

# MIND THE ESG GAPS: TRANSMISSION MECHANISMS AND THE GOVERNANCE OF AND BY SUSTAINABLE FINANCE



## **Acknowledgements**

Working Papers make DIIS researchers' and partners' work in progress available to readers prior to formal publication. They may include documentation which is not necessarily published elsewhere. DIIS Working Papers are published under the responsibility of the author alone.

We would like to thank Barbara Brandl, Carola Westermeier, Daniel Mertens, Elsa Massoc, Ismael Ertürk, Katrijn Siderius, Lena Rethel, Matthias Thiemann, Thomas Rixen, Tobias Pforr, and especially Patrick Jahnke for their feedback and comments on earlier versions of this paper.

The views and opinions expressed by the authors in this paper do not represent the official position of the Deutsche Bundesbank.

### **Jan Fichtner**

Visiting researcher, DIIS, and collateral and securities markets specialist, Deutsche Bundesbank, [jan.fichtner@bundesbank.de](mailto:jan.fichtner@bundesbank.de)

### **Robin Jaspert**

Research assistant, Institute for Political Science, Goethe University Frankfurt, [jaspert@em.uni-frankfurt.de](mailto:jaspert@em.uni-frankfurt.de)

### **Johannes Petry**

Principal investigator of the StateCapFinance project, Goethe University Frankfurt, and CSGR research fellow, University of Warwick, [j.petry@soz.uni-frankfurt.de](mailto:j.petry@soz.uni-frankfurt.de)

## **DIIS WORKING PAPER 2023: 04**

DIIS · Danish Institute for International Studies  
Østbanegade 117, DK-2100 Copenhagen, Denmark

Tel: +45 32 69 87 87

E-mail: [diis@diis.dk](mailto:diis@diis.dk)

[www.diis.dk](http://www.diis.dk)

ISBN 978-87-7236-109-3 (pdf)

DIIS publications can be downloaded free of charge from [www.diis.dk](http://www.diis.dk)

© Copenhagen 2023, the authors and DIIS

# **MIND THE ESG GAPS: TRANSMISSION MECHANISMS AND THE GOVERNANCE OF AND BY SUSTAINABLE FINANCE**

**Jan Fichtner, Robin Jaspert & Johannes Petry**

## **TABLE OF CONTENTS**

<b>Abstract</b>	<b>2</b>
<b>Introduction</b>	<b>3</b>
<b>Governance and ESG</b>	<b>7</b>
Governance of ESG: from Sustainable Finance 1.0 to 3.0	8
Governance by ESG: the (potential) transmission mechanisms	9
The gaps we know: (the lack of) governance via ESG ratings and proxy voting	11
<b>Capital allocation and ESG funds: who sets standards for sustainable finance?</b>	<b>14</b>
Capital allocation and asset managers	15
Capital allocation and ESG indices	18
<b>ESG index methodologies: a look inside the ‘green’ box</b>	<b>21</b>
<b>Conclusion</b>	<b>26</b>
<b>Appendix. Interview data</b>	<b>29</b>
<b>References</b>	<b>30</b>

## **ABSTRACT**

Environmental, social and governance (ESG) funds are among the fastest growing investment styles. ESG funds can be used either to only mitigate risk (input ESG) or to go beyond that to create impact (output ESG). We argue that the governance by ESG is characterised by three potential transmission mechanisms: ratings, shareholder engagement and capital allocation. These mechanisms can create sustainability impact or constitute 'ESG gaps', if they remain ineffective or unutilised. Based on financial data, an investigation of ESG methodologies and expert interviews, we provide a novel market analysis of the ESG industry, focusing primarily on the capital allocation mechanism. Our findings highlight that while ESG indices could have an impact, most currently do not meaningfully facilitate sustainability – we call this the 'ESG capital allocation gap'. This has important implications because without effective transmission mechanisms, ESG funds cannot have sustainability impact on companies and the real economy.

## INTRODUCTION

Sustainable finance has been growing rapidly in recent years. This paper focuses on ESG (environmental, social and governance) investment funds as a crucial pillar of sustainable finance.<sup>1</sup> ESG funds received record inflows of USD 650 billion in 2021, up from USD 285 billion in 2019 and virtually zero a few years before that (Kerber and Jessop, 2021), with asset managers expecting this trend to continue over the next decade (IIA, 2021). Essentially, these funds integrate environmental, social and governance criteria into investment products and services – in addition to purely financial criteria. However, to date, ESG funds have been largely unregulated in how they create impact as emerging regulation in the EU and the US has focused primarily on increased transparency through better disclosure. Therefore, the sustainability effect of ESG funds remains unclear. Arguably the key open question is whether ESG merely reduces environmental, social and governance risk for investors ('input ESG') or whether this type of investing can have sustainability impact on firms ('output ESG'). This paper investigates the governance of and by ESG funds. Historically, the governance of ESG was characterised by a market-driven entrepreneurial setting of de facto standards by the leading firms. ESG funds thereby developed particular standards that may have governing effects on corporations. We argue that governance *by* ESG is characterised by three potential *transmission mechanisms*: (1) ratings, (2) shareholder engagement, and (3) capital allocation. Through these transmission mechanisms, ESG investing can either have sustainability impact or constitute what we refer to as 'ESG gaps', if they remain ineffective or unutilised.

In industry and policy debates, ESG investing is often framed as having a significant impact for advancing sustainability and tackling climate change (Caldecott et al., 2022, Kölbel et al., 2020). However, the underlying criteria and potential benefits of ESG are highly controversial (Pollmann, 2022). Many advocates see ESG as a meaningful way to address pressing issues, such as labour standards, board composition or biodiversity loss and – most importantly – climate change (Caldecott et al., 2022). In contrast, most critics see ESG mainly as corporate window dressing without significant positive long-term impact – either for the environment or for investors, employees or corporations (Buller, 2020; Baines and Hager, 2022; Harmes, 2011). One ex-industry insider has even claimed that ESG is 'a dangerous placebo that harms the public interest' (Edmans, 2021) because it arguably does not have the impact that many people assume. Similarly, the former head of ESG of a large European asset manager recently argued that

---

<sup>1</sup> Essentially, sustainable finance can be divided into three different segments: green bonds, green loans and ESG funds. Green bonds and loans represent financial instruments with which firms raise funds that are earmarked for specific 'sustainable' purposes. In contrast, ESG funds buy shares that firms have already issued. Hence, there are no 'green' shares of listed companies but rather more or less 'green' companies.

‘ESG today is meaningless – you have to define what it is’ (Mundy and Talman, 2022).<sup>2</sup>

Because there is no internationally recognised definition of what constitutes an ESG fund, estimates of the global ESG assets differ enormously (see Deutsche Bundesbank, 2019). According to the Global Sustainable Investment Alliance (GSIA, 2020) sustainable investment funds have reached USD 35.3 trillion in assets under management (AUM) in 2020, a 55% increase since 2016; this would amount to almost 36% of all professionally managed assets. This surprisingly high figure arguably results from the fact that GSIA (2020) defines sustainable investing very loosely as ‘an investment approach that *considers* ESG factors in portfolio selection’ [emphasis added] – which is known as ‘ESG integration’. In contrast, one estimate by Morningstar for March 2021 put the value of assets in ‘sustainable’ funds at USD 3.4 trillion (Quinio, 2022) – less than one tenth of GSIA’s estimate. Further, the subsequent Morningstar estimate for September 2021 stated the value of sustainable funds at only USD 2.03 trillion (Quinio, 2022). Had ESG funds suffered massive outflows of well over USD 1 trillion in this short period of time? Had financial market valuations dropped by over one third in six months? No; what happened was that parts of the European Union’s new Sustainable Finance Disclosure Regulation (SFDR) were applied from March 2021 onwards (European Commission, 2021). As a result, Morningstar tightened its criteria for classifying funds as ‘sustainable’ which caused the figure to decline significantly.

**Table 1. Estimates of global ESG investment assets**

<b>Data provider</b>	<b>ESG investment estimate</b>	<b>Further information</b>
Bloomberg	\$793 billion (Q1-2022)	ESG funds; dataset from Bloomberg Terminal compiled with ‘fund screener’ function
Morningstar	\$2,030 billion (Q1-2021)	All sustainable investment funds
Broadridge	\$8,000 billion (Q3-2021)	All fund assets (mutual funds, ETFs, institutional mandates, private funds)
Global Sustainable Investment Alliance	\$35,301 billion (Q4-2020)	All ESG assets, including ESG integration (\$25,000 billion)

Source: Data collected by the authors.

<sup>2</sup> Note that this paper is primarily concerned with ESG funds for private retail investors; public pension funds also often invest in a ‘sustainable’ way but mostly use segregated accounts or in-house investment strategies for which data are not publicly available.

Given the conceptual confusion about ESG criteria (see Table 1), we see vastly different estimates regarding the share of ESG funds in total investment assets, which range from 1% (Bloomberg) to 8% (Broadridge, 2021) and even 36% (GSIA, 2020). According to GSIA (2020), Europe has a share of 34% of all global sustainable funds, whereas Morningstar (2022) states that Europe's share is 81%. Most sources agree that the European Union is leading in ESG funds with the US being the second largest region; Asia and other regions have much less ESG fund assets; however, it is very difficult to measure this precisely. Clearly, ESG is a very fuzzy term. This is primarily due to the vague category of 'ESG integration', which in practice means that 'money managers may be "aware of" and "take into account" ESG factors when making investment decisions (...). But they're not necessarily compelled to act on that information' (Kishan, 2020).

One key reason for the confusion and controversy around ESG is, arguably, that historically there was no public regulation which precisely defined what ESG is and what it is not.<sup>3</sup> In the absence of public regulation that defined sustainable finance, *governance of ESG* was instead facilitated by a burgeoning private industry for ESG investment tools (data, ratings, indices) that has developed over the last two decades and which has consolidated into a handful of globally dominant firms in recent years (European Commission, 2020; ESMA, 2022). While existing literature has mostly analysed ESG data and ratings, our focus is on ESG indices and their role in capital allocation. We argue that the largest ESG index providers and benchmark administrators de facto set the international standards of how funds have to be structured to be accepted as 'ESG' or 'sustainable'. Standard setting capabilities of private firms in a specific issue area can either be delegated by states or, alternatively, private actors develop their own standards in an entrepreneurial fashion and persuade others to adopt them (Green, 2010, 2014). ESG standards can be seen as an example of what Bütte and Mattli (2011) have called 'market-based' private regulation, which 'entails rule-making by firms (...) to establish their preferred technologies or practices as the de facto standard through market dominance or other strategies' (ibid. 14).

The vastly varying estimates for ESG investment above demonstrate that 'greenwashing' – which can be defined as 'a public image of environmental responsibility promulgated by or for an organisation, but perceived as being unfounded or intentionally misleading' (de Freitas Netto et al., 2020)<sup>4</sup> – is an inherent potential problem of the currently still largely unregulated ESG industry. Importantly, greenwashing can be intentional to gain an advantage in the market but it can also be unintentional, due to the fact that public regulation and a specific definition of ESG has not existed during the formative period of the industry. We argue in this paper that we are currently in the transition between the unregulated entrepreneurial phase of the development of the ESG industry and a more

<sup>3</sup> In the conclusion, we discuss current regulatory efforts by the EU and US in light of our findings.

<sup>4</sup> Furthermore, the term 'impact washing' has been proposed as 'using the term impact as a marketing tool to attract capital or boost reputations without actually focusing on material solutions to environmental and societal challenges' (Busch et al., 2021:32).



standardised period that is beginning to emerge with both the EU and the Securities and Exchange Commission (SEC) in the US launching regulatory initiatives concerning ESG (Caldecott et al., 2022).

Better defining and regulating ESG investing is thus a key objective for researchers, regulators and policymakers. As Clapp and Helleiner noted (2012: 492), scholars ‘need to devote much more attention to the environmental implications of the actual everyday functioning of financial markets’. One crucial element of sustainable investing that has so far been largely neglected by research and regulation is the *governance by ESG* – especially the role of the *transmission mechanisms* through which ESG funds are supposed to have sustainability impact on firms (output ESG). Without such sustainability impact, ESG investing would not have significant positive effects on the real economy, which is, however, widely assumed by regulators, policymakers and civil society (Caldecott et al., 2022).

The purpose of this paper is thus two-fold. First, we analyse the governance and regulation of the ESG industry; second, we provide a novel analysis and discussion of the transmission mechanisms via which sustainability impact by ESG funds on publicly listed companies could take effect. We argue that this *governance by ESG* is characterised by three potential transmission mechanisms: (1) ratings, (2) shareholder engagement, and (3) capital allocation. While existing research has largely focused on what we call the ‘ESG ratings gap’ and ‘ESG shareholder engagement gap’, we focus on capital allocation. We identify the crucial role of ESG indices in steering investment towards and even defining what is considered sustainable investment. Along with secondary literature and policy documents, our analysis draws on an extensive dataset on ESG funds (n=1,110) combining various data sources (Bloomberg Terminal, Market Insider, Morningstar, ESG fund/index prospectuses). This quantitative data is complemented with qualitative interview data from industry experts and practitioners (n=9).<sup>5</sup> Our findings highlight that while ESG indices could have a sustainable effect via capital allocation, currently most do not meaningfully facilitate sustainability. We call this the ‘ESG capital allocation gap’. These findings have important implications because without effective transmission mechanisms, ESG funds cannot have sustainability impact on portfolio firms.

The high academic and societal relevance of this topic is primarily rooted in the ongoing process of determining the role of investors and financial markets in mitigating global climate change. If greenhouse gas (GHG) emissions are not reduced drastically in the near future, the collapse of food production systems and social institutions in some countries is a realistic possibility within this century (Paterson, 2020). Moreover, in the medium to long term, not sufficiently mitigated climate change would become a severe and pervasive risk that could not be diversified away by investors (Crona et al., 2021). In the words of Mark Carney (2019): ‘The task is large, the window of opportunity is short, and the stakes are

<sup>5</sup> See list of all interviews in Appendix.

existential'. By assessing sustainable transmission mechanisms through ESG investing, we contribute to ongoing debates about the effectiveness of financial markets in mitigating climate change.

This paper is structured in five sections. Section 2 discusses the relationship between governance and ESG, including the history of ESG investing (governance of ESG) and potential ESG transmission mechanisms (governance by ESG). Section 3 provides a novel analysis of market concentration in the segments of ESG funds and indices. Section 4 focuses on how ESG indices are constructed and why their methodologies matter for ESG transmission mechanisms. The final section concludes.

## GOVERNANCE AND ESG

There are two distinct but interconnected aspects when it comes to the relationship between governance and finance: the 'governance of' and the 'governance by' finance. On the one hand, there is the question how finance itself is governed. This has been a long-standing debate on the roles of and interactions between public and private actors in the governance and regulation of financial markets (Helleiner, 1996; Underhill and Zhang, 2008; Moschella and Tsingou, 2012). In addition to the enormous influence of financial actors on public regulatory processes (Young, 2013), finance has been marked by private self-governance where financial industry actors have 'often provide[d] the rules or help[ed] public sector regulators in the formulation and implementation of policies' (Moschella and Tsingou, 2013: 409). Market concentration (Büthe and Mattli, 2011), private authorities (Sinclair, 2014) and industry associations (Porter, 2011) which set the standards that govern finance (also Young, 2013: 470-471) play key roles here. As Section 2.1 highlights, the case of ESG mirrors this 'governance of' finance more broadly – with private governance of ESG through standard-setting emerging once ESG turned from a niche to a mainstream phenomenon in the mid-2000s.

On the other hand, finance itself has a governing effect qua its intermediating role – financial markets have an important impact on corporations through setting standards for and monitoring corporate governance (Lazonick and O'Sullivan, 2000; Cioffi, 2009). Importantly, this 'governance by' finance can lead to very different outcomes. For instance, as Monciardini and Conaldi (2019: 243) outline, corporate governance regimes can be public-oriented by taking into account labour/stakeholders or shareholder value-oriented.<sup>6</sup> Creating a framework for studying the 'governance by ESG', Section 2.2 outlines the potential transmission

---

<sup>6</sup> In the case of Corporate Social Responsibility (CSR), these differences then result in either 'impactful' or 'instrumental' CSR which more narrowly focus on financial risks/profits (Monciardini and Conaldi, 2019: 243); this distinction follows the same logic as 'input ESG' (focus on financial risks) and 'output ESG' (focus on sustainability impact).

mechanisms through which ESG investing can have governing effects on corporations as well as what its characteristics are – whether it focuses on financial risks (input ESG) or creates sustainability impact (output ESG).

### **Governance of ESG: from Sustainable Finance 1.0 to 3.0**

The governance of ESG can be broadly separated in three historical phases, from its unregulated beginnings to a period marked by market-based private standard-setting and the current period of emerging public regulation. The origin of ESG investing can be seen in the anti-apartheid movement when investors from Europe and North America sought to avoid investment in companies active in South Africa. Even earlier attempts to do ‘socially responsible investing’ focused on excluding so-called ‘sin stocks’ (alcohol, tobacco and gambling) from investment portfolios and have been mainly pursued by religious groups (Camilleri, 2017). Busch et al. (2021) have called this first period of ‘sustainable’ investing that relied exclusively on avoiding exposure to unethical firms ‘Sustainable Finance 1.0’.<sup>7</sup> This approach to fully or partially exclude specific firms or entire industries (e.g. coal) is still an integral part of ESG investing today and is referred to as ‘negative screening’ (see Deutsche Bundesbank, 2019; Kölbel et al., 2020). Overall, this ‘sustainable’ investment style developed largely outside of public regulation and was primarily defined by the individual investment decisions of fund managers.

The ‘Sustainable Finance 2.0’ era was then characterised by the development of sustainable investing from a niche phenomenon to a mainstream investment product (Busch et al., 2021). In this period, the primary purpose was not to avoid unethical firms, but mainly to manage financial risks related to environmental, social and governance factors (Crona et al., 2021). Arguably the launch of the first ESG ETFs (exchange traded funds) in the early 2000s marks the beginning of this period, as ETFs are easily tradable investment products aimed at retail investors (Braun, 2016; Fichtner et al., 2017). Moreover, the term ESG was coined in 2004 in a report by the United Nations Global Compact (Pollmann, 2022). The UN Principles for Responsible Investment (PRI) launched in 2006 created a broad framework for sustainable investing but did not provide specific definitions or standards for ESG. In the absence of public regulation, this period saw the dynamic development of various ESG ratings, data and indices as tools of self-governance for this growing area of finance. This was followed by the rapid consolidation of the ESG industry into a few big firms (Dimmelmeier, 2022). As a European Commission report noted:

‘Larger players have acquired smaller and regional specialists increasing their market share, decreasing the number of market players, and making it more difficult for new entrants to compete. The major barrier to market entry is the

<sup>7</sup> In 1990, the first sustainable index was created (Domini 400 Social Index; now MSCI KLD 400 Social Index) and by 1994 investors had access to 26 sustainable funds with USD 1.9 billion of AUM (Blackbaud, 2021).

high-level investment needed to establish an alternative product that covers a broad range of sustainability issues across thousands of companies'. (European Commission, 2020).

In the Sustainable Finance 2.0 period small retail investors and large institutional asset owners increasingly invested in 'mass market' ESG funds enabled and standardised by these large ESG data, rating and indices providers. These ESG standards are an example of 'market-based' private regulation, where firms 'establish their preferred technologies or practices as the de facto standard through market dominance or other strategies' (Büthe and Mattli, 2011: 14). This period, however, has almost exclusively been focused on input ESG, that is managing risks (Taylor, 2022).

According to Busch et al. (2021), the 2015 Paris Agreement marks the transition towards 'Sustainable Finance 3.0' (see also Deutsche Bundesbank, 2019). The advent of the UN Sustainable Development Goals (SDGs) and the increasingly understood urgency to keep global warming below +2.0°C induced a stronger focus on the positive real-world *impact* of sustainable finance (output ESG). Since then, policymakers and regulators had also become increasingly involved with ESG investing (see Conclusion). Importantly, the standards set within the ESG industry may have important governing effects on the companies into which ESG funds invest. For Busch et al. (2021: 33) a central question in this current phase of sustainable finance is: 'Which investments are real-impact investments and which investments are not?' However, scholarly work on such investment impact and the mechanisms through which it is supposed to be achieved is still very scarce.

### **Governance by ESG: the (potential) transmission mechanisms**

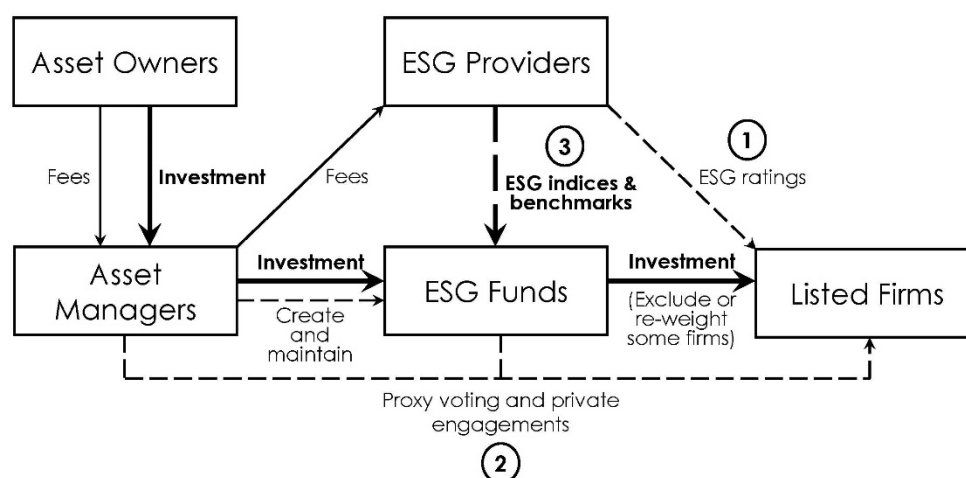
Similar to a broader focus on how finance influences corporate governance practices (Cioffi, 2019; Monciardini and Conaldi, 2019), this paper aims to assess the governing effects of ESG funds; particularly: how can ESG investing create sustainability impact? According to Wilkens et al. (2022: 5), 'sustainable investments have an impact if they themselves have a positive effect on reality (such as the real economy, the environment and society) regarding the respective sustainability goal ("additivity")'. Consequently, we define sustainability impact as when ESG funds have significant positive effects on the environmental, social and governance profiles of the firms in their portfolio. Put differently, sustainability impact is a change in companies' behaviour and real-world outcomes caused by ESG funds. As Caldecott et al. (2022) noted, it is much less important to discuss which assets can be considered 'green' or 'sustainable' but rather *how* financial products seek to improve sustainability.<sup>8</sup> In other words, one

<sup>8</sup> Caldecott et al. (2022) identify three mechanisms through which sustainable finance could impact the real economy: increasing the cost of capital for unsustainable activities, reducing access to liquidity for unsustainable activities, and finally changing corporate practices.

needs to consider the *transmission mechanisms* through which ESG investing can influence the actions of listed companies.

In the absence of public regulation, market-based private regulation (Büthe and Mattli, 2011) determines the effectiveness of these mechanisms in governing corporate behaviour in what we refer to as the ‘ESG investment chain’ (see Figure 1). Investment (shown as bold arrows in the figure) flows from asset owners via the ESG funds provided by asset managers into the stocks (or bonds) of publicly listed firms. Asset owners pay fees (shown as narrow arrows) to asset managers; asset managers pay fees to ESG providers to use their ESG indices/benchmarks or ratings. Nowadays, asset owners mostly invest via asset managers and the ESG funds they offer, which can either be actively managed funds or passive funds. Noteworthy here is the crucial role that indices play in this age of asset management (see Jahnke, 2019a, 2019b; Petry et al., 2021). Active ESG funds usually have a non-ESG benchmark index against which their performance is being evaluated, while passively managed ESG funds directly replicate a specific ESG index.

**Figure 1. The ESG investment chain and potential transmission mechanisms**



Source: Authors.

Overall, we posit that in the ESG industry there can be three potential sustainable transmission mechanisms: (1) ratings, (2) shareholder engagement, and (3) capital allocation (see Figure 1). If the mechanism is effective and utilised, it can have a sustainability impact. If the mechanism does not work or is not utilised effectively, we observe an ‘ESG gap’, i.e. the ‘ESG ratings gap’, the ‘ESG shareholder engagement gap’ and the ‘ESG capital allocation gap’. Each of these mechanisms works at a different part of the ESG investment chain: (1) The ratings mechanism provides investors with tools to make informed decisions about sustainable investing, namely through using ESG ratings and data; this mechanism also



includes potential indirect impacts on companies via ESG ratings, i.e. incentives for them to improve their ESG ratings. (2) The shareholder engagement mechanism comprises proxy voting at annual general meetings and public or private engagements with top management to directly influence corporate activities. (3) The capital allocation mechanism steers investment into pre-defined sustainable investment categories, namely through ESG indices and benchmarks. These mechanisms for ESG funds are also consistent with the transmission mechanisms that were identified within sustainable investing more broadly (e.g. Kölbel et al., 2020; Caldecott et al., 2022). As the next subsection demonstrates, the few existing studies have mostly focused on ESG ratings and shareholder engagement mechanisms, while capital allocation through ESG funds has not been sufficiently studied.

### **The gaps we know: (the lack of) governance via ESG ratings and proxy voting**

With respect to the three potential transmission mechanisms, the small existing literature (see Wilkens et al., 2022 for an overview) has mostly focused on ESG ratings and proxy voting, investigating the sustainability impact through the first two mechanisms we identified – the rating and shareholder engagement mechanisms. This literature generally points towards a lack of sustainable governance through these mechanisms.

(1) The ESG ratings mechanism provides investors with tools to make informed decisions about sustainable investing, namely through using ESG ratings and data; this mechanism also includes potential indirect impacts on companies via ESG ratings, i.e. incentives for them to improve their ESG ratings. These *indirect company rating impacts* comprise stigmatisation, endorsement and (ESG) benchmarking (Kölbel et al., 2020). Indirect impacts may arise when investors influence third parties, which in turn have an impact on companies. Ansar et al. (2013) have argued that stigmatisation might have a significant impact on the fossil fuel industry. ESG ratings and benchmarking of firms may create incentives for them to improve their ESG scores. Despite the centrality of ESG funds and indices there is currently neither public regulation nor private self-regulation (e.g. through industry standards; see Young, 2013) of the underlying ESG ratings. In addition, internationally standardised reporting requirements for listed firms to disclose ESG-relevant information, such as greenhouse gas emissions, have not yet been developed.<sup>9</sup> This means that ESG rating providers use various sorts of public and private data sources to measure but often just to estimate specific environmental, social and governance criteria.

Consequently, ESG ratings are hugely inconsistent, a fact that has been pointed out by several scholars. Reportedly, there are over 150 ESG providers globally

<sup>9</sup> In 2021 the International Sustainability Standards Board (ISSB) was founded to develop global sustainability reporting standards.

(Pollmann, 2022); however, only a few large firms matter (ESMA, 2022). One study has analysed and compared the ratings by six prominent ESG rating providers and found a strong divergence in the key building blocks of ratings (scope, measurement and weightings) – or, in other words, ‘aggregate confusion’ (Berg et al., 2022; see also Billio et al., 2020). Moreover, another study found that ESG providers retrospectively revise their own ratings, to the extent that ‘not a single ESG score was the same across the two versions’ of the same dataset (2018 vs 2020) (see Berg et al., 2020: 2).

Hence, there are no agreed upon standards of what ESG actually is and what it is not. We call this the ‘ESG ratings gap’. A recent OECD study (OECD, 2020) highlights this ‘ESG ratings gap’ by demonstrating the great discrepancies between ESG ratings and credit ratings. While the variance of different credit ratings for individual companies is minimal, ESG ratings diverge hugely. Importantly, this ESG ratings gap means that there are arguably no strong incentives for corporations to significantly improve their sustainability ratings, and it also translates into a lack of trust on behalf of investors. According to a recent PwC survey (2021), only 40% of investors trust the scores from ESG rating providers, while only 30% rely on ESG ratings to a significant extent when making their investment decisions.

More recent regulatory initiatives, like the EU taxonomy for sustainable activities, may certainly help to establish which corporate activities are sustainable from an environmental, social and governance perspective. However, major difficulties remain. Firstly, most publicly listed corporations are (to some extent) conglomerates and thus have multiple divisions that have quite different ESG footprints.<sup>10</sup> Furthermore, ESG funds cannot invest in individual divisions but only in entire companies. Secondly, as Crona et al. (2021: 620) have argued, ESG ratings in their current form capture primarily ‘financial materiality’ (i.e. financial risk) and largely fail to account for investment externalities (‘aggravation risk’) that play a crucial role for climate change and other sustainability issues. In other words, ESG ratings are about input ESG, not output ESG. Finally, deciding which activities are ‘ESG’ is often complex and politicised, as the disagreement in the EU about whether to include gas and nuclear into the taxonomy shows. In recent years, asset owners, asset managers, non-governmental organisations and regulators have increasingly realised that the ambiguity and the vagueness of what ESG means can be very problematic. Overall, it seems unlikely that the ‘ESG ratings gap’ will be closed in the near future and thus ESG ratings will probably not constitute a strong transmission mechanism.

(2) The ESG transmission mechanism through direct shareholder engagement includes two components: exercising the voting rights attached to the shares to directly influence corporate activities and having meetings with top management, which are called private engagements. Public engagement, via press statements, interviews etc. is also a possible form of engagement. In their literature review,

<sup>10</sup> Interview\_8.

Kölbel et al. (2020) have found high success rates of shareholder engagement between 18% and 60%. Hence, in principle, shareholder engagement seems to be a strong transmission mechanism for ESG funds to have a positive real-world impact (see Busch et al., 2021; Krahn et al., 2021). However, as currently practised, ESG investing is entirely defined by what Busch et al. (2021) call ‘pre-investment approaches’, such as exclusions and ‘best-in-class’; post-investment approaches, such as voting and engagement, are rarely defined in the prospectuses of ESG funds as integral components to create a sustainability impact for investors. We call this the ‘ESG shareholder engagement gap’. This is supported by previous research on proxy voting, which has found that, historically, large asset managers tended to vote all their funds (active, passive, ESG) similarly (Fichtner et al., 2017; Lipton, 2017), and by studies outlining that many asset managers have voted mostly against ESG shareholder proposals (Baines and Hager, 2022; de Groot et al., 2021; Golland et al., 2022; Griffin, 2021). Other recent research, however, has found indications that ESG funds are beginning to vote differently from non-ESG funds (Quinn et al., 2021; Dikolli et al., 2022). Azar et al. (2021) have found the first evidence that private engagements by big asset managers have been associated with decreased GHG emissions of the engaged firms in subsequent years. More research is needed on both proxy voting and private engagements linked to ESG, but it seems clear that shareholder engagement constitutes an important potential transmission mechanism for sustainability, which could be facilitated and made much more transparent by mandatory industry standards.

(3) The ESG capital allocation mechanism steers investment into pre-defined sustainable investment categories, namely through ESG indices and benchmarks – with the concomitant divestment from non-sustainable shares creating a negative impact, e.g. fossil fuel firms. Divestment is the major element of *capital allocation* and constitutes a potential transmission mechanism from financial markets to the real economy insofar as it could increase the cost of capital for companies whose stocks are being divested. Important theoretical groundwork for this mechanism has been done by Heinkel et al. (2002), which was refined by Zerbib (2022). While Hansen and Pollin (2020) found that divestment campaigns had no significant financial impact on fossil fuel firms thus far, Hong and Kacperczyk (2009) and Kölbel et al. (2020) report that divestment may have small to medium impact. However, recent work presented first evidence that divestment pledges from oil and gas companies are indeed associated with lower capital flows to such firms (Cojoianu et al., 2020). As Wilson and Caldecott (2022) emphasise, ‘capital allocation is a key transmission mechanism to drive alignment with climate outcomes’ since it can affect asset prices and the cost of capital faced by companies in the real economy (see also Caldecott et al., 2022). Notably, Rohleder et al. (2022) have found evidence that mutual funds can have a very significant effect on the stock prices of listed firms via what they call ‘decarbonisation selling pressure’ and thus divestment may have a strong sustainability impact.

The subsequent section therefore analyses whether ESG funds facilitate sustainability impact through capital allocation. Specifically, we focus on which

actors have standard-setting capabilities to influence capital allocation (governance by ESG) and its sustainability impact (input ESG or output ESG).

## **CAPITAL ALLOCATION AND ESG FUNDS: WHO SETS STANDARDS FOR SUSTAINABLE FINANCE?**

Who and what matters for sustainable capital allocation in the ESG funds industry? To address this question, we created a large dataset on existing ESG funds. For this, we extracted the data of all investment funds that are classified as ESG (including ‘socially responsible’ and ‘environmentally friendly’) in the Bloomberg Terminal using the ‘fund screener’ function. The resulting dataset contains data on 1,110 ESG funds with total AUM of USD 793.21 billion (as of 10 February 2022).<sup>11</sup> Especially as the definition of what is and what is not considered ESG is subject to ongoing debates and discussions, we decided to base our calculations on Bloomberg Terminal data for several reasons. First, the total sum of ESG funds in our dataset (USD 793 billion) is at the lower end of the spectrum of estimates of how much AUM are allocated to ESG funds (see Table 1), allowing for a more precise analysis, and excluding many ‘ESG integration’ funds that increase the size of the ESG industry without actually trying to create a sustainable ESG impact via one of our identified transmission mechanisms. If ESG investing has a sustainable effect, it would be much more easily observable in this narrower dataset. Second, our Bloomberg-based dataset allows us to link ESG funds with the issuing entities (fund managers) and – most importantly – the underlying ESG indices that are being tracked (passive funds) or used as benchmarks (active funds). This enables us to calculate market shares of ESG index providers and ESG asset managers (after manual data completion). Overall, we thus posit that this represents a reliable and replicable data source for an analysis of the ESG industry.

In a second step, we analysed the 250 largest ESG funds from this dataset in closer detail. As the data extracted from Bloomberg was partially incomplete, we cleaned the dataset and added missing as well as additional data points such as underlying indices, benchmarks, tracking errors and active share through a manual analysis of individual fund websites, prospectuses and other financial databases (e.g. Markets Insider, Morningstar). These 250 largest ESG funds account for 84.3% of AUM from our total dataset (n=1,110) and are therefore a sufficient basis for analysis.<sup>12</sup> These funds were analysed based on the following categories: active or passive management; asset type; benchmark (active funds) or underlying index (passive funds); index provider; management company; total AUM; tracking error and active share. Subsequently we calculated the market share of index providers and asset managers. Finally, ESG indices were

<sup>11</sup> While our dataset contains a few mixed-asset/bond funds, equity funds constitute over 90% of the AUM and are the focus of this analysis.

<sup>12</sup> Smaller funds are thus beyond the scope of this analysis.

categorised according to their sustainability potential on the basis of coded classifications provided by index providers (see Section 4).

This dataset provides us with the opportunity to analyse the ESG fund universe and allows us to identify the most important actors, their market share in the different segments, and – most importantly – their potential impact on the environmental, social and governance dimensions of investment. While current discussions of ESG have shed light on the ESG ratings and shareholder engagement mechanisms, contemporary scholarship has not yet adequately addressed issues of capital allocation with respect to the global ESG industry. Is this a level playing field with strong competition or do we have highly concentrated market structures – similar to credit rating agencies (Sinclair, 2014)? Do we have a situation where the ‘Big Three’ asset managers dominate the ESG funds landscape similar to the situation in non-ESG index funds (Fichtner et al., 2017) or do we see more dispersed market structure? On which basis are funds conducting sustainable investment – are they pursuing benchmark agnostic active strategies or are they relying on indices/benchmarks? Which indices are utilised by funds and what are the methodologies behind them? These questions are essential because they determine the governance of and by ESG via capital allocation.

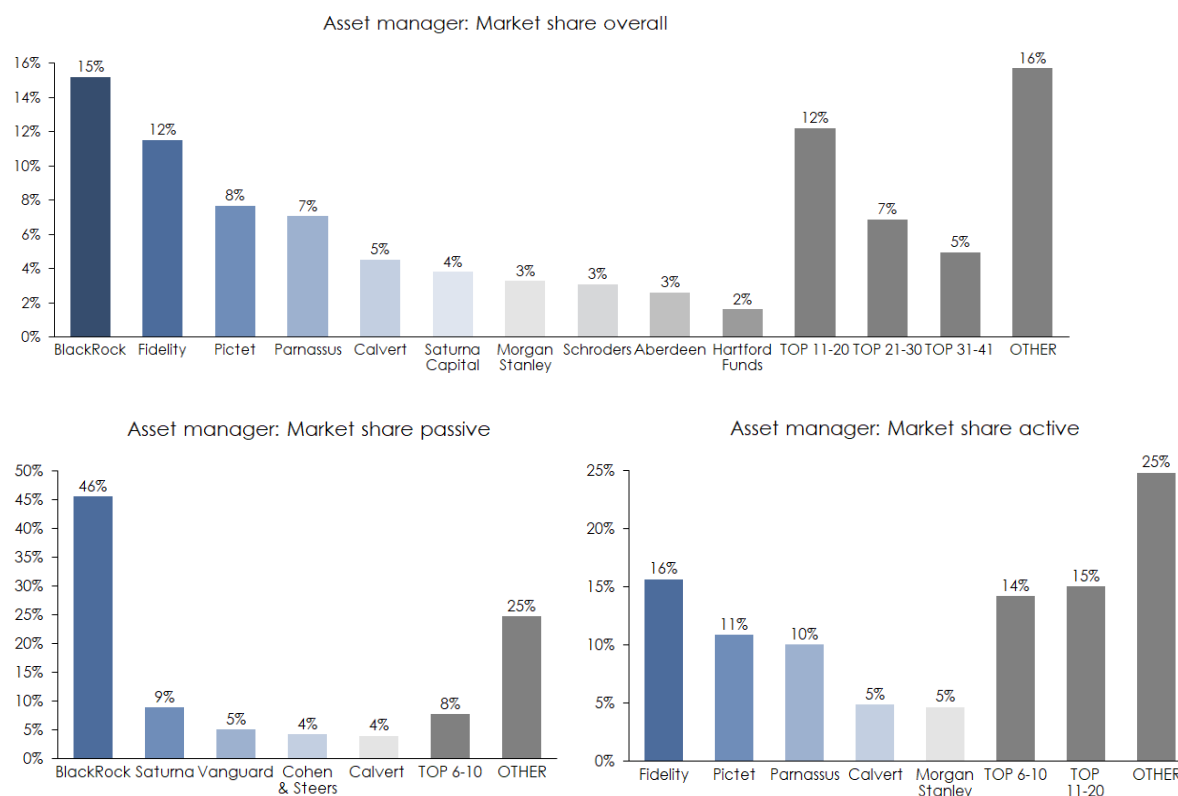
Crucially, high market concentration is a key precondition for any group of firms to have international standard-setting capabilities (Bütte and Mattli, 2011). While we only see a moderate concentration among fund managers, we show that ESG indices created by a handful of ESG index providers are really what matter when it comes to shaping ESG investment strategies. Specifically, our dataset enables us to analyse the role of indices in the ESG capital allocation mechanism and to pinpoint whether specific actors have the ability to set de facto standards on what constitutes sustainable investing and shape its impact.

### **Capital allocation and asset managers**

The first finding from our dataset (n=1,110) is that 71.8% of funds (by AUM) are actively managed whereas only 28.2% are passively managed. Importantly, passive investment into ESG funds has been rapidly growing in recent years, with their share of ESG funds increasing by more than 400% since 2017 and hence contributing the most to the expansion of ESG funds (Leaders Arena, 2020). This development is observable in both the US and the EU and is also in line with existing research on the ongoing shift from active to passive investment and its broader consequences for corporate governance and sustainability (Braun, 2016, 2021; Fichtner and Heemskerk, 2020; Galaz et al., 2018; Haberly et al. 2019; Jahnke, 2019a, 2019b). However, in contrast to the ‘Big Three’ asset managers which dominate the market for index funds, the results of our analysis indicate only a moderate degree of concentration in ESG funds. While five asset managers hold nearly 46% of the total market share in our dataset (Figure 2), the rest of the assets is rather dispersed among a broad range of companies.



**Figure 2. Market share of ESG funds by asset manager (upper figure = total; bottom lhs = passive; bottom rhs = active)**



Source: Authors' calculations based on Bloomberg Terminal.

This picture changes when dividing the dataset into active and passive funds. Whereas the observations in the active segment only slightly deviate from the overall concentration, with five companies holding 46% of AUM while the rest is rather dispersed, the passive segment is much more concentrated. Here, BlackRock manages 45.5% and only a few other asset managers have relevant market shares.

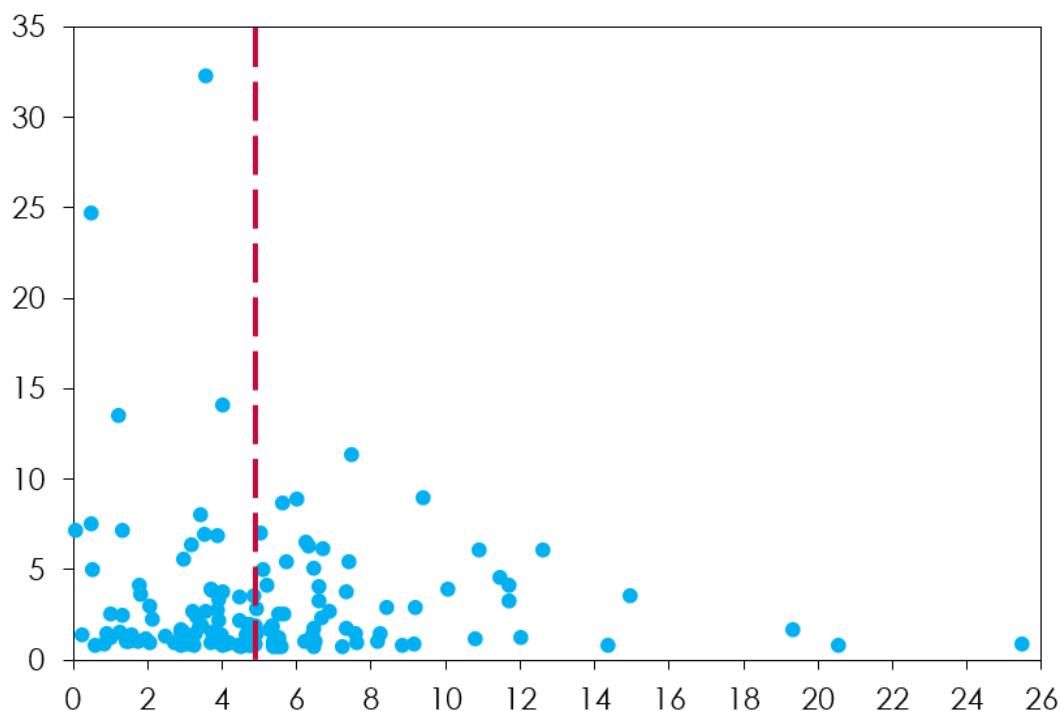
However, as pointed out previously, large asset managers, such as BlackRock and Vanguard, do not systematically use engagement and proxy voting as a means for positive sustainability impact (Baines and Hager, 2022; Brière et al., 2020; Golland et al., 2022; Griffin, 2021). Moreover, as previous research has found, passive asset managers are essentially delegating their investment decisions to those companies that determine the indices that their funds track (Jahnke, 2019b; Petry et al., 2021). We therefore posit that while they potentially could have an impact via the shareholder engagement mechanism, passive asset managers do not significantly influence capital allocation due to their reliance on ESG indices.

In contrast, the active ESG segment is too fragmented to lead to the formation of standard-setting capable asset managers that define ESG investing – first-placed Fidelity having only about 16% market share. Importantly, 87.9% of active ESG funds utilise non-ESG indices as benchmarks for their investment, while only 3.7% use ESG indices<sup>13</sup> and 8.4% do not disclose their benchmarks. This means that the baseline against which they assess their performance is decidedly non-sustainable and they would have to substantially deviate from this to have a sustainable capital allocation impact. But as a closer analysis of the active ESG funds in our dataset highlights, they hardly deviate from their non-ESG benchmarks. The weighted average tracking error between active ESG funds and their non-ESG benchmarks is only 4.88% (Figure 3), with especially larger funds closely following their respective benchmarks, a phenomenon called ‘index hugging’. ESMA (2016) considers up to 4% as ‘index hugging’, while truly benchmark agnostic investing has much higher tracking errors of above 8%.<sup>14</sup> The low tracking errors are arguably due to what Petry et al. (2021: 162) called the ‘pull effect’ that indices have on active management, since indices now mechanically move ever larger parts of the markets. Similar to passive funds that track indices, active ESG funds are thus to a large extent effectively delegating their investment decisions to index providers.

<sup>13</sup> These are all Broad ESG indices (see Section 4).

<sup>14</sup> Another metric for assessing index hugging is the ‘active share’ of a portfolio, with index hugging defined as below 60%, somewhat active 60-80% and benchmark agnostic above 80%. The AUM-weighted average active share of the 20 largest active ESG funds (for which data is available) is 76.61%.

**Figure 3. Tracking error of active ESG funds (x-axis; in %) and fund AUM (y-axis; in USD billion)**



Source: Calculations by the authors.

Overall, our data suggest that asset managers on their own are unlikely to directly and meaningfully impact ESG capital allocation and their activities will thus probably not translate into effective sustainability effects. Instead, to a large extent they are relying on ESG indices for their investment decisions, which are supplied by index providers.

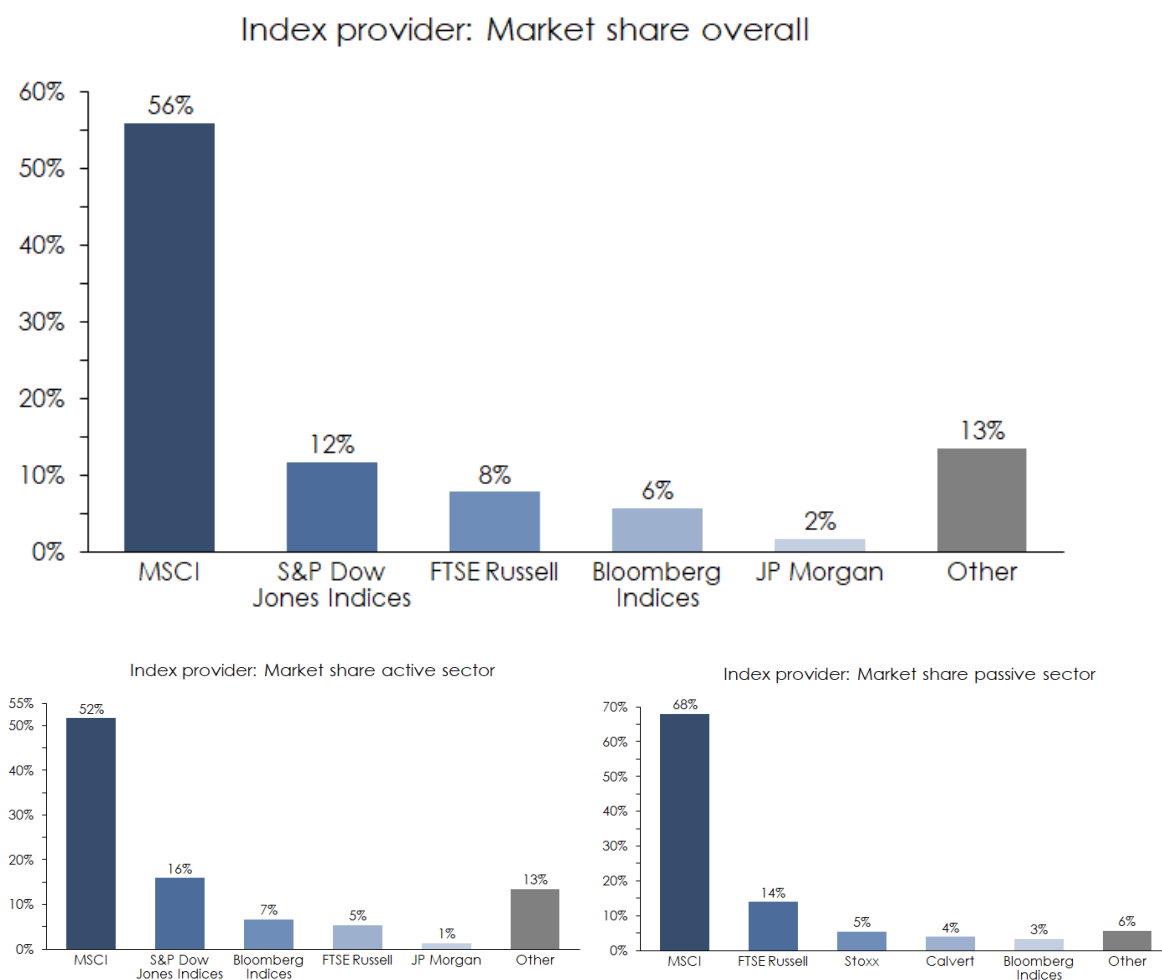
### **Capital allocation and ESG indices**

Globally, there are over 150 companies that provide ESG data, indices and ratings (Pollmann, 2022). But while ESG ratings do not have a large sustainability impact on ESG funds (Section 2.2), ESG indices are much more consequential.<sup>15</sup> The purpose of indices is to display the performance of a specific economic entity such as a nation's stock market (e.g. S&P 500) in one single number that is relatively easy to understand and comparable over time. Index providers – the companies that construct indices – have a particularly salient role in capital markets as their decisions whether assets are included or excluded from indices have a strong influence on capital allocation (Jahnke, 2019a, 2019b; Petry et al., 2021).

<sup>15</sup> Interview\_1, Interview\_8.

This is also the case for ESG investment. A survey by the Index Industry Association (IIA, 2021) highlights that 88% of investors use ESG indices as the basis for investment strategies, with ESG indices being either a core part of their portfolios (56%) or most of them (32%). Investors track indices for their investment strategies (39%), use them as benchmarks (40%) or both (19%). ESG indices therefore matter as they define which stocks (i.e. companies) are ‘sustainable’ and which not. As one interviewee working in ESG product development for a stock exchange noted, ‘essentially, the index providers define the rules of the game’.<sup>16</sup> In addition, we argue that a high concentration in the market share of individual index providers would translate into standard-setting capability over what is considered as ESG and what is not.<sup>17</sup> Such a capability would translate to direct influence over whether sustainable finance will help mitigating climate change and other pressing issues or not, because such a de facto standard-setter would significantly influence the capital allocation of ESG funds.

**Figure 4. Market share of ESG funds by index provider**



Source: Authors’ calculations based on Bloomberg Terminal.

<sup>16</sup> Interview\_7.

<sup>17</sup> Interview\_8.

The analysis of our dataset shows a very high concentration in the market for index provisions in both active and passive investing (Figure 4). In passive investing this translates to directly steering capital allocation as index funds fully replicate ESG indices. But this is also highly relevant for active funds, as our analysis above (see Figure 3) has found very low tracking errors of most actively managed ESG funds, which means that they diverge only slightly from their non-ESG benchmarks. Hence, indices also determine the capital allocation of active ESG funds. In both segments the market is in essence dominated by five companies which are slightly diverging between passive and active funds. In the active segment the five largest ESG providers hold 88.9% of the market share, while in the passive segment 93.6% of the AUM are based on the indices provided by the five largest providers. MSCI has a particularly prominent role with an overall market share of 56.8%, respectively 52.4% in the active and a striking 67.9% in the passive segment.<sup>18</sup> The ESG index industry is thus characterised by a highly concentrated market structure.

MSCI has emerged as by far the most dominant global provider of ESG indices. Partially, this is because MSCI is one of the very few fully integrated firms that are leading providers of ESG ratings, data and indices, which creates strong synergistic ‘network’ effects (Petry, 2021). Another factor that probably facilitated MSCI’s dominant role was to pursue the financial ‘value-oriented’ ESG methodology of Innovest and abandoning the ‘values-driven’ ESG methodology by KLD, the two large ESG providers that MSCI acquired in 2010 (Eccles et al., 2020). Crucially, the former methodology was much more compatible with financial metrics, including indices, complementing its synergistic business model. First-mover advantage via acquisitions, combined with large economies of scale and scope and such a market-compatible approach paved the way for MSCI’s success.<sup>19</sup> By deciding which assets are included into ESG funds via its indices, MSCI effectively defines what counts as ESG investment and could thus become a new kind of ‘focal institution’ in this issue area (Büthe and Mattli, 2011). As one interviewee noted, ‘MSCI is leading in ESG, they are setting the standards’,<sup>20</sup> a point that was confirmed by several interviewees.<sup>21</sup>

More than merely leading the market, MSCI is de facto setting global ESG investment standards. Rather than ESG ratings (which are often considered unreliable and diverge massively) and shareholder engagements by asset managers (whose ESG funds closely track indices), ESG indices are the tools through which – in theory – sustainability effects could be achieved via capital allocation. Consequently, we have to analyse whether this transmission

<sup>18</sup> This figure is in line with MSCI reporting data; In its ‘ESG Investing’ brochure, MSCI (2022g) noted that by Q4-2020 passive funds worth USD 105.1 billion tracked MSCI ESG indices.

<sup>19</sup> This is in line with Fransen and Conzelmann (2014) who argue that high industry concentration, business-driven governance and lenient standards lead to more cohesive private regulation.

<sup>20</sup> Interview\_2.

<sup>21</sup> Interview\_3, Interview\_4, Interview\_5, Interview\_8, Interview\_9.



mechanism actually materialises. We therefore investigate more closely according to which methodology MSCI (and other index providers) construct their ESG indices.

## **ESG INDEX METHODOLOGIES: A LOOK INSIDE THE ‘GREEN’ BOX**

In this section we take a closer look at how index providers design and construct their ESG indices. What are their underlying methodologies? What do they actually measure? And, crucially, does contemporary ESG investing have a sustainability impact via capital allocation or does it constitute an ESG gap? These are key questions because while index providers ‘standardise’ ESG investments,<sup>22</sup> ESG indices are not uniform – their methodologies vastly differ<sup>23</sup> in order to achieve widely diverging objectives: from promoting women’s leadership or excluding weapons manufacturers, performance-focused investment in ESG leaders (best-in-class approach) to impact-focused indices that aim to invest into green opportunities or align investments with the Paris Agreement.

Importantly, these indices have vastly different climate impacts. As a recent study by InfluenceMap (2021) showed, the average Portfolio Paris Alignment Score of Broad ESG funds is -6% compared to 0% for climate-themed ESG funds, and between -12% to -17% for global benchmark indices such as the MSCI World, S&P 500 and Stoxx Europe 600. Similarly, the Aggregate Fossil Fuel Reserves Intensity – how many tons of CO<sub>2</sub> emissions are released through USD 1 million of investment – is four times higher for Broad ESG funds than for Climate-themed funds (621 vs 173). The sustainability impact of ESG indices therefore varies significantly.

Rather than one third of global investments being ‘sustainable’ as claimed by financial industry bodies (GSIA, 2020), the question is how many ESG investments actually meet global climate mitigation targets as set out by the Paris Agreement. To address this issue, in a first step we created a classification of ESG indices across the three major ESG index providers, categorising these indices according to their climate impact. This categorisation is based on differences between ESG index investment objectives and the methodologies that underlie the construction of these indices (Table 2).

<sup>22</sup> Interview\_8.

<sup>23</sup> Interview\_2, Interview\_4, Interview\_7, Interview\_8.

**Table 2. Varieties of ESG indices**

	<b>MSCI</b>	<b>S&amp;P DJI</b>	<b>FTSE Russell</b>
Broad ESG	e.g. Global Environment, Women's Leadership, Impact, ESG Screened ex Fossil Fuel, Faith-based, SRI, KLD400, ESG Leaders, ESG Focus, ESG Universal Index	e.g. S&P ESG, ESG Select Equal Weight, Dow Jones Sustainability, DJSI Diversified, S&P Sustainability Screened, other Core ESG indices	e.g. FTSE ESG Index Series, Blossom Japan, Green Revenues, Global Climate Index, Women on Boards Leadership
Light Green	e.g. Ex Fossil Fuel, Low Carbon Index	e.g. S&P Global 1200 Fossil Fuel Free, Carbon Price Risk 2030 Adjusted Index	e.g. Climate Balanced Factor Index, FTSE4Good RAFI, FTSE4Good Global Minimum Variance Index
Dark Green (Paris Aligned)	e.g. Climate Change Index, MSCI Climate Paris Aligned Index	e.g. Paris Aligned and Climate Transition (PACT) Index	e.g. FTSE Climate Transition Benchmark (CTB), FTSE Paris Aligned Benchmark (PAB) Indices

Source: Data compiled by the authors from company websites.

The first level of ESG indices are *Broad ESG* (or ESG integration) indices. Generally, these indices have a very low sustainability impact since the methodology of these Broad ESG indices takes into account a plethora of different indicators. On the individual company level, these indices utilise MSCI's 'standard' ESG ratings. However, in this rating methodology, climate change is only one out of 10 pillars and carbon emissions are only one of 35 sub-issue areas that together constitute an ESG rating. For companies in the coal industry, for instance, carbon emissions only account for 13% of the overall ESG score (Table 3). Given that CO<sub>2</sub> emissions from coal consumption are one of the world's major drivers of climate change, it becomes clear that these standard ratings are not effectively mitigating climate risks.

**Table 3. MSCI ESG rating methodology for the coal industry**

ESG elements	Sub-issues
Environmental (40%)	'carbon emissions' (13%) 'biodiversity and land use' (10%) 'water stress' (10%) 'toxic emissions and waste' (7%)
Social (27%)	'health and safety' (10%) 'community relations' (10%) 'labour management' (7%)
Governance (33%)	'ownership and control', 'board', 'pay', 'accounting', 'business ethics', 'tax transparency' (aggregate score)

Source: MSCI (2022a).

On the aggregate index level, the question is then which scores/companies are included and how these companies are weighted. Take for instance the 'MSCI USA Extended ESG Focus Index' that underlies the largest passive ESG fund in our sample, BlackRock's 'iShares ESG Aware MSCI USA' fund which has USD 24.7 billion AUM. By aiming at creating 'risk and return characteristics similar to those of the MSCI USA Index [the parent index]', its tracking error is a minimal 0.5%, only excluding a handful of companies based on ESG criteria (e.g. tobacco, thermal coal and oil sands), and consequently this Broad ESG index hardly deviates from investing into its non-ESG parent index. Further, companies included into the 'MSCI USA Extended ESG Focus' Index do not require a minimum ESG rating (MSCI, 2020a). In addition, 2.5% of investment through this index goes into companies that hold fossil fuel reserves – compared to 3.6% in the non-ESG parent index and 0% for related but climate-focused indices such as the 'MSCI USA Choice ESG Screened' Index (MSCI, 2020a).

Broad ESG indices are not likely to create sustainability impact via capital allocation (output ESG) but are rather about safeguarding investment performance against adverse effects from climate change and state measures to mitigate it (input ESG). This is also noted by MSCI itself which states that 'MSCI's ESG ratings are designed for one purpose: to measure a company's resilience to financially material environmental, societal and governance risks. Our ESG ratings provide a window into one facet of risk to financial performance. They are not a general measure of corporate 'goodness', a barometer on any single issue or a synonym for sustainable investing' (MSCI, 2022b). FTSE Russell similarly notes that its Broad ESG index range is designed for 'investing in a world that's changing', rather than 'investing to change the world' (FTSE Russell, 2022). In other words, the capital allocation mechanism is ineffective for most Broad ESG funds.

The second level of ESG indices are what we call *Light Green* indices. These are ESG indices that aim to identify and minimise climate-related financial risks for

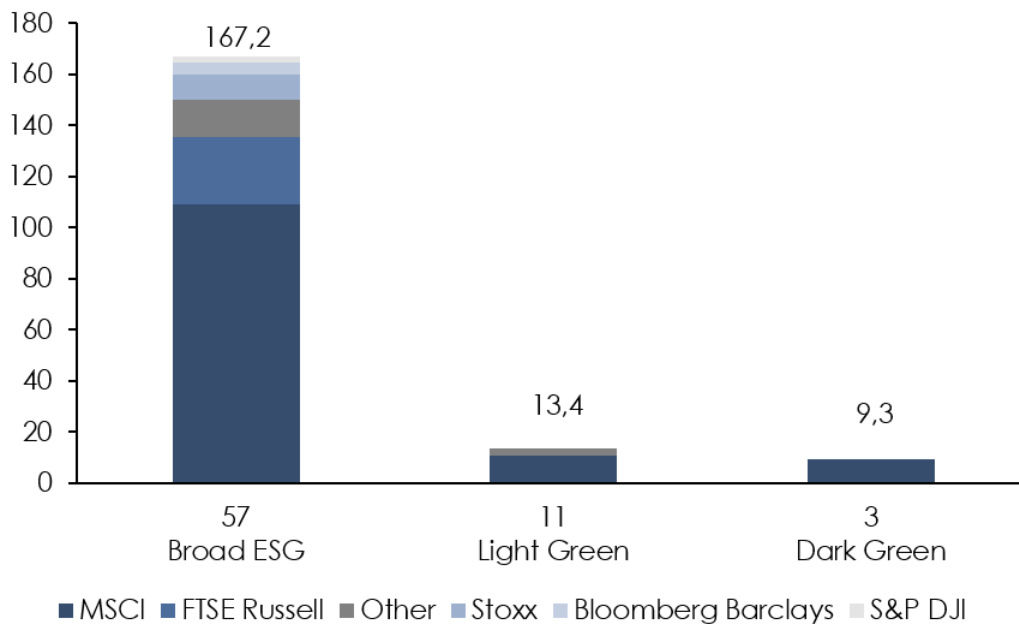
investors, largely by excluding fossil fuel and other carbon-intensive industries from their portfolios. In contrast to Broad ESG indices where environmental, social and governance factors are equally weighted, environmental factors are much more important in the construction of these indices. One example of this is the 'MSCI USA Minimum Volatility ESG Reduced Carbon Target' Index that underlies the 'iShares Edge MSCI USA Minimum Volatility ESG UCITS ETF', the largest Light Green fund in our sample with USD 1.71 billion AUM. Next to minimising volatility risk, this index aims to 'reduce the carbon-equivalent exposure to CO<sub>2</sub> and other GHG', reduce 'the exposure to potential emissions risk of fossil fuel reserves by 30%' and to 'improve the weighted-average industry-adjusted ESG score of the index portfolio by 20% with respect to their [...] parent index' (MSCI, 2022c). Instead of 133t CO<sub>2</sub> emissions for each USD 1 million of investment (non-ESG parent index), the Reduced Carbon Target Index only creates 52t CO<sub>2</sub> emissions. These indices also deviate substantially from their parent benchmarks, with a tracking error of 7.1% compared to 0.5% for the previously discussed Broad ESG index. However, while faring better than Broad ESG indices, these Light Green indices largely remain focused on mitigating risks for investors (input ESG) rather than facilitating impactful investment (output ESG), with the capital allocation gap remaining to a certain extent.

The third level of ESG indices are what we call *Dark Green* indices. These indices are geared to facilitate the transition toward a low carbon economy and are designed to exceed the minimum requirements of the EU Climate Transition Benchmark or EU Paris Aligned Benchmark. Take for example MSCI's USA ESG Enhanced Focus Climate Transition Benchmark (CTB) Index which underlies the iShares MSCI USA ESG Enhanced UCITS ETF (USD 5.0 billion), the largest Dark Green ESG fund in our sample. Rather than standard ESG ratings, these indices use MSCI's Low Carbon Transition scores that aim to 'increase exposure to companies participating in opportunities associated with transition and decrease its exposure to companies exposed to risks associated with transition' (MSCI, 2022d). Next to excluding coal and other companies with severe environmental or ESG controversies, these indices aim to: reduce GHG intensity by a minimum of 30% relative to the reference index; incentivise companies to set emissions targets, increasing weighting of companies which see opportunities from climate transition; have at least equivalent ratio of weighted average 'green revenues' to weighted average 'brown revenues' as that of the underlying investment universe; increase the share of green companies by up to 300% compared to parent index; and facilitate annual decarbonisation by reducing the weighted average GHG intensity by 7% on an annualised basis (MSCI, 2022e). Paris Aligned Indices follow similar but even stricter methodologies. In addition to coal, for example, 'MSCI Climate Paris Aligned' indices also exclude other fossil fuel sectors, have a 400% share of green companies compared to the parent index, a 50% minimum reduction in Weighted Average Potential Emissions Intensity and annual decarbonisation of 10% (MSCI, 2022f). While Light Green indices aim to achieve *some* degree of sustainability impact, the overall objective of Dark Green indices is to bring investment practices in line with the +1.5°C target of the Paris Agreement. Of all three ESG index categories, we argue that only funds that replicate or follow

Dark Green indices can be considered as holding genuinely sustainable assets in their portfolio. Dark Green indices could therefore potentially mitigate the ESG capital allocation gap and create substantial sustainability impact (output ESG).<sup>24</sup>

Drawing on our dataset, we categorised the indices that determine investment decisions of passive ESG funds on the basis of this classification. Out of all passive ESG funds, 57 funds (worth USD 167.2 billion) follow Broad ESG indices, representing 88.0% of total passive AUM. Light Green indices are only followed by 11 funds (worth USD 13.4 billion), representing 7.1% of AUM, while only three funds (USD 9.3 billion) follow Dark Green indices – representing a mere 4.9% of passive AUM (Figure 5).

**Figure 5. ESG funds and AUM in passive segment by index type (USD billion)**



Source: Authors' calculations based on index provider classifications and Bloomberg Terminal.

Importantly, our above analysis of ESG index methodologies showed that certain ESG indices *could* have a sustainability impact by steering capital allocation towards green activities. However, the distribution of assets within the ESG industry shows that these Dark Green indices only represent a fraction of all ESG investments. As a result, we conclude that most ESG investment currently does not have a meaningful sustainability impact via capital allocation. Instead, we observe the existence of an ESG 'capital allocation gap'.

<sup>24</sup> However, even Dark Green ESG funds rarely define their shareholder engagement strategy to create sustainability impact, leaving open the question of the 'shareholder engagement gap'.

## CONCLUSION

Arguably the key open question for ESG investing is whether these rapidly growing funds are used by investors only to manage environmental, social and governance risks (input ESG) or whether they create a sustainability impact (output ESG). Many observers, including asset owners, policymakers and the public, seem to *assume* that ESG funds have a significant positive effect on the sustainability of listed companies. However, the actual transmission mechanisms via which sustainability impact can work have so far been inadequately researched. In this paper we aim to contribute to this ongoing debate. In the absence of public regulation, industry standards have characterised the governance of ESG. Consequently, governance by ESG can be achieved through three transmission mechanisms through which ESG potentially could create impact: (1) ratings, (2) shareholder engagement and (3) capital allocation. These mechanisms either achieve a sustainability impact or constitute a gap if they remain ineffective or unutilised. The ratings mechanism is by far the weakest of the three mechanisms and ratings diverge so significantly that we observe an ‘ESG ratings gap’. Shareholder engagement and capital allocation could have a much stronger effect on sustainability – if used effectively. The vast majority of ESG funds, however, neither define nor execute effective shareholder engagement strategies (proxy voting and public/private engagements) concerning sustainability issues. Hence, we also identify an ‘ESG shareholder engagement gap’. Our empirical analysis of ESG investment funds has focused on the capital allocation mechanism, which has so far remained under-researched.

Our findings show that ESG indices are the crucial factor that determines how sustainable the capital allocation of ESG funds is. Passive ESG funds directly replicate indices, while most active ESG funds also do not deviate significantly from their benchmark indices. Through a detailed analysis of the ESG funds industry based on Bloomberg Terminal data, fund prospectuses and other financial data, we found that the market for the provision of ESG indices is highly concentrated with MSCI having an overall market share of 56% – and a remarkable 68% in the passive funds segment. In contrast, the market shares of asset managers in the ESG space are relatively dispersed, especially in active funds where Fidelity leads with only 16%, while the smaller segment of passive ESG funds is dominated by BlackRock with 45% market share. Hence, ESG index providers, and MSCI in particular, are setting standards for sustainable investing and de facto steer the capital allocation of ESG funds. However, the ESG indices they provide have very different sustainability impacts. The majority of ESG funds today fall into the very problematic category of Broad ESG (or ESG integration); these funds stay very close to their non-ESG benchmarks and rarely facilitate sustainability impact. The next category is Light Green funds, which rather than facilitating impactful investment are primarily focused on mitigating risks for investors (input ESG). Overall, only Dark Green funds are able to undertake capital allocation that has a significant sustainability impact (output ESG). However, contemporary ESG investing is heavily skewed towards Broad ESG indices (88%), with only three Dark Green funds in the 250 largest ESG funds of

our dataset (4.9%). Thus, while ESG indices *could potentially* have a sustainability impact, most currently do not meaningfully facilitate sustainability – we call this the ‘ESG capital allocation gap’.

While historically the ESG industry has relied on private governance, regulators in both the US and the EU have launched initiatives to remedy existing shortcomings of ESG. Due to space constraints, we are not able to discuss all regulations in detail, many of which are still being developed. So far, most regulations are focused on disclosure. In May 2022, the SEC published proposed rules for mandatory disclosures by ESG funds, distinguishing between ‘Integration Funds’, ‘ESG-Focused Funds’, and ‘Impact Funds’ (SEC, 2022). All these funds would need to describe how they incorporate ESG factors in their investment strategy, while ESG impact funds would also need to disclose how they measure progress on their objectives. The European Union has enacted the Sustainable Finance Disclosure Regulation (SFDR) primarily aimed at investment funds in 2019 and its disclosure requirements will be phased in from 2021 to 2023 (EU, 2019). SFDR seeks to make the sustainability profile of funds more transparent and thus easier to compare for investors. Under the new SFDR classifications, investment funds must be labelled either as Article 6, 8 or 9 funds, with Article 6 funds having the lowest sustainability objectives and Article 9 funds the highest. While these two sets of categories do not map exactly onto our categorisation between Broad ESG, Light Green, and Dark Green funds, they share a lot of parallels.

Based on the findings of our analysis we identified a few key points on which researchers, regulators and policymakers could focus. The sheer urgency of addressing climate change and other sustainability issues suggests to us that the real-world impact of ESG funds should be pivotal. First, this means that we need much more research on the three identified transmission mechanisms of ESG funds and the different actors that are involved in shaping and influencing their implementation. Second, it seems crucial to develop regulation that is specifically targeted towards the two key potential transmission mechanisms: shareholder engagement and capital allocation. Initially, ESG funds should publicly disclose how exactly they use these two transmission mechanisms. Subsequently, mandatory minimum standards could be developed to ensure asset owners that their investments do create impact via these mechanisms. This would also address concerns of greenwashing which is harmful to investors and asset managers alike. This primarily pertains to the very fuzzy category of Broad ESG (or ESG integration) funds, most of which closely track non-ESG indices. Without minimum standards for shareholder engagement, these funds will not be able to create sustainability impact (output ESG).

Dark Green funds that use both shareholder engagement and capital allocation clearly have the highest potential to create sustainability impact. Hence, researchers, regulators and policymakers should think about developing effective incentives for retail and institutional clients to invest in such Dark Green funds, be it through regulatory measures or favourable taxation schemes. The rationale is that significant sustainability impact contributes towards reducing ‘public bads’ (climate change, biodiversity loss etc.) and thereby creates value for the public,

which future research should attempt to quantify. While making ESG investing more transparent is important, current regulation should thus take more effective steps to facilitate the sustainability impact of ESG investing. To reiterate the words of Mark Carney (2019), 'the task is large, the window of opportunity is short, and the stakes are existential'. Only if utilised effectively, can ESG investing potentially create significant impact that helps to mitigate global climate change and other pressing sustainability issues.



## APPENDIX. INTERVIEW DATA

interview_1	APAC director, index provider (Hong Kong; 7 June 2017)
interview_2	Head of business development, index provider (Hong Kong; 27 September 2018)
interview_3	Former asset manager (New York; 19 August 2019; telephone interview)
interview_4	Head of research, index provider (Frankfurt; 20 August 2019)
interview_5	Senior managing director, index provider (Zurich; 23 August 2019; telephone interview)
interview_6	Research department, index provider (Shanghai; 23 October 2019)
interview_7	Product development, derivatives exchange (Frankfurt; 28 February 2020).
interview_8	ESG fund manager (Frankfurt; 2 September 2022)
interview_9	ESG analyst, asset management company (Munich; 29 Sep 2022)

## REFERENCES

- Ansar, A., Caldecott, B., and Tilbury, J. (2013). *Stranded assets and the fossil fuel divestment campaign: What does divestment mean for the valuation of fossil fuel assets?* <https://www.smithschool.ox.ac.uk/publications/reports/SAP-divestment-report-final.pdf>
- Azar, J., Duro, M., Kadach, I., and Ormazabal, G. (2021). The Big Three and corporate carbon emissions around the world. *Journal of Financial Economics*, 142(2): 674–696.
- Baines, J. and Hager, B. S. (2022). From Passive Owners to Planet Savers? Asset Managers, Carbon Majors and the Limits of Sustainable Finance. *CITYPERC Working Paper*. No. 2022-04.
- Berg, F., Fabisik, K., and Sautner, Z. (2020). Rewriting History II: The (un)predictable past of ESG ratings. *European Corporate Governance Institute, ECGI Working Paper* No. 708/2020. [https://ecgi.global/sites/default/files/working\\_papers/documents/bergfabisiksautnerfinal.pdf](https://ecgi.global/sites/default/files/working_papers/documents/bergfabisiksautnerfinal.pdf)
- Berg, F., Kölbel, J., and Rigobon, R. (2022). *Aggregate Confusion: The Divergence of ESG Ratings*. *Review of Finance*, <https://doi.org/10.1093/rof/rfac033>
- Billio, M., Costola, M., Hristova, I., Latino, C., and Pelizzon, L. (2020). Inside the ESG Ratings: (Dis)Agreement and Performance. *SAFE Working Paper* No. 284. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3659271](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3659271)
- Blackbaud (2021). *Exploring Environmental Social Governance Programs*. White Paper, May 2021. [https://info.yourcause.com/hubfs/Whitepaper\\_ESG\\_v2.3.pdf](https://info.yourcause.com/hubfs/Whitepaper_ESG_v2.3.pdf)
- Braun, B. (2016). From performativity to political economy: index investing, ETFs and asset manager capitalism. *New Political Economy*, 21(3): 257–273.
- Braun, B. (2021). ‘Asset Manager Capitalism as a Corporate Governance Regime.’ In J. Hacker, A. Hertel-Fernandez, P. Pierson, and K. Thelen (eds.), *The American Political Economy: Politics, Markets, and Power*. Cambridge: Cambridge University Press, pp. 270–294.
- Brière, M., Pouget, S., and Ureche-Rangau, L. (2020). Institutional Investors Votes on Corporate Externalities: The Case of Two Emblematic Investors. *Revue d'économie financière*, 138 (2): 119–138.
- Broadridge. (2021). ESG Investments Poised to Reach \$30 Trillion by 2030. *Bloomberg*. <https://www.bloomberg.com/press-releases/2021-12-02/esg-investments-poised-to-reach-30-trillion-by-2030>

- Buller, A. (2020). 'Doing Well by Doing Good'? Examining the rise of ESG Investing. Common Wealth. <https://www.common-wealth.co.uk/reports/doing-well-by-doing-good-examining-the-rise-of-environmental-social-governance-esg-investing>
- Busch, T., Bruce-Clark, P., Derwall, J., Eccles, R., Hebb, T., Hoepner, A., Klein, C., Krueger, P., Paetzold, F., and Scholtens, B. (2021). Impact investments: a call for (re)orientation. *SN Business & Economics*, 1(2), 1–13.
- Büthe, T. and W. Mattli (2011). *The New Global Rulers: The Privatization of Regulation in the World Economy*. Princeton: Princeton University Press.
- Caldecott, B. L., Clark, A., Harnett, E., Koskelo, K., Wilson, C., and Liu, F. (2022). Sustainable Finance and Transmission Mechanisms to the Real Economy. *University of Oxford Smith School of Enterprise and the Environment Working Paper 22-04*.
- Camilleri, M. A. (2017). Socially responsible and sustainable investing. In: Camilleri, M.A. (ed.) *Corporate sustainability, social responsibility and environmental management*. Cham: Springer International Publishing, pp. 61–77.
- Carney, M. (2019). *A new horizon*. Speech at European Commission Conference: A global approach to sustainable finance. <https://www.bankofengland.co.uk/speech/2019/mark-carney-speech-at-european-commission-high-level-conference-brussels>
- Cioffi, J. W. (2009). Adversarialism versus legalism: Juridification and litigation in corporate governance reform. *Regulation & Governance*, 3(3): 235-258.
- Clapp, J. and Helleiner, E. (2012). International political economy and the environment: back to the basics? *International Affairs*, 88(3): 485–501.
- Cojoianu, T. F., Ascuí, F., Clark, G. L., Hoepner, A. G. F., and Wójcik, D. (2020). Does the fossil fuel divestment movement impact new oil and gas fundraising? *Journal of Economic Geography*, 21(1), 141–164.
- Crona, B., Folke, C., and Galaz, V. (2021). The Anthropocene reality of financial risk. *One Earth*, 4(5): 618–628.
- de Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., and Soares, G. B. L. (2020). Concepts and forms of greenwashing: a systematic review. *Environmental Sciences Europe*, 32(19). <https://doi.org/10.1186/s12302-020-0300-3>
- Deutsche Bundesbank (2019). Deutsche Bundesbank Monthly Report October 2019 – The sustainable finance market: a stocktake. <https://www.bundesbank.de/en/publications/search/the-sustainable-finance-market-a-stocktake-811962>
- de Groot, W., de Koning, J. and van Winkel, S. (2021). Sustainable Voting Behavior of Asset Managers: Do They Walk the Walk? [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3783454](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3783454)

- Dikolli, S. S., Frank, M. M., Guo, Z. M. and Lynch, L. J. (2022). Walk the talk: ESG mutual fund voting on shareholder proposals. *Review of Accounting Studies*. <https://doi.org/10.1007/s11142-022-09692-2>
- Dimmelmeier, A. (2020). Mergers and Acquisitions of ESG Firms: Towards a New Financial Infrastructure? *SocArXiv*. doi:10.31235/osf.io/jt2uk
- Eccles, R. G., Lee, L. -E. and Strohle, J. (2020). *The Social Origins of ESG?: An Analysis of Innovest and KLD*. *Organization & Environment*, 33(4): 575-596.
- Edmans, A. (2021). *Is Sustainable Investing Really a Dangerous Placebo?* Oxford Law Faculty. <https://www.law.ox.ac.uk/business-law-blog/blog/2021/11/sustainable-investing-really-dangerous-placebo>
- ESMA (2016). Supervisory work on potential closet index tracking. <https://www.esma.europa.eu/document/public-statement-supervisory-work-potential-closet-index-tracking>
- ESMA (2022). ESMA publishes results of its Call for Evidence on ESG ratings. <https://www.esma.europa.eu/press-news/esma-news/esma-publishes-results-its-call-evidence-esg-ratings>
- EU (2019). *REGULATION (EU) 2019/2088 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 November 2019 on sustainability-related disclosures in the financial services sector*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2088&rid=1>
- European Commission (2020). *Study on Sustainability-Related Ratings, Data and Research*. <https://op.europa.eu/en/publication-detail/-/publication/d7d85036-509c-11eb-b59f-01aa75ed71a1>
- European Commission (2021). *Sustainability-related disclosure in the financial services sector*. [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/sustainability-related-disclosure-financial-services-sector\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/sustainability-related-disclosure-financial-services-sector_en)
- European Commission (2022). *Overview of sustainable finance*. [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/overview-sustainable-finance\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/overview-sustainable-finance_en)
- Fichtner, J., Heemskerk, E., and Garcia-Bernardo, J. (2017). Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk. *Business and Politics*, 19(2): 298–326.
- Fransen, L. and Conzelmann, T. (2015). Fragmented or cohesive private regulation. *Regulation & Governance*, 9: 259-275.
- FTSE Russell (2022). Climate and ESG indexes. <https://www.ftserussell.com/data/sustainability-and-esg-data/sustainability-esg-indexes>

- Galaz, V., Crona, B., Dauriach, A., Scholtens, B., and Steffen, W. (2018). Finance and the Earth system – Exploring the links between financial actors and non-linear changes in the climate system. *Global Environmental Change*, 53: 296–302.
- Golland, A., Galaz, V., Engstrom, G., and Fichtner, J. (2022). *Proxy Voting for the Earth System: Institutional Shareholder Governance of Global Tipping Elements*. <http://dx.doi.org/10.2139/ssrn.4067103>
- Griffin, C. (2021). *Environmental & Social Voting at Index Funds*. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3542081](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3542081)
- Green, J. (2010). Private Standards in the Climate Regime: The Greenhouse Gas Protocol. *Business & Politics*, 12(3):1–37.
- Green, J. (2014). *Rethinking Private Authority – Agents and Entrepreneurs in Global Environmental Governance*. Princeton University Press: Princeton University Press.
- GSIA (2020). *Global Sustainable Investment Review 2020*. <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>
- Haberly, D., MacDonald-Korth, D., Urban, M., and Wójcik, D. (2019). Asset management as a digital platform industry: A global financial network perspective. *Geoforum*, 106: 167–181.
- Hansen, T. and Pollin, R. (2020). Economics and climate justice activism: assessing the financial impact of the fossil fuel divestment movement. *Review of Social Economy*, <https://doi.org/10.1080/00346764.2020.1785539>
- Harmes, A. (2011). The limits of carbon disclosure: Theorizing the business case for investor environmentalism. *Global Environmental Politics*, 11(2): 98–119.
- Helleiner, E. (1996). *States and the reemergence of global finance: From bretton woods to the 1990s*. Ithaca: Cornell University Press.
- Hong, H., and Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, 93(1): 15–36.
- IIA (2021). Measurable Impact: Asset Managers on the Challenges and Opportunities of ESG Investment. *Industry Index Association*. <http://www.indexindustry.org/wp-content/uploads/2021/07/IIA-ESG-Executive-Summary-2021-vFINAL.pdf>
- InfluenceMap (2021). *Climate Funds: Are They Paris Aligned? Full results for 723 climate-themed and ESG equity funds*. August 2021. <https://financemap.org/climate-funds-data>
- Jahnke, P. (2019a). Ownership concentration and institutional investors' governance through voice and exit. *Business and Politics*, 21(3), 327–350.
- Jahnke, P. (2019b). *Holders of Last Resort: The Role of Index Funds and Index Providers in Divestment and Climate Change*. <http://dx.doi.org/10.2139/ssrn.3314906>

Lipton, A. (2017). Family Loyalty: Mutual Fund Voting and Fiduciary Obligation. *Tulane Public Law Research Paper No. 17-15*.

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3054812](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3054812)

Kerber, R. and Jessop, S. (2021). Analysis: How 2021 became the year of ESG investing. *Reuters*. <https://www.reuters.com/markets/us/how-2021-became-year-esg-investing-2021-12-23/>

Kishan, S. (2020). What's \$35 trillion got to do with it? *Ethical Markets*.

<https://www.ethicalmarkets.com/whats-35-trillion-got-to-do-with-it/>

Kishan, S. (2021). 'Wild West' of ESG Ripe for a Crackdown, Veteran Investor Says. *Bloomberg*. <https://www.bloomberg.com/news/articles/2021-09-29/-wild-west-of-esg-ripe-for-a-crackdown-veteran-investor-says#xj4y7vzkg>

Kölbel J. F., Heeb F., Paetzold F., and Busch T. (2020). Can Sustainable Investing Save the World? Reviewing the Mechanisms of Investor Impact. *Organization & Environment*, 33(4): 554–574.

Krahn, J. P., Rocholl, J., and Thum, M. (2021). A primer on green finance: From wishful thinking to marginal impact. *SAFE White Paper No. 87*. <https://safe-frankfurt.de/policy-center/policy-publications/policy-publicationview/publicationname/a-primer-on-green-finance-from-wishful-thinking-to-marginal-impact.html>

Lazonick, W. and O'Sullivan, M. (2000). Maximizing shareholder value: A new ideology for corporate governance. *Economy & Society*, 29(1): 13-35.

Leaders Arena (2020). ESG market growth accelerates in 2020, led by greater ESG integration among US investors. <https://www.leadersarena.global/single-post/esg-market-growth-accelerates-in-2020-led-by-greater-esg-integration-among-us-investors>

Lester, A. (2021). EU climate benchmarks 'de facto mandatory' for Article 9 funds. *Environmental Finance*, 9 August. <https://www.environmental-finance.com/content/news/eu-climate-benchmarks-de-facto-mandatory-for-article-9-funds.html>

Monciardini, D. and Conaldi, G. (2019). The European regulation of corporate social responsibility: The role of beneficiaries' intermediaries. *Regulation & Governance*, 13(2): 240-259.

Moschella, M. and Tsingou, E. (2013). Regulating finance after the crisis: Unveiling the different dynamics of the regulatory process. *Regulation & Governance*, 7(4): 407-416.

MSCI (2020a). Extended ESG Focus and Choice ESG Screened Indexes. <https://www.msci.com/documents/1296102/19257042/ESG-Screened-Indexes-cbr-en-longV.pdf/2c928e76-383d-32ee-e25a-2744d5f15efd>

MSCI (2020b). Thirty years of ESG investing. <https://www.msci.com/esg/30-years-of-esg>

MSCI (2022b). What MSCI's ESG Ratings are and are not. <https://www.msci.com/our-solutions/esg-investing/esg-ratings/what-esg-ratings-are-and-are-not>

MSCI (2022a). ESG Industry Materiality Map. <https://www.msci.com/our-solutions/esg-investing/esg-industry-materiality-map>

MSCI (2022c). MSCI USA Minimum Volatility ESG Reduced Carbon Target Index (USD). <https://www.msci.com/documents/10199/38c626b0-2e90-0095-28a0-130570fc9c66>

MSCI (2022d). Climate Change Indexes. <https://www.msci.com/climate-change-indexes>

MSCI (2022e). MSCI Climate Change Indexes Methodology. [https://www.msci.com/eqb/methodology/meth\\_docs/MSCI\\_Climate\\_Change\\_Indexes\\_Methodology\\_May2021.pdf](https://www.msci.com/eqb/methodology/meth_docs/MSCI_Climate_Change_Indexes_Methodology_May2021.pdf)

MSCI (2022f). MSCI Climate Paris Aligned Indexes. <https://www.msci.com/documents/1296102/21527972/MSCI+Climate+Paris+Aligned+Indexes-cfs-en.pdf>

MSCI (2022g). ESG Investing Better investments for a better world. <https://www.msci.com/documents/1296102/23188071/MSCI-ESG-Investing-Brochure.pdf>

OECD (2020). *OECD Business and Finance Outlook 2020: Sustainable and Resilient Finance*. Paris: Organisation for Economic Co-operation and Development.

Paterson, M. (2020). Climate change and international political economy: between collapse and transformation. *Review of International Political Economy*, 28(2): 394–405.

Petry, J., Fichtner, J., and Heemskerk, E. (2021). Steering capital: the growing private authority of index providers in the age of passive asset management. *Review of International Political Economy*, 28(1): 152–176.

Petry, J. (2021). From National Marketplaces to Global Providers of Financial Infrastructures: Exchanges, Infrastructures and Structural Power in Global Finance. *New Political Economy*, 26(4): 574–597.

Pollmann, E. (2022). *The Origins and Consequences of the ESG Moniker*. Institute of Law and Economics Research Paper No. 22-23. <https://ecgi.global/sites/default/files/Paper%3A%20Elizabeth%20Pollman.pdf>

Porter, T. (2011). Public and private authority in the transnational response to the 2008 financial crisis. *Policy and Society*, 30(3): 175-184.

- PwC (2021). 2021 Global investor survey. <https://www.pwc.com/gx/en/services/audit-assurance/corporate-reporting/2021-esg-investor-survey.html>
- Quinio, A. (2022). Morningstar cuts 1,200 funds from 'sustainable' list. *Financial Times*. <https://www.ft.com/content/9cf8c788-6cad-4737-bc2a-2e85ac4aef7d>
- Quinn, C., Fisch, J., and Robertson, A. Z. (2021). Do ESG Funds Deliver on Their Promises? *Michigan Law Review*, 120: 393–450.
- Rohleder, M., Wilkens, M., and Zink, J. (2022). The effects of mutual fund decarbonization on stock prices and carbon emissions. *Journal of Banking & Finance*, 134, <https://doi.org/10.1016/j.jbankfin.2021.106352>
- Sinclair, T. (2014). *The New Masters of Capital: American Bond Rating Agencies and the Politics of Creditworthiness*. Ithaca: Cornell University Press.
- SEC (2022). *SEC Proposes to Enhance Disclosures by Certain Investment Advisers and Investment Companies About ESG Investment Practices*. <https://www.sec.gov/news/press-release/2022-92>
- Taylor, N. (2022). Making financial sense of the future': Actuaries and the management of climate-related financial risk. *New Political Economy*. <https://doi.org/10.1080/13563467.2022.2067838>
- Underhill, G. R. D. and Zhang, X. (2008). Setting the rules: Private power, political underpinnings, and legitimacy in global monetary and financial governance. *International Affairs*, 84(3): 535-554.
- Wilkens, M., Rohleder, M., and Zink, J. (2022). The Impact of Sustainable Investment Funds - Impact Channels, Status Quo of Literature, and Practical Applications. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4205546](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4205546)
- Wilson, C. and Caldecott, B. (2021). Breaking the Bond: Primary Markets and Carbon-Intensive Financing. *Oxford Sustainable Finance Programme, Smith School of Enterprise and the Environment*, Working Paper No. 21-05.
- Young, K. (2013). Financial industry groups' adaptation to the post-crisis regulatory environment: Changing approaches to the policy cycle. *Regulation & Governance*, 7(4): 460-480.
- Zerbib, O. (2022). Sustainable Capital Asset Pricing Model (S-CAPM): Evidence from Environmental Integration and Sin Stock Exclusion. *Review of Finance*. <https://doi.org/10.1093/rof/rfac045>