ODDO BHF
ASSET MANAGEMENT

SUSTAINABLE FINANCE

WEATHERING THE STORM OF ESG COMPLEXITY BY LEVERAGING AI

SEPTEMBER 2021

CONTENTS

FOREWORD

ESG investing has grown exponentially in the last decade and is estimated to be somewhere between 35.3[1] to 40.5[2] trillion USD (according to the GSIA, 2021, and OPIMAS, 2020).

The ESG investment industry is constantly in transition, with rapid developments across ESG strategies, approaches, and technologies reshaping the industry towards best standards of practice.

This transition is leading to variations in the scale and growth of sustainable investment in different regions, according to GSIA. Many regions continue to see strong growth in sustainable investment assets under management – most notably Canada, the United States and Japan. Other regions are slowing down their rate of growth or have seen a reported reversal – in particular Europe and Australasia. In both cases, this is largely due to changes in how sustainable investment is defined, either by law as in the case of the EU, or by new industry standards as is the case in Australasia.

Increasingly, there are expectations that sustainable investment is defined not just by the strategies involved, but by the short- and long-term impacts that investors are having from their sustainable investment approach.

Meanwhile, technology is catching up and artificial intelligence (AI)-based solutions, along with machine learning, automation and robotics, have become commonplace and are already essential for many areas within operations of organizations.

There is great potential for the next generation of tools and data, harnessing financial technology (Fintech) and AI applications, for Environmental, Social and Governance (ESG) analysis, in sustainable investing. Over the last decade, the asset management industry has been gearing up for a massive adoption of ESG data within investment decision-making, and by expanding in-house ESG models, methodologies and teams at scale[3].

AI capabilities have proven to be successful, as an investment theme, and for a broad set of issuers linked to data and frameworks complexity management in ESG investing: Technology including AI, robotics and automation, ICT – and related sectors – have become important investing themes, and the growth of the artificial intelligence market is enviable. Grand View Research estimates it to be US$39.9 billion in 2019, and projects a 42.2% compound annual growth rate for the segment, between 2020 and 2027.

For the purpose of this article, we aim to focus on how AI-based technology and digitalisation efforts can be used to enhance ESG data management in investment decision-making, especially when and where the screening of extra-financial information, in real time, is concerned. Currently, the sustainable investment industry relies on self-disclosed, annualised corporate information, exposed to inherent data challenges and biases.

Martina Macpherson

Head of ESG Strategy
ODDO BHF
Asset Management

Sarah Schmid

ESG Analyst
Innovation Lead
ODDO BHF
Asset Management

[1] GSIA, "2020 Global Sustainable Investment Review" (GSIR), 2021, Link: http://www.gsi-alliance.org/wp-content/uploads/2021/07/GSIR-2020.pdf
[2] OPIMAS, "ESG Data Integration by Asset Managers: Targeting Alpha, Fiduciary Duty & Portfolio Risk Analysis", 17 June 2020, Link: http://www.opimas.com/research/570/detail/
[3] See for more information: OPIMAS, "ESG Data Integration by Asset Managers: Targeting Alpha, Fiduciary Duty & Portfolio Risk Analysis", 17 June 2020, Link: http://www.opimas.com/research/570/detail/

Initial considerations for ESG and Artificial Intelligence

We are in the early stages of the Fourth Industrial Revolution (4IR)[4], a fusion of advances in artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, genetic engineering, quantum computing, and so on.

The journey to digital transformation is at 4IR's core. Decision-makers and analysts aim to make everyday processes simpler and more efficient. The aim is to fuel innovation and to take advantage of new opportunities, new business models – within the boundaries of regulatory obligations.

There is a large potential for AI to contribute towards global economic activity, especially towards ESG investing. The Fintech areas deemed most promising for sustainable finance and investing include crowdfunding, tokens, distributed ledger technology (DLT), AI and big data. A new Fintech ecosystem has emerged leveraging big data based on asset-level information, natural language processing (NLP), IoT, satellite imagery, blockchain and robo-advisory. If properly developed and integrated, these new technologies and the alternative data sets can provide investors and other decision-makers with a significant competitive advantage.

And innovation is key, as supporting global markets in the transition to a low carbon and more sustainable economy requires investment at scale: for infra-structure alone, there are estimates of investment needs of approximately US$6trn per year, year on year, between 2015-2030, according to the G20 and the New Climate Economy.[5] Moreover, suitable solutions for sustainable development and green finance activities need 4IR innovations and Fin-technology.

Meanwhile, a recent report released by the World Economic Forum (WEF, 2020)[6] found that around 70% of its targets to tackle environmental issues such as climate change and habitat loss, as well as social issues, ranging from poverty through to inequality, could be tackled by harnessing the power of technology. Looking at the next decade, the WEF gives predictions, based on the applications of today, on what can be achieved in health, clean energy, industry, innovation and infrastructure.

ESG and technological innovation were treated as separate areas of focus among political decision-makers for some time, however, nowadays the EU's "Fintech Action Plan for a more Competitive and Innovative European Financial Sector"[7], and more recently the "Digital Finance Strategy"[8] on the one hand, as well as the EU's "Sustainable Finance Action Plan" (2018) on the other are visibly complementing and supporting each other. This was also highlighted in the recent report by the European Financial Reporting Advisory Group (EFRAG) published in February 2021[9]. And for a reason: they can help address the prevailing issues linked to clarity, consistency and comparability of ESG information, especially in the current context of disclosure requirements for investors, banks and issuers:

- There is an increasing regulatory focus when and where disclosure of ESG information for investors is concerned: The EU's Taxonomy (EU 2020/852) for economic activities is aimed at defining when an activity can be considered sustainable from an environmental point of view, while the EU regulation on the disclosure of non-financial, sustainable information, SFDR, (EU 2088/2019) requires financial market participants and financial advisors to publish information on their policies regarding the integration of sustainability risks in their invest-ment and advisory decision-making processes, on their websites and in pre-contractual

[4] World Economic Forum, The Fourth Industrial Revolution: What it Means, How to Respond, January 2016, Link: https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/ - for a definition of "4IR".
[5] IFR, "Optimising Sustainable Finance Report", 2017, Link: https://www.ifre.com/story/1442122/ifr-optimising-sustainable-finance-report-nnczrwhxff
[6] World Economic Forum / PwC, "Unlocking Technology for the Global Goals", January 2020, Link: http://www3.weforum.org/docs/Unlocking_Technology_for_the_Global_Goals.pdf
[7] European Commission https://ec.europa.eu/info/publications/180308-action-plan-fintech_en
[8] European Commission https://ec.europa.eu/info/publications/200924-digital-finance-proposals_en
[9] EFRAG, "Final report, proposals for a relevant and dynamic EU sustainability reporting standard- setting", February 2021

documents. Reporting on sustainability risks and principal adverse impacts will become mandatory from July 2022. In addition, the European Commission is considering clarifying within MiFID II, and other relevant texts, the fiduciary and organizational duties of financial services operators in relation to ESG factors, including suitability testing and product governance.

- The European Security Market Authorities, ESMA,[10] and the European Banking Authority, EBA,[11] are required to integrate ESG criteria into their supervisory assessment tasks, which, in turn, is also leading to mandatory reporting on climate risks in the banking sector.

- Lastly, corporate disclosure requirements are following suit: on 21 April 2021, the European Commission published a new package of measures within the framework of the "EU Action Plan for Sustainable Finance and Climate Neutrality Objectives by 2050", which includes the proposal for a Directive on Corporate Sustainability Reporting (CSRD) intended to introduce more rigorous transparency requirements for corporate sustainability disclosure and reporting. Among these, the EU foresees a requirement for issuers to communicate their sustainability information using "digital tagging" in machine-readable format.[12]

Meanwhile "tagging" in the reporting and disclosure context is becoming a new method:

- Various regulatory bodies already mandate the use of "XBRL" for financial disclosures in their jurisdictions. The European Securities and Markets Authority (ESMA)'s "European Single Electronic Format" (ESEF) and the United States Securities and Exchange Commission (US SEC) mandate XBRL-tagging of annual financial reports, as have many other regulators and exchanges.

- Some normative ESG standard setters have also started to pilot and introduce Fintech solutions for integrated financial and sustainability reporting, accounting, and assurance. "The Sustainability Accounting Standards Board" (SASB) announced in October 2020 to engage "PwC's XBRL Practice" to support an XBRL-led non-financial taxonomy[13].

Better disclosure of ESG information is not just an issue concerning Europe: recently, the US Government Accountability Office (GAO) declared in July 2020 that investors do not need more information on ESG challenges that companies face. Rather, they need better information[14] and to do so, in early March 2021, The United States Securities and Exchange Commission (SEC) established a task force focused on climate and ESG issues whose initial goal is to identify any material gaps or inaccuracies in issuers' disclosure of climate risks under existing regulations. The SEC task force will also analyze disclosure and compliance issues related to the ESG strategies of investment advisors and funds and coordinate the effective use of the division's resources, including using sophisticated data analytics to extract and evaluate the disclosed information in order to identify potential breaches.[15]

Meanwhile, criticism from large-scale investors is intensifying: Larry Fink, BlackRock CEO, indicated earlier this year that in the absence of robust disclosure, investors, including BlackRock, will conclude that companies cannot adequately manage risks.[16]Companies and investors now need new tools and skills to fully manage the reporting requirements defined by standard setters and regulators, globally.

[10] ESMA, "Final Report. ESMA's technical advice to the European Commission on integrating sustainability risks and factors in the UCITS Directive and AIFMD", April 2019, Link: https://www.esma.europa.eu/sites/default/files/library/esma34-45-688_final_report_on_integrating_sustainability_risks_and_factors_in_the_ucits_directive_and_the_aifmd.pdf

[11] EBA, "Discussion Paper on management and supervision of ESG risks for credit institutions and investment firms" (EBA/DP/2020/03), Link: https://www.eba.europa.eu/calendar/discussion-paper-management-and-supervision-esg-risks-credit-institutions-and-investment

[12] For an overview on the EU developments, please see Martina Macpherson, Andrea Gasperini, Matteo Bosco, 25 February 2021, Link: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3790774

[13] SASB, "Financial Reporting, SASB Engages PwC's XBRL Practice to Support Build of XBRL Taxonomy", Oct 2020: Link: https://www.sasb.org/blog/as-markets-move-toward-structured-non-financial-reporting-sasb-engages-pwcs-xbrl-practice-to-support-build-of-xbrl-taxonomy/

[14] United States Government Accountability Office, "Public Companies: Disclosure of Environmental, Social, and Governance Factors and Options to Enhance Them", July 2020.

[15] SEC, "Announcing Enforcement Task Force Focused on Climate and ESG Issues, 4 March 2021, Link https://www.sec.gov/news/press-release/2021-42

[16] See as a reference, Blackrock, Pursuing long-term value for our clients, Report 2021, Link: https://www.blackrock.com/corporate/literature/publication/2021-voting-spotlight-full-report.pdf

1

HOW CAN AI SUPPORT ESG ANALYSIS

Many ESG and mainstream financial data aggregators, solutions and index providers have started to leverage Fintech and a combination of AI, and other similar Machine Learning (ML) technologies, to screen, mine and analyse big data from online sources. They apply AI-linked and NLP-centred ontologies to their research outputs to assess, rate, classify, benchmark, monitor, triage and report on extra-financial data sets.

These innovators look for the typical ESG indicators, in the context of "trends", "risks", "behaviours", "sentiment" and/or "consistency", and apply Fintech and AI, to identify these issues and potential controversies in real time. "Alternative data" has become key to capturing more information from "black-box" and non-rated companies for extra disclosures.

And while investment managers have come under increasing pressure to identify, measure, and integrate more and more extra-financial information in their portfolios, AI-based analysis technologies that can filter essential data have become catalysts for sustainable investing - at scale.

New Fintech-, and AI-backed business and investment models can go a long way towards addressing key investor concerns, while supporting a regulatory push for more consistency and transparency in corporate reporting, auditing and ratings analysis[17].

Much of the potential for artificial intelligence in ESG investing comes from sentiment or emotional analysis algorithms. These NLP-based algorithms allow computers to analyse the tone, style, context and/or pattern(s) of a conversation. Some algorithms also allow for forecasting, which in turn can enable investors to gain a forward-looking perspective on exposures to negative or positive change trajectories and scenarios.

However, AI in ESG investing can provide both tremendous benefits and risks to watch out for: In short, while giving ESG investing the opportunity to grow and expand, AI can itself become a "G" risk for companies that aim to undertake the effort.[18] Hence, investors are increasing their efforts to engage on governance, ethics and human rights related issues in relation to Fintech companies and AI tools. Moreover, more ESG data and disclosures do not necessarily mean more data clarity, consistency and comparability, and less exposure to corporate "green washing" risks.

But before we assess the challenges and opportunities related to alternative ESG data sources and providers, we aim to uncover the multiple layers of complexity linked to ESG frameworks, providers and methods, and limitations of (conventional) ESG data.

[17] See e.g. IPE, Dutch and French regulators in joint call for ESG rating regulation, 16 December 2020, Link: https://www.ipe.com/news/dutch-and-french-regulators-in-joint-call-for-esg-rating-regulation/10049653.article

[18] See Martina Macpherson, Kalyani Inampudi, "The Impact of AI on Environmental, Social and Governance (ESG) Investing: Implications On The Investment", in: The AI Book, Wiley, 2020

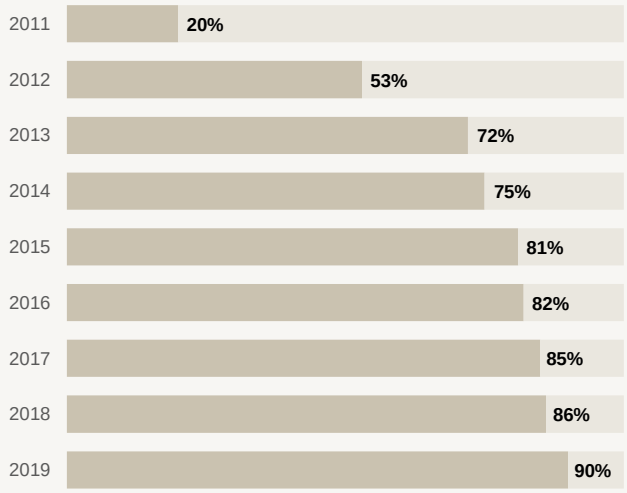
THE FIRST LAYER OF COMPLEXITY: ESG REPORTING FRAMEWORKS

According to the Governance and Accountability Institute's Annual Survey (2020) corporate sustainability reporting is continuously increasing: nowadays, as much as 90% of the S&P 500 companies reported on sustainability in 2019, while the non-reporters now make up a percentage of only 10%.[19]

- **The 9-year Track Record of S&P 500 Companies Reporting**

In the just-completed analysis of the 2019 publication year, G&A analysts determined that 90% of the S&P 500 companies are now reporting, while the non-reporters now make up a percentage of only 10%. The analysis included a breakdown of reporting and non-reporting by GICS® classification.

FIGURE 1: S&P 500 COMPANIES PUBLISHING SUSTAINABILITY REPORTING



Source: Governance & Accountability Institute, Flas Report S&P 500, 2020

To meet the ever-increasing reporting requirements from multiple stakeholders, data needs are also growing at speed, in quality, but also in quantity. However, companies are not bound to a specific standard when it comes to corporate reporting. Currently, multiple standards exist in parallel, and all focus on different definitions, topics and methods.

Corporate ESG standards and frameworks fall into three categories: reporting, accounting, and more recently assurance. Below, we are providing a brief overview on commonly used normative and regulatory standards and frameworks for ESG:

- **Frameworks for Corporate CSR / ESG Reporting**

In Europe, sustainability reporting has been mandatory for listed companies with more than 500 employees since the introduction of the Non-Financial Reporting Directive, NFRD, (EU 2014/95) in 2017.

Since then, regulatory-focused corporate reporting commitments (formerly EU NFRD, now CSRD) have evolved. However, at the same time, a pluralism of normative reporting standards, which are equally used and established, continue to co-exist.

Most ESG reporting frameworks and standards focus on a specific area and serve a certain purpose: there are standards for assessing climate and/or other environmental risks such as the "Taskforce for Climate-Related Financial Disclosures" (TCFD), CDP, "Carbon Disclosure Standards Board" (CDSB), and the "Task Force on Nature-Related Financial Disclosures" (TNFD), as well as frameworks covering a broad range of "E", "S" and "G" issues such as UN Global Compact (UNGC), the "Sustainability Accounting Standards Board" (SASB), the Global Reporting Initiative" (GRI), WEF's recent "Stakeholder Capital Metrics", and the ISO Norms and Standards, to mention a few.

Following the tireless efforts of multiple standard setters, including SASB, the TCFD, GRI, CDSB, CDP, and others, some alignment for normative reporting standards is finally on the cards. Their efforts around harmonisation and consolidation, for example the alignment of SASB with the "International Integrated Reporting Council" (IIRC), and the recent announcement of a collaboration between EFRAG and the GRI, are continuing and have contextually accumulated in a recent "Statement of Intent to Work Together Towards Comprehensive Corporate Reporting" by many of these bodies[20].

[19] G&A, Flash Report S&P 500, 2020, Link: http://www.ga-institute.com/fileadmin/ga_institute/images/FlashReports/2020/G_A-Flash-Report-2020.pdf?vgo_ee=Ggq7j2sT8edctd4A9zfifwaJYQhx04waAaKCBs0SmxE%3D

[20] See Value Reporting Foundation, Link: https://integratedreporting.org/

- **Frameworks for Accounting**

  Until recently, the leading force for sustainability accounting was SASB. The organization was one of the first to develop a financial materiality framework for ESG, now commonly used in corporate (and investor) reporting on sustainability issues.

  Meanwhile, the International Financial Reporting Standards ("IFRS") has recently announced the development of an "International Sustainability Standards Board" ("ISSB"). The goal of the ISSB will be to define the standards for the IFRS relating to sustainability, in order to streamline the financial and extra-financial accounting efforts of global enterprises. Currently however, the ISSB is still in its consultation phase.

- **Frameworks for Assurance**

  Currently, ESG reports are commonly being assured by global auditing firms using e.g. the "ISAE 3000" or the "AA1000AS" standards.

  In addition, the "International Business Council" (IBC) of the World Economic Forum is working in collaboration with the Big4 auditing firms, Deloitte, EY, PwC and KPMG, on disclosure recommend-dations, which can help align corporate reporting and assurance efforts with another key ESG framework: the "United Nations Sustainable Development Goals" (SDGs).

  The group has defined a "core" and an "expanded" set of auditable ESG metrics, which are ultimately universal in order to assess companies' extra-financial efforts across industries and jurisdictions. They also reference existing, commonly used reporting frameworks such as GRI or TCFD.

  Instead of replacing existing frameworks, the aim of the next generation of assurance frameworks for corporate ESG reporting is to provide more transparency and clarity to stakeholders[21].

A large group of companies[22] already have some form of assurance on their sustainability disclosures, through external assurance or internal audit assurance:

- Increasingly external assurance is the preferred option when assurance is provided
- A limited level of assurance on a large range of indicators or the reporting process is the most common
- A combination of limited are reasonable assurance and reasonable assurance on the whole report is not widespread
- European-headquartered companies are leading the way in terms of combined and reasonable assurance

FIGURE 2: TYPES OF ASSURANCE (% OF REPORTS)[22]

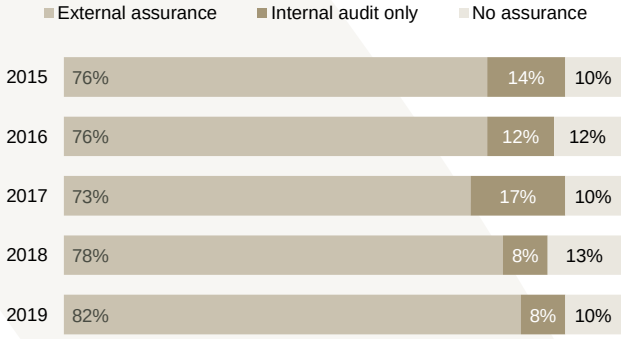
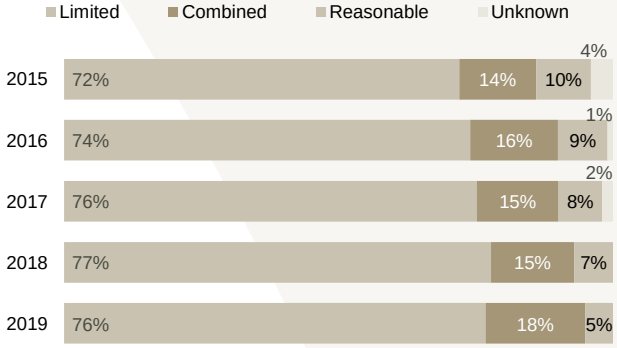


FIGURE 3: LEVELS OF EXTERNAL ASSURANCE (% OF REPORTS)[22]



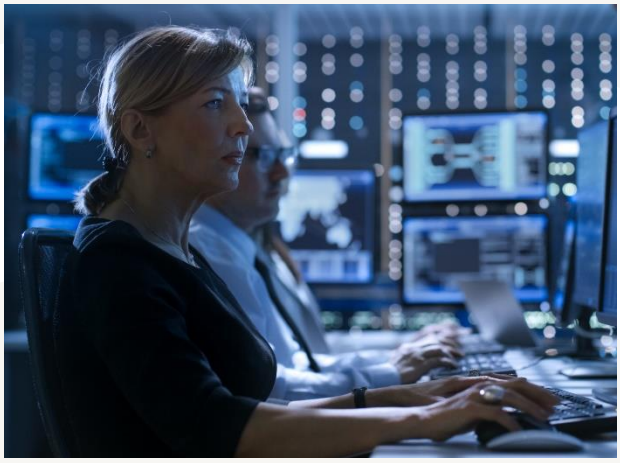
[21] WEC, Measuring Stakeholder Capitalism, White Paper, September 2020, Link: http://www3.weforum.org/docs/WEF_IBC_Measuring_Stakeholder_Capitalism_Report_2020.pdf

[22] Source: WBCSD, Reporting Matters, 2019: 82% of WBCSD members have their report externally assured in 2018 = 78%

THE SECOND LAYER OF COMPLEXITY: PLURALISM OF ESG METHODS

As shown earlier, a pluralism of compulsory and non-compulsory ESG reporting frameworks across the normative and regulatory spectrum still exists – and is commonplace.

One important source for ESG data providers, for their analyses, scores and ratings, is usually the self-disclosed information published by companies once a year, according to these standardized frameworks.



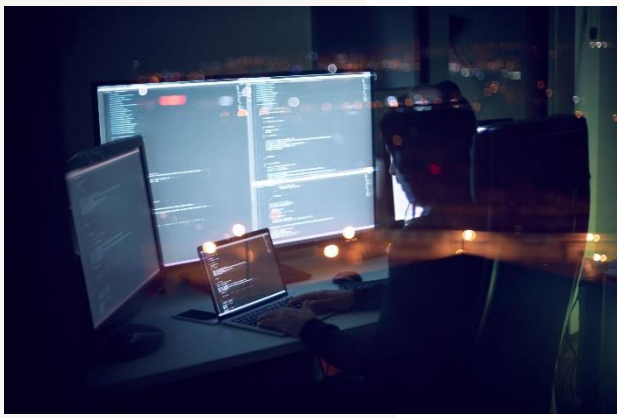
However, the coexistence of so many frameworks does not only challenge the companies having to adjust their reporting lenses to meet multiple standards, but also the data providers.

- Firstly, both the normative and the regulatory frameworks are subject to regular changes.
- Secondly, among frameworks, many of the metrics and hence the data points overlap.
- Thirdly, there are significant contextual differences in ESG rating methodologies, in relation to "scope", "measurements" and "weightings", and in the way a methodology uses e.g. relative versus absolute approaches and applies financial or dual/stakeholder materiality concepts.

ESG data providers, regardless of the years of consolidation in this "crowded" industry, vary noticeably in their methodologies and approaches when assessing and rating companies. Not only do they assign different weights to the "E", "S" and "G" factors. They also put a different emphasis on risks and opportunities related to ESG topics, and some of them also focus on assessing a "net impact".

For financial institutions, this is not just a risk but also an opportunity. By combining ("triaging") multiple ESG data inputs they can establish a holistic and long-term view on ESG risks and opportunities associated with the company. However, the ability to leverage this opportunity also depends on the fact that investors have their own ESG methodology, model, budget for multi-subscriptions feeds, and ideally a proprietary ESG analyst team in-house.

To note: in-house ESG models and methodologies are becoming commonplace among the 30 of the 50 largest asset managers worldwide, according to Investor Relations (IR) Magazine (IR Magazine, 2021)[23]. Financial institutions are no longer solely relying on a single data source but rather combine quantitative and qualitative ESG information sources from multiple data providers with their own analysis. Meanwhile, risks associated with ESG ratings and "single-provider dependencies", with possible effects on returns, also feature increasingly in academic research[24].



[23] IR Magazine, More than half of top 50 asset managers developing internal ESG rating 8 March 2020, Link: https://www.irmagazine.com/buy-side/more-half-top-50-asset-managers-developing-internal-esg-ratings

[24] ECGI Working Paper Series, in Finance, Florian Berg, Kornelia Fabisik and Zacharias Sautner 2020, "Rewriting History II: The (Un)predictable Past of ESG Ratings", November 2020; ECGI Working Paper Series, in Finance, Rajna Gibson, Philipp Krueger, Nadine Riand and Peter S. Schmidt 2020, "ESG rating disagreement and stock returns", January 2020

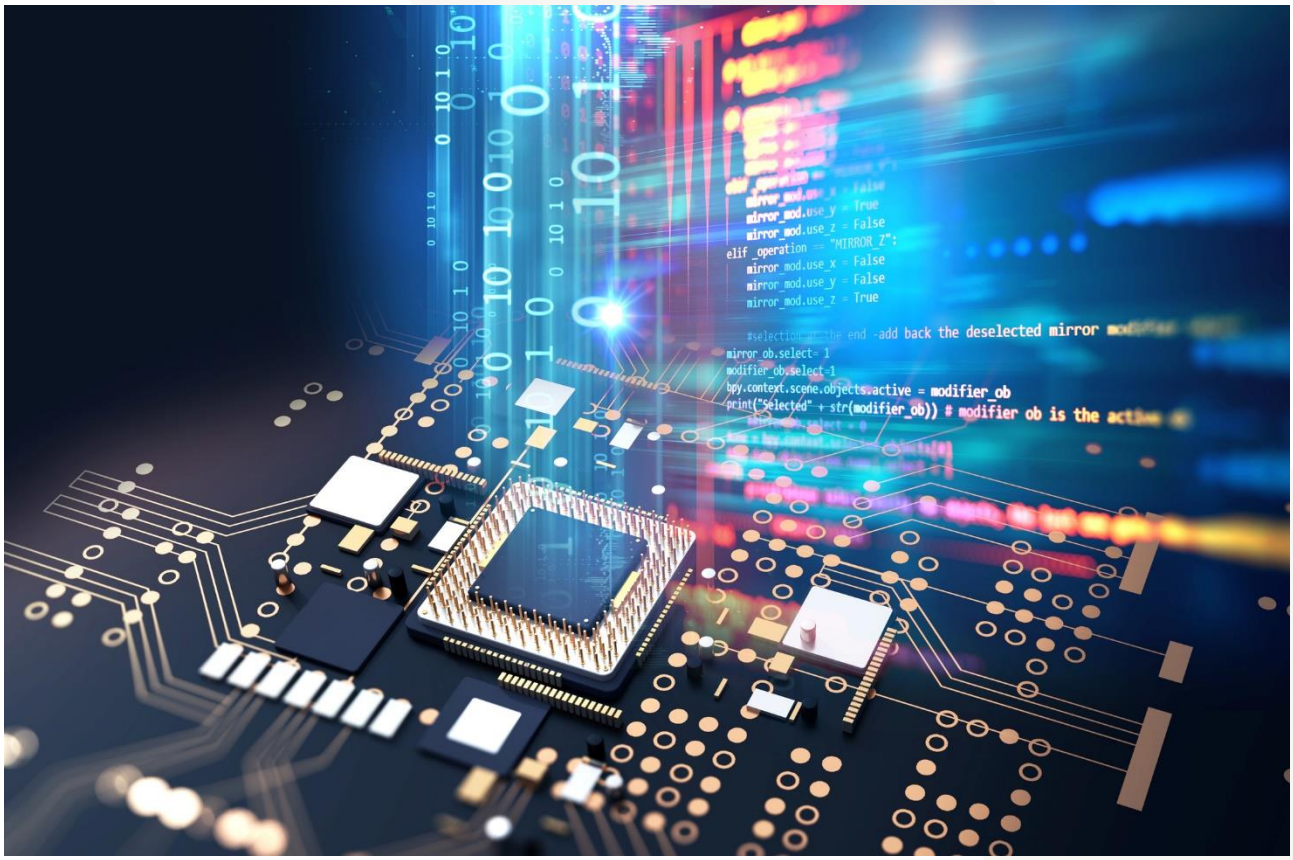
THE THIRD LAYER OF COMPLEXITY: LIMITATIONS OF CONVENTIONAL ESG RATINGS

The more data available for a company, the greater the room for interpretation: This comment highlights just one of the many limitations linked to conventional ESG data and ratings. Multiple academic studies have shown that a positive bias towards large cap companies can be observed in traditional ESG rating approaches: larger companies by market capitalization tend to be rated higher, compared to smaller companies.

At the same time, the coverage of traditional ESG data providers is primarily focused on larger and mid cap companies, often leaving small cap companies without an appropriate ESG rating.

There are other common issues and biases linked to ESG ratings that are based on annualized corporate information: in many cases they are simply not timely, even out of date, and hence do not provide an accurate picture on ESG issues and by no means a forward-looking perspective on systemic risks and opportunities.

Data providers benefit greatly from growing requirements as regards ESG data quality and quantity. Given the limitations and biases, conventional ESG data providers have noticed the urgency to consolidate their efforts. The table below provides a brief overview on the consolidation efforts in the conventional ESG data provider market over the last 5 years, with large data providers, index and credit rating houses acquiring smaller ESG rating and data boutiques.



CONTINUED CONSOLIDATION AMONG ESG DATA PROVIDERS

Select deals with M&A targets that provide ESG data, research and rating

Buyer (ticker)	Target (percent acquired, if not 100%)	Target country	Announce date
Institutional Shareholder Services Inc.	CAER	Australia	02/19/19
	Oekom Research AG	Germany	03/15/18
	IW Financial Inc.	US	01/05/17
	Ethix SRI Advisors AB	Sweden	09/15/15
Moody's Corp. (MCO)	Syn Tao Green Finance Co. Ltd. (minority stake)	China	10/28/19
	Four Twenty Seven Inc.	US	07/22/19
	Vigeo Eiris	France	04/11/19
	Vigeo SAS[25]	France	10/12/15
	Conflict Risk Network[25]	US	05/15/13
Morningstar Inc. (MORN)	Systainalytics BV (60)	Netherlands	04/21/20
	Systainalytics BV (40)	Netherlands	07/24/17
	Responsible Research Pte Ltd.[26]	Singapore	09/15/15
	ESG Analytics AG[26]	Switzerland	09/08/15
MSCI Inc. (MSCI)	Carbon Delta AG	Switzerland	09/09/19
	GMI Rating Inc.	US	06/27/14
S&P Global Inc. (SPGI)	RobescoSAM AG's ESG ratings business	Switzerland	11/21/19
	Trucost PLC	UK	08/12/16
Spread Research SAS	EthiFinance	France	03/06/17
StatPro Group PLC	ECPI Group Srl's ESG research and index business	Italy	06/12/19
Techedge SpA (EDGE)	ESGeo Srl	Italy	12/09/19

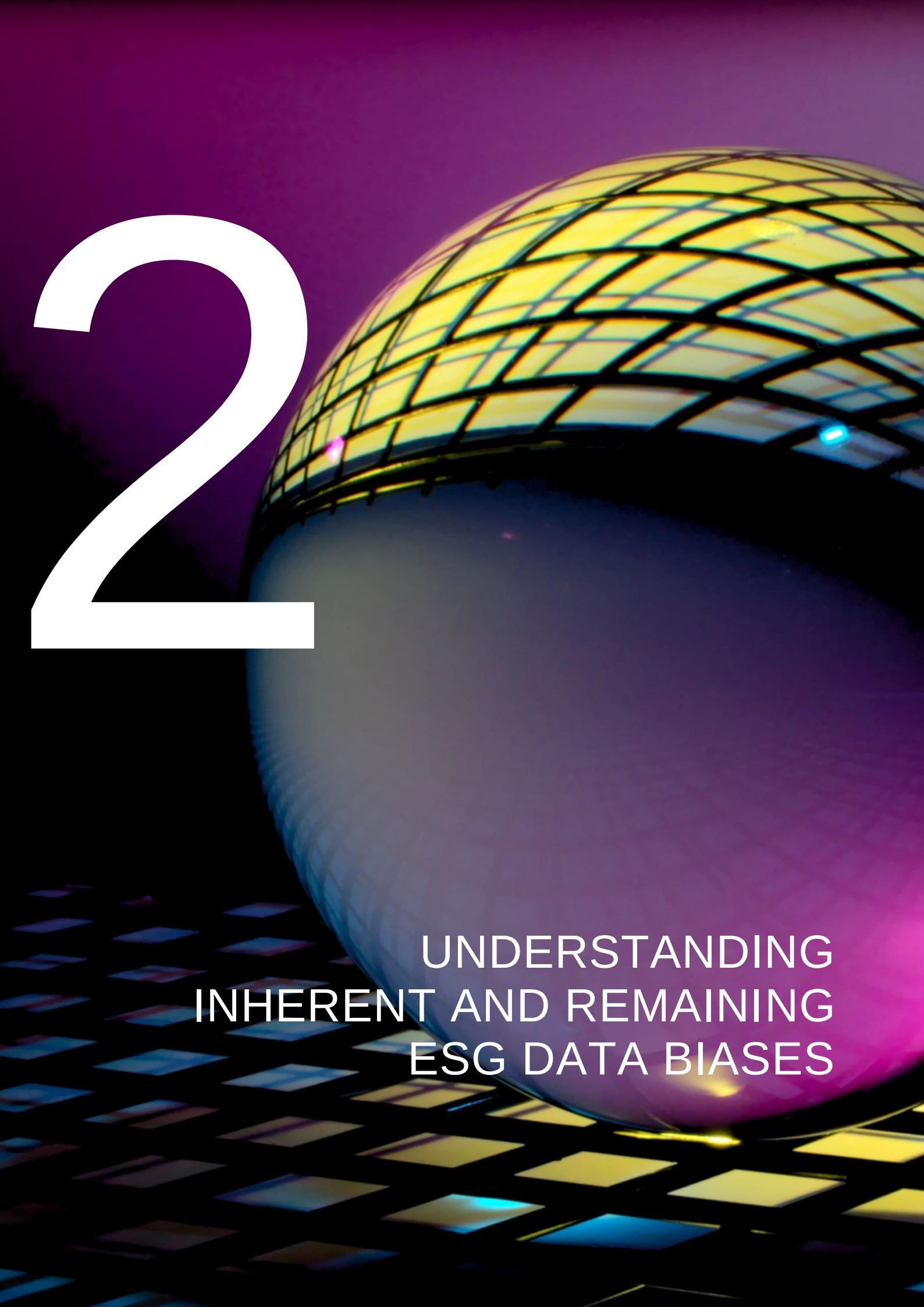
Data compiled April 27, 2020
Data acquired on a best-efforts basis and by not be comprehensive.
Ticker based on home country stock exchange

Source: S&P Global, 2020, Link: https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/consolidation-among-esg-data-providers-continues-amid-covid-19-pandemic-58306410

Regardless of the consolidation efforts in the ESG data and ratings industry, which have happened in multiple phases over the last decade or so, different ESG rating methodologies, even within and among the same umbrella of companies, remain in place.

Meanwhile, issues related to ESG data biases and annualized, self-disclosed information have created the use case for the next generation of alternative data inputs and tools, powered by Fintech and AI. But before exploring these, we aim to briefly explore some of the inherent ESG data and rating biases in even more detail.

[25] Acquired by Ethical Investment Research Services before resultant combined company (Vigeo Eiris) was acquired by Moody's
[26] Acquired by Sustainalytics, currently a merger target of Morningstar



2

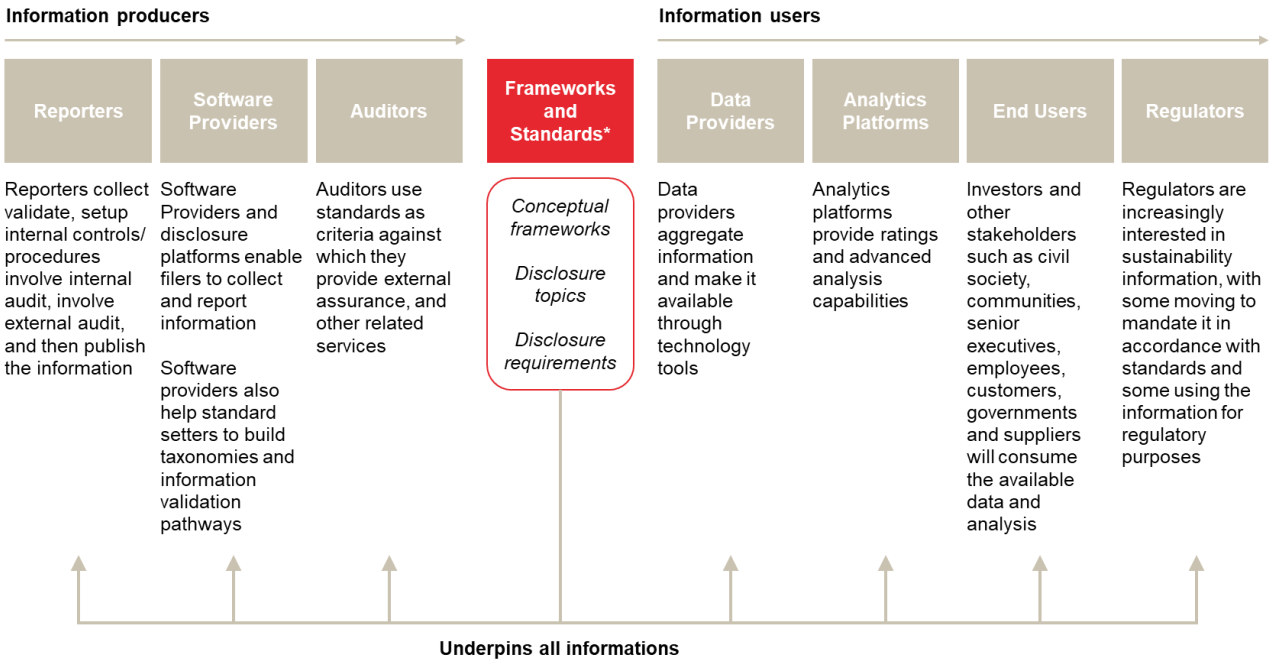
UNDERSTANDING INHERENT AND REMAINING ESG DATA BIASES

Multiple questions, asymmetries and challenges remain when and where ESG information disclosure and analysis is concerned. This, in turn, has led to increasing confusion among investors and to reporting fatigue among issuers.

CHALLENGES AND KEY QUESTIONS FOR ESG DATA BIASES REMAIN:

- The definitions of materiality: such as “financial”, “dual” or “dynamic”.
- The alignment of standards and standardisation of information: for reporting, accounting and assurance purposes.
- The comparability and consistency of information: across different types of reports.
- The forward-looking perspectives: scenarios for assessing future climate and sustainability risks over different time horizons.

THE REPORTING VALUE CHAIN



Source: EDM Council, Working Group Inputs, 2020

CORPORATE REPORTING BIASES

In the last few years, corporate sustainability reporting has undergone a systematic transformation, from “nice-to-have”, voluntary reporting of philanthropic efforts to financially material, integrated reporting and accounting statements endorsed by the finance department, and increasingly the CFO.

Meanwhile there is an ever-increasing and wide-ranging insight requirement from multiple stakeholders, with demands for more clarity, consistency and comparability of ESG information, but:

- **ESG information disclosure depends on "the sources and channels".** Challenges of and around the collection of ESG information, disclosure and reporting remain and very much depend on the source of the information chain, as well as the type of report used for disclosure.

- **Challenges for "long-term value creation" remain.** Investors and other stakeholders are looking for organizations to adopt a longer-term perspective and focus on long-term value creation. This shift to a long-term value orientation presents a significant challenge. Over recent years, issuers have had to contend with a wave of regulatory-driven change to financial reporting requirements, often investing significant time and effort into meeting new accounting standards.

ESG RATING BIASES

Overall, ESG ratings and scores have come a long way, with quality gradually evolving towards more "material" and "behaviour-based" assessments and scores and away from the more traditional "policy-based" efforts. Still, there are a few inherent biases to note:

- **Size biases can favour larger firms:** ESG ratings often display a size bias that gives larger firms better ESG scores on average. This does not necessarily mean that larger companies take better care of the environment or society. More often, it is the result of larger companies having more resources to develop and report on their ESG policies and activities.

- **Sector neutrality can lead to counter-intuitive results:** Most ESG scoring methodologies include a certain type of sector neutrality. This means that every sector includes the full range of ESG scores. Even in sectors with serious sustainability issues – for example oil and gas – some companies will score highly on ESG metrics. This could lead to a clear conflict with sustainability. Companies active in sectors that are arguably inherently unsustainable, such as tobacco and traditional energy, can still obtain high, above-market-average ESG scores driven by their policies.

- **Correlation is low between ESG rating agencies:** The correlation between ESG scores from different data providers is often limited. Research from CSRHub shows that the correlation between ESG scores from different rating agencies can be as low as 0.3, indicating a clear lack of consistency.

A recent study from the Massachusetts Institute of Technology (MIT Sloan, 2019) highlighted this divergence and discrepancy of ESG ratings: the business school found that the correlation among agencies' ESG ratings is on average just 0.61; by comparison, credit ratings from Moody's and Standard & Poor's are correlated at 0.99. The research team also found that ratings agencies may adopt different definitions of ESG performance, and that they may take different approaches to measuring the performance or weightings of ESG attributes.

According to their research, there are three main sources of ESG ratings divergence:

- **Scope divergence** (36.7%) can occur when one agency includes greenhouse gas emissions, employee turnover, human rights, and corporate lobbying in its ratings scope, while another doesn't consider lobbying.

- **Weight divergence** (13.2%) can happen when agencies assign varying degrees of importance to attributes, valuing human rights more than lobbying, for example.

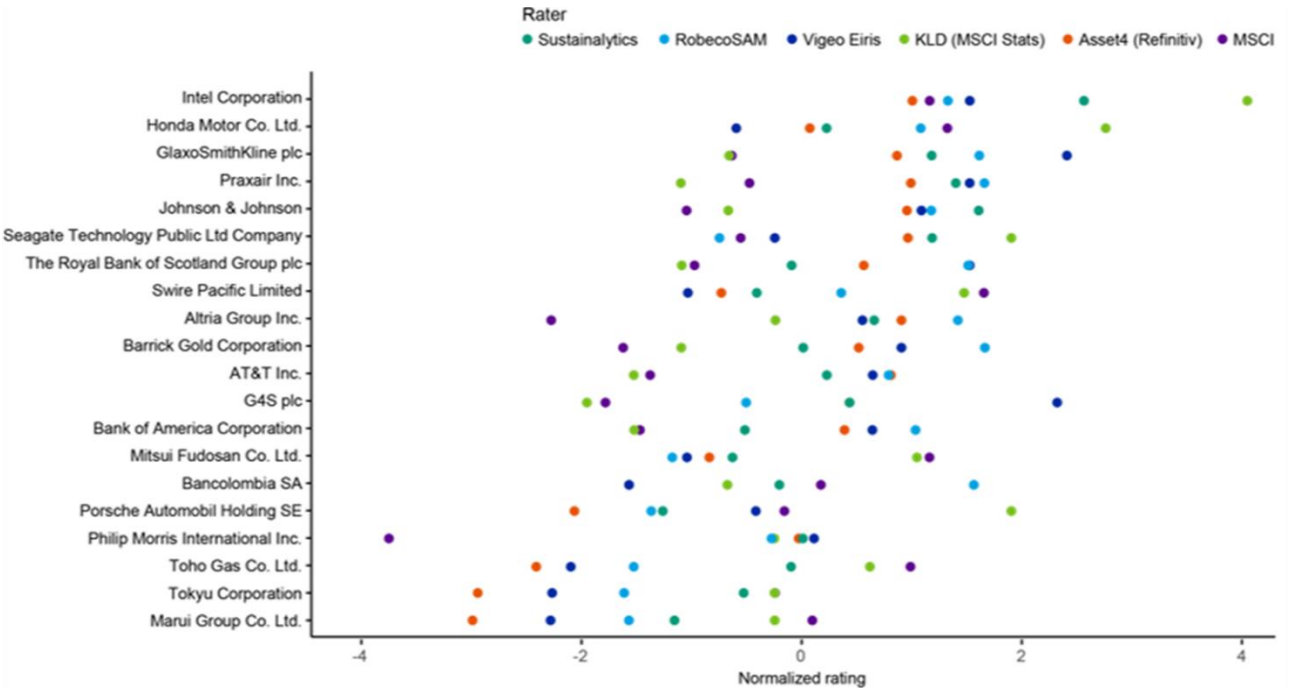
- **Measurement divergence** (50.1%) occurs when ratings agencies measure the same attribute using different indicators. One might evaluate a firm's labor practices based on workforce turnover, while another counts the number of labor cases against the firm. While both capture aspects of a firm's labor practices, they are likely to lead to different assessments, the research cautions.

They concluded that "the information the decision-makers receive from [ESG] ratings agencies is relatively noisy" - a condition that the researchers call "aggregate confusion."[27]

[27] MIT Sloan Business School, Aggregate Confusion: The Divergence of ESG Ratings, 2019, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3438533

CHALLENGES – ESG RATINGS DIVERGENCE

CORRELATION AMONG ESG RATINGS 0.61 VS. 0.99 AND CREDIT RATINGS



Three main sources of divergence:		
50.1%	**36.7%**	**13.2%**
Measurements divergence	Scope divergence	Weight divergence

Source: Aggregate Confusion: The Divergence of ESG Ratings, MIT Sloan, May 2019

ADDRESSING COMMON BIASES THROUGH THE NEXT GENERATION OF ESG DATA PROVIDERS AND INPUTS

As seen, conventional ESG data providers are facing limitations in relation to the annualized, self-disclosed information that they receive from corporations. In turn, they provide ratings which are based on diverging methodologies.

Some providers have been addressing the inherent ESG data conundrums by adding a variety of third-party information sources, or by using new "big data" inputs screening multiple sources for updates on issues and developments, in real time.

In the ESG data and ratings sector, the introduction of Fintech and AI-based (screening) tools and approaches has led to roughly three types of ESG providers harnessing ESG and AI:

1. **Conventional ESG data providers which have started to enhance their methodologies using Fintech and AI**, such as MSCI, Sustainalytics (now a part of Morningstar), S&P Global and its subsidiaries Trucost and RobecoSAM (now Sustainable 1), ISS ESG (formerly a part of the group was known as ISS Governance and oekom ratings respectively), Refinitiv and FTSE (now both part of LSE Group), RepRisk, and others.

2. **Some Fintech-led ESG providers**, including TrueValue Labs (TVL, now part of FactSet), Datamaran, and Arabesque, which have made AI-backed solutions for ESG screening, reporting and framework adaptation a fundamental part of their value proposition.

3. **In parallel, other data-led Fintech start-ups have sprung up in the last decade** that have now come up with new business models to extract useful (ESG) data from extremely large universes. To mention here are Sesamm, Ravenpack, SFJ Technologies, and others.

Conventional ESG data providers using an AI-based technology are commonly established market players which already have data provisioning contracts with the leading financial institutions globally. These companies come with a good reputation and use their existing customer base to build scope and scale through additional and new data services. For investors, this attribute related to a strong track record can be decisive criteria as the technical integration of additional services within a pre-existing data infrastructure framework is often easier, less costly, and faster in the implementation phase.

However, established conventional ESG data providers face increasing competition from new Fintechs, most of which can meanwhile show a track record of more than 10 years' of data and services, and an impressive array of financial services customers. Another compelling feature is that these Fintech firms often come with innovative solutions and a high degree of adaptability and customization which in turn is important for investors aiming to leveraging their own proprietary ESG models, use cases and methodologies.

MAPPING THE REQUIREMENTS FOR ALTERNATIVE DATA PROVIDERS IN THE ESG CONTEXT

Key criteria for selecting alternative information providers for ESG commonly include:

- **Universe & Track Record:** investment universes and preferences for ESG data services vary. Multiple dimensions are relevant when it comes to the so called ESG coverage of companies / issuers / sectors / geographies. The coverage for sector-specific, large cap companies/issuers is nowadays commonplace. SME company/issuer coverage, as well as coverage for non-listed universes are hence often becoming a key factor for differentiation. In demand from investors is also coverage for different asset classes beyond equities and fixed income. Depending on the investment focus, emerging markets coverage is also sought-after by global investors. Last but not least, a data and constituents track record, especially for index-linked products, but also for active management, is a prerequisite. But a track record beyond ~7-10 years is not always a given in the relatively young field of ESG data, hence, data providers such as MSCI and FTSE, which also offer index constituents data dating back more than 10 years, have a competitive advantage and are seen as established providers in this crowded market. Costs for data subscriptions can vary significantly depending on providers, packages, and the type of data.

- **Data Points:** in addition to coverage, the type and "quality" of ESG data inputs have become the focus of discussions in academia and industry. Usually, a starting point for ESG assessments is self-disclosed, corporate ESG information. In addition, there is a large variety of third-party data, often provided by multi-lateral, governmental or non-governmental organizations, which can offer additional insights. Sources include news agencies, potentially limited by paywalls, publications from civil society organizations, and news flow on social networks, such as Twitter, in multiple languages. Depending on the type of investment, the frequency of a data feed update is crucial for the decision-making process. For some trading strategies, a real-time update might be preferable than a daily, weekly or a monthly update. To note: cost savings for certain data subscriptions can potentially be achieved using data aggregators such CSRHub. More recent developments in this area, by e.g., SSGA and BoNY, also offer dashboards for aggregated data sets and scores.

- **Model, Analysis & Customization:** besides data, analysis and customization plays a critical role for investors when choosing a provider. There are multiple ways to provide data and analysis to customers, most commonly in the form of a data and analysis platform, or via API data feeds. By providing a static platform for analysis based on pre-defined frameworks, some providers simply lack flexibility and adaptability when and where investors' proprietary ESG models and methodologies are concerned. There is an increasing trend for customized approaches often with a core need to triage and align multiple ESG inputs. Providers such as Sesamm, who offer flexibility and adaptability, are well positioned to master this challenge. To note: costs for customization are a key consideration that should be assessed carefully ex ante, to avoid disappointment and disruption.

- **System & Integration:** there are different approaches for ESG data inputs, analysis, and outputs. Given the regulatory drive for more disclosure, reporting outputs have increasingly become the area of focus. Investors rely on robust and reliable (IT-based) infrastructure and adaptable systems for ESG analysis and (automated) reporting. ESG and reporting teams, data providers, IT and data scientists ideally need to work together to establish relevant data dashboards and platforms that are "fit-for-purpose" in this context. But not every investor can build a costly customized ESG data and services management system in-house. Dashboards from third-party providers can help bridge certain gaps in the interim. To note: in the ever-increasingly complex landscape of ESG reporting, a one-size-fits-all approach from a third-party vendor is not always the right answer and still requires customization to meet investors' specific data, analysis, and reporting needs.

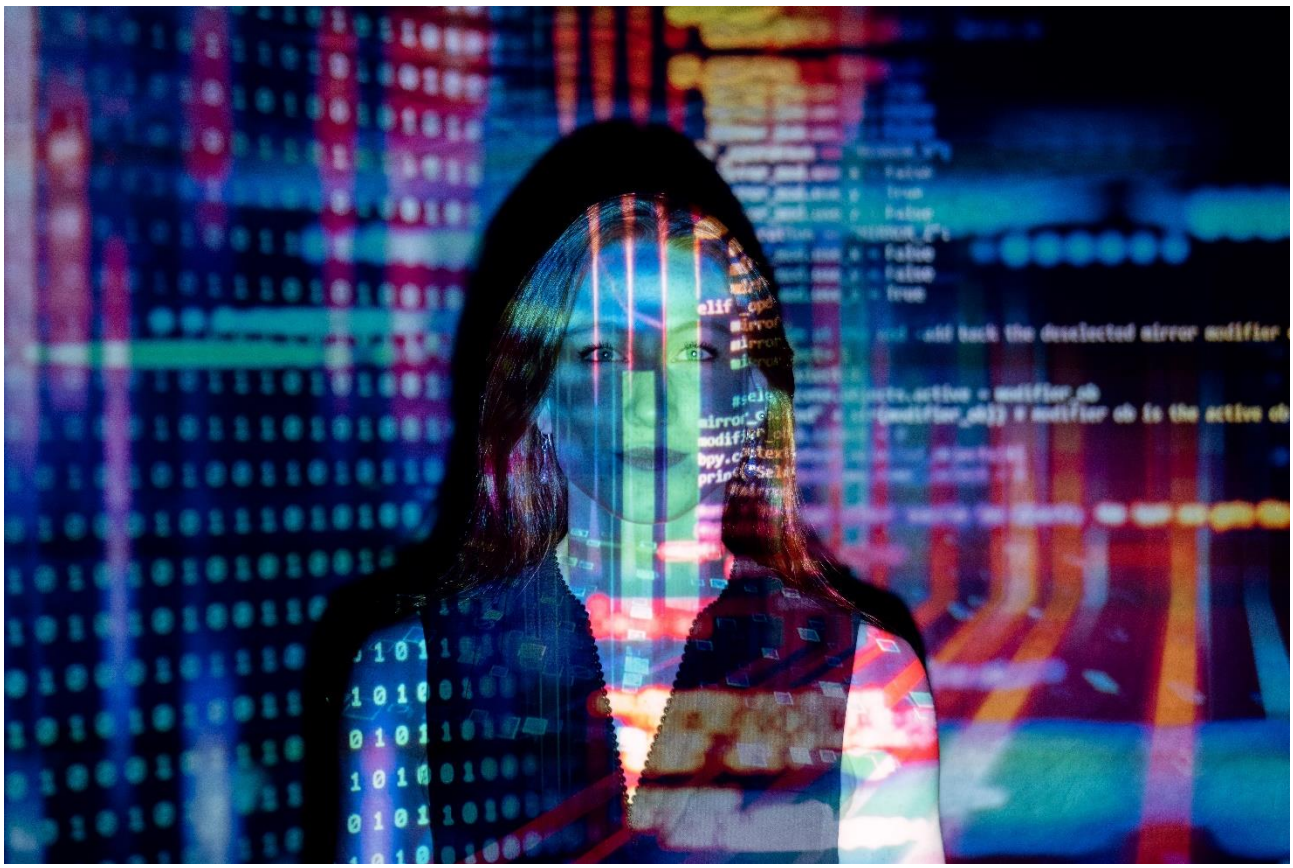
A FINAL NOTE ON AI-LINKED DATA BIASES

To conclude on alternative data inputs for ESG, we also need to take a brief look at biases. According to research by Deutsche Bank[28], ESG data and ESG rating biases remain a key concern, also when using AI based sentiment analysis.

These biases are due to various factors, including:

- **Company size and budget:** with more resources on average dedicated to sustainability.
- **Company marketing and content:** a richer variety of language in corporate reports maybe more indicative of marketing creativity and "green-washing".
- **ESG ratings "bonus":** companies that simply disclose more information tend to be at times rewarded for being "verbose".

The risk that any AI system or algorithm even has biased outcomes is largely unknown and currently unknowable. Investors already understand the inherent risks and biases associated with corporate reporting, and ESG rating. They also need to remain cautious and apply due diligence when implementing and using AI-based sentiment or emotional analysis. If the risks are sufficiently well understood and priced accordingly, investors have many tools to assure they will be compensated for taking them.



[28] Deutsche Bank, Big Data Shakes Up ESG Investing, 2018, Link: https://www.db.com/newsroom_news/2018/big-data-shakes-up-esg-investing-en-11692.htm

3

APPLICATION AT ODDO BHF AM AND NEXT STEPS

AI AND ESG AT ODDO BHF ASSET MANAGEMENT

At ODDO BHF Asset Management, we have focused on the opportunities linked to screening for ESG themes using AI technology for some time, as an investment (fund) theme and for operational management and oversight in investment management processes.

In this context, we have been evaluating the adoption of algorithms that improve data quantity, quality, and their knowledge due in part to the growing evidence of the materiality of high-frequency data[29].

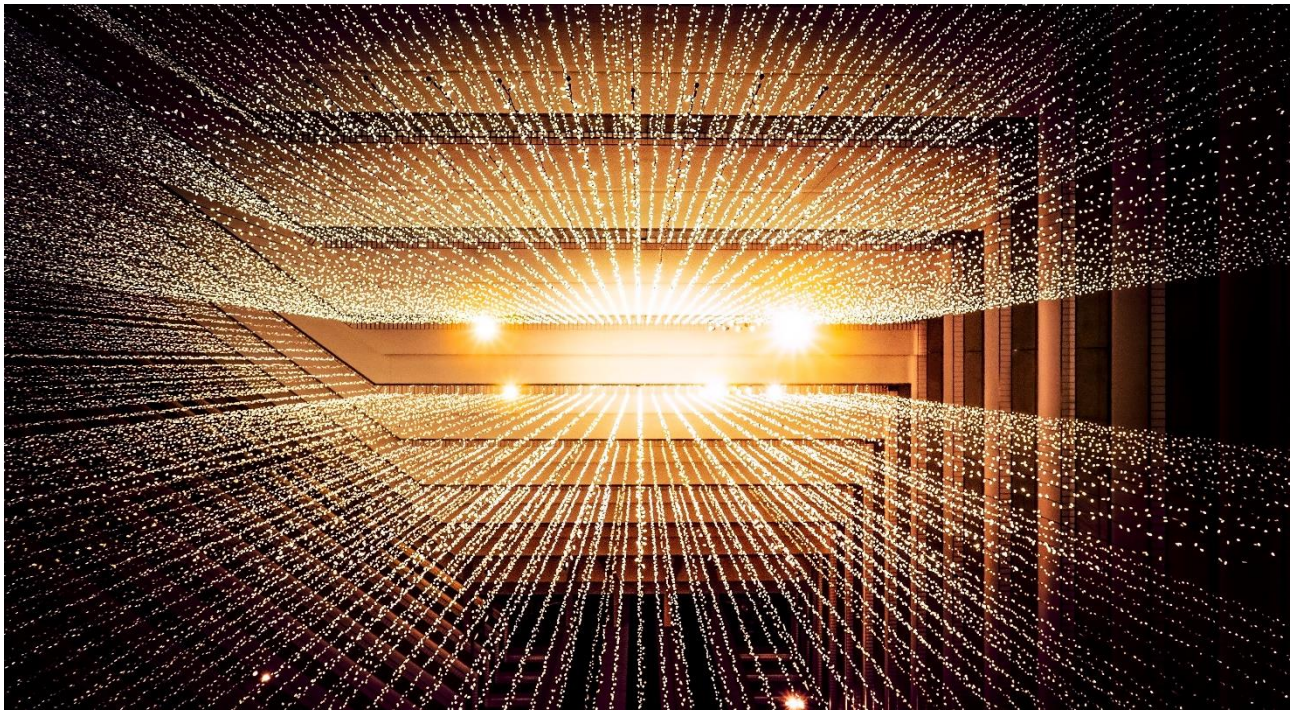
Pragmatism dictates our use of multiple sources of ESG information while we are trying to avoid unnecessary exposure to unexpected data errors and risks, especially where portfolio construction is concerned.

ODDO BHF Asset Management's 1st Use Case for ESG and Artificial Intelligence: ODDO BHF Green Planet

At ODDO BHF Asset Management, our first use case for alternative ESG data inputs using Natural Language Processing (NLP) is **ODDO BHF Green Planet**, a global equity thematic fund invested in companies that will participate the most in the ecological transition - precisely the four sub-themes clean energy, energy efficiency, sustainable mobility and the preservation of natural resources - according to our analysis. This fund was launched in October 2020.

The NLP algorithm is based on ~700 defined ESG terms which represent the sustainability investment goals of the fund. Based thereon, the companies from a global universe are identified which best meet the fund objectives. The algorithm supports the investment team in narrowing down the investment universe. Using an algorithm is also an essential tool helping to keep the investment team small, whilst at the same time allowing for identifying promising small- and mid-cap companies also in the Americas and emerging countries. The investment teams can then focus their fundamental research on those companies that certainly fit the sustainability criteria.

Through this approach, ODDO BHF Green Planet actively supports the financing of the ecological transition.



[29] Responsible Investor, "ESG Data: Evidence of materiality and alpha from continuous, high-frequency data", Jim Hawley, 14 November 2016, Link: https://www.responsible-investor.com/articles/esg-data-evidence-of-materiality-and-alpha

Proposed steps for investors in application of AI and ESG in investment processes

Environmental, social and governance (ESG) issues are becoming increasingly important to internal and external stakeholders. Whether it is from employees, customers, activist or institutional investors, mining and metals companies are feeling the pressure to review strategies and invest in proper processes, measurement and reporting to address concerns and comply with evolving regulations.

Conundrums remain in relation to the sheer complexity of ESG frameworks, providers and methodologies. And further work needs to be done to address inherent biases and divergences in relation to “scope”, “weighting”, and “measurement”.

However, the latest innovation-centred collaboration efforts between regulators, standard setters, accounting, assurance, and innovation providers have shown that technology and digitalisation, including Fintech- and AI-led solutions, can provide a meaningful approach for ESG complexity management in the context of the data management and oversight, alignment of frameworks and methodologies, and hence for sustainable investing.

Finally, here are a few proposed steps, investors can take to successfully leverage AI-based, NLP-linked and other digital technologies in end-to-end ESG processes for decision-making:

1) Assess the current state of the issues beyond ESG data

Have a clear picture of what success looks like to make a tangible impact. Companies and investors need to understand the people, systems and processes in place, to assess the status quo and to set the roadmap for the future. Performing a due diligence assessment of the state of technology, data and providers inside and outside of the organization is a prerequisite.

2) Address process alignment across business areas and activities

Compare and map the current state of the systems, processes, and needs, for multiple use cases. Understanding the current state’s strengths and shortcomings presents the opportunity for operational alignment and allows to explore options that could alleviate current constraints and pain points when planning for future scenarios.

3) Enable strong analytics and reporting through cross-border collaboration

Develop an approach that supports clear, comparable, and consistent analysis and reporting of results. An investor that embraces and effectively uses technology will be equipped to make better, quicker and smarter decisions to achieve organizational objectives and to improve (ESG) performance. Meanwhile, collaboration and innovation across teams can leverage different skill sets to develop multi-purpose solutions that are “future fit”.

4) Align conventional with alternative inputs and approaches

ESG data inputs and analysis should not be looked upon in isolation. They should align with, or support, the broader ESG, investment and/or product strategy, and the different goals, at an entity and a portfolio level. Collaboration across business areas and activities is key to achieve a holistic view on key requirements and to define cross-border solutions.

5) Capture relevant data in real time for informed decision-making

Finally, digital systems and technology solutions that can support multiple, real-time, customizable, and accurate data inputs for informed decision-making are becoming a prerequisite. Collecting clear, comparable and timely data on ESG factors such as air quality, environmental impacts and local procurement can help companies and investors to make more informed decisions and to better communicate ESG performance and actions to all stakeholders.

DISCLAIMER

ODDO BHF AM is the asset management division of the ODDO BHF Group. It is the common brand of four legally separate asset management companies: ODDO BHF AM SAS (France), ODDO BHF PRIVATE EQUITY (France), ODDO BHF AM GmbH (Germany) and ODDO BHF AM Lux (Luxembourg).

This document has been drawn up by ODDO BHF ASSET MANAGEMENT SAS for all market communication. Its investor communication is the responsibility of each distributor or advisor. Potential investors should consult an investment advisor before investing in a strategy. Investor's attention is drawn to the fact that all strategies are not authorised in every country. Should they decide to invest, investors are invited to acquaint themselves with the detailed nature of any risks incurred, in particular the risk of capital loss. The value of the investment may vary both upwards and downwards and may not be returned in full. The investment must be made in accordance with investors' investment objectives, their investment horizon and their capacity to deal with the risk arising from the transaction. ODDO BHF AM SAS cannot be held responsible for any direct or indirect damages resulting from the use of this document or the information contained in it. This information is provided for indicative purposes and may be modified at any moment without prior notice. Any opinions presented in this document result from our market forecasts on the publication date. They are subject to change according to market conditions and ODDO BHF AM SAS shall not in any case be held contractually liable for them.

ODDO BHF Asset Management SAS

12 boulevard de la Madeleine – 75440 Paris Cedex 09 France – Tel.: +33 (0)1 44 51 85 00.

am.oddo-bhf.com