ESG investing: the role of public investors in sustainable investing

Ulrike Elsenhuber[1] and Adela Skenderasi[2]

Abstract

This paper provides an overview of environmental, social and governance (ESG) investing from the perspective of public investors. In an effort to evaluate the role of public investors in sustainable investing, the Bank for International Settlements in April–May 2018 conducted an informal survey among a number of central banks, international organisations and asset managers. The results indicate that public investors are increasingly being pressed to play a role in sustainable investing, but they face a number of challenges in this process. Among these, the most critical are the lack of a commonly adopted ESG taxonomy, and also limitations on the application of the various ESG approaches in some of the portfolios they manage. At present, central banks have introduced ESG factors mainly for their pension fund investments, with the aim of further integrating sustainable investing into their own funds and in foreign exchange reserves portfolios, given that the strategic asset allocation of the latter tends to be less diverse and focused on asset classes that currently do not have a conventional ESG approach. Given the growing relevance of ESG investing for public investors, this paper identifies the motivations for more sustainable investing among public investors and draws attention to the underlying constraints that influence the decision-making of public investors with respect to sustainable investing.

[1] Bank for International Settlements, Asset Management Unit. Email: Ulrike.Elsenhuber@bis.org.

[2] International Monetary Fund, Investment Office. Email: Adela.Skenderasi@imf.org. The author was employed by the BIS Asset Management Unit during the drafting of this research paper.

1. Introduction

Over the last decade, sustainable investing has gained considerable momentum as investors acknowledge the benefits of environmental, social and governance (ESG) investing from a risk management perspective (both for the portfolio and the reputation of the institution), as well as from the viewpoint of the long-term impact on society and the environment.

At the same time, given the nascent stage of sustainable investing, there is no commonly accepted definition or standard for what constitutes a "sustainable" investment, causing a great deal of uncertainty. Instead, there are many different names and taxonomies, each emphasising a particular aspect and different sets of motives. Nevertheless, all of these are related and overlap to a significant extent. While the focus of this paper is ESG investing, we introduce some of the other main concepts used to incorporate sustainability considerations in the investment process to highlight how they differ, namely:

1. **Ethical or values-based investing:** an approach where specific ethical considerations or religious values are taken into account in the investment process. Ethical investing is also commonly referred to as negative screening, as it excludes investments in specific companies or industries that are considered objectionable due to their involvement in activities that are in conflict with particular values or social norms. For example, the exclusion of controversial industries, such as tobacco, alcohol or weapons, from portfolio construction would be referred to as ethical investing.

2. **Impact investing or corporate engagement**: a practice whereby impact investors actively seek to influence corporations by encouraging better practices and might engage in shareholder meetings to address ESG shortcomings. Impact investors allow investments in products with specific features, such as green bonds or bonds from issuers with a low carbon footprint, and they consider social or environmental benefits alongside financial return.

3. **Positive screening:** a process that targets the selection of best-in-class companies to form the desirable investment universe. An example of a positive screening approach would be to favour investments in global companies with the highest ESG scores relative to sector peers.

4. **ESG investing:** an approach that seeks to incorporate ESG factors, alongside financial considerations, in the investment process to evaluate respective risks and opportunities and to measure the sustainability of the investments. ESG metrics may be applied in the form of an overlay strategy[3] or they may be included in all aspects of the investment process.[4]
   ESG considerations span:
   - **Environmental issues** such as climate change, energy and water usage, CO_2 emissions, pollution, waste etc.

[3] Eg exclusion of issuers with the lowest ESG ratings or applying an ESG momentum tilt by over/underweighting issuers that experienced ESG up- or downgrades. The integration of ESG into existing investment portfolios in the form of an overlay strategy allows a present alpha strategy to be maintained, while seeking to use ESG ratings and ESG momentum for risk-return enhancement.

[4] That is, in security valuation, formation of expected returns, risk analysis and portfolio construction.

- **Social issues** such as workplace diversity, labour laws, health and safety considerations etc.
- **Governance issues** such as business ethics, board structure and independence, executive compensation, accounting, anti-fraud and anti-corruption policies etc.

ESG investing is based on the notion that ESG factors are drivers of a company's long-term value, risk and return, and that they signal how sustainable the company is over the long term. Including ESG factors in the analysis of a company extends the assessment beyond traditional financial risk metrics and offers a more holistic approach towards risk management, as it includes an analysis of intangible and "soft" factors to capture the non-financial risks to which a company is exposed.

In the past two decades, several ESG ratings providers have emerged. They aim to assess the key sustainability risks of different entities (sovereigns, corporations or others). ESG ratings are relative in nature: they rank individual issuers within relevant peer groups, such as a particular industry or sector and may thus help to identify best-in-class peers. Each ESG ratings provider uses its own proprietary methodologies to rate entities on ESG measures, leading at times to differences in their assessments of an issuer. Despite this, a number of studies[5] using ESG ratings from both MSCI and Sustainalytics (two of the primary ESG ratings providers), revealed broadly similar results about the impact of ESG factors on portfolio performance. As such, portfolios with high ESG scores outperformed portfolios with low ESG scores, with the governance factor showing the strongest link to outperformance.

In this paper, we document the rationale for ESG investing among public investors, the fundamental challenges they face, the role of public initiatives in ESG investing, and finally we present through the survey results why and how public investors implement ESG investing.

2. Rationale for ESG investing

Over the last decade, as ESG investing has shifted from a regional, niche initiative to a global trend, public investors' conversation around ESG considerations has also evolved. A growing number of them is considering implementing one of the ESG investing approaches in their portfolios (pension funds, own funds or foreign exchange reserves). There have been several motivations leading to the consideration of ESG investing, chief among them are the following:

a. Addressing ESG-related concerns

The public and private sectors recognise that failure to mitigate climate risk and extreme weather patterns present some of the most pressing risks to the global macroeconomy. As such, public institutions face significant pressure to address the climate risk both through a strengthened regulatory environment that incorporates such risks in the oversight of the financial sector, but also by setting a public example of how they conduct their business and manage their investment portfolios. In addition to climate risk, public investors at times face pressure to exclude companies involved in controversial practices from their

5 See Barclays (2016).

portfolios, based both on local norms and values but also legislation. The financial impact on portfolio performance of implementing ESG considerations has in some instances taken a secondary role to targeting the harmful activities, as public investors also need to consider the adverse impact their inaction may have on public perception.

b. Better expected portfolio performance in the long term

Among investors, there is still concern about the potential negative effects on performance from implementing an ESG investment policy. The unease is fuelled by anecdotal evidence, such as the case of the sovereign wealth fund of Norway, which suggests that restrictive negative screening, which significantly shrinks the investable universe, typically results in lower returns.[6] However, academic research demonstrates that other approaches to ESG investing, such as portfolio optimisation towards higher-rated ESG issuers, ESG integration in portfolio construction, or shareholder engagement, may have positive effects on financial performance in the long term. While ESG investing is still in the early stages of development, and performance analyses may be inconclusive, several studies have shown that bond issuers with higher ESG ratings are associated with better risk-adjusted performance compared with peers with lower ESG ratings over the long term. In their analysis of more than 2,000 empirical studies on the relationship between ESG factors and corporate financial performance, Friede et al[7] demonstrate that around 90% of studies reveal a non-negative correlation between ESG factors and corporate financial performance, with the majority of studies revealing a positive correlation. The positive impact of ESG factors on corporate financial performance also seems to be stable over time.

3. The role of public initiatives in ESG investing

Several policy initiatives to promote sustainable investments have helped to promote their rapid growth over the past decade. Statistics of the Global Sustainable Investment Alliance suggest that 26% of professionally managed assets in ex-Japan Asia, Australia, Canada, Europe, Japan, New Zealand and the United States qualified as sustainable investments at the beginning of 2016.[8]

The most prominent policy initiative to promote responsible investments internationally is the United Nations-endorsed **Principles for Responsible Investment (PRI)**. Launched in 2006, the PRI is an investor-sponsored initiative in partnership with the UN Environment Progamme (UNEP) Finance Initiative and UN Global Compact, which sets forth six voluntary and aspirational principles for incorporating ESG issues into investment practice. At the outset, the principles were undersigned by approximately 100 signatories, who collectively managed USD 6.5

6 The loss of over 150 basis points annualised over 12 years from the performance of Norway's sovereign wealth fund was attributed to its negative screening approach.

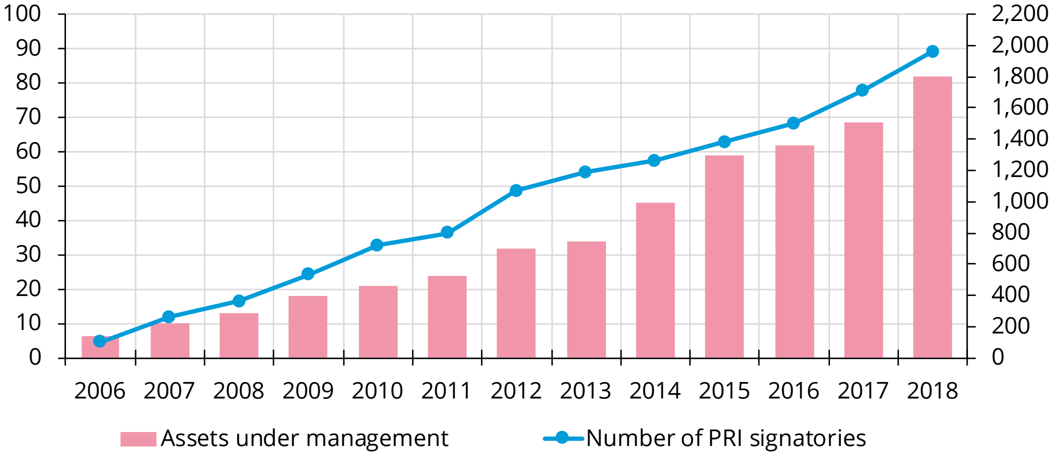
7 See eg Friede et al (2015).

8 The Global Sustainable Investment Alliance (GSIA) is an international collaboration of membership-based sustainable investment organisations, which publishes a review of sustainable, responsible and impact investing on a biennial basis. The review covers sustainable investment data from ex-Japan Asia, Australia, Canada, Europe, Japan, New Zealand and the United States and was last conducted in 2016.

trillion in assets. Since then, the number of signatories has grown to 1,961, representing a total of USD 82 trillion assets under management in April 2018 (Graph 1). Anecdotal evidence suggests that most asset managers operating globally today are PRI signatories, underscoring their commitment to sustainable investing. Additionally, being a PRI signatory is perceived as a standard for independent third-party verification and transparency of the investments by investors. While becoming a PRI signatory is less relevant for public investors today, public pressure and widespread acceptance of the PRI may result in central banks and international organisations signing the principles in the future.

ESG assets under management and signatories to the PRI — Graph 1

USD trillions; number



Source: PRI. Data as of end-April.

Another, more recent initiative, established in December 2015 by the Financial Stability Board (FSB) at the request of the G20, is the **Task Force on Climate-related Financial Disclosures (TCFD)**.[9] The TCFD followed the agreements made at the 2015 Paris Climate Conference, where more than 190 countries committed themselves to keep global warming below 2°C and to channel financial flows towards low-carbon and climate-resilient developments.[10] The TCFD was tasked with identifying the information needed by investors, lenders and insurance underwriters to adequately assess and price climate-related risks and opportunities, considering physical, liability and transition risks associated with climate change, and to issue recommendations for voluntary and consistent disclosure of climate-related financial risks in financial reporting. The result of this undertaking was the issuance of four recommendations on climate-related financial disclosures, which are widely adoptable across different industries and jurisdictions globally. Given the involvement of the public sector in this initiative and the fact that users and providers of financial capital increasingly recognise the risks and opportunities inherent in a changing climate[11] with effects that could even become a financial stability issue, a more widespread adoption of

[9] See Task Force on Climate-related Financial Disclosures, www.fsb-tcfd.org/.

[10] See Sustainable Innovation website, www.cop21paris.org/about/cop21/.

[11] See N Stern (2016).

climate-related financial disclosures and increasing recognition of the global financial sector's role in relation to global climate change may be expected.

At the European level, the European Commission (EC) launched an initiative in December 2016 that encourages the financial sector to re-orient investments towards more sustainable technologies and businesses, to finance growth in a sustainable manner over the long term and to contribute to the creation of a low-carbon, climate-resilient and circular economy.[12] For this purpose, it established a **High-Level Expert Group (HLEG) on Sustainable Finance**, which advised the EC on the steering of public and private capital flows towards sustainable investments, identified the steps that financial institutions and supervisors should take to protect the stability of the financial system from risks related to the environment and advised the EC on how to deploy these policies on a pan-European scale. The HLEG published an action plan on sustainable finance, which was adopted by the EC in March 2018. Among key actions, the HLEG recommended the establishment of a clear EU classification system (taxonomy) for environmentally sustainable economic activities, an EU Green Bond Standard, the introduction of measures to clarify asset managers' and public investors' duties regarding sustainability and the strengthening of transparency with regard to companies' ESG policies. The establishment of a common taxonomy and the development of a Green Bond Standard may be regarded as particularly valuable, as these standardised classifications might solve one of the above-mentioned deficiencies connected with ESG investing, which is the lack of a commonly accepted definition of what constitutes a sustainable investment. Once these standards are established on a European scale, they might also gain a worldwide relevance.

In emerging market economies (EMEs), the **Sustainable Banking Network (SBN)**, which is a voluntary market-based network of EME financial sector regulatory agencies and banking associations (including central banks), has taken the lead in promoting sustainable finance and addressing climate change in line with international practices.[13] The SBN is supported by the International Finance Corporation (IFC) and was launched in September 2012 with members from 10 EMEs. By February 2018, the SBN had grown to a network of members from 34 EMEs, representing USD 42.6 trillion in banking assets (about 85% of total banking assets in EMEs). The focus of the SBN is to support the private sector in adapting to developments linked to environmental and social sustainability and to contribute to national sustainable development agendas. As of February 2018, 15 countries had launched national policies, guidelines, principles or roadmaps focused on sustainable banking. They include Bangladesh, Brazil, China, Colombia, Indonesia, Kenya, Mexico, Mongolia, Nigeria, Peru, Turkey and Vietnam. Nineteen others (classified as being at the "initiating stage"), had committed themselves to taking sector-wide action to promote sustainable finance.

Several central banks are also active in ESG investing and have taken action within their jurisdictions in order to ensure that the financial sector begins to address challenges resulting from the economic and financial impact of climate change and/or to promote sustainable finance. A recent initiative in this regard is the

12 See European Commission website, Sustainable investing, https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en/.

13 International Finance Corporation, IFC Environmental and Social Performance Standards www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at ifc/company-resources/sustainable-finance/sbn.

Network of Central Banks and Supervisors for Greening the Financial System (NGFS).[14] The NGFS was established in December 2017 by eight central banks and supervisors. Since then, the network has added several other members plus a number of observers, among them the Bank for International Settlements (BIS). The network's purpose is to help strengthen the global response required to meet the goals of the Paris agreement and to enhance the role of the financial sector to manage risks and to mobilise capital for green and low-carbon investments in the broader context of environmentally sustainable developments.

4. Main findings of the informal ESG survey conducted in April–May 2018

In April–May 2018, the BIS Asset Management unit conducted an informal survey of 26 peer institutions and select asset managers that have been at the forefront of sustainable investing, in order to assess sustainable investment practices at other institutions. The sample of surveyed institutions is not representative of the central bank and international organisation communities, but it provides relevant information from the perspective of early adopters of ESG investing strategies. Table 1 summarises the responses across the following seven ESG investment concepts:

1. **ESG investment policy**: the formalised commitment to integrate ESG factors in the investment criteria;
2. **Negative screening**: the exclusion of certain sectors or companies based on specific ESG criteria (values or social norms);
3. **ESG integration**: the systematic inclusion of ESG factors into traditional financial analysis;
4. **Shareholder engagement**: the use of shareholder power to influence corporate behaviour, including through direct engagement with management and/or boards, filing shareholder proposals, and proxy voting that is driven by ESG guidelines;
5. **PRI signatory**: the signing of the UN-endorsed PRI, which is perceived as a public commitment to sustainable investing;
6. **Green bonds**: investments in debt securities that are issued to raise capital specifically to support climate-related or environmental projects; and
7. **Carbon footprint measurement**: the measurement of greenhouse gases produced to directly and indirectly support human activities.

[14] See Bank of France website, Network for greening the financial system, http://www.banque-france.fr/en/financial/stability/international-role/network-greening-financial-system.

ESG trends among public institutions and asset managers — Table 1

In per cent

	Central banks	International organisations	Asset managers
ESG investment policy	73%	33%	88%
Negative screening	55%	33%	13%
ESG integration	64%	50%	75%
Shareholder engagement	36%	33%	50%
PRI signatory	0%	33%	88%
Green bonds	91%	67%	0%
Carbon footprint measurement	0%	33%	25%

Source: BIS.

a. ESG investing trends among central banks

In an effort to better understand the evolving ESG investing practices among central bank investors, we contacted a number of institutions that have, in recent years, not only expressed an interest in sustainable finance, but have also made progress in implementing it. The majority of the central banks that have already established ESG investment policies have done so in recent years primarily for their pension funds and own funds, but in some cases also for their foreign reserves. Some central banks also participate in initiatives to promote green finance and to increase transparency on climate risks, such as the above-mentioned Network for Greening the Financial System and the Task Force on Climate-related Financial Disclosures. Our discussions confirmed that sustainable investing policies among central banks not only vary by country and institution but are also dependent on a country's public commitment to the UN's Sustainable Development Goals (SDGs).[15] Most of the surveyed central banks that had established an ESG investment policy were in countries that were actively promoting the UN's SDG agenda.

Public pressure and national laws demanding certain exclusions from investments played an important role in determining whether or not central banks pursued a policy of negative screening. More than half the central banks in the survey had chosen to exclude a number of investments from their portfolios based on negative screening. Some of the banks had taken a norms-based approach in negative screening, establishing their lists of non-investable companies based on national laws, guidelines or international conventions. Others had constructed lists of excluded securities focusing on reputational risks to the central bank. Central banks that had established ESG investment charters for their pension funds focused primarily on the ESG integration approach, as this endorsed a sustainable investment portfolio without reducing investment return expectations. Prior to drafting their charters, they had consulted a number of other public investors, and sought to ensure that the resulting statement emphasised the public good to society. One central bank remarked that their charter had been designed to be implemented within three years, giving them sufficient time to consider any side effects of the sustainable investment policy on the portfolio. Another institution had adopted an ESG investment policy across all asset classes in response to the national financial regulator's requirement.

[15] The UN has established 17 global SDGs to align the interests of investors, companies and society on sustainability matters.

Academic literature advocates that shareholder engagement could be a beneficial instrument in fostering sustainable investing, but most of the surveyed central banks suggested that this remains a costly approach to implement and monitor.

A number of central banks that use external asset managers mentioned that they require fund managers to be PRI signatories and that they use this requirement for screening the asset manager universe. One of the institutions had even considered the possibility of becoming a PRI signatory itself, but the disclosure requirements appeared burdensome and made the application process unappealing.

Most of the central banks we surveyed were also using green bonds in their portfolios. However, in some cases, the use of green bonds was not based on any ESG investment policy, but was motivated primarily by their financial attractiveness. A few of the central banks said that, while green bonds were a suitable first step in establishing an ESG investment policy, they currently focused on a limited number of sectors and represented a very narrow share of the fixed income universe, thereby making large-scale green bond investments unfeasible.

At this stage, central banks had not implemented a carbon footprint measurement process as there was no well established methodology and it remained unclear how the outcome of any measurements should be interpreted. Additionally, there was uncertainty whether the burden of the carbon footprint measurement remained with the company, ie the issuer of a security, or the investor in the company, and whether the reporting by the investor might lead to double-counting of the carbon footprint within the same security.

b. ESG investing trends among international organisations

In addition to central banks, we also held discussions with a number of international financial organisations that are considered peers of the BIS, as well as others who have been pioneers in sustainable investing. While a few of them have yet to adopt a sustainable investment policy, all of these organisations are currently at various stages of considering ESG investments for their pension funds and other investment portfolios. Those that do not yet have an ESG investment policy expect to put one in place in the near future.

The international organisations confirmed that, while ESG investment approaches could take various forms – from negative screening to ESG integration and shareholder engagement – ESG integration was the preferred approach by both those that had already introduced a policy and those that were looking to draft one. There was a general agreement that ESG investing was still in the early stages; hence, even institutions that had adopted a policy early had deliberately moved slowly with implementation, allowing themselves to observe the enhancements around sustainability and modifying their course of action accordingly.

In several of our discussions, these institutions noted that becoming a PRI signatory not only sent a strong public signal of support for responsible investing, but also put pressure internally on the investor to take concrete steps to move the investment portfolio towards more sustainable investment practices.

The international organisations that had invested in green bonds noted that the use of these instruments was viewed as a first step in making the fixed income allocation more sustainable. However, green bonds represented a very minor portion of the overall fixed income market and efforts needed to be made to encourage higher green bond issuance across various sectors.

An additional observation made during the discussions with the pension funds of international organisations was that a number had already started measuring the carbon footprint of their investment portfolios (primarily by using the relevant MSCI module). However, some of them considered this exercise to be part of their long-term portfolio monitoring, and not a reporting tool that gave meaningful information to stakeholders when presented as an isolated measure at a point in time.

c. ESG investing trends among asset managers

In an attempt to better understand ESG investing practices, we also surveyed the asset managers of the BIS Pension Fund. Most have already established firm-wide policies on ESG issues. These ESG investment policies reflect the growing interest in sustainable investing among global investors. They recognise that companies that made an effort to improve their ESG practices also tended to enhance their long-term profitability by becoming more sustainable. By adopting a sustainable investment policy, the asset managers expected to better identify the companies that could deliver higher returns to investors in the long term. Furthermore, asset managers viewed the development of ESG investment policies as part of their fiduciary responsibility to identify potential intangible risks (ie the costs of energy, climate change impact, board representation, alignment of management and shareholder interests etc) that could impact investments.

Most of the managers noted that, unless requested by investors, they would not implement negative screening, as the approach tended to shrink the investable universe and could consequently erode performance. Another evolving trend among asset managers was the establishment of teams and committees in charge of ESG issues, because they recognised that sustainable investing was no longer only an isolated investment style, but instead ESG factors needed to be integrated into all investment processes. These teams served various functions in different organisations, but the overarching role and responsibility was to define the firm’s policy and direction in respect of ESG matters. They were responsible for the oversight of the ESG investment policy implementation, engagement with invested companies on ESG issues, ESG integration analysis into the investment process, and working alongside policymakers in developing a global ESG taxonomy. The asset managers’ approach to ESG investing had also evolved over time as their knowledge and awareness of ESG topics advanced. They noted that companies were also under more pressure, from both regulatory bodies and shareholders, to increase sustainability reporting. As a result, asset managers had introduced sustainability scoring systems for their portfolios, taken a more active role in dealing with companies represented in their portfolios by focusing on engagement and voting, and, in some cases, included an ESG component in their employee compensation packages.

The asset managers we reviewed assigned different weights to ESG factors, with some of them putting more emphasis on governance issues, particularly in relation to the judicious exercise of shareholder engagement through proxy voting. The asset managers with significant assets under management recognised that shareholder engagement was a powerful tool in influencing companies on ESG matters and had subsequently designated significant resources (both employees and systems) to focus on proxy voting.

Most of the asset managers were PRI signatories and, in some cases, were measuring the carbon footprint of the asset management business. However, they were steering away from measuring the carbon footprint of the portfolios in which they were invested.

Asset managers and public investors used a number of tools to capture ESG data. The majority of them mentioned MSCI ESG data analytics as one of the leading tools in an evolving space. In addition, they made use of Aladdin (which has incorporated the MSCI ESG module), Reprisk (a provider of global business intelligence on ESG risks), ISS for their proxy voting services and the Bloomberg ESG analysis tools.

5. Practical considerations in implementing ESG investing for public investors

While public investors embrace the philosophy of ESG investing, they struggle with the execution of an ESG investment policy, as the implementation costs remain unclear and the path is relatively new and untested. Given that ESG investing addresses different concerns for different investors, it is important to determine at an early stage which goals are being pursued with ESG investing (eg whether it is to avoid reputational risks, or to pursue political priorities, or those of marketing, performance, risk management or beneficiary interests). It is important for central banks to differentiate among the various portfolios (pension funds, own funds, and foreign exchange reserves) when implementing ESG investing. At this stage, central banks enjoy the most flexibility in implementing ESG investing within their pension fund portfolios. This is driven primarily by the pension funds' very diverse strategic asset allocation, which not only allows for investments in fixed income and equities, but also into alternative investment strategies, where ESG investing approaches can be implemented without major obstacles. Similarly, central banks' own funds may be slightly more limited by their strategic asset allocations in terms of the eligible asset classes, but there is still enough scope for allocating to ESG investments in a meaningful way. ESG investing in foreign exchange reserves remains challenging due to the restrictions on the strategic asset allocation, which focuses primarily on short-duration sovereign fixed income. However, the unanimous adoption of the UN SDGs by 193 countries is expected to be followed by the issuance of SDG bonds not only by the private sector and development banks but also by sovereigns. This, along with the evolving ESG ratings for sovereigns, may facilitate the implementation of ESG investing in the future strategic asset allocation of foreign exchange reserves.

Conclusion

As evidenced by the rise in policy initiatives and also the results of the informal BIS survey, ESG investing is becoming a mainstream topic for public investors. However, significant work remains to be done to achieve standardisation in both the ESG lexicon and practices for a smooth implementation of sustainable investing by public investors. As such, it is important for investors to not only determine at an early stage the goals that are being pursued with respect to ESG investing, but to also consider the viability of the practices shared by early adopters. The practical considerations suggested in this paper may help investors achieve a more sustainable investment portfolio in a feasible manner, while leaving space to consider the next stages in ESG investing.

References

Baldinger, M, M Castelli, C Greenwald and P Salman (2017): *Long-term value creation: sustainable investing for sovereign institutions*, UBS Asset Management.

Barclays (2016): *Sustainable investing and bond returns*, http://www.investmentbank.barclays.com/our-insights/esg-sustainable-investing-and-bond-returns.html, 31 October.

Barkó, T, M Cremers and L Renneboog (2017): "Shareholder engagement on environmental, social and governance performance", *Finance Working Paper*, European Governance Institute.

Barkó, T, M Cremers and L Renneboog (2017): "Shareholder engagement on environmental, social, and governance performance", *CentER Discussion Paper*, no 2017-040, Tilburg: CentER, Center for Economic Research.

Bernow, S, B Klempner and C Magnin (2017): *From 'why' to 'why not': sustainable investing as the new normal*, McKinsey Consulting, October.

CFA Institute (2018): *Guidance and case studies for ESG integration in equities and fixed income*.

Clark, G, A Feiner and M Viehs (2015): *From the stockholder to the stakeholder: how sustainability can drive financial outperformance*, University of Oxford and Arabesque Partners, March.

Czerwinska, T and P Kazmierkiewicz (2015): "ESG rating in investment: risk analysis of companies listed on the public market in Poland", *Economic Notes*, vol 44, no 2, July, pp 211–48.

DB Climate Change Advisors, Deutsche Bank Group (2012): *Sustainable investing: establishing long-term value and performance*, June.

Deutsche Asset Management (2017): *Measuring physical climate risk in equity portfolios*, November.

Ehlers, T and F Packer (2017): "Green bond finance and certification", *BIS Quarterly Review*, September.

Friede, G, T Busch and A Bassen (2015): "ESG and financial performance: aggregated evidence from more than 2000 empirical studies", *Journal of Sustainable Finance and Investment*, vol 5, no 4, pp 210–33.

Giese, G, L Lee, D Melas, Z Nagy and L Nishikawa (2018): *Foundations of ESG investing, integrating ESG into benchmarks*, MSCI, May.

Global Sustainable Investment Alliance (2016): *Global Sustainable Investment Review*.

Inderst, G and F Stewart (2018): *Incorporating environmental, social and governance (ESG) factors into fixed income investment*, World Bank Group, April.

JP Morgan Perspectives (2018): *ESG investing goes mainstream*, 9 May.

Khan, M, G Serafeim and A Yoon (2016): "Corporate sustainability: first evidence on materiality", *The Accounting Review*, vol 91, no 6, pp 1697–724.

Stern, N (2016): *The economics of climate change: the stern review*, 30 October.

Swiss Sustainable Finance (2017): *Handbook on Sustainable Investments*.