢ Part of this reduction is driven by **divesting from emission-intensive sectors**

➢ We find **little evidence of a best-in-class** (positive selection) approach

2 TAKE AWAYS
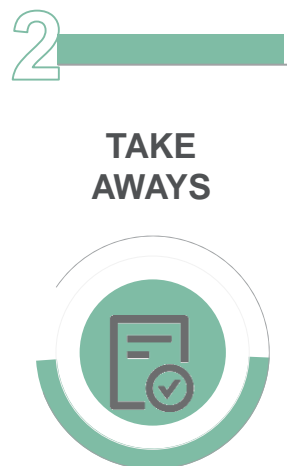
➢ **Investors** on average reduce carbon exposure by investing in self-proclaimed ESG ETFs

➢ **Investors** looking to cover a **broad market**, while rewarding **lowest emitters within a sector**, cannot generally do so by investing in self-proclaimed ESG ETFs

➢ **Policymakers** need to ensure better data availability and transparency

3 ROAD FORWARD

➢ **Standardization** of sustainability criteria, enhanced transparency and data availability **is underway on company-level**.* Standardization on fund-level is yet to come

➢ Further analyses may focus on how positive and negative selection in self-proclaimed ESG ETFs **affects companies' cost of capital and incentives**

* e.g "EU taxonomy" (Regulation (EU) 2019/2088), Corporate Sustainability Reporting Directive (CSRD), Procedure (EU) 2021/0104/COD

References

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➢ The Economist (2021). Sustainable Finance is Rife with Greenwash. Time for More Disclosure. Retrieved 2022/02/12, from https://www.economist.com/leaders/2021/05/22/sustainable-finance-is-rife-with-greenwash-time-for-more-disclosure.

➢ Jessop, S., & Howcroft, E. (2021). Sustainable Fund Assets Hit Record $1.7 Trln in 2020: Morningstar. Retrieved 2022/02/14, from https://www.reuters.com/article/us-global-funds-sustainable-idUSKBN29X2NM.

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➢ Martin, P. R., & Moser, D. V. (2016). Managers' Green Investment Disclosures and Investors' Reaction. Journal of Accounting and Economics, 61(1), 239-254.

➢ Time (2021). Thinking of Investing in a Green Fund? Many Don't Live Up to Their Promises, a New Report Claims. Retrieved 2022/02/12, from https://time.com/6095472/green-esg-investment-funds-greenwashing/.

➢ Torres, A., Bijmolt, T. H. A., Tribó, J. A., & Verhoef, P. (2012). Generating Global Brand Equity Through Corporate Social Responsibility to Key Stakeholders. International Journal of Research in Marketing, 29(1), 13-24.

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sustainability-data@bundesbank.de