Sustainable Finance in Luxembourg

2023

An expanded overview

LSFI
Luxembourg Sustainable Finance Initiative

pwc

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FOREWORD

As I write these words in late November 2023, the world is grappling with social and environmental crises. In recent years, extreme weather events fueled by climate change – ranging from devastating wildfires and torrential rains to droughts and floods – have spared no corner of our planet. The consequences of these events are having catastrophic effects on biodiversity ecosystems, societies, and economies. In December this year, at the COP28, countries and other stakeholders will conduct the global stocktake, the first assessment of global progress in implementing the 2015 Paris Agreement.

Scientists and civil society organizations have long advocated for meaningful and immediate actions to address this situation. Similarly, forward-thinking financial institutions and corporations have joined various initiatives to drive change within their sectors. Multiple public bodies have also developed frameworks to establish a new level playing field with sustainability at the forefront. Against this backdrop, the Sustainable Development Goals of the United Nations, the Paris Agreement, the EU Action Plan on Sustainable Finance, and the European Green Deal remind us that a paradigm shift is needed.

As per what we can initially observe, the progress achieved thus far falls short. Additional efforts are needed at all levels and across various industries worldwide. In the context of the financial sector, sustainable finance – defined as the integration of environmental, social, and governance considerations into investment decisions – is crucial for financing the urgent transition toward sustainability. This transition is not a choice but a necessity to ensure a just, sustainable, and inclusive future.

Situated in the heart of Europe, Luxembourg has been an early pioneer in sustainable finance, boasting a commendable track record in Microfinance and hosting initiatives such as the Luxembourg Green Exchange, the International Climate Finance Accelerator and LuxFLAG, as well as supporting numerous blended finance ventures. Despite existing challenges, the combination of a growing skill set, a thriving financial sector, and a vibrant and collaborative sustainable finance ecosystem provides Luxembourg with a unique opportunity to lead and advance sustainable finance. The current challenge lies in ensuring that this opportunity is not overlooked, that the financial sector transitions effectively, and that support is extended to and from all the stakeholders involved.

In 2020, the LSFI was founded as a coordinating entity on sustainable finance aiming to support the financial sector's transition. As part of our endeavour to do so, in December 2022, we released the study "Sustainable Finance in Luxembourg: a quantitative and qualitative overview", developed in collaboration with PwC. Our first report sought to analyse the sustainable finance landscape in Luxembourg. This present new edition can be considered a sequel of sorts, as it not only provides a figures' update, but also dives into new facets, such as information reported as per SFDR requirements, among others. Our attempt is to periodically map new dimensions and indicators available to measure and track the progress of sustainable finance across financial sectors over time. A robust understanding of the quantitative facets is essential to identify the existing challenges and pave the way for a sustainable, just and inclusive future. This understanding is vital for financial market actors to fulfil their key role in advancing the sustainable transition.

I would like to thank all the colleagues and partners who contributed to this study, with a special thank you to the study advisory committee and the LSFI Board members. We hope this study will come in handy for stakeholders in the Luxembourg financial centre as they navigate the sustainable finance landscape, providing useful insights and serving as a source of consideration for their actions in the near, medium and long-term future.

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CEO, Luxembourg Sustainable Finance Initiative

ACKNOWLEDGEMENTS

The LSFI and PwC wish to sincerely thank all the professionals who contributed to this study. Your support, guidance, constructive feedback, and expertise were crucial in its development. Special thanks are extended to the members of the Study Advisory Committee, comprising:

- **Enrico Benetto,** Researcher and Head of Environmental Sustainability Assessment And Circularity Unit, Luxembourg Institute of Science and Technology (LIST)
- **Jane Wilkinson,** Independent Director, Ripple Effect
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- **Michael Halling,** Chair and Coordinator of the research program in Sustainable Finance, University of Luxembourg

KEY FINDINGS & CONCLUSIONS

Building on the 2022 study ***Sustainable Finance in Luxembourg: A quantitative and qualitative overview***, this edition aims to provide an unbiased and thorough data-driven analysis of the current status of the sustainable finance landscape within the Luxembourg financial services sector. This analysis seeks to assist key stakeholders in identifying strengths and weaknesses, tracking progress, and ultimately facilitating the transition toward sustainability. The study is not promotional in nature and is intended to complement existing research endeavours on the subject.

More specifically, the study looks at the main environmental, social, and governance (ESG) strategies implemented through sectoral analysis and asset classification breakdowns, with a focus on the investment fund industry. The study also delves into how sustainable finance regulations at the European Union (EU) level have been implemented so far by financial market participants (FMPs) in the Grand Duchy. This part has a broader scope including the asset management, banking, and insurance segments – a new development compared to last year's edition. Lastly, the study provides an overview of how key players in the Luxembourg financial centre have positioned themselves with respect to global climate initiatives and tools.

In this context, the following statements outline the principal observations and findings derived from the analysis of Luxembourg's sustainable finance domain:

- In addition to the Undertakings for Collective Investment in Transferable Securities (UCITS) segment, this year's study was able to showcase adherence with the EU's sustainable finance regulations by the banking, insurance, and alternative investments segment, as further regulatory frameworks were implemented.
- Notwithstanding the economic uncertainties and market turbulence in 2022, Luxembourg-domiciled ESG funds reached EUR2.8tn in assets by the end of June 2023, rebounding from the previous year. Notably, they constituted 4,814 out of the 9,761 active funds in Luxembourg, and accounted for approximately 67.3% of the country's overall UCITS fund Assets under Management (AuM) by the close of Q2 2023. This underscores how firmly sustainable finance has taken root in the Luxembourg fund industry.
- The investment fund industry remains the only sector for which accessible (paid) consolidated and aggregated data is publicly available. Additionally, it is important to recognise that the ESG dimensions and data evaluated across industry studies – including this one – heavily depend on data providers which typically have exclusive control over the collection and classification of ESG data.
- In 2022, ESG funds showed greater resilience than non-ESG funds, as the former saw net outflows of EUR76.9bn, while the latter saw net outflows of EUR98.6bn. However, in the first half of 2023, ESG funds registered EUR21.3 bn net outflows while non-ESG registered EUR20.7 bn net inflows.
- The three types of sub-strategies adopted by ESG funds – Involvement, Exclusion, and Screening funds – have recovered from the lows reached in mid-2022, but remain far from the heights reached in Q4 2021. The AuM of ESG Exclusion and Screening funds dropped by 14.6% and 9.6% respectively from Q4 2021 to Q2 2023, while the AuM of ESG Involvement funds dropped by 8.1% during the same period.
- The majority (59.1%) of ESG UCITS assets in our sample belonged to funds that only applied the ESG Exclusion strategy. From these, 72.8% applied at least three exclusions, predominantly to the weapons, tobacco, and fossil energy sectors, which is in line with last year's observations.
- The vast majority of ESG Involvement funds (82%) strictly adhere to a single sub-strategy. Notably, the Best-in-Class and SDGs sub-strategies were the most common within the ESG Involvement cluster, representing 37.7% and 37.5% respectively. Furthermore, Best-in-Class funds saw the most net inflows from investors of all the sub-strategies in 2022 (EUR3.5bn) and H1 2023 (EUR2.5bn). On the other hand, Microfinance was the least common sub-strategy, representing only 2% of ESG Involvement funds.

- American and French-based asset managers remain the top ESG managers in the Grand Duchy. With EUR756.6bn in AuM, ESG funds promoted by US-based asset managers account for the largest amount of ESG AuM in the Grand Duchy. Ranking second in terms of AuM (EUR414.6bn), France-based managers lead in terms of number of funds with 862 funds. Among the top 9 locations of fund managers' headquarters, little change was observed since the 2022 study.
- A significant proportion (67%) of the AuM of UCITS domiciled in Luxembourg report under Article 8 or Article 9 of the Sustainable Finance Disclosure Regulation (SFDR). Funds reporting as per Article 8 represent 43% of Luxembourg-domiciled UCITS funds as of end-June 2023, an increase from the 34% recorded in June 2022. In contrast, funds under Article 9 make up 5% of the total UCITS funds, compared to 6% in June 2022.
- The rise in funds reporting under Article 8 is in line with Europe-wide trends and is primarily caused by the conversion of funds reporting under Article 6, the launch of new funds disclosing as per Article 8 in the past year, and the shift of funds reporting under Article 9 to Article 8.
- The proportion in terms of AuM of ESG Involvement funds reporting under Article 9 compared to Article 8 decreased from 43% in Q2 2022 to 20% Q2 2023. This reflects the wider shift from Article 9 to Article 8 disclosure.
- Among the 485 management companies (ManCos), banks, and insurance companies analysed, slightly more than half (57%) fulfilled the SFDR's "comply or explain" obligation in relation to reporting on the Principal Adverse Impacts (PAIs) of their investment decisions on sustainability factors. Whereas 169 entities (35%) published a declaration not to report, 109 (22%) published a PAI report. Additionally, 180 entities (37%) did not manage to meet the reporting or declaration requirements. Overall, PAI reports are highly heterogeneous, with entities designing their own reports without referring to a standardised methodology across industries.
- At this stage, mandatory PAIs cannot be really used to assess progress. Beyond the quantitative measures, the following key observations about current PAIs reporting practices were identified:
  - The percentage of entities reporting on PAIs is low;
  - Certain entities only disclose PAIs at the fund or group level;
  - The accessibility of PAI reports varies greatly;
  - The usage of formulas to calculate PAIs is applied inconsistently.
- When evaluating the voluntary European ESG Template (EET), introduced in June 2023 by FinDatEx, the study has revealed that funds tend to commit to a lower proportion of investments with a sustainability objective or that promote E/S characteristics during the pre-contractual phase, than the actual reported investments.
- A relatively small proportion of the analysed Luxembourg-based firms adhere to one of the following climate initiatives or tools: The Glasgow Financial Alliance for Net Zero (GFANZ), the Partnership for Carbon Accounting Financials (PCAF) and the Science-Based Targets Initiative (SBTi). Super ManCos, which are UCITS ManCos that are also appointed to manage an Alternative Investments Fund (AIF), have the most overall adherences, with 42% adhering to at least one of the three initiatives or tools.
- Partnership for Carbon Accounting Financials (PCAF) is the least popular initiative/tool in this study. Only 33 out of the 401 entities in the sample adhere to it, 10 of which are banks – making up one-fifth of the banks in our sample. As for Alternative Investment Fund Managers (AIFMs) and Super ManCos, only 4% and 5% adhere to PCAF, respectively. The significance of this discovery is underscored by the results presented in the LSFI Working Group on Climate Measurement's outcome report which unambiguously recommended it to financial institutions in order to reach net zero.
- Despite the regulatory developments, there are still data gaps as well as a lack of standardisation, hence regulation is not yet delivering the expected level of transparency.

1. INTRODUCTION

1.1. CONTEXT AND OBJECTIVE OF THE STUDY

The global economy is facing a perilous crossroads.

With inflation reaching heights unseen in decades, central banks across the world have, since mid-2022, ushered in a policy of monetary tightening, bringing an end to the prolonged period of ultra-low interest rates. Meanwhile, the era of globalisation appears to have paved the way for a new context marked by geopolitical tensions, trade wars, and economic protectionism. It is no surprise that the term "polycrisis" has increasingly come to the fore in global policy discussions[1].

Looming large over these socioeconomic and political developments are the climate and biodiversity crisis. As a matter of fact, 2023 has been one of the worst years yet for climate-related disasters. The United States experienced 23 climate catastrophes that caused at least one billion dollars in damages, as of September 2023[2]. Up north, Canada witnessed devastating and unprecedented wildfires which are estimated to have ravaged over 15 million hectares of land[3]. Southeast Asia experienced an intense monsoon season characterised by extreme rain that has caused floods and landslides across several countries[4]. Europe found itself in the midst of a water crisis, while devastating floods hit every corner of the world in what has been aptly called the hottest summer on record[5].

Overcoming the challenges confronting the world cannot be dissociated from how we respond to the climate crisis, particularly as it becomes clear that the global economy must urgently transition towards sustainability and decarbonisation. Article 2.1c of the Paris Agreement clearly sets the goal of "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development"[6], hence, sustainable finance being more important than ever.

In the EU, sustainable finance regulatory developments have proceeded at speed, aiming to foster the transition across the continent, with all its attendant ripple effects across the world. Likewise, policymakers have begun implementing industrial policies to decarbonise their economies and achieve energy security and sovereignty – the Inflation Reduction Act in the US and the Green Deal Industrial Plan in the EU standing as core examples[7].

At the end of 2021, global ESG AuM stood at USD18tn, a figure that was projected to reach USD33.9tn in 2026 at a compound annual growth rate (CAGR) of 21.5% in a base-case scenario, as per PwC's projections[8]. Given its position as a global financial centre situated in the heart of Europe, and as the home of several pioneering sustainable finance organisations and the world's first exchange dedicated to sustainable securities, Luxembourg is ideally situated to help drive the sustainability transition. Founded in 2020, the Luxembourg Sustainable Finance Initiative (LSFI) was established precisely to raise awareness, promote and help develop sustainable finance initiatives in the country[9].

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1. World Economic Forum, *The Global Risks Report 2023, 18th Edition.* https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf
2. Flavelle, C. (2023). *Record Number of Billion-Dollar Disasters Shows the Limits of America's Defenses*, New York Times, September 14, 2023.41.7% of the analysed funds. https://www.nytimes.com/2023/09/12/climate/billion-dollar-disasters.html#:~:text=The%20United%20States%20has%20suffered,the%20effects%20of%20climate%20change
3. Carty, M. (2023). *World on Fire: 2023 is Canada's worst wildfire season on record – and it's not over yet*, CBC, September 4, 2023. https://www.cbc.ca/radio/ideas/world-on-fire-canada-s-worst-wildfire-season-on-record-1.6946472
4. Ng, K. (2023). *Asia floods: Death toll climbs in severe monsoon season*, BBC, July 14, 2023. https://www.bbc.com/news/world-asia-66197937
5. Reuters (2023). *Summer 2023 was hottest on record, scientists say*, September 7, 2023. https://www.reuters.com/business/environment/august-was-hottest-ever-recorded-third-straight-month-set-record-2023-09-06/
6. UNFCCC (2015). Paris Agreement, Article 2.1. https://unfccc.int/sites/default/files/english_paris_agreement.pdf
7. Vonner, F. (2023). *Implications of the New Green Industrial Policies*, ESG Investor, August 11, 2023. https://www.esginvestor.net/implications-of-the-new-green-industrial-policies/
8. PwC (2022). *Asset and wealth management revolution 2022: Exponential expectations for ESG*, October 11, 2022. https://www.pwc.com/gx/en/financial-services/assets/pdf/pwc-awm-revolution-2022.pdf
9. LSFI. About Us. https://lsfi.lu/who-we-are/

In 2022, the LSFI partnered with PwC to prepare *Sustainable Finance in Luxembourg: A quantitative and qualitative overview*, a study which sought to analyse the status of the sustainable finance landscape in the Grand Duchy as of the first half of that year. Despite the macroeconomic turmoil that befell the global economy at the time, the AuM of ESG funds domiciled in Luxembourg made up over half of the country's UCITS fund assets, while over 40% of the funds were ESG funds[10].

An update is in order, particularly given that global AuM are expected to rebound from their 2022 stagnation and grow at a CAGR of 5% to reach USD147tn by 2027[11] – and ESG AuM are likely going to make up a growing share as sustainable finance regulations increasingly get rolled across different jurisdictions. A trend that is further driven by the ongoing climate emergency and the growing awareness surrounding sustainability.

1.2. THE SFDR: GOALS AND CURRENT ASSESSMENT

A key pillar of the EU's action plan on sustainable finance[12], the Sustainable Finance Disclosure Regulation (SFDR)[13] was introduced in November 2019 and is widely regarded as a pioneering legislative text. It explicitly mentions that "as the Union is increasingly faced with the catastrophic and unpredictable consequences of climate change, resource depletion and other sustainability-related issues, urgent action is needed to mobilise capital not only through public policies, but also by the financial services sector"[14].

At its core, the SFDR is an instrument of transparency. It aims at providing ESG-oriented investors with clarity on the content of funds that claim to be sustainable or to have sustainability characteristics, thus helping them compare sustainability-related financial products, decarbonise their portfolios and shift capital flows towards sustainable investments. However, given the novelty of the whole sustainable finance landscape, the SFDR is still generally considered to be at a regulatory early stage, and its effects remain difficult to assess.

After coming into force in March 2021, the SFDR helped lift ESG towards the centre of the global asset and wealth management industry. Any Financial Market Participant (FMP) with more than 500 employees is required to disclose the sustainability risk policies used and the adverse impacts of investment decisions or advice on sustainability factors by publishing a detailed entity-wide statement on its websites.

But implementing the SFDR has not been without challenges, especially when it comes to disclosing the Principal Adverse Impacts (PAIs) of investment decisions on sustainability factors, at both the entity-level (Article 4) and product-level (Article 7). The SFDR outlines a total list of 64 ESG-related PAI indicators, 18 of which are mandatory (e.g., greenhouse gas emissions and gender pay gap) and 46 of which are optional. Most FMPs, depending on the composition of their investments, must disclose a set of mandatory PAI indicators.

As per the SFDR, entities must publish yearly PAIs disclosures where they disclose the direct impact of their activities or investments on the environment and society. This year was the first one in which these disclosures were mandatory, with the deadline for publication being June 30, 2023.

10. LSFI & PwC (2022). *Sustainable Finance in Luxembourg: A quantitative and qualitative overview,* December 13, 2022. https://lsfi.lu/wp-content/uploads/2022/12/Sustainable-Finance-in-Luxembourg.pdf

11. PwC (2023). *Asset and wealth management revolution 2023: The new context,* July 7, 2023. https://www.pwc.com/gx/en/industries/financial-services/asset-management/publications/asset-and-wealth-management-revolution-2023.html

12. European Commission (2018). *Communication from the Commission to the European Parliament, the European Council, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions. Action Plan: Financing Sustainable Growth*, March 8, 2018. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0097

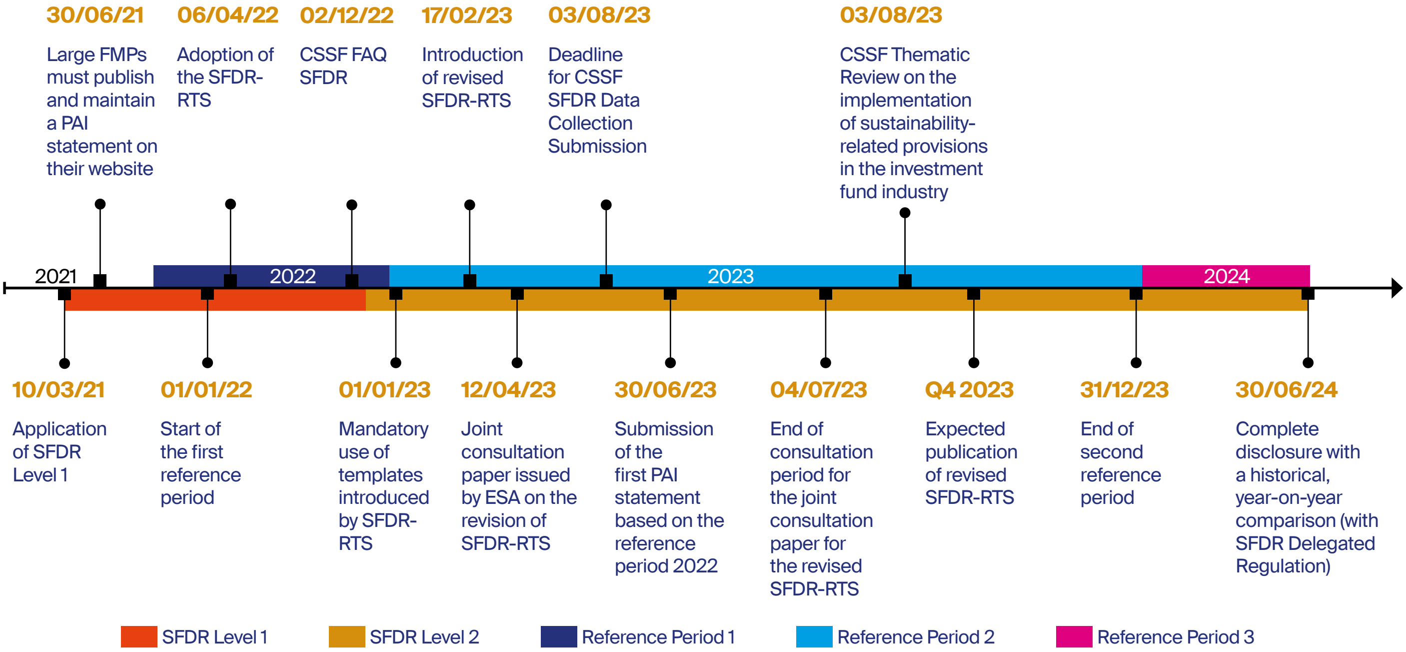
13. EU Regulation 2019/2088 on sustainability-related disclosures in the financial services sector. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088

14. Ibid.

Exhibit 1. Timeline of key SFDR dates

Applies to all FMPs and financial advisors defined in Articles 2(1) and 2(11) of the SFDR:*

(a) an IBIP;
(b) an investment firm which provides portfolio management;
(c) an IORP;
(d) a manufacturer of a pension product;
(e) an AIFM;
(f) a PEPP provider;
(g) a venture capital fund
(h) a social entrepreneurship fund
(i) a UCITS management company; or
(j) a credit institution which provides portfolio management.



*Commission Delegated Regulation (EU) 2019/2088.

Sources: PwC Global AWM & ESG Market Research Centre, European Commission[15], CSSF

In January 2023, the long-awaited Regulatory Technical Standards of the SFDR (colloquially known as 'SFDR Level II' or 'SFDR-RTS') came into force. SFDR Level II includes precise templates for pre-contractual disclosure documents and periodic reporting for financial products that fall under the SFDR, as well as templates for entity-level disclosures of the PAIs of investment decisions on sustainability factors[16]. These templates are designed to inform potential investors on FMPs' annual sustainability performance and on the sustainability attributes of their products.

15. European Commission, *Action Plan: Financing Sustainable Growth.* *https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0097*; *European Commission, Commission Delegated Regulation (EU) 2019/2088.* *https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088*

16. Commission Delegated Regulation (EU) 2022/1288 of 6 April 2022 supplementing Regulation (EU) 2019/2088. *https://eur-lex.europa.eu/eli/reg_del/2022/1288/oj*

Ultimately, the SFDR is only one piece of the broader sustainable finance legislative framework in the EU, and it is directly linked to other regulations and directives such as the EU Taxonomy Regulation and the Corporate Sustainability Reporting Directive (CSRD) (cf. Exhibit 2).

Exhibit 2. Core sustainable finance legislations in the EU

Sustainable Finance Disclosure (SFDR)

- Requires FMPs and financial advisers to report their products' sustainability risks to end-investors.
- Applies more comprehensive disclosure requirements to products that "promote, among other characteristics, environmental or social characteristics" (Article 8) or that have "sustainable investment as their objective" (Article 9).
- Imposes the disclosure of principle adverse impacts (PAIs) at entity level.

Impl. date: March 2021 (Level I) and January 2023 (Level II)

EU Taxonomy

- Establishes an EU framework to define sustainable economic activities and inform investors and FMPs.
- Defines an activity as sustainable if it contributes substantially to one of six specified environmental targets, while not causing significant harm to any of the other ones.
- Sets minimum safeguards to ensure that investments labelled as 'taxonomy-aligned' meet specific criteria related to human and labour rights, anti-bribery, taxation and fair competition, and provides a safeguard against classification of environmentally sustainable activities that conflict with fundamental social norms.

Impl. date: January 2022 for CCM/CCA January 2023 for the remaining objectives

Corporate Sustainability Reporting Directive (CSRD)

- Extends the scope and reporting requirements of the Non-Financial Reporting Directive (NFRD).
- Requires all large entities to regularly report on their environmental and social activities if they meet at least two of the following criteria:

>250 employees;

>EUR 40mn in turnover;

>EUR 20mn in assets*.

Impl. date: January 2024/2025/2026 depending on company's size

Note: *These thresholds are currently in force, but the EU proposal in October 2023 aims to change these minimum thresholds as follows: >250 employees; >50mn turnover; >25mn assets.
Source: PwC Global AWM & ESG Research Centre

Another piece being the Taxonomy, this one adds additional disclosure requirements to the SFDR – for instance, if a financial product invests in any economic activity that contributes to one of the Taxonomy's six environmental objectives, information on this activity must be disclosed in the pre-contractual stage, as well as on the website and in periodic reports. The Taxonomy also makes it mandatory for FMPs to add disclaimers to financial products that invest in economic activities which cannot be defined as sustainable within its definition[17].

While the European regulatory landscape is broader, only the regulatory pieces which have been analysed in the study are mentioned in this section.

17. Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088.
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32020R0852

1.3. LUXEMBOURG: A SUSTAINABLE FINANCE ECOSYSTEM

As the second largest fund centre in the world after the United States in terms of AuM[18], Luxembourg has also distinguished itself as a global hub for sustainable finance.

In October 2018, the Luxembourgish government and the United Nations Environment Programme - Finance Initiative (UNEP FI) published the *Luxembourg Sustainable Finance Roadmap*[19] – from which the LSFI was established – and policymakers and industry participants alike consider the development of sustainable finance as a core priority for the future of the Luxembourg financial centre. The Luxembourgish government issued its first Triple A sovereign sustainability bond in 2020[20], and in the 2021 budget law, it introduced a reduced subscription tax for investment funds, applicable to the share of assets invested in Taxonomy-aligned activities[21].

In addition, the world's first climate awareness bond was issued by the European Investment Bank in the Luxembourg Stock Exchange in 2007[22]. Nine years later, the Luxembourg Green Exchange (LGX) – the world's first platform entirely dedicated to green, social, and sustainable financial instruments – was established; currently the LGX is the world's leading platform dedicated exclusively to sustainable finance, playing a pivotal role in this space, especially considering the recently adopted European Green Bond Standard[23].

The thriving Luxembourg landscape is also complemented by other organisations such as LuxFLAG, Luxembourg labelling agency which was founded in 2006, and the ICFA, the International Climate Finance Accelerator founded in 2018.

Considering this landscape and with sustainable finance regulations showing no signs of slowing down at the European level, we can only expect Luxembourg's prominence as a European and global sustainable finance hub to grow in the coming years. As of Q2 2023, Luxembourg's ESG UCITS AuM stood at EUR2,758.3bn, making up a significant chunk of European ESG UCITS AuM which stood at EUR4,802.0bn at the end of 2022 (cf. Exhibits 3.a and 3.b).

18. Luxembourg for Finance (2023). *Financial Centre: Key Figures.* https://www.luxembourgforfinance.com/en/financial-centre/key-figures/

19. Government of Luxembourg & UNEP (2018). *Luxembourg Sustainable Finance Roadmap: A Journey Towards a Sustainable Financial System*. October 2018. https://gouvernement.lu/dam-assets/documents/actualites/2018/10-octobre/04-sustainable-finance/Luxembourg-Sustainable-Finance-Roadmap-WEB.pdf

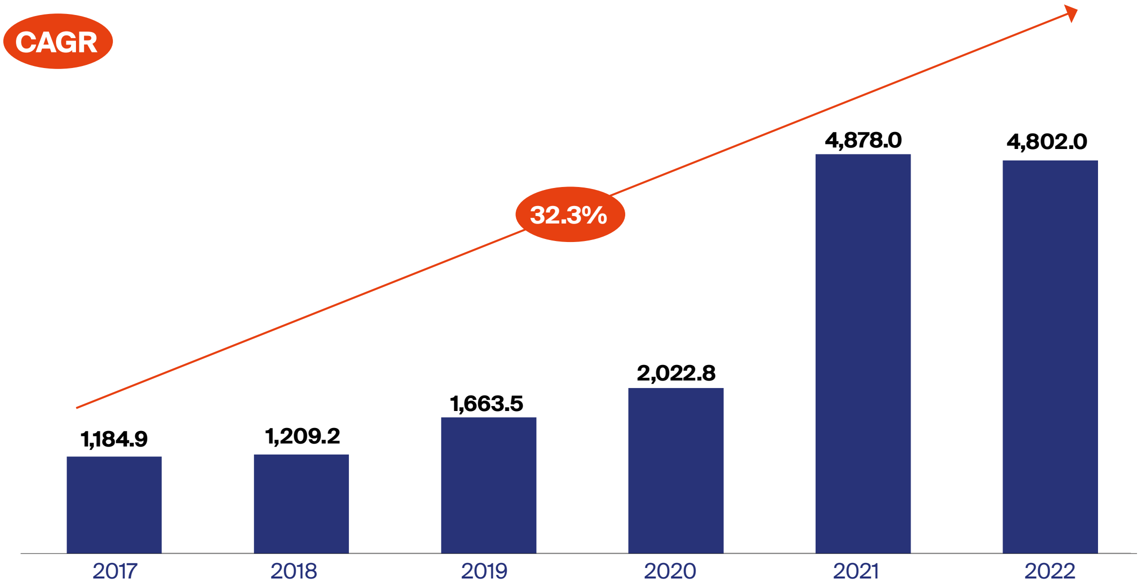
20. Halder, K. (2023). *Luxembourg issues final report on its inaugural €1.5bn sustainable bond.* Delano, September 8, 2023. https://delano.lu/article/luxembourg-issues-final-report

21. LSFI (2021). *Luxembourg Sustainable Finance Strategy.* February 9, 2021. https://lsfi.lu/wp-content/uploads/2021/02/Luxembourg-Sustainable-Finance-Strategy_EN.pdf

22. European Investment Bank (2022). *15 years of EIB green bonds: leading sustainable investment from niche to mainstream*. July 5, 2022. https://www.eib.org/en/press/all/2022-308-15-years-of-eib-green-bonds-leading-sustainable-investment-from-niche-to-mainstream#:~:text=On%20July%205th%202007,of%20social%20and%20sustainability%20bonds

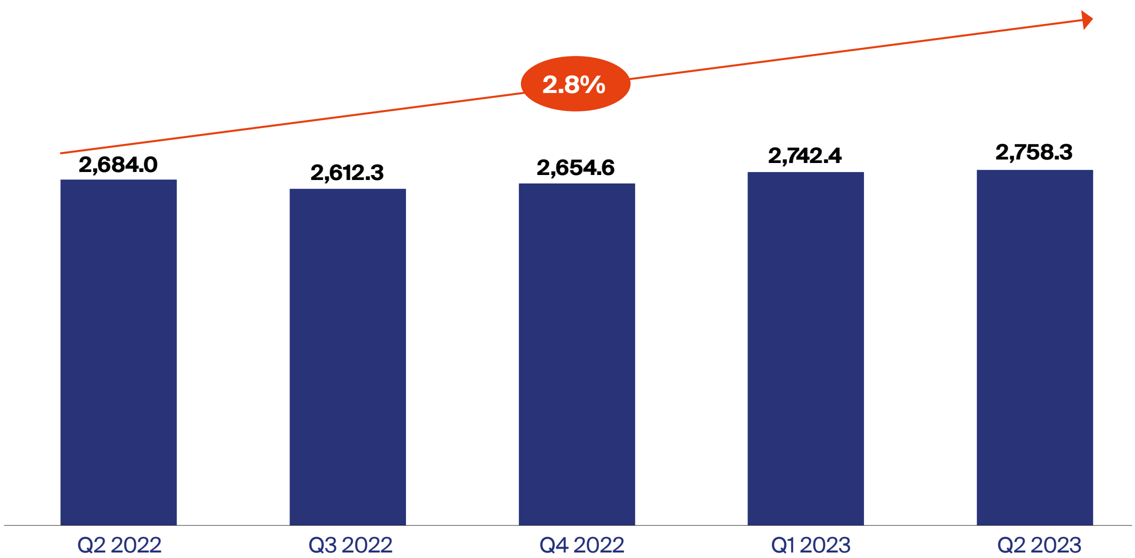
23. *G. Corsini (2023). Europe's Green Bond Standard: A game changer?* Environmental Finance, October 6, 2023. https://www.environmental-finance.com/content/analysis/europes-green-bond-standard-a-game-changer.html

Exhibit 3.a. European ESG UCITS AuM (in EUR bn)



Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Exhibit 3.b. Luxembourg ESG UCITS AuM (in EUR bn)



Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

1.4. SCOPE AND TARGET AUDIENCE

The primary objective of this study is to provide an unbiased and fact-driven overview of the sustainable finance domain in Luxembourg. While recognising that data availability and consistency are still limiting factors, this study harnesses the latest available data, expands last year's scope, and presents a comprehensive summary for financial sector professionals and key stakeholders in Luxembourg and worldwide. Its aim is to help identify existing strengths and weaknesses, monitor progress, facilitate the sustainability transition, and show the continuous effort to offer timely and additional insights within the Luxembourg sustainable finance landscape. It is not of a promotional nature, and is designed to complement existing research efforts, such as the 2022 study commissioned by the Association of the Luxembourg Fund Industry (ALFI)[24], which provides a complete outlook of the European asset management landscape.

It is important to stress that this study is only a partial assessment of the financial services sector, as it focuses solely on the sustainable finance segment in Luxembourg and does not include any national or regional comparisons or benchmarks. When analysing Luxembourg's financial industry on a product level, the study is restricted to Luxembourg-domiciled UCITS and excludes AIFs and other types of investment vehicles given this is the only sector for which publicly available data exists regarding consolidated and aggregated data.

However, in Section 5 of the study, we analyse the extent to which FMPs in the Luxembourg financial sector are managing to adhere to Article 4 of the SFDR which addresses the entity-level PAIs disclosures. Here, the full spectrum of Luxembourg's financial services industry is considered – AIFMs, Super ManCos[25], banks and insurance companies, in addition to UCITS. Given the size of Luxembourg's fund industry (EUR5,197bn as of June 30, 2023[26]) and particularly its 55% global market share[27] of cross-border funds, the results provide a robust picture of sustainable finance's overall state.

This edition of the *Sustainable Finance in Luxembourg* study is compelling particularly because it offers a first glance at sustainability-related data that FMPs have to disclose for the first time, such as reporting on PAIs of investment decisions on sustainability factors (see more details in Section 5). In addition, this year's improved coverage gives a more accurate picture of the trends in Luxembourg's sustainable finance sector over the last two years.

The study also analyses how FMPs in Luxembourg are positioned with regards to the adherence to major climate-related initiatives and tools.

Finally, an overview of sustainability considerations in the banking and insurance sectors is provided.

24. ALFI (2022). *European sustainable investment funds study 2022: Hitting the road to a greener future*. June 22, 2022. https://www.alfi.lu/getattachment/d590f0cc-8141-402e-9df2-bff575382dbe/european-sustainable-investment-funds-study-2022.pdf

25. Although the term is not legally defined, the Association of the Luxembourg Fund Industry defines 'Super ManCos' as "UCITS management companies which are appointed as AIFMs of at least one AIF." https://www.alfi.lu/en-gb/pages/setting-up-in-luxembourg/investment-fund-managers

26. CSSF (2023). *Global situation of undertakings for collective investment at the end of June 2023*. August 2, 2023. https://www.cssf.lu/en/2023/08/global-situation-of-undertakings-for-collective-investment-at-the-end-of-june-2023/

27. PwC (2023). Global Fund Distribution Poster – 2023 edition. https://www.pwc.lu/en/fund-distribution/gfd-poster.html

2.

STRUCTURE AND METHODOLOGY

2.1. PREPARATORY WORK

As in 2022, the LSFI selected PwC to consult and support with data research and analysis on ESG in Luxembourg financial sector for this second, updated and expanded edition of the Sustainable Finance in Luxembourg study. To provide an additional layer of procedural rigour, the Advisory Committee which the LSFI had appointed in 2022 has once again assumed its role, reviewing the study's results, ensuring an oversight from experts across sectors and providing constructive feedback whenever necessary.

2.2. STRUCTURE OF THE STUDY

Section 3 of the study begins setting the stage by diving into the ESG UCITS funds landscape in Luxembourg and looking at how ESG funds have been faring when compared with their non-ESG counterparts and also delves into the applied investment strategies: Screening, Exclusion and Involvement. Section 3 is complemented by the Appendix, in which we include a quantitative analysis of the six sub-strategies under ESG Involvement, looking at key metrics such as AuM and net flows, as well as the core sectoral allocations and the different exclusions applied, to name a few.

Starting with Section 4, the study expands the scope of the 2022 edition. This section zooms in on ESG funds and contains an analysis of funds' disclosures under the Sustainable Finance Disclosure Regulation (SFDR), focusing on the ratio of funds under Articles 6, 8, and 9 with respect to the ESG strategies, including AuM and number of funds. Section 5 goes a step further by looking at all FMPs; in particular, it analyses the PAIs disclosures at entity-level, with separate analyses for different types of FMPs, comparing disclosures of mandatory and voluntary PAIs metrics. It also suggests best practices and gives a general overview of the current state of the financial sector with respect to PAIs. Section 6 deals with additional voluntary sustainability practices among Luxembourg's financial institutions, such as funds' voluntary European ESG Template (EET) disclosures. Notably, it studies how the EET disclosures of funds under SFDR Article 8 and Article 9 differ before and after an investment is carried out. Section 7 covers the adherence of FMPs in Luxembourg to different internationally recognised climate initiatives and tools. Finally, Section 8 offers an overview of sustainability considerations in the banking and insurance sectors.

2.3. DATA SOURCES

For the analysis and the data included in Sections 3 to 4 and in the Appendix focusing on ESG Involvement funds, PwC used data from Refinitiv Lipper as it is considered among the most trustworthy, comprehensive and widely accepted data providers within the fund management sector. All data was extracted in July 2023 and covers up to the end of Q2 2023, namely June 30, 2023. For Section 6 which covers EETs, the study also uses Refinitiv Lipper data, but as of September 30, 2023. In this case, the extract was made in October 2023.

The dataset for all the PAI related disclosures from ManCos, banks, and insurance companies included in Section 5 was manually collected by PwC Global AWM & ESG Research Centre in July and August 2023 from the websites of a vast array of financial institutions.

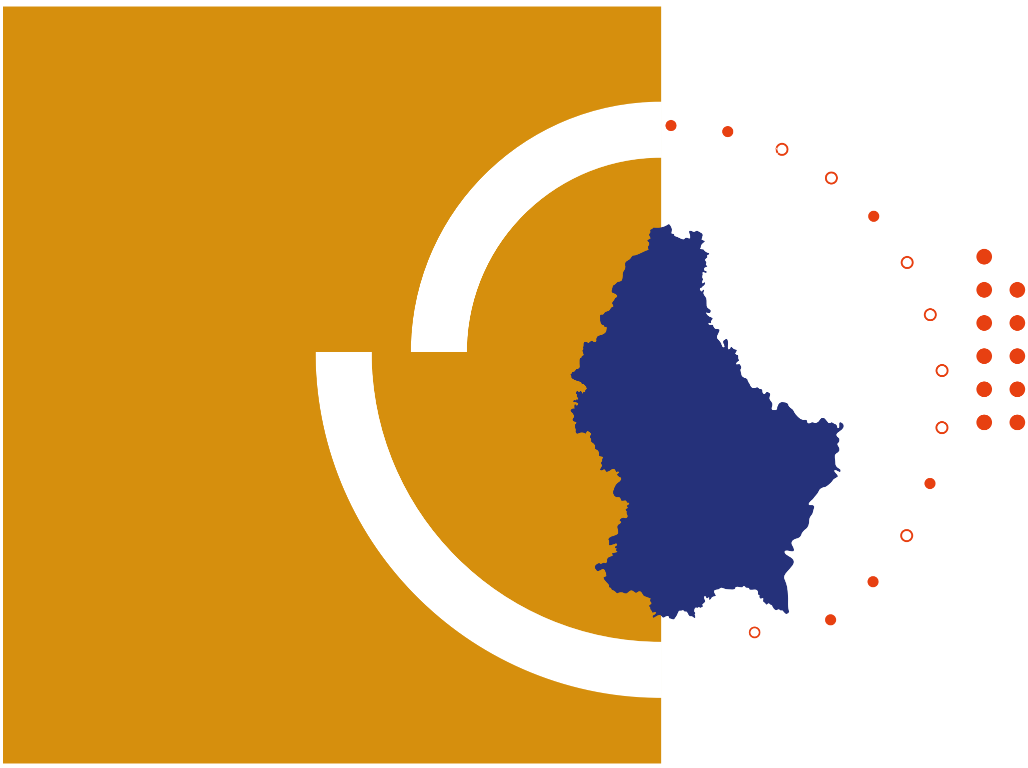
For Section 7, a dual approach was adopted to extract the data, consisting of a verification of the membership registers available on the initiatives and tools websites, together with an individual assessment of the entities' websites, when relevant.

2.4. UPDATED FIGURES

While the investment fund sector is the sole sector with accessible (paid) data, it is crucial to recognise that the ESG dimensions and data evaluated across industry studies, including this one, heavily depend on data providers. These data providers typically have exclusive control over the collection and classification of ESG data.

After the 2022 study was published, Refinitiv Lipper continuously updated and reclassified the funds in its database as additional information on ESG funds became publicly available. The analysis and comparisons in this 2023 edition have been carried out with the updated 2022 figures. Thus, when referring to the 2022 figures, we included the most up-to-date and revised ones in this study. For instance, ESG funds' AuM amounted to EUR2.2bn as of Q2 2022 in the first edition of the study. However, in the current edition, and thanks to Refinitiv Lipper's updated coverage of ESG funds, the AuM as of Q2 2022 stood at roughly EUR2.7bn, with a significantly increased share of ESG Involvement funds. Consequently, in the present study, the updated figures allow us to correctly depict the actual growth in ESG funds, thus avoiding any data bias. To illustrate, the AuM evolution from Q2 2022 to Q2 2023 has shown modest growth due to macroeconomic and geopolitical volatilities – using the old, non-revised ESG fund data for Q2 2022 would have been misleading as it would have shown a larger increase.

This update and reclassification on Lipper's part accounts for any discrepancies between the 2021 and 2022 figures present in this study and in the first edition from last year. All databases regularly improve their coverage, and it is important to stress that the 2022 study gave the most complete overview of the sustainable finance landscape in Luxembourg that was possible at the time.



2.5. DESCRIPTION OF FUND ESG CHARACTERISTICS

The definitions below are provided and used by Refinitiv Lipper for their data classification and are consistent with those included in the 2022 study. These have been applied by PwC for the categorisation detailed in Section 2.6 below, as well as in Sections 3 to 4, and in the Appendix.

ESG

This term is used to describe all the funds that include material[28] Environmental and/or Social and/or Governance factors into their overall screening processes regardless of their underlying strategy or sub-strategy as listed below.

Negative Screening

Funds that undertake this strategy exclude one or more controversial sectors from their investments. These include, but are not limited to, weapons, tobacco, adult entertainment, nuclear energy, alcohol or drugs, GMOs, and fossil energy.

Best-in-Class

Funds in this subcategory select the best companies by ESG criteria within each sector of the fund's investment universe (e.g., the least polluting oil company).

Positive Tilt

Funds in this subcategory lean towards companies that lead in terms of certain ESG criteria. Positive Tilt funds use a known investment strategy, called "tilting," to insulate portfolios from risk through the pursuit of a specific investment strategy or goal – in this case, by weighting their portfolios towards ESG companies and financial instruments.

Thematic

Funds in this subcategory focus on sustainable themes such as clean water, climate change etc.

Microfinance

Funds in this subcategory invest in Microfinance projects.

Sustainable Development Goals

Funds in this subcategory invest in companies that demonstrate progress towards the achievement of the UN sustainable development goals (SDGs).

Sustainable Bonds funds

Funds in this subcategory invest in green bonds, social bonds, sustainable bonds or other types of similar fixed-income securities, whose proceeds go towards sustainable investments.

For the classifications above, Refinitiv uses official documents such as fund prospectuses, Key Investor Information Documents (KIIDs), and ESG strategy documents.

28. All definitions are quoted from Lipper "Responsible Investing Attributes-Definitions," March 2022.

2.6. DESCRIPTION OF DATA GROUPING METHODOLOGY

Similar to last year's edition, the study divides the categories outlined in the previous subsection into three clusters, or ESG strategies:

ESG Screening	ESG Exclusion	ESG Involvement
This cluster contains ESG flagged funds which apply ESG factors into their overall screening process and cannot be explicitly included in either of the other two categories.	This cluster includes ESG flagged funds that also apply one or more exclusion criteria.	This cluster includes ESG flagged funds that also apply one or more of the following sub-strategies: Best-in-Class, Positive Tilt, Thematic, Microfinance, SDGs, and Sustainable Bonds funds. Given that 18% of the funds apply more than one sub-strategy, the data presented by sub-strategy double counts these funds and their respective AuM. These funds may also apply exclusion criteria as well.

All funds categorised under ESG Involvement and ESG Exclusion are tagged as ESG funds in the Lipper database, meaning that they all apply ESG Screening to varying degrees.

2.7. DATA REVIEW PERIOD

The starting point of our data analysis is Q4 2021 and extends to Q2 2023. We selected Q4 as a starting point (the same as in the 2022 study) because many funds were re-categorised after the SFDR went into effect in March 2021. Using older ESG fund data would result in data dilution.

2.8. LIMITATIONS OF THE ANALYSIS

Given the constant changes in the ESG funds domain, this study is as complete as it can be in terms of its analysis, and we acknowledge that other methodologies can be complementary to ours.

In Section 3, concerning the ESG strategies analysis, we have chosen this approach because it allows us to perform and showcase a unique view of ESG strategies applications at fund level. However, no analysis of the underlying constituent companies of the funds was performed, and no verification of the identified ESG strategies applied by each fund has been performed as it is beyond the scope of this study. Furthermore, investor stewardship or active ownership of funds – through voting and engagement – has not been assessed due to a lack of aggregated, publicly available data for comprehensive and standardised analysis. Hence, in addition to implementing one of the analysed ESG strategies, the funds in scope could proactively engage in voting or engagement activities with their investee companies. These approaches are critical to sustainable investments and can be employed to create a positive impact on sustainability-related challenges and to address associated risks.

The main limitations of Section 5 (PAIs) lie in the fact that current data coverage is not representative of all FMPs in Luxembourg. Although all financial institutions in Luxembourg were analysed, data limitations with regards to adherence to Article 4 of the SFDR limited our sample. In addition, a selection of mandatory indicators has been chosen as these lend themselves well to historical and interinstitutional comparison and cover a range of topics within the ESG domain. For Section 6 (EET), we acknowledge that funds are not required to report via the EET template and do so on a voluntary basis. This results in limited data available through this source. Moreover, only the fields with product-level asset allocation information mandated by SFDR Level II have been included, as these were relevant for the purposes of this analysis.

When it comes to Section 7 (climate initiatives and tools), we limited the analysis to the biggest 50 banks (by assets) and insurance companies (by total premiums collected). The only assumption made was that in the absence of information at Luxembourg entity-level, the status of the parent entity was applied, only if the Luxembourg entity explicitly stated that it fully follows the parent company's policies.

We acknowledge here as well that another approach could have been taken.

3.

ANALYSIS OF LUXEMBOURG ESG FUNDS' INVESTMENT STRATEGIES

3.1. OVERALL LANDSCAPE OF LUXEMBOURG UCITS

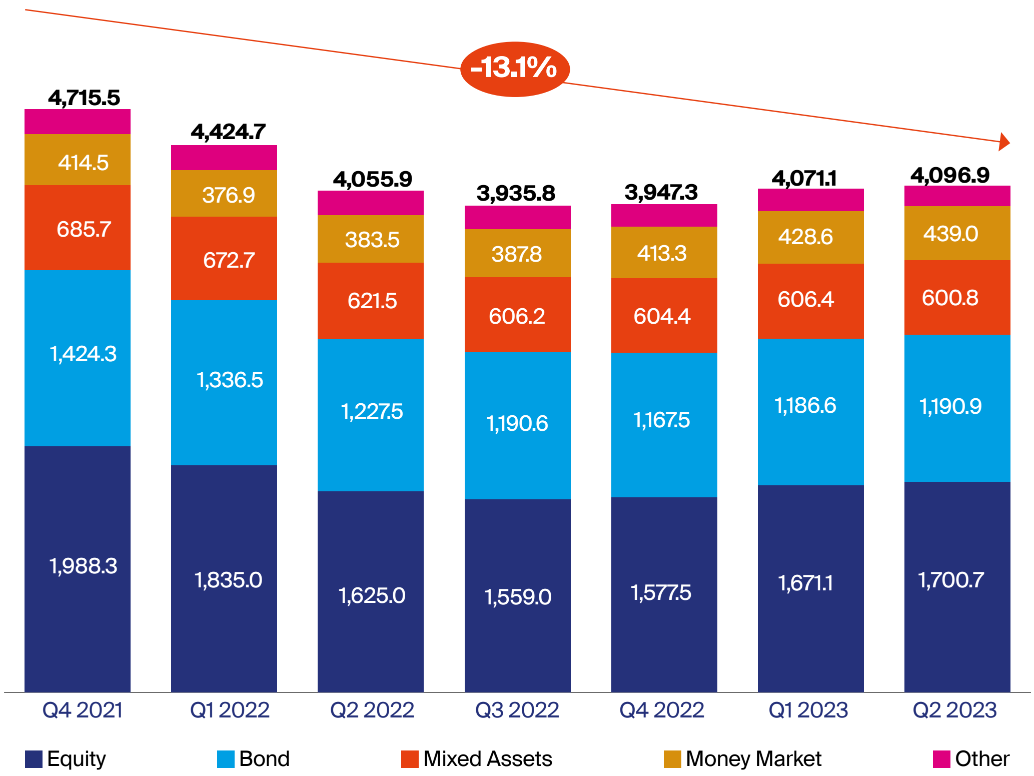
The 2022 impacts of the geopolitical and macroeconomic situation eased in the first half of 2023. Given that the economic confidence remains unstable, investor behaviour adjusted towards safer investments.

3.1.1. Asset Class Breakdown

Macroeconomic and geopolitical headwinds still being felt

The global asset and wealth management industry experienced a downturn in 2022. Between the end of 2022 and Q2 2023, UCITS AuM domiciled in Luxembourg grew by EUR149.6bn (3.8%) to reach EUR4,096.9bn – however, this rise over the first two quarters of 2023 has not been enough to bring AuM back to 2021 levels, resulting in a negative CAGR of -13.1% during the period analysed (cf. Exhibit 4). The adverse macroeconomic headwinds that began in Q1 2022 are still being felt.

Exhibit 4. UCITS AuM domiciled in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Nonetheless, investors were more confident in financial markets in 2023 compared to 2022: H1 2023 only saw EUR0.7bn in net outflows compared to EUR175.5bn in 2022 (cf. Exhibit 5). The reallocation of assets back into markets after 2022 has been felt very consistently throughout the financial sector.

Exhibit 5. UCITS net flows domiciled in Luxembourg (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	-59.8	-10.9
Bond	-104.4	16.5
Mixed	0.6	-18.9
Money Market	-10.7	23.4
Other	-1.2	-10.9
Total	**-175.5**	**-0.7**

Note: The figures presented in this Exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

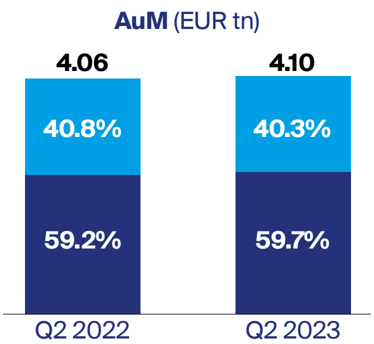
3.1.2. Institutional vs. Retail Split

Institutional investors are re-allocating from public to private markets

In H1 2023, institutional investors caused net outflows in UCITS markets as they increasingly shifted towards private markets[29] – particularly the private credit and private equity asset classes, both of which are increasingly seen as being ESG-compatible[30].

Institutional players were reticent to invest in 2022, causing EUR119.7bn in net outflows from Luxembourg-domiciled UCITS. As of the end of H1 2023, net outflows from this group have only amounted to EUR16.2bn. On the other hand, retail investors, who make up 59.7% of market AuM, contributed positively with net inflows of EUR15.5bn in H1 2023 (cf. Exhibit 6).

Exhibit 6. UCITS domiciled in Luxembourg; Institutional vs. Retail split (AuM and net flows)



Net flows (EUR bn)

	2022	H1-23 (YTD)
Institutional	-119.7	-16.2
Retail	-55.8	15.5
TOTAL	-175.5	-0.7

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

29. Hoekstra, T. (2023). *Pension funds to continue alternatives buying spree.* IPE, October 6, 2023. https://www.ipe.com/pension-funds-to-continue-alternatives-buying-spree/10069334.article

30. Kokoszka, P. (2023). *Pensions view private equity as ESG compatible, says Apex Group.* IPE, October 25, 2023. https://www.ipe.com/latest/pension-funds-view-private-equity-as-esg-compatible-asset-says-apex-group/10069659.article

3.1.3. Sectoral Analysis

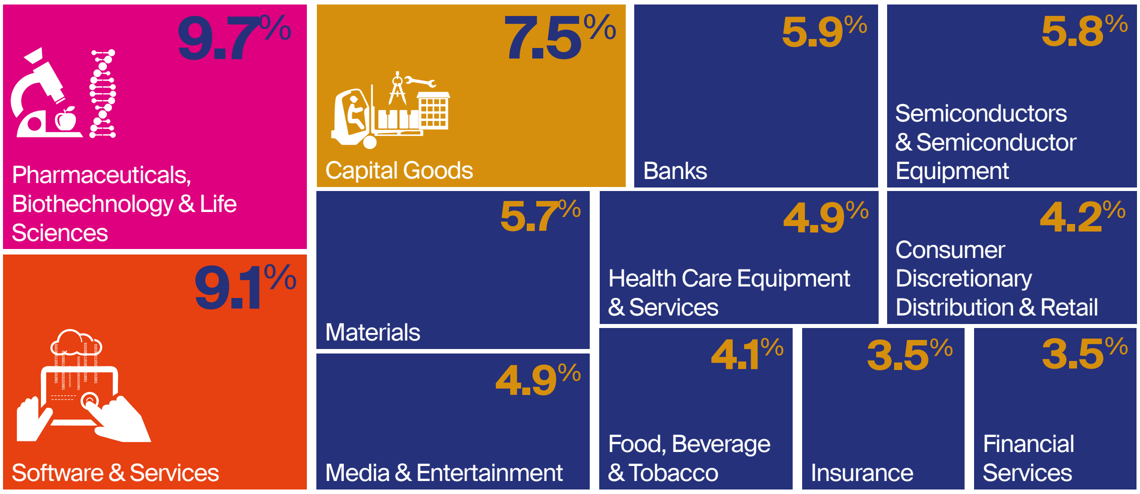
Capital Goods take the lead over Pharmaceuticals, Biotechnology & Life Sciences

This trend is unsurprising given the growth that the Pharmaceuticals, Biotechnology & Life Sciences sectors had during the COVID-19 pandemic. Its fall to third place, with 7.3% of total AuM as of June 2023 (down from 9.7% in June 2022) might indicate how the impacts of the pandemic are phasing out from the markets. The rise of Capital Goods to the largest sector in Luxembourg denotes an increase in financial activities and investments in general.

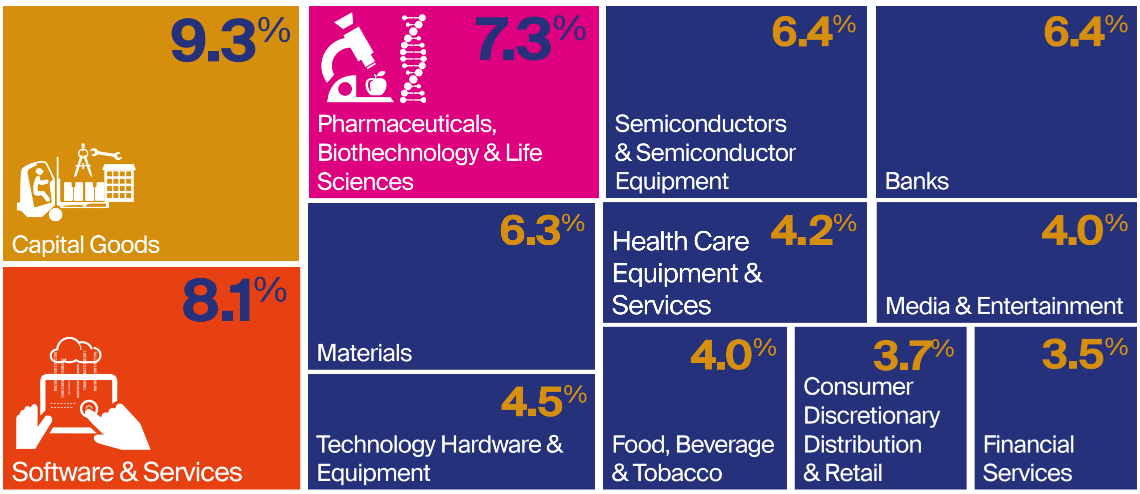
The Luxembourg investment ecosystem remains as diversified as in 2022. Capital Goods investments gained market share, growing from 7.5% to 9.3% of AuM, and becoming the largest sector. It is followed closely by Software & Services, which retained its second position compared to 2022, despite its market share diminishing to 8.1% (cf. Exhibit 7).

Exhibit 7. AuM percentage allocation to top sectors in Luxembourg (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data for H1 2023 was available is EUR1.85tn or 45.2% of the EUR4.1tn displayed previously. The remaining sectors account for 32.2% of the allocation.

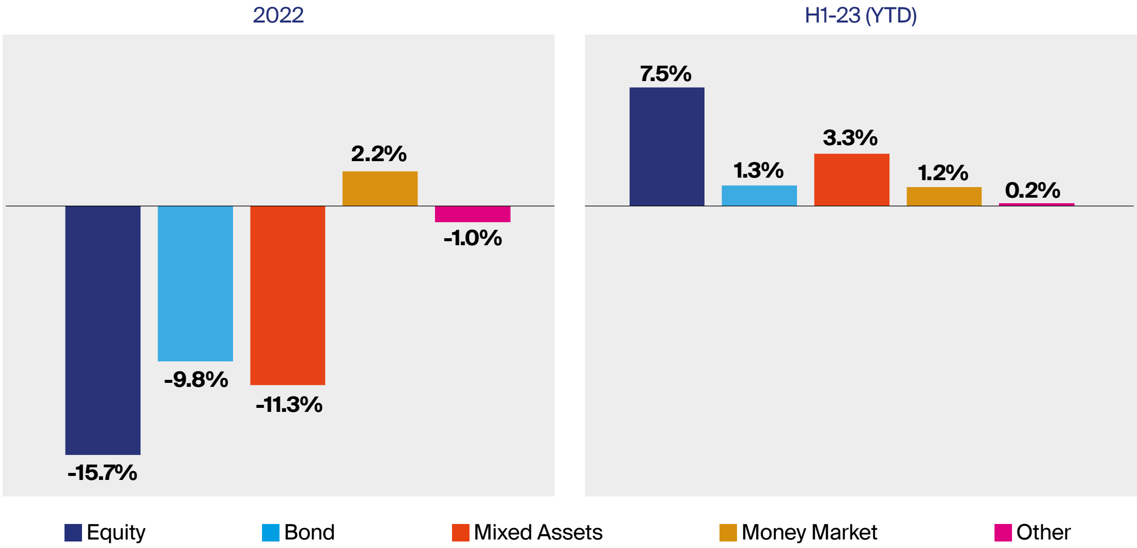
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.1.4. Performance by Asset Class

Asset classes rebound, but fail to recoup 2022 losses

During the first half of 2023, equity, bond, and mixed asset funds saw positive returns, but they fell short of recouping the losses experienced in 2022. Only money market funds managed to achieve positive returns in both years. Like in global markets, the higher risk asset categories in Luxembourg were adversely affected by a rise in risk aversion and pessimism in 2022, which favoured the safer assets within money markets (cf. Exhibit 8).

Exhibit 8. Luxembourg-domiciled funds average gross returns by asset class*



*Note: Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees.

Sources: PwC Global AWM Research Centre analysis based on Refinitiv Lipper

3.2. ANALYSIS OF LUXEMBOURG ESG FUNDS' INVESTMENT STRATEGIES

This subsection offers an overview of the current state of sustainable finance in Luxembourg and examines the changes that have occurred since 2022. To provide a complete picture and highlight emerging trends in the ESG space, we use Refinitiv Lipper's updated data from 2022 alongside the data for H1 2023.

The sustainable finance sector has not been immune from the shocks that affected the global financial sector throughout 2022. The decline of ESG AuM in 2022 and the mild recovery in H1 2023 closely match that of the wider financial sector. Indeed, ESG funds have seen slow increases from Q4 2022 to Q2 2023, and performance of sustainable funds has outgrown that of its traditional peers in parallel[31]. This is in line with the fact that the majority of Luxembourg-domiciled AuM (67.3%) are placed in ESG funds. It should be noted that ESG UCITS funds performed slightly better than non-ESG UCITS funds between Q4 2021 and Q2 2023, which is a promising sign for sustainable finance.

Although net flows were lower for ESG funds than for non-ESG funds in H1 2023, it is likely that the sustainable finance sector will be able to weather this storm. Indeed, ESG investors, both retail and institutional, are generally less sensitive to negative outflows and poor performances, even in the face of adverse macroeconomic conditions[32]. Furthermore, as Millennials and Generation Z increasingly join the ranks of retail investors, interest for ESG is likely to increase[33]. This trend is even stronger in funds with ambitious sustainability goals rather than vague ESG commitments[34]. All this means that the outflows and performance seen in ESG UCITS since 2022 is likely a reflection of the broader market, not of the sustainable finance sector. ESG finance is likely to continue to grow, particularly as governments across the world increasingly foster the sustainable transition of their economies.

This study analyses ESG funds based on the strategy they use to ensure their investments are sustainable (cf. Sections 2.5 and 2.6).

31. Morgan Stanley (2023). *Sustainable funds beating peers in 2023*. August 17, 2023. https://www.morganstanley.com/ideas/sustainable-funds-performance-2023#:~:text=Understanding%202023%20Fund%20Performance&text=By%20asset%20class%2C%20sustainable%20equity,%25%20(see%20Figure%201

32. Capota, L., Giuzio, M. Kapadia, S. & Salakhova, D. (2022). *Are ethical and green investment funds more resilient?* European Central Bank - Working Paper Series, November 2022. https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2747~1b6db3db8d.en.pdf

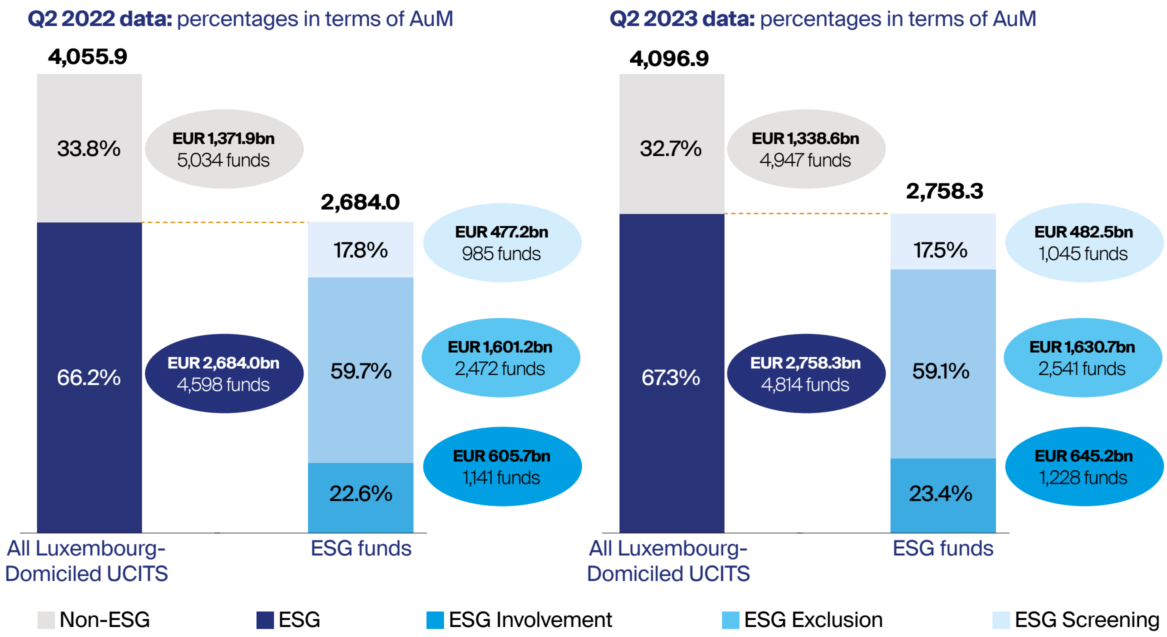
33. Versace, C. & Abssy, M. (2022). *How Millennials and Gen Z Are Driving Growth Behind ESG*. September 23, 2022. https://www.nasdaq.com/articles/how-millennials-and-gen-z-are-driving-growth-behind-esg

34. Fang F. & Parida S. (2022). *Sustianable mutual fund performance and flow in the recent years through the COIVD-19 pandemic.* https://www.sciencedirect.com/science/article/pii/S1057521922003374

In Luxembourg, the dominant trend among ESG funds is to primarily employ Exclusionary approaches or ESG Involvement (59.1% and 23.4% of ESG AuM respectively). However, there is also a segment of ESG funds, approximately 17.5% of ESG AuM, that lacks explicit ESG Involvement or Exclusion policies but reportedly employs ESG Screening methods in their investments.

A modest change compared to 2022 is the growth of ESG Involvement funds from 22.6% to 23.4% of ESG AuM. At the same time, ESG Screening funds maintained a similar market share of 17.5% of AuM in H1 2023 compared to 17.8% in 2022. Exclusion also remained roughly the same, changing from 59.7% to 59.1%. This shift suggests that some fund managers abandoned a solely-Screening strategy in favour of ESG Involvement, adopting a more active ESG approach (cf. Exhibit 9).

Exhibit 9. Status of ESG funds in Luxembourg, based on selected classification method (data for Q2 2022 and Q2 2023; percentages in terms of AuM; EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database. ESG Involvement funds may also employ exclusion criteria, and all ESG funds use ESG Screening.

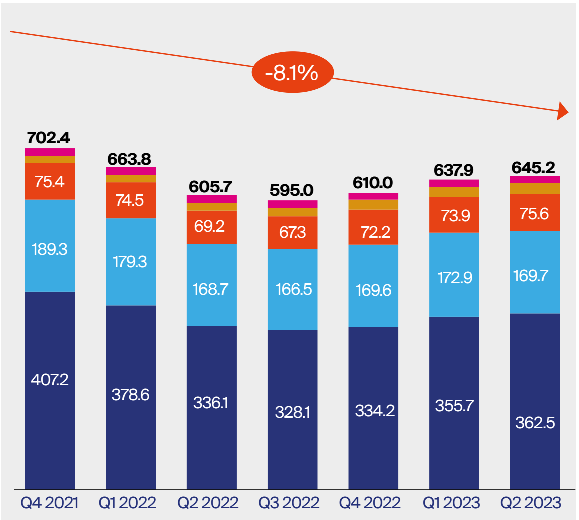
Sources: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

The three strategy clusters saw a mild downward trend since Q4 2021, with Exclusion funds seeing the largest loss in AuM at 14.6%. Both Involvement and Screening funds performed slightly better than the overall UCITS market, which saw a 13.1% drop in the same period. However, the performance of all three strategy clusters as well as the overall market were generally similar. ESG Involvement funds witnessed a drop of 8.1% – the lowest among the three clusters.

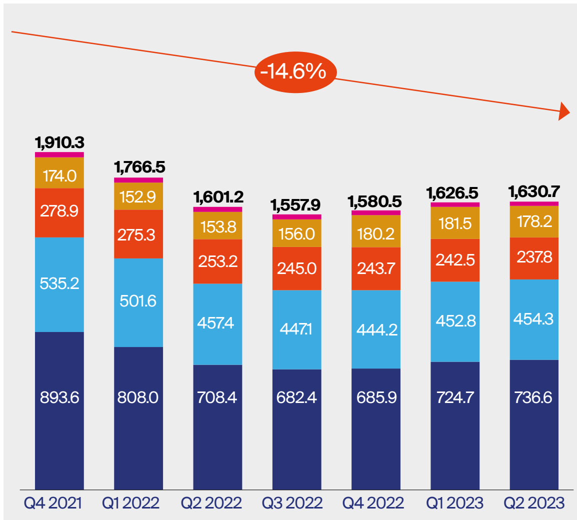
All three strategy clusters began improving from Q4 2022 and have trended upwards since then. While the overall trend measured since the end of 2021 has not been reversed yet, the most recent figures provide a more optimistic outlook (cf. Exhibit 10).

Exhibit 10. ESG clusters comparison – Asset class split

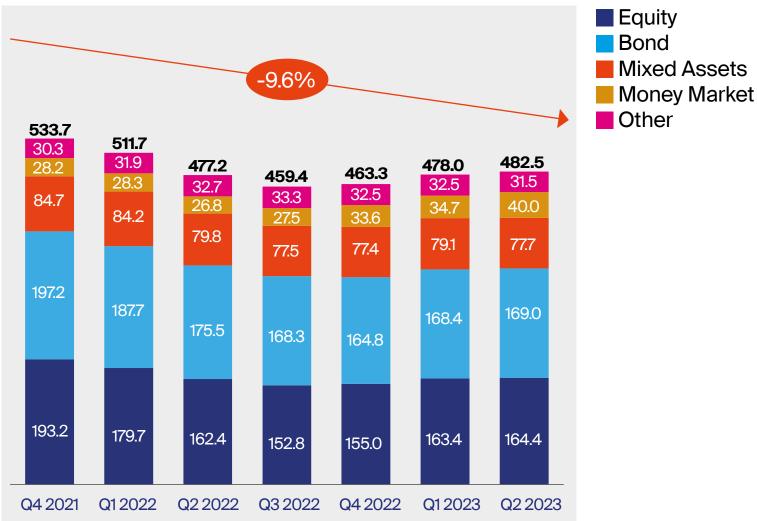
ESG Involvement funds AuM in Luxembourg
(by quarter, EUR bn)



ESG Exclusion funds AuM in Luxembourg
(by quarter, EUR bn)



ESG Screening funds AuM in Luxembourg
(by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database. ESG Involvement funds may also employ Exclusion criteria, and all ESG funds use ESG Screening.

Source: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

3.2.1. ESG Funds vs. Non-ESG Funds

ESG funds expected to regain their momentum after a difficult 2022

The majority of AuM in Luxembourg is ESG AuM. Out of EUR4,096bn in Luxembourg-domiciled UCITS AuM, EUR2,758bn (67.3%) is in ESG funds. However, only 4,814 out of the 9,761 funds (49.3%) are ESG funds. This means that ESG funds are larger on average than non-ESG funds.

Among ESG asset classes, bonds and money markets are the only ones that saw net inflows during H1 2023, with EUR3.3bn and EUR7.1bn respectively. This is in part due to investors reallocating their assets to safer asset classes following market turmoil. As of H1 2023, the overall ESG market saw net outflows worth EUR21.3bn, compared to the EUR76.9bn of net outflows in 2022.

During 2022 both ESG and non-ESG AuM saw net relative (semi-annual YTD) outflows worth 2.9% and 7.6% respectively. This is indicative of ESG funds' resilience in the face of economic and geopolitical headwinds. However, the recovery in 2023 has been difficult for ESG funds. While 2023 has been a better year than 2022 for both ESG and non-ESG funds, only non-ESG AuM saw net relative inflows (1.5% of their AuM) while ESG AuM continued to suffer net relative outflows worth 0.8%. While this situation is not ideal for ESG funds, it is likely more reflective of macroeconomic factors and the nature of non-ESG funds. For example, the rise in energy prices made funds investing in fossil fuels perform well in 2023 – a rise which ESG funds did not experience. This course correction away from net outflows is expected to continue with sustainable investments regaining their momentum (cf. Exhibit 11).

Exhibit 11. Net flows of Luxembourg-domiciled ESG- and non-ESG UCITS (EUR bn)

	Net flows 2022 (EUR bn)		**Net flows H1-23 YTD** (EUR bn)		**Relative flows* 2022**		**Relative flows* H1-23 YTD**	
Asset Class	**ESG**	**Non-ESG**	**ESG**	**Non-ESG**	**ESG**	**Non-ESG**	**ESG**	**Non-ESG**
Equity	-42.8	-16.9	-14.6	3.7	-3.6%	-4.2%	-1.2%	0.8%
Bond	-47.8	-56.6	3.3	13.2	-6.1%	-14.5%	0.4%	3.3%
Mixed	2.7	-2.2	-14.6	-4.2	0.7%	-1.0%	-3.7%	-2.0%
Money Market	11.2	-21.9	7.1	16.3	4.8%	-12.3%	2.9%	8.2%
Other	-0.2	-0.9	-2.5	-8.3	-0.3%	-0.8%	-3.7%	-8.7%
Total	**-76.9**	**-98.6**	**-21.3**	**20.7**	**-2.9%**	**-7.6%**	**-0.8%**	**1.5%**

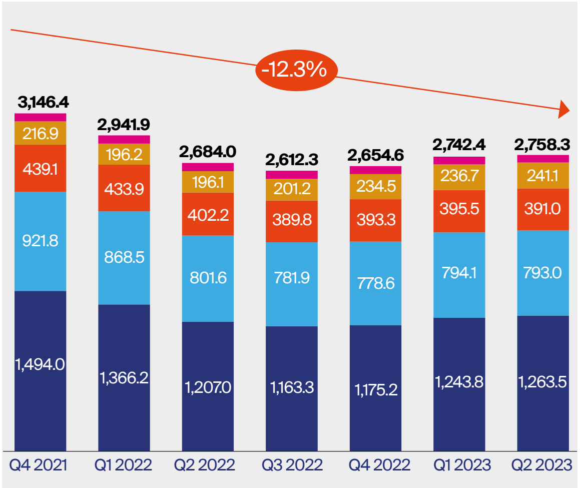
Note: "Relative flows" are obtained through a ratio between net flows and AuM.
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Equity is the largest asset class among ESG UCITS by AuM, comprising on average 45.5% of ESG AuM between Q4 2021 and Q2 2023. This figure is 31.3% for non-ESG UCITS. The asset class breakdown for both ESG and non-ESG UCITS has not changed significantly since late 2021. ESG AuM make up the majority of AuM in all asset classes, besides 'other.' ESG Equity AuM were 74.4% of total equity AuM in Q2 2023. Additionally, two thirds of bonds AuM (66.8%) were ESG. The asset class with the lowest share of ESG AuM was money markets, where ESG AuM made up 55.1% of the total in Q2 2023.

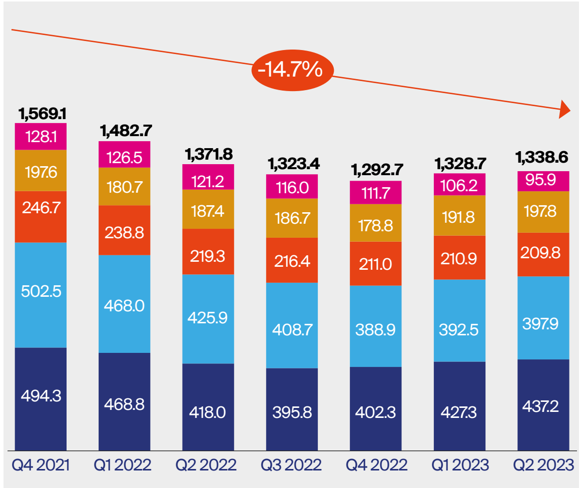
Despite the downward trajectory observed in both ESG and non-ESG clusters since the end of 2021, it appears that ESG funds demonstrated greater resilience in the face of the past year's challenges. Their overall decline in AuM stood at 12.3%, less than the 14.7% decline witnessed in non-ESG funds. ESG AuM during H1 2023 overtook ESG AuM in H1 2022, whereas non-ESG AuM did not manage to surpass its H1 2022 levels in H1 2023 (cf. Exhibit 12).

Exhibit 12. Luxembourg-domiciled ESG vs Non-ESG funds – Asset class split (EUR bn)

ESG UCITS AuM in Luxembourg
(by quarter, EUR bn)



Non-ESG UCITS AuM in Luxembourg
(by quarter, EUR bn)



Equity Bond Mixed Assets Money Market Other

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

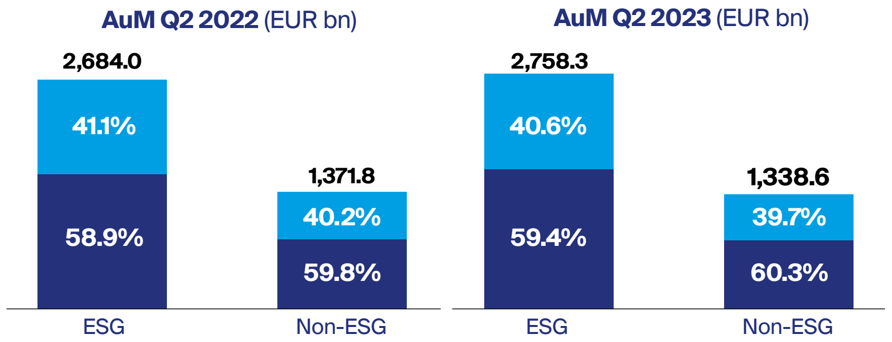
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Retail investors display confidence in ESG funds

Despite overall ESG outflows worth EUR21.3bn during H1 2023, retail investors brought in EUR4.1bn worth of inflows (cf. Exhibit 13). This aligns with wider market trends, where institutional investors have been generally more reticent to invest compared to retail investors. As a result, it is likely not a reflection of the state of sustainable finance specifically.

The negative ESG flows were due to institutional investors outflows worth EUR25.5bn. Retail investors' AuM also grew from 58.9% of the total ESG market in Q2 2022 to 59.4% in Q2 2023. Non-ESG funds fared relatively better, seeing net inflows worth EUR20.7bn in H1 2023, with both retail and institutional investors reinvesting after heavy outflows in 2022 (cf. Exhibit 13).

Exhibit 13. Luxembourg-domiciled ESG vs Non-ESG funds – Institutional vs. Retail split (AuM and net flows)



	Net flows 2022 (EUR bn)		**Net flows H1-23 YTD** (EUR bn)	
	ESG	Non-ESG	ESG	Non-ESG
Institutional	**-64.9**	**-54.8**	**-25.5**	**9.2**
Retail	**-12.0**	**-43.7**	**4.1**	**11.4**
TOTAL	**-76.9**	**-98.6**	**-21.3**	**20.7**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

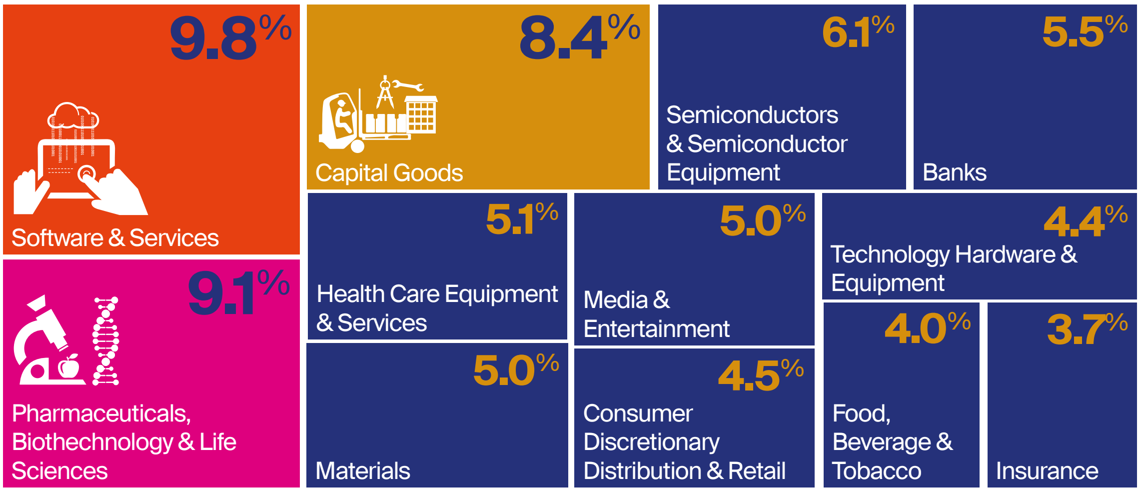
3.2.2. Sectoral Analysis

Capital Goods becomes the largest sector by AuM

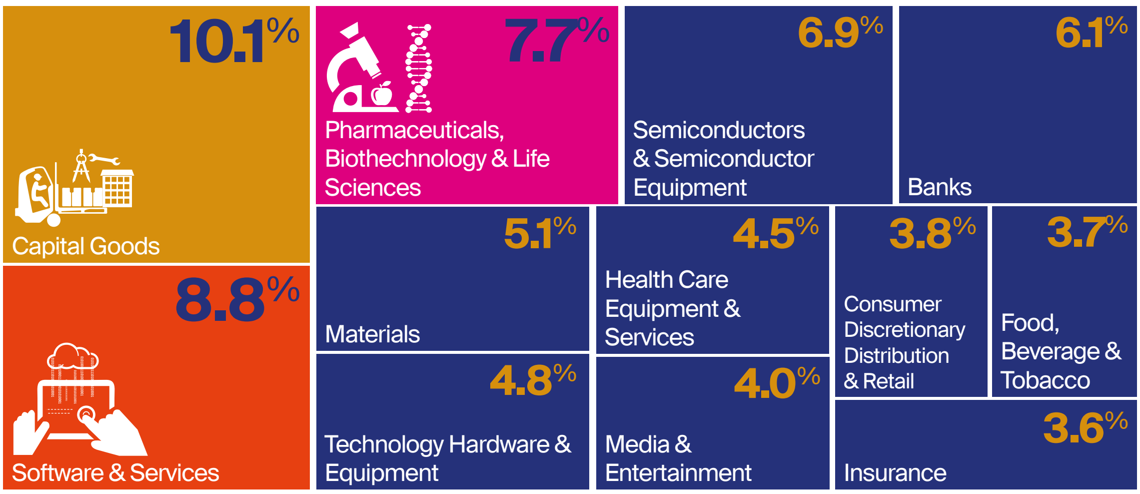
The top three largest sectors which ESG funds have invested in during H1 2023 remain the same as in the previous year, but the podium has been rearranged. Capital Goods became the largest sector, growing from 8.4% to 10.1% of total AuM between Q2 2022 and Q2 2023. Software & Services dropped to second place maintaining 8.8% of AuM, while Pharmaceutical, Biotechnology & Life Sciences dropped to third place with 7.7% of AuM. These figures align with the overall market where the same trend was observed, where a shift away from medical-adjacent sectors has been taking place since the impacts of the COVID-19 pandemic diminished (cf. Exhibit 14).

Exhibit 14. ESG AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data was available is EUR1.19tn or 43.3% of the EUR2.76tn in this fund cluster. The remaining sectors account for 30.9% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.2.3. Manager Headquarter Split

US and French managers remain the largest ESG managers in Luxembourg

ESG funds promoted by asset managers headquartered in the United States have the most ESG AuM in Luxembourg, with EUR 756.6bn. France remains in second place in terms of AuM and first place in terms of number of funds, with 862 funds (cf. Exhibit 15).

Exhibit 15. ESG funds – Manager HQ split by AuM and number of funds (as of June 2023)

Variation 22-23		Manager HQ	AuM Q2 2023 (EUR bn)	# of funds
=	1	USA	**756.6**	826
=	2	FR	414.6	**862**
▲	3	UK	358.7	528
▼	4	CH	349.6	731
=	5	DE	264.9	489
▲	6	IT	159.0	293
▼	7	BE	137.5	182
▲	8	FI	72.9	95
▼	9	NL	72.3	141
		Other	173.1	667
		TOTAL	**2,758.3**	**4,814**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.3. OVERVIEW OF ESG SCREENING FUNDS

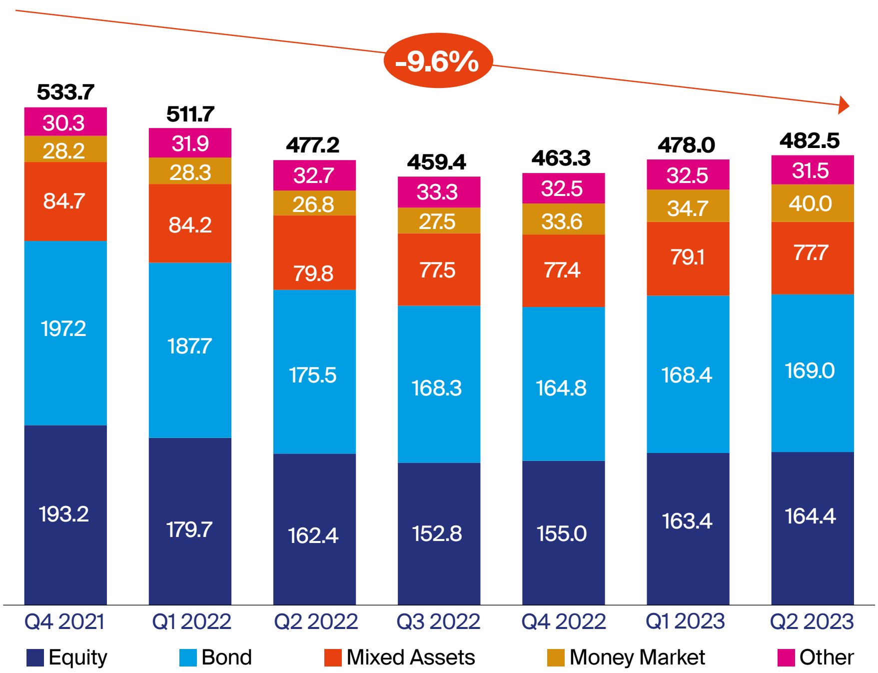
The funds outlined in this subsection – the ESG Screening funds – are ESG funds that applied an ESG strategy other than Exclusion or Involvement. They make up 17.5% of all ESG AuM (EUR482.5bn) among 1,045 funds.

3.3.1. Asset Class Breakdown

Net inflows during the first half of 2023

Despite an overall decline of 9.6% in AuM from Q4 2021 to Q2 2023, ESG Screening funds had a stronger performance than the overall market during this period, highlighting ESG funds' general resilience. Their AuM rose for three consecutive quarters from September 2022 to June 2023, accruing EUR0.4bn in net inflows in H1 2023. While this gain is relatively small, it is a reversal of the net outflows worth EUR10.8bn experienced during 2022. Equity and bonds continue to occupy a similar share of total ESG Screening AuM, with the two asset classes making up 69.1% of Screening AuM as of the end of H1 2023. This is unique among other ESG strategies, which tend to favour equity over bonds (cf. Exhibits 16 and 17).

Exhibit 16. ESG Screening funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this Exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Exhibit 17. ESG Screening funds net flows in Luxembourg (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	-7.3	-2.2
Bond	-13.5	-1.2
Mixed	2.8	-1.6
Money Market	5.2	6.0
Other	2.0	-0.6
Total	**-10.8**	**0.4**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

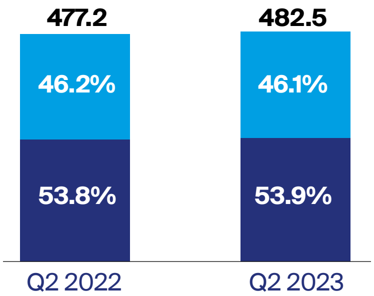
3.3.2. Institutional vs. Retail Split

Net retail inflows and net institutional outflows observed in H1 2023

The EUR0.4bn in net flows recorded at the end of H1 2023 is a clear improvement compared to the EUR10.8bn of net outflows recorded in 2022. This increase is attributable to the strong interest displayed by retail investors who put in EUR1.9bn in ESG Screening funds. As for institutional investors, their outflows reduced to around one-eighth of their 2022 outflows (cf. Exhibit 18).

Exhibit 18. ESG Screening funds Institutional vs. Retail split (AuM and net flows)

AuM (EUR bn)



Net flows (EUR bn)

	2022	H1-23 (YTD)
Institutional	-11.6	-1.4
Retail	0.9	1.9
TOTAL	-10.8	0.4

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

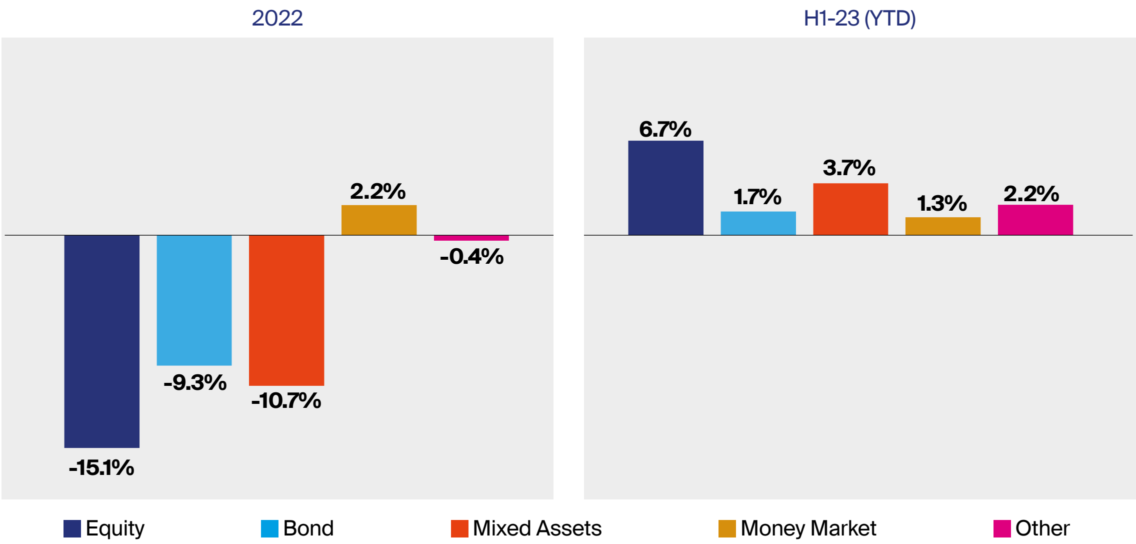
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.3.3. Performance by Asset Class

Screening funds follow the general market

As of H1 2023, Screening funds' performance has been similar to the one of overall UCITS market. This is a major improvement compared to the negative performances witnessed during the major selloff period of 2022 (cf. Exhibit 19).

Exhibit 19. Luxembourg-domiciled ESG Screening funds average gross returns* by asset class



Note: Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.3.4. Manager Headquarter Split

ESG Screening strategy predominantly used by France-based asset managers

Fund managers based in France are the largest group in Luxembourg both in terms of AuM and number of funds, controlling EUR110.5bn in AuM among 233 ESG Screening funds. This is a significant shift from 2022, when US managers had the top spot in terms of AuM and Swiss managers came first in number of funds. Switzerland remained in second place and the UK ascended to third (cf. Exhibit 20).

Exhibit 20. ESG Screening funds: Manager HQ split by AuM and number of funds (as of June 2023)

Variation 22-23		Manager HQ	AuM Q2 2023 (EUR bn)	# of funds
▲	1	FR	110.5	233
=	2	CH	73.2	161
▲	3	UK	69.6	132
=	4	DE	65.0	124
▼	5	USA	51.2	100
=	6	BE	44.0	38
▲	7	IT	21.8	73
▲	8	SG	17.7	43
▲	9	SE	4.6	19
▼	10	LU	4.2	45
		Other	20.8	77
		TOTAL	482.5	1,045

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.4. OVERVIEW OF ESG EXCLUSION FUNDS

ESG Exclusion funds had the largest net outflows among the ESG strategies

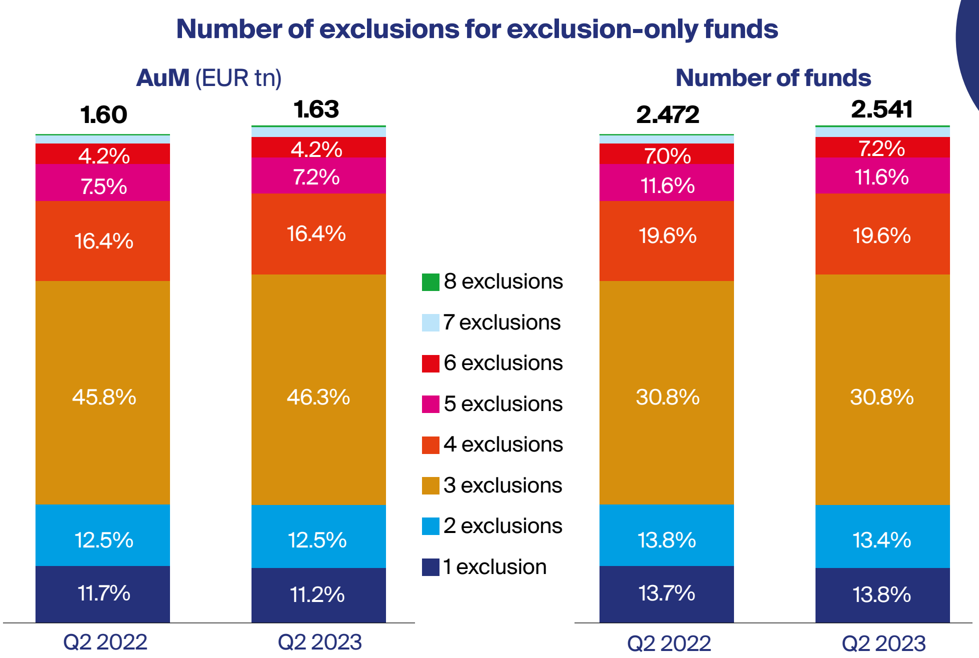
Funds analysed in this subsection do not invest in companies operating in one or more non-sustainable or controversial sectors. These sectors include, but are not limited to, fossil fuels, weapons, alcohol or drugs, tobacco, and nuclear energy. These funds represent 59.1% of ESG AuM in Luxembourg, down from 59.7% in 2022.

From Q4 2021 to Q2 2023, ESG Exclusion funds' AuM shrunk by 14.6% (cf. Exhibit 94). The decline is slightly higher than overall UCITS funds' AuM, which declined by 13.1% in the same period. This trend can be partially explained by the fact that ESG Exclusion funds did not perform as well as some funds that do not have such a policy – for instance, funds that exclude fossil fuels missed out on the significant returns that sector experienced during the spike of energy prices in 2022. Another major reason for the drop in ESG Exclusion AuM is the significant net outflows in 2022 and during the first half of 2023, which came principally from institutional investors.

Nonetheless, as of Q2 2023, ESG Exclusion funds represented EUR1,630.7bn in AuM – up by EUR30bn since Q2 2022 – with 76.3% of these AuM based in funds that exclude three or more non-sustainable sectors as part of their investment strategy, and 30.0% excluding four or more (cf. Exhibit 21).

Exhibit 21. ESG Exclusion funds overview

ESG Exclusions*
EUR 1,630.7bn
2,541 funds



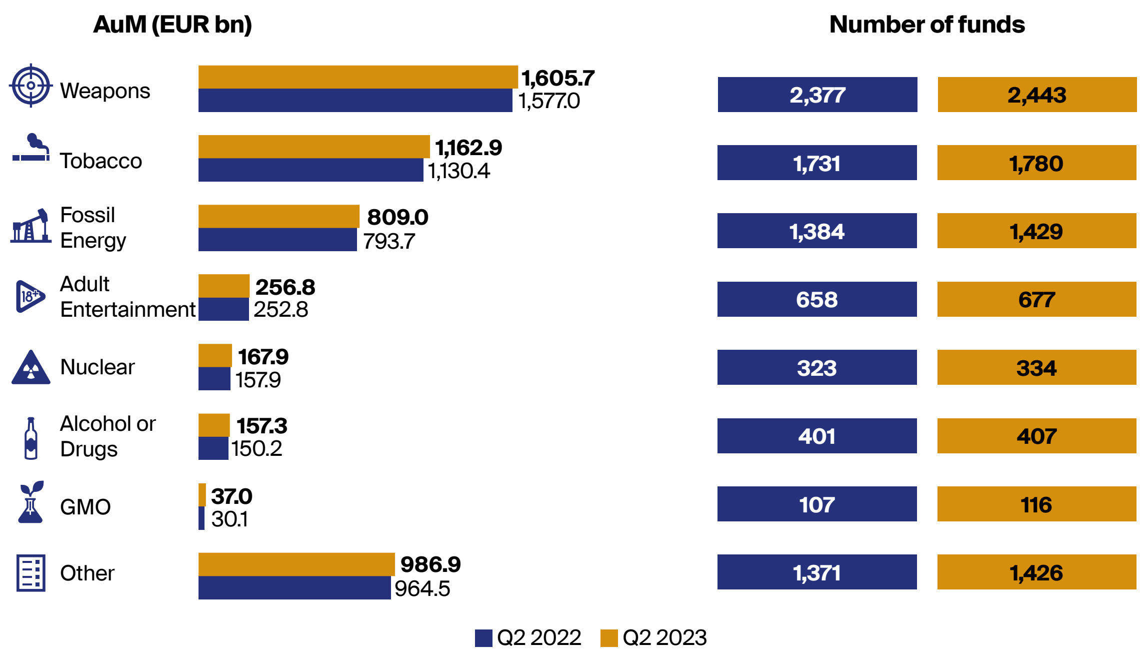
*Note: Funds within this cluster can apply more than one exclusion. As a result, the AuM shown sum up to more than the total for this fund cluster. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Weapons, Tobacco, and Fossil Energy remain the most common exclusions

For each controversial sector, ESG Exclusion funds' AuM grew in 2023 compared to 2022. Funds that exclude weapons, tobacco, and fossil energy remain the most common type of exclusions for this strategy, with EUR1,605.7bn, EUR1,162.9bn, and EUR809.0bn respectively. Since the number of funds excluding weapons (2,443) is very similar to the total number of Exclusion funds (2,541), it can be assumed that the vast majority of ESG Exclusion funds, roughly 96.1%, are excluding the weapons sector (cf. Exhibit 22). It is important to bear in mind that ESG Exclusions are not mutually exclusive, and that funds can and do exclude more than one sector. As a result, the fact that 96.1% of funds exclude weapons does not mean that those funds are not also excluding other sectors.

Exhibit 22. AuM and number of funds excluding each sector



Note: Funds within this cluster can apply more than one exclusion. As a result, the AuM shown sum up to more than the total for this fund cluster.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

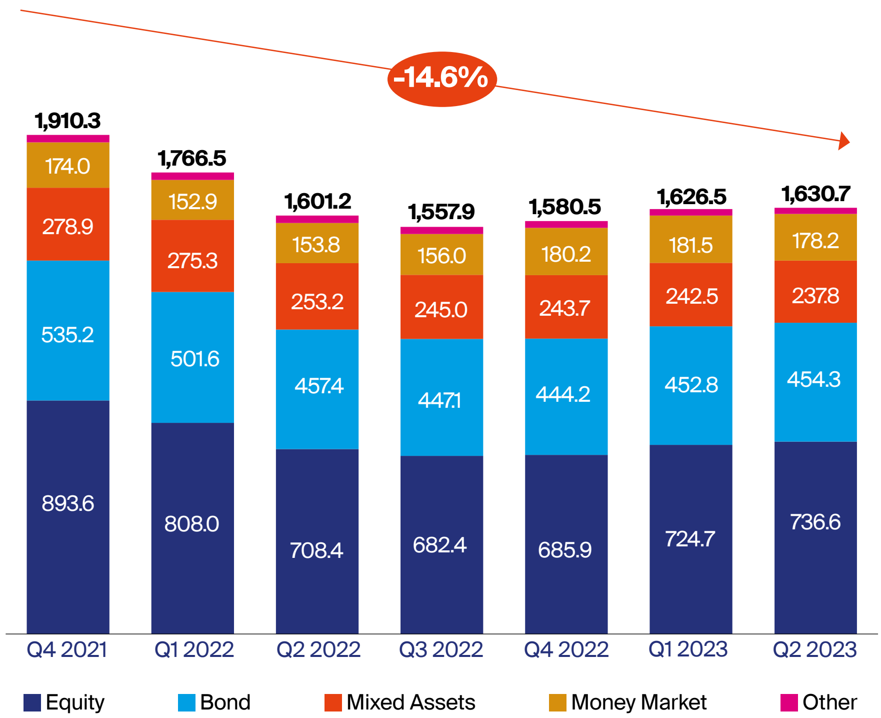
3.4.1. Asset Class Breakdown

Bonds gained momentum in flows in H1 2023

ESG Exclusion funds saw much less net outflow in H1 2023 than in 2022. The only net inflow for this strategy in 2022 was in money market funds, with a small EUR0.3bn. This minimal inflow reflects investor uncertainty, as money markets are generally viewed as a safe asset class. Bonds gained momentum in H1 2023, becoming the only asset class with net inflows in that period with EUR4.7bn. While bonds are also considered a safe investment, this trend mirrors a wider tendency towards bonds seen throughout financial markets in 2023, as interest rates have gone up[35].

While this strategy suffered net outflows in H1 2023 worth EUR19.4bn, these are much smaller than the EUR75.2bn that flowed out of ESG Exclusion funds in 2022. The relatively smaller outflows in 2023 reflect the broader market trend for both ESG and non-ESG UCITS (cf. Exhibits 23 and 24).

Exhibit 23. ESG Exclusion funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

35. Shalett, L. (2022). *Why Smart Investors Will Look to Bonds in 2023*. Morgan Stanley, November 22, 2022. https://www.morganstanley.com/ideas/investing-in-bonds-vs-stocks-2023

Exhibit 24. ESG Exclusion funds net flows in Luxembourg (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	-38.0	-9.3
Bond	-34.5	4.7
Mixed	-2.0	-11.5
Money Market	0.3	-0.8
Other	-0.9	-2.5
Total	**-75.2**	**-19.4**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

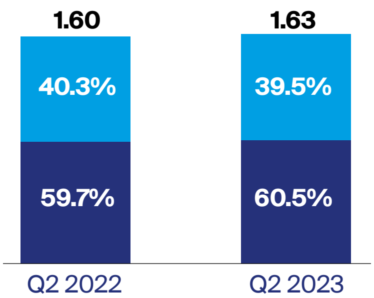
3.4.2. Institutional vs. Retail Split

Retail investors engage in ESG Exclusion funds while institutional investors withdraw

ESG Exclusion funds had the largest outflows of any of the ESG strategies. Although the majority of retail investors provided for a net inflow of EUR5.1bn, institutional players pulled out EUR24.5bn from these funds (cf. Exhibit 25).

Exhibit 25. ESG Exclusion funds in Luxembourg; Institutional vs. Retail split (AuM and net flows)

AuM (EUR tn)



Net flows (EUR bn)

	2022	H1-23 (YTD)
Institutional	-52.2	-24.5
Retail	-23.0	5.1
TOTAL	-75.2	-19.4

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

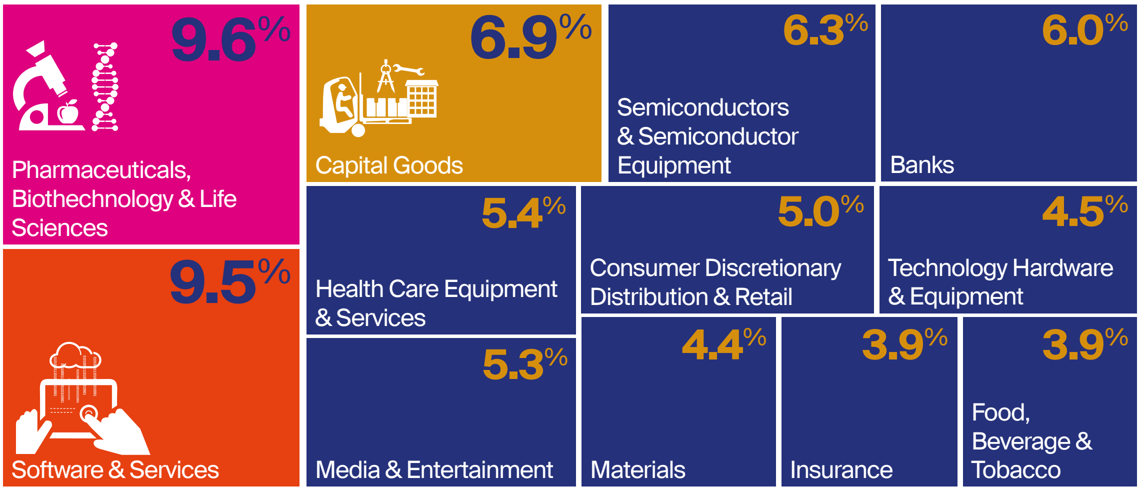
3.4.3. Sectoral Analysis

Capital Goods became the largest sector

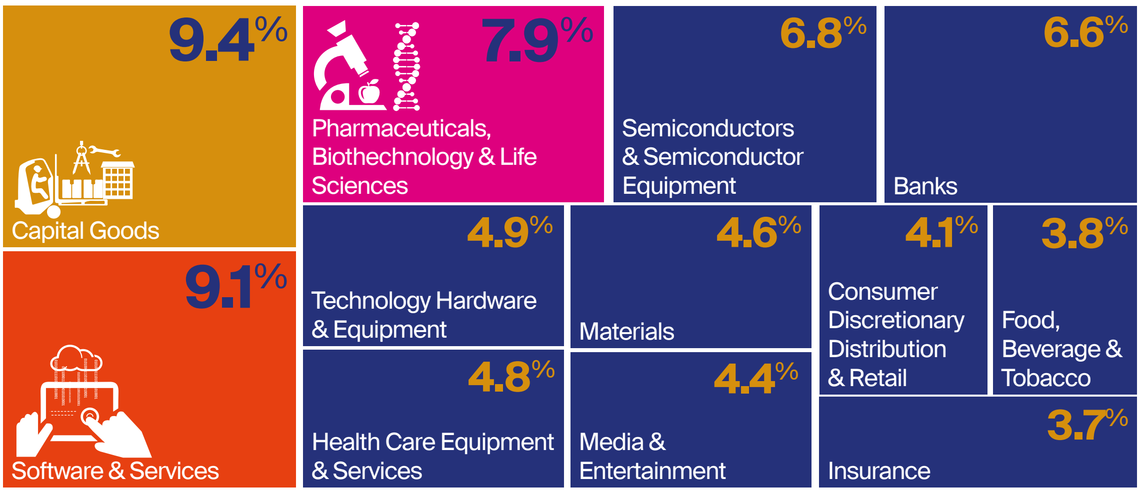
Capital Goods rose to the first place, overtaking the Software & Services and Pharmaceutical, Biotechnology & Life Sciences sectors in 2023. These last two had 9.1% and 7.9% of market share respectively, while Capital Goods grew to 9.4% (cf. Exhibit 26).

Exhibit 26. ESG Exclusion AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)



Note: The total AuM of funds for which sector data was available for H1 2023 is EUR774.1bn or 47.5% of the EUR1.63tn in this fund cluster. The remaining sectors account for 29.8% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

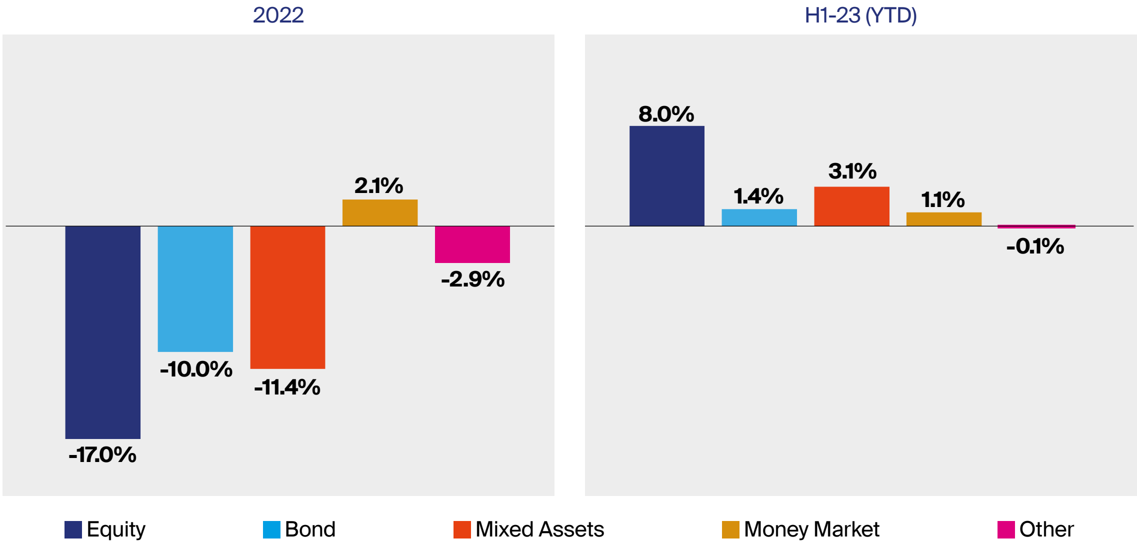
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.4.4. Performance by Asset Class

Equity makes a strong comeback after a difficult 2022

As with UCITS funds in general, ESG Exclusion funds saw a global downturn in 2022, and ESG Exclusion equity funds underperformed compared to average UCITS funds that year (-17.0% compared to -15.7%). However, as ESG Exclusion funds began to recover in H1 2023, ESG Exclusion equity funds have performed better than average UCITS funds (8.0% compared to 7.5%; cf. Exhibits 27). This is possibly because ESG Exclusion funds are highly exposed to the technology sector.

Exhibit 27. ESG Exclusion funds average gross returns* by asset class



Note: Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this Exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.4.5. Manager Headquarter Split

US asset managers have a clear lead in terms of ESG Exclusion AuM domiciled in Luxembourg, managing a combined total of EUR616.9bn, or nearly 38% of the AuM in this fund cluster. French managers remained in third place with EUR194.0bn in AuM while Swiss managers dropped to sixth place with EUR120.5 in AuM. UK asset managers are still in second place with EUR247.2bn (cf. Exhibit 28).

Exhibit 28. ESG Exclusion funds: Manager HQ split by AuM and number of funds

Variation 22-23		Manager HQ	AuM Q2 2023 (EUR bn)	# of funds
=	1	USA	616.9	561
=	2	UK	247.2	292
=	3	FR	194.0	418
▲	4	DE	151.3	234
▲	5	IT	122.2	177
▼	6	CH	120.5	366
▲	7	BE	68.9	105
▲	8	FI	29.7	58
▲	9	LU	26.7	150
▲	10	ZA	16.3	19
		Other	37.2	161
		TOTAL	**1,630.7**	**2,541**

Sources: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

3.5. OVERVIEW OF ESG INVOLVEMENT FUNDS SUB-STRATEGIES

It is important to reiterate that as the data coverage of the Refinitiv Lipper database has substantially improved between 2022 and 2023, there can be apparent mismatches between the 2022 figures found in the first edition of the study and the figures in the current one, as the 2022 figures in this year's study have replaced the ones used in last year's study.

With this important caveat in mind, this subsection zooms in on ESG Involvement funds and the six sub-strategies which they adopt, namely Best-in-Class, Positive Tilt, Thematic, Microfinance, SDGs, and Sustainable Bonds. As of the end of June 2023, there were 1,228 ESG Involvement funds in Luxembourg, holding EUR645.2bn in AuM. These funds can adopt one or more sustainable investment sub-strategies to reach their goals (cf. Exhibit 29). A more detailed analysis can be found in the Appendix A.

Exhibit 29. Analysed ESG Strategies within the ESG Involvement funds

Analysed ESG Strategies*

Positive Tilt	**Best-in-Class**	**Thematic**
The fund leans towards companies that lead in terms of certain ESG criteria. Positive Tilt funds use a known investment strategy, called "tilting," to insulate portfolios from risk through the pursuit of a specific investment strategy or goal.	The fund selects the best companies by ESG criteria within each sector of the fund's investment universe (e.g., the least polluting oil company).	The fund focuses on sustainable themes such as clean water, climate change etc.
Sustainable Development Goals (SDGs)	**Microfinance**	**Sustainable Bond funds**
The fund invests in companies that demonstrate progress towards the achievement of the United Nations' Sustainable Development Goals.	The fund invests in Microfinance projects. Microfinance is the provision of financial services to low-income individuals and households that are not otherwise served by the global financial system.	The fund invests in Green, Social, Sustainability Bonds, or other types of similar fixed-income securities, whose proceeds go towards sustainable investments.

Note: ESG Involvement funds can apply more than one sustainable investment sub-strategy. As a matter of fact, 18% of the ESG Involvement funds apply more than one sub-strategy. Consequently, when summing both the AuM and number of funds of the different sub-strategies, the total exceeds the total for the overall ESG Involvement funds universe.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

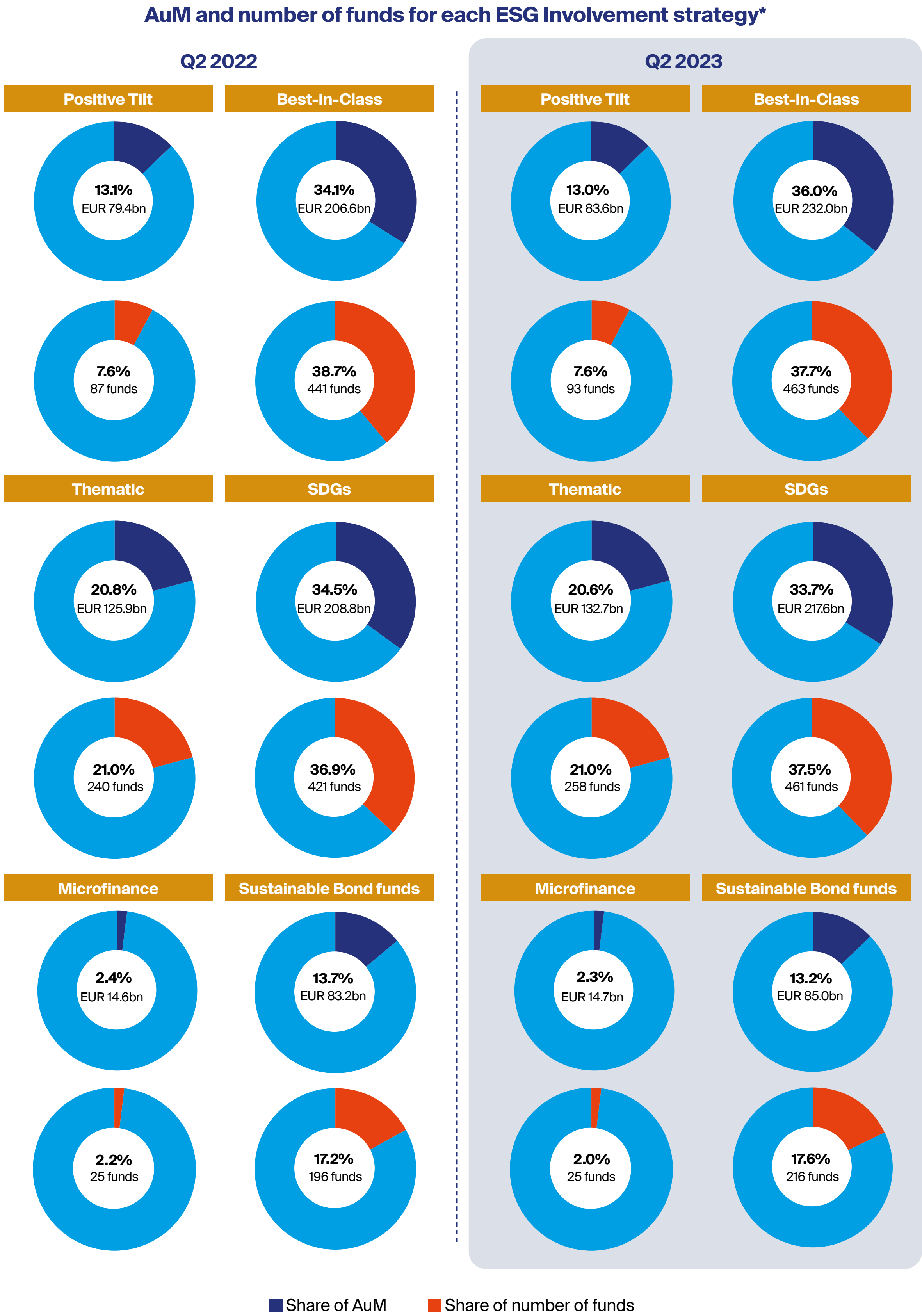
Not only is ESG Involvement the ESG strategy of which AuM decreased the least between Q4 2021 and Q2 2023, it also outperformed the market during this period. While average market performance for that period was -13.1%, ESG Involvement funds declined by only 8.1%. The general decline throughout the first three quarters of 2022, followed by a recovery between Q4 2022 and Q2 2023 matches that of the overall ESG and non-ESG markets. However, the decline for ESG Involvement funds was much more subdued, and the comeback much more pronounced. This may be because ESG Involvement is the most ambitious ESG strategy in terms of its sustainability targets and proactiveness.

As for the sub-strategies adopted by ESG Involvement funds, the AuM distribution essentially remained the same between 2022 and 2023. The most noteworthy change is that funds using the Best-in-Class strategy went from 34.1% of overall share in ESG AuM in Q2 2022 to 36% in Q2 2023. The three most used sub-strategies both in terms of AuM and number of funds remain Best-in-Class, SDG and Thematic, with Best-in-Class the leading sub-strategy both in terms of AuM (36%) and number of funds, followed by SDG funds (33.7% in AuM and second in terms of number of funds).

During the first semester of 2023, Positive Tilt, Best-in-Class and Sustainable Bonds funds netted positive inflows (Best-in-Class remaining here as well the most successful strategy), while Thematic, SDGs and Microfinance have so far experienced net outflows of varying degrees.

Microfinance, Positive Tilt and Sustainable Bonds funds remain the least frequent of all ESG Involvement sub-strategies, representing respectively 2.3%, 13% and 13.2% of overall ESG Involvement AuM in 2023. All increased their AuM between Q2 2022 and Q2 2023 but maintained the same overall share in the ESG Involvement space. SDGs and Best-in-Class were the most attractive options for funds: funds using the SDG strategy went from 421 in 2022 to 461 in 2023, and funds using the Best-in-Class strategy went from 441 to 463 funds (this being the largest increase for any subcategory in absolute terms, but overall share went from 38.7 to 37.7%) (cf. Exhibit 30).

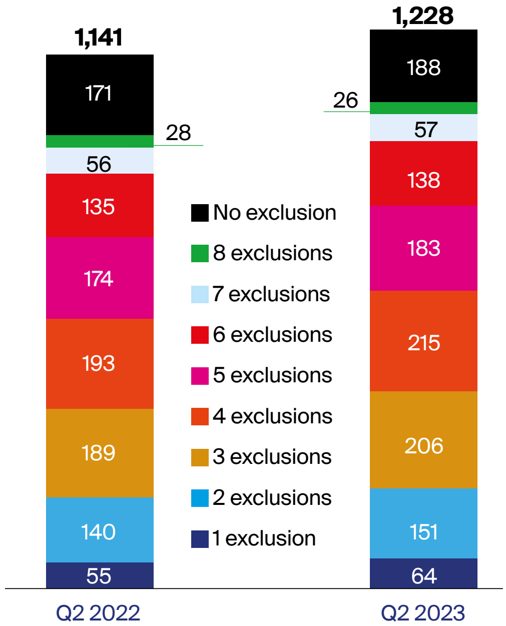
Exhibit 30. AuM and number of funds for each ESG Involvement strategy*



Note: Funds within this cluster can apply more than one of the ESG Involvement strategies. As a result, the percentages shown sum up to more than 100%. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Exhibit 31. Number of exclusions applied by ESG Involvement funds (number of funds)



Sources: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

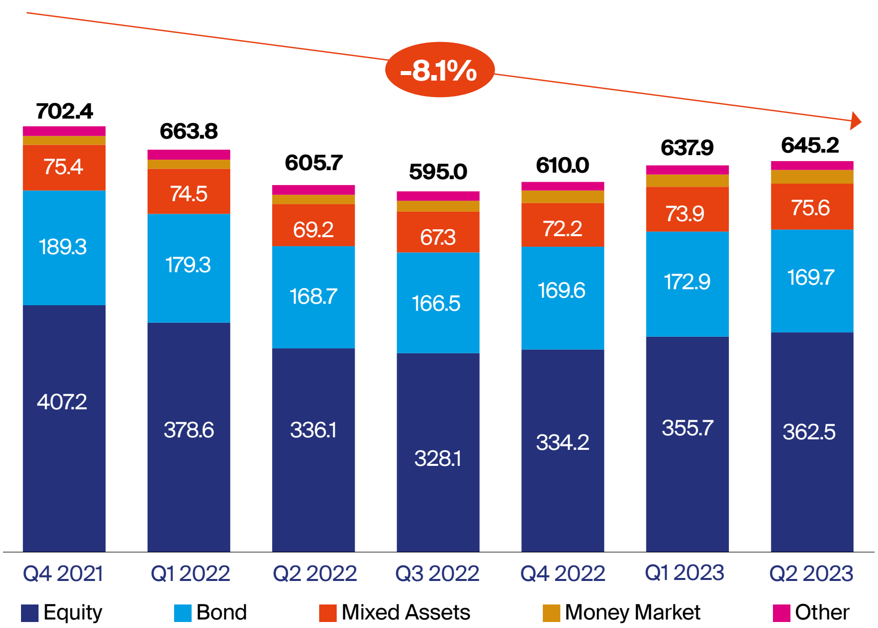
ESG Involvement funds often combine their strategy with several exclusions. As of the end of Q2 2023, 85% of ESG Involvement funds applied at least one exclusion (cf. Exhibit 31). Some sub-strategies lend themselves to more exclusions than others – for example, 80% of funds with a Best-in-Class approach applied one or more exclusions compared to 92% of Positive Tilt funds.

3.5.1. Asset Class Breakdown

ESG Involvement funds growing in 2023

ESG Involvement funds are overwhelmingly invested in equities and bonds, with a small share investing in mixed assets and money markets. Nevertheless, this fund cluster has experienced a robust 5.6% growth since Q4 2022. This is why the ESG Involvement drop in AuM since 2021 was only 8.1%, much lower than the 12.3% rate at which all ESG funds declined during the same period (cf. Exhibit 32).

Exhibit 32. ESG Involvement funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.5.2. Institutional vs. Retail Split

Institutional investors continue to allocate capital to ESG Involvement funds

While nearly every fund category encountered capital outflows in the past year, ESG Involvement funds exhibited relatively limited impact, showing only a modest outflow of EUR2.3bn so far this year (cf. Exhibit 33). Contrary to most other ESG fund categories, net outflows from ESG Involvement funds this year were driven by divestment among retail investors. Institutional investors caused positive inflows worth EUR0.5bn (cf. Exhibit 34).

Exhibit 33. ESG Involvement funds net flows in Luxembourg (EUR bn)

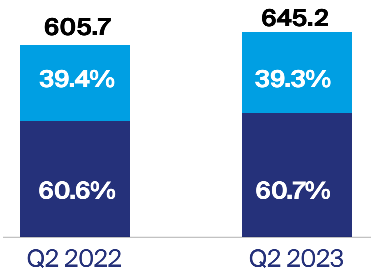
Asset Class	2022	H1-23 (YTD)
Equity	2.4	-3.0
Bond	0.2	-0.2
Mixed	2.0	-1.5
Money Market	5.7	1.8
Other	-1.3	0.5
Total	**9.1**	**-2.3**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Exhibit 34. ESG Involvement funds in Luxembourg; Institutional vs. Retail split (AuM and net flows)

AuM (EUR bn)



Net flows (EUR bn)

	2022	H1-23 (YTD)
Institutional	1.0	0.5
Retail	10.1	-2.8
TOTAL	9.1	-2.3

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

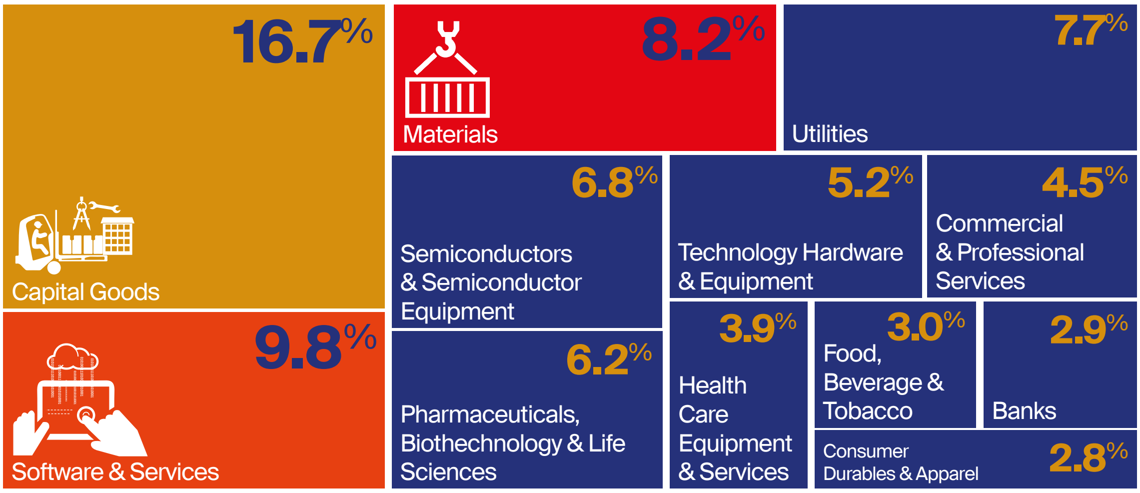
3.5.3. Sectoral analysis

Semiconductors become the third largest sector

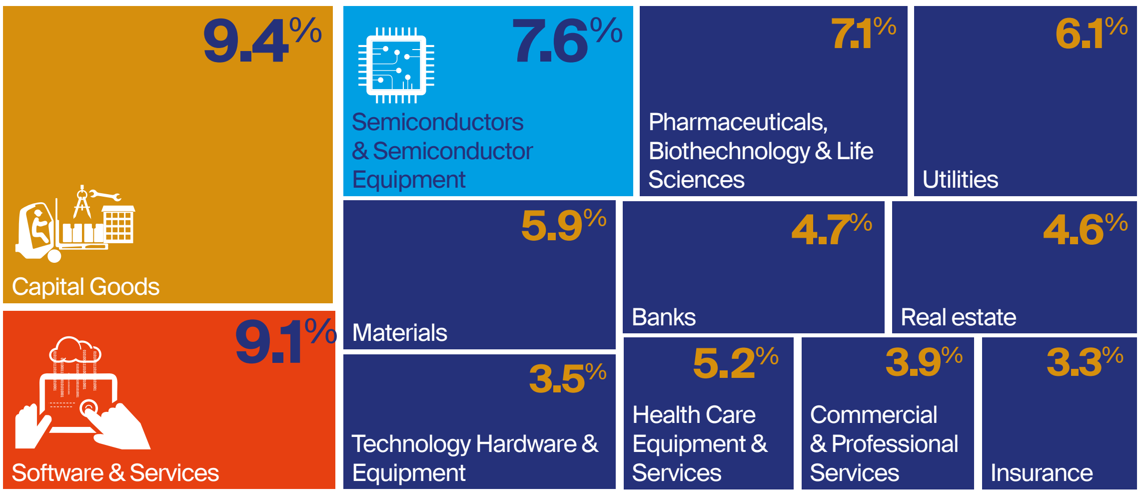
Regarding the sectors in which ESG Involvement funds were the most invested in, Capital Goods and Software & Services retained the first and second place, with 13.4% and 8.3% respectively. However, Semiconductors & Semiconductor Equipment became the third largest sector with 7.6% of AuM, displacing the Materials sector. This is likely due to a general increase in subsidies to semiconductor production, both globally and in the EU. Capital Goods and Software & Services both diminished in market share compared to 2022, dropping to 13.4% and 8.3% respectively (cf. Exhibit 35).

Exhibit 35. ESG Involvement AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data was available for H1 2023 is EUR237.5bn or 36.8% of the EUR645.2bn in this fund cluster. The remaining sectors account for 26.5% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

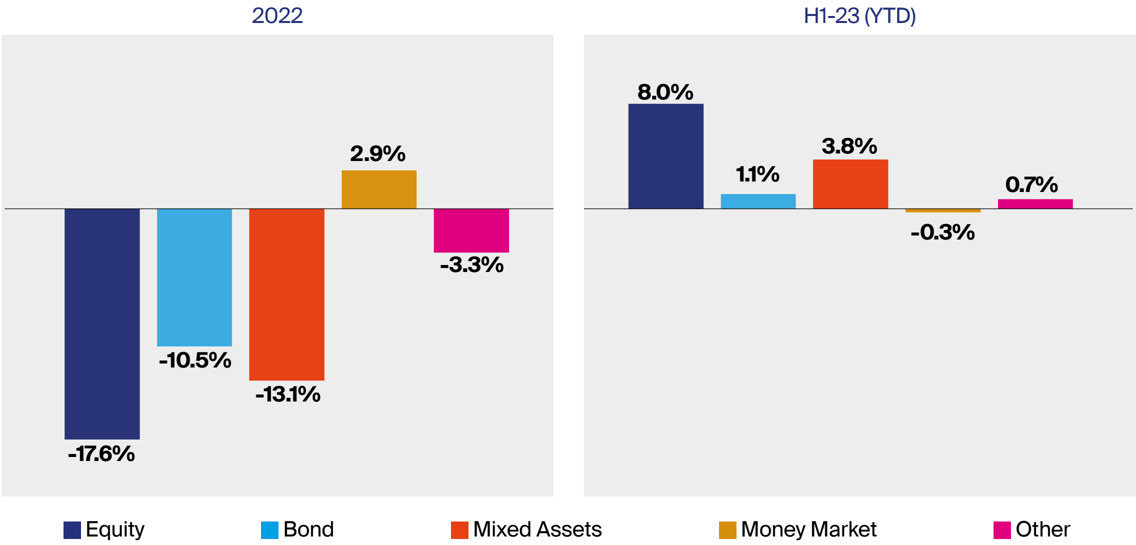
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.5.4. Performance by asset class

Most asset classes make a comeback

Following the turbulence in the later parts of 2022, both equity and mixed asset ESG Involvement funds showed a much-improved performance in H1 2023. However, money market assets continue to fluctuate and dip into negative territory (cf. Exhibit 36).

Exhibit 36. ESG Involvement funds average gross returns* by asset class



Note: *Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

3.5.5. Manager Headquarter Split

Swiss managers are the most active ESG fund managers

ESG Involvement funds domiciled in Luxembourg from fund managers headquartered in Switzerland now have higher AuM than funds from both France and US-based managers, which are placed second and third respectively. However, ESG Involvement funds from managers headquartered in France are the most numerous, followed by those headquartered in Switzerland (cf. Exhibit 37).

Exhibit 37. ESG Involvement funds: Manager HQ split by AuM and number of funds (as of June 2023)

Variation 22-23		Manager HQ	AuM Q2 2022 (EUR bn)	# of funds
▲	1	CH	155.9	204
▼	2	FR	110.1	211
=	3	USA	87.7	165
▲	4	NL	61.1	90
▲	5	DE	48.6	131
▼	6	UK	41.9	104
▲	7	FI	39.7	29
▲	8	LU	26.4	97
▼	9	BE	24.6	39
▲	10	SE	15.3	30
		Other	33.9	128
		TOTAL	645.2	1,228

Sources: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

The vast majority of funds (82%) in this cluster apply only one sub-strategy. The table below shows which sub-strategies are used the most in terms of number of funds as well as allows for an easy overview of which funds apply multiple strategies.

Within the funds that apply more than one sub-strategy, there is a variety of choices, with no clear preference for any other sub-strategy. The largest intersections, interestingly, lie between the Thematic and the SDGs sub-strategy, as well as between Sustainable Bond funds and SDGs. All Microfinance funds except for one apply an additional sub-strategy (cf. Exhibit 38).

Exhibit 38. Number of funds for each ESG Involvement strategy

	Positive Tilt	Best-in-Class	Thematic	SDGs	Microfinance	Sustainable Bonds
Positive Tilt	**93**	9	9	9	3	9
Best-in-Class	9	**463**	34	52	16	34
Thematic	9	34	**258**	71	4	34
SDGs	9	52	71	**461**	24	67
Microfinance	3	16	4	24	**25**	17
Sustainable Bonds	9	34	34	67	17	**216**

Sources: PwC Global AWM & ESG Market Research Centre analysis based on Refinitiv Lipper

4.

FUND APPROACHES WITHIN SUSTAINABILITY DISCLOSURES (SFDR)

Under the SFDR, FMPs can follow three different levels of sustainability disclosures for their financial products:

ARTICLE 6

of the SFDR states that all FMPs, including those without any sustainability characteristics or objectives, must include a pre-contractual disclosure at product level on how sustainability risks are integrated in a particular financial product's investments and how they may impact returns. Even if sustainability risks are not deemed material for a particular product, a pre-contractual explanation is still required.

ARTICLE 8

of the SFDR states that financial products that promote "among other characteristics, environmental or social characteristics, or a combination of those characteristics"[36] will disclose information on how these characteristics are met.

ARTICLE 9

of the SFDR states that whenever "sustainable investment" is one of a financial product's objectives (e.g., reducing carbon emissions), the responsible FMP must publicly disclose how this objective will be achieved[37].

Several challenges surround the implementation of SFDR. Although it is intended to be a transparency regime, the SFDR has somewhat become a de facto labelling regime. Funds without any sustainability objectives usually report as per Article 6, while funds reporting under Article 8 and Article 9 are used to signal to investors that the product is pursuing ESG objectives, with the latter signalling more ambitious sustainability goals.

These categorisations may not always correspond to a fund's actual ESG attributes, and the European Securities Market Authority (ESMA)'s recent *Progress Report on Greenwashing* reveals that regulatory bodies are concerned about greenwashing being a widespread practice within the industry. In addition, while the SFDR was meant to encourage the growth of ESG funds, these funds now face heavier compliance burdens than non-ESG funds, which could form a practical deterrent to ESG development in the future, especially in times of macroeconomic volatility. To address this, the European Commission has issued a public and a targeted consultation[38] which seeks to gather comments from relevant stakeholders on how they have implemented the SFDR in order to gauge its potential shortcomings and explore options to improve it.

Although data disclosures have markedly improved since the SFDR came into force, FMPs are still struggling to assemble ESG data that is both reliable and meaningful in order to be fully transparent on sustainability. Indeed, ESG-oriented FMPs are finding it difficult to keep pace with the administrative legwork requiring them to show the exact extent to which they are meeting their sustainability objectives or requirements. As a result, regulators are focusing on streamlining different interlinked regulations and addressing ambiguities in the legal framework[39].

36. EU Regulation 2019/2088 on sustainability-related disclosures in the financial services sector. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088
37. Ibid.
38. European Commission (2023). *Targeted consultation on the implementation of the Sustainable Finance Disclosures Regulation (SFDR).* https://finance.ec.europa.eu/regulation-and-supervision/consultations/finance-2023-sfdr-implementation_en
39. Van Egghen, R. (2023). *Fund use of SFDR 'loophole' under scrutiny*, Ignites Europe, October 19, 2023. https://www.igniteseurope.com/c/4286044/551444?referrer_module=searchSubFromIE&highlight=loophole%20SFDR

4.1. SFDR SPLIT OF LUXEMBOURG ESG FUNDS

This subsection, which was not included in the previous edition of this study, seeks to integrate the information, which became available since the SFDR's implementation. It will explore the differences between funds disclosing as per SFDR Articles 6, 8, and 9, and will compare the three fund types' AuM, number of funds, distribution and management style.

The main finding is that while most funds that employ a Screening and Exclusion strategy are adhering to Article 8 disclosure requirements, a good portion of ESG Involvement funds are following Article 9 disclosure requirements. This is likely due to the fact that Involvement is the most ESG-intensive strategy out of the three.

However, compared to last year, there are fewer ESG Involvement funds reporting as per Article 9 requirements, although there are more funds categorised as ESG Involvement funds by Refinitiv Lipper. This observation is consistent with the general trend amongst FMPs to shift the disclosure ambitions from Article 9 to Article 8 requirements. This could be partially due to the evolving nature of the regulation, which implies a growing number of disclosures required and a degree of uncertainty in their interpretation, particularly as SFDR Level II came into force in January 2023. Notwithstanding the current negative trend, funds reporting as per Article 9 had a steady level of demand, with the highest net sales in 2022 compared to funds disclosing under Article 6 and 8, consistently attracting net flows. It is important to note that, although the Commission de Surveillance du Secteur Financier (CSSF) – Luxembourg's national competent authority for the supervision of the financial sector – has issued guidelines[40] stating that funds that only apply an ESG Exclusion strategy cannot follow Article 9 ambitions under the SFDR, the data used in this study contains some instances of ESG Exclusion funds disclosing as Article 9. In due course, as CSSF's guidelines are being fully implemented, this should be reflected in the SFDR funds's categorisations.

ESG funds increase their market share to two thirds of Luxembourg's AuM

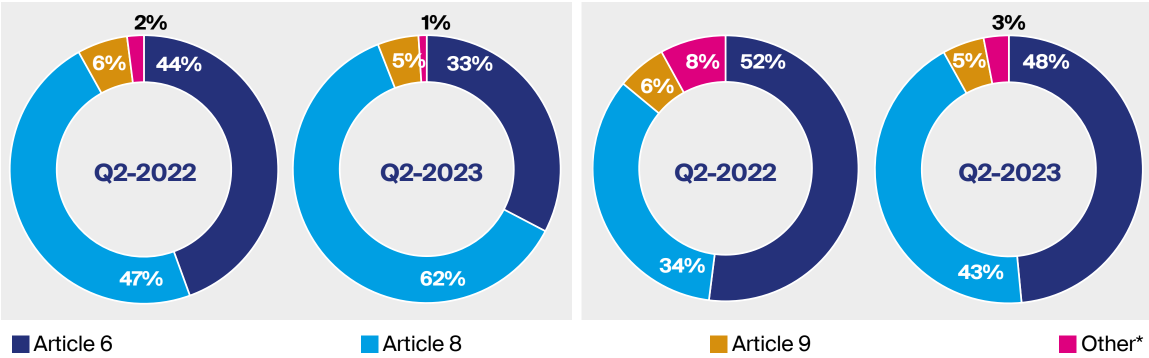
Since the SFDR came into force, ESG funds have steadily grown, both in terms of number of funds and AuM. For instance, as of Q2 2023, funds disclosing as per Articles 8 and 9 of the SFDR account for 67% of Luxembourg-domiciled funds' AuM, up from 53% in Q2 2022. In addition, the AuM of funds following Article 8 went up from 47% to 62% during the same period. However, the AuM of funds following Article 9 requirements decreased from 6% to 5%. As for the number of funds following Article 8, their share increased from 34% in Q2 2022 to 43% in Q2 2023 of total funds, while the number of funds following Article 9 decreased from 6% to 5% in the same period.

Funds reporting under Article 8 surpass those reporting as per Article 6 in AuM but not in number of funds

Within ESG funds, funds reporting under Article 8 remain the largest category, making up 62% of AuM in H1 2023. However, in terms of number of funds, funds disclosing as per Article 6 are the most numerous, closely followed by funds disclosing as per Article 8. Funds reporting as per Article 9 represent a small category, both in terms of AuM and number of funds. Indeed, funds disclosing as per Article 9 make up 5% of Luxembourg-domiciled UCITS funds' AuM, and 5% of the total number of UCITS funds (cf. Exhibit 39). The predominance of funds under Article 8 reflects the level of requirements funds can safely comply with today, while showing that ESG funds are gaining traction.

40. CSSF (2022). *CSSF FAQ Sustainable Finance Disclosure Regulation (SFDR).* December 2, 2022. https://www.cssf.lu/en/Document/cssf-faq-sustainable-finance-disclosure-regulation-sfdr/

Exhibit 39. SFDR – UCITS funds split by AuM and by number of funds

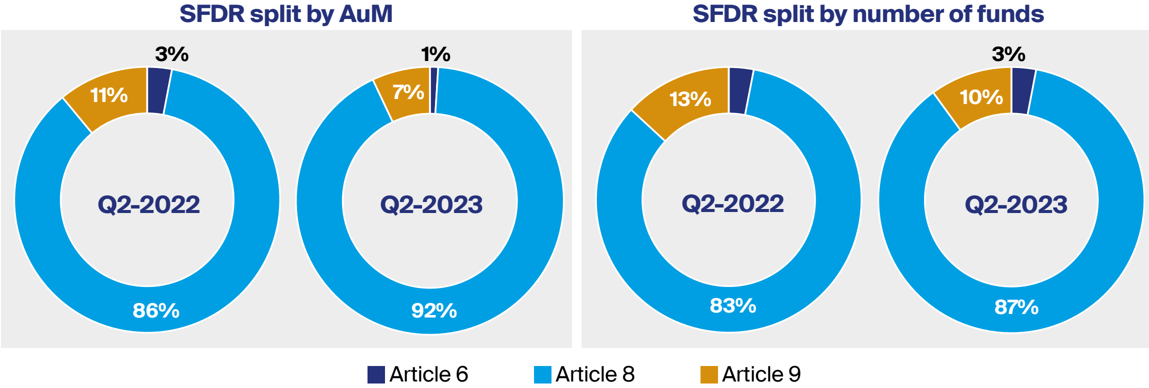


Note: Other includes funds that have not reported their SFDR status to Refinitiv Lipper and funds for which no data is available
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

10% of Luxembourg's ESG funds are reporting under Article 9 in Q2 2023

The study finds that as of Q2 2023, 10% of all ESG funds in Luxembourg are reporting under Article 9, a decrease compared to 2022 (cf. Exhibit 40). According to the European Fund and Asset Management Association (EFAMA), this represents 51% of all funds disclosing as per Article 9[41]. It is worth noting that a small portion of ESG funds, 3% as of Q2 2023, are reporting as per Article 6. In other words, some asset managers may have funds that incorporate ESG factors and opted to report in line with Article 6 requirements of SFDR.

Exhibit 40. SFDR – ESG funds split by AuM and by number of funds



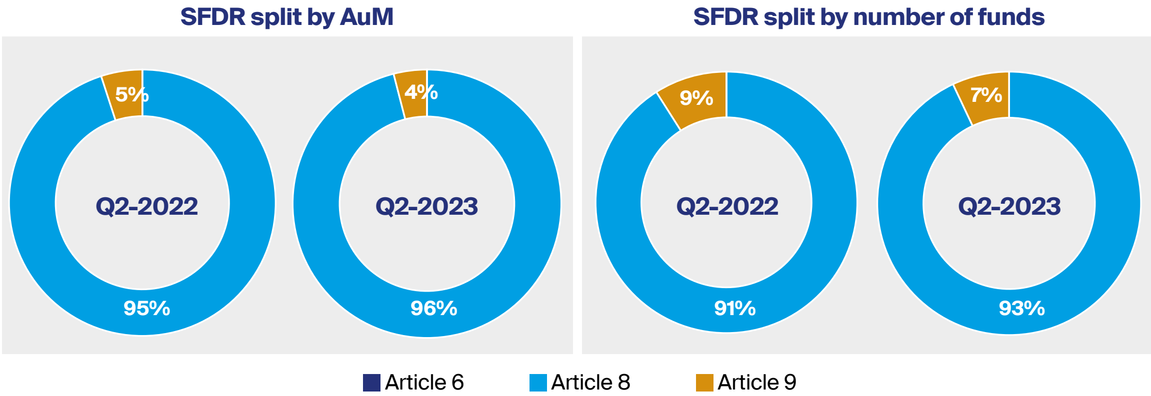
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

41. European Fund and Asset Management Association (2023). *Fact Book 2023 – 21st Edition*. June 2023. https://www.efama.org/sites/default/files/files/Fact%20Book%202023_lowres.pdf

4.2. SCREENING FUNDS SFDR SPLIT

Within Luxembourg's ESG space, Screening funds[42] held 17.5% of total AuM at the end of Q2 2023. While this ESG strategy is predominately used by funds disclosing under Article 8, it is interesting to note that 7% of the 1,045 funds in Luxembourg employing this strategy are reporting as per Article 9. Between 2022 and 2023, within Luxembourg's ESG space, the share of funds disclosing under Article 8, in terms of AuM and number of funds, increased (cf. Exhibit 41).

Exhibit 41. SFDR – ESG Screening funds

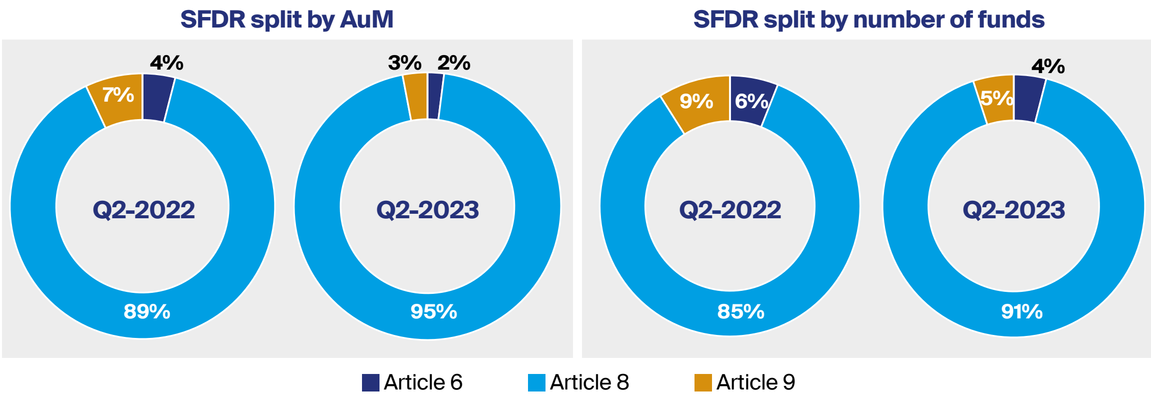


Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

4.3. EXCLUSION FUNDS SFDR SPLIT

The majority of ESG Exclusion funds are reporting under SFDR Article 8. However, since exclusions can be made for ethical reasons that are not related to ESG considerations, some funds in this category are also reporting as per Article 6. The number of Exclusion funds following Article 9 requirements almost halved in 2023 compared to 2022 (cf. Exhibit 42). However, 5% of ESG Exclusion funds are still reported to be following Article 9 requirements, in contradiction with the CSSF's aforementioned guidelines.

Exhibit 42. SFDR – ESG Exclusion funds split by AuM and number of funds



Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

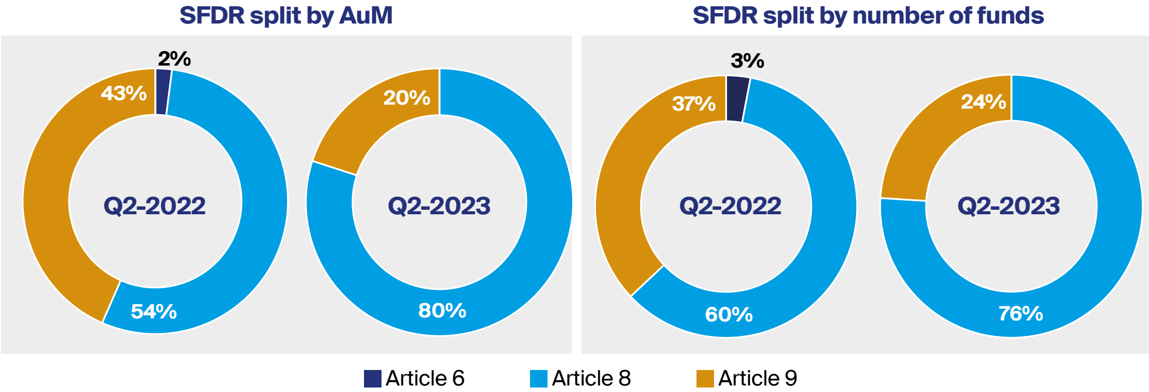
42. It should be kept in mind by the reader that these three clusters – Involvement, Exclusion and Screening – are not a regulatory categorisation, but a framework devised conjointly by the LSFI and PwC.

4.4. INVOLVEMENT FUNDS SFDR SPLIT

Involvement funds have the highest proportion of funds disclosing per Article 9 compared to the two other clusters, which is likely due to it being the most ESG-intensive strategy out of the three.

The proportion in terms of AuM of ESG Involvement funds reporting under Article 9 compared to Article 8 decreased from 43% in Q2 2022 to 20% in Q2 2023 (cf. Exhibit 43). This reflects the wider reporting shift from Article 9 to Article 8 disclosure[43].

Exhibit 43. SFDR – ESG Involvement funds split by AuM and number of funds



Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

4.5. INVOLVEMENT SUB-STRATEGIES' FUNDS SFDR SPLIT

In-line with the widely reported shift from Article 9 to Article 8 reporting, the fraction of Microfinance and Sustainable Bonds funds disclosing under the former declined

This shift might be due to managers' choice to make disclosures in line with requirements of the SFDR's Article 8, as Microfinance and Sustainable Bonds funds reporting as per Article 8 increased in AuM and proportion.

As of the end of Q2 2023, funds disclosing as per Article 8 were the most common across all sub-strategies, with funds following Article 9 requirements being more prevalent among Thematic, SDGs and Microfinance funds.

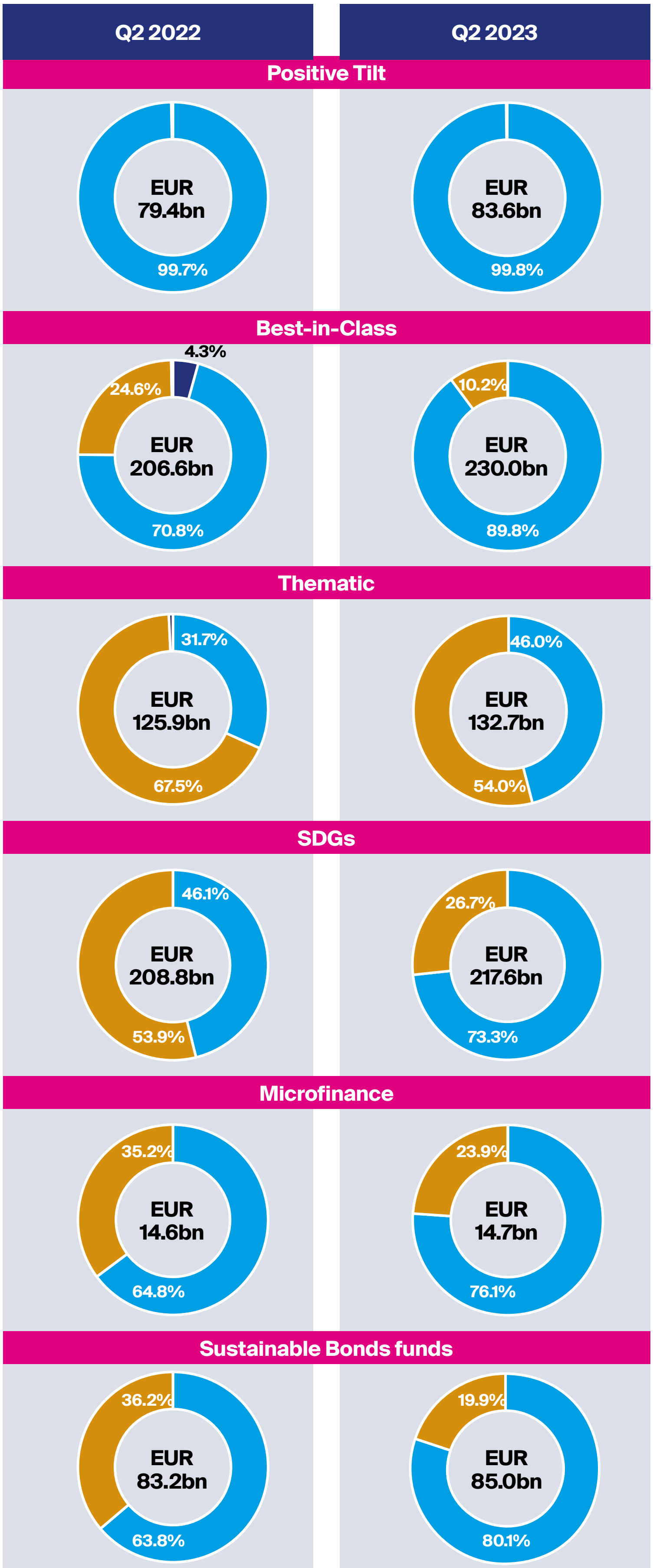
Compared to previous year, all sub-strategies have seen a decrease to different degrees in funds disclosing under Article 9 by funds' AuM. Specifically, AuM for SDG funds reporting under Article 9, Thematic funds and for Sustainable Bonds decreased to 26.7%, 54.0% and 19.9% respectively.

The overwhelming majority of Positive Tilt funds' AuM follows Article 8 requirements, and there was no substantial change between 2022 and 2023. The Best-in-Class sub-strategy showed the biggest decrease in AuM of funds disclosing per Article 9 requirements, from 24.6% in Q2 2022 to 10.2% in Q2 2023. The small percentage of funds AuM reporting under Article 6 that existed in Q2 2022 disappeared, suggesting there may have been a general reconfiguration into Article 8 or that data coverage was improved at the source during the Lipper data adjustment.

Thematic funds' specific approach – focusing on one particular ESG-relevant sector – would lend itself well to Article 9 disclosure requirements. Among all the sub-strategies, funds applying the Thematic strategy had the highest share of funds reporting under Article 9 AuM. Indeed, 54.0% of all Thematic funds' AuM being placed in funds reporting as per Article 9 (cf. Exhibit 44).

43. Van Egghen, R. (2022). Brussels considers greenwashing sanctions. Ignites Europe, August 17, 2022. https://www.igniteseurope.com/c/3715604/479104?&referrer_module=article&referring_content_id=3719784&referring_issue_id=479694

Exhibit 44. SFDR – ESG Involvement Funds AuM



Article 6 Article 8 Article 9

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper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S
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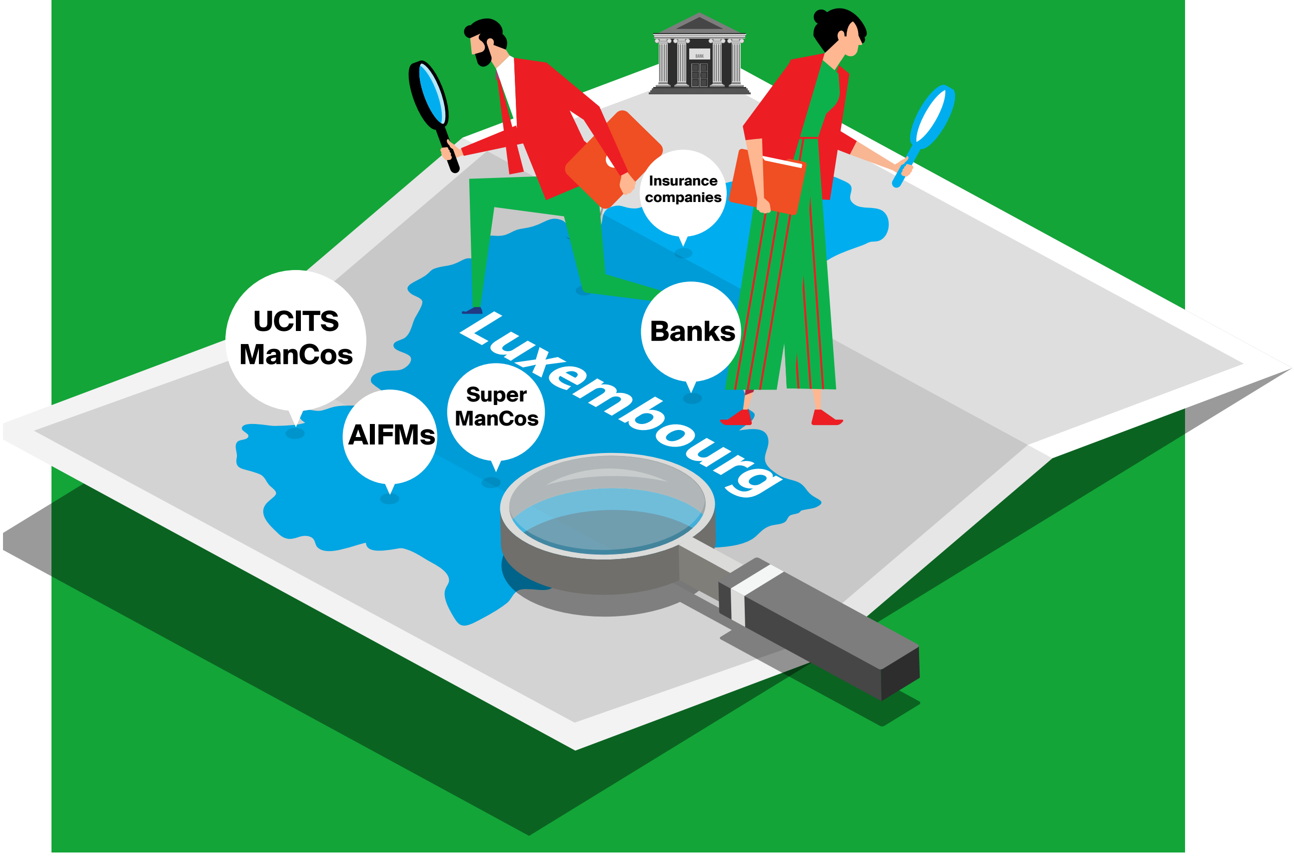
5.

PRINCIPAL ADVERSE IMPACT (PAI) STATEMENTS



This Section covers the Luxembourg financial sector's adherence with Principal Adverse Impacts (PAIs)-related requirements of the Sustainable Finance Disclosure Regulation (SFDR).

The SFDR contains two articles which address the PAIs of financial market participants (FMPs)' investment decisions on sustainability factors. Article 4 focuses on the entity-level PAI disclosures which FMPs have to carry out, while Article 7 focuses on disclosures at the level of the financial product on offer. This Section focuses only on Article 4 of the SFDR. According to Article 4, FMPs must either (1) publish a PAI declaration explaining whether they consider PAIs in their investment decisions, or (2) publish a report outlining the PAIs of their investment decisions on sustainability factors.

This study analyses 485 FMPs with a legal presence in Luxembourg, which are required to disclose under SFDR how they consider investment decisions that might result in negative effects on sustainability factors – the PAIs. These FMPs have been divided into five categories: Super ManCos, AIFMs, UCITS ManCos[44], banks, and insurance companies. The former three are ManCos that have been categorised according to their licences.

5.1. PAI REPORTING REQUIREMENTS

The current PAI list comprises a total of 18 mandatory key indicators and 46 additional environmental and social indicators. The directive requires FMPs with investments in investee companies to disclose all 14 mandatory indicators and at least two other indicators (one environmental, and one social), as shown in Exhibit 56 below. For FMPs with direct investment in supranational and sovereign assets, they only need to disclose two mandatory and one additional indicators. For FMPs with direct investment in real estate assets, they only need to disclose one mandatory and one additional indicators. Along with these scores, the statement for the identified negative sustainability indicator should include the metrics used, its impact, and outlines of proposed steps to improve that have been taken or are planned.

This analysis follows a purpose-built methodology with the goal of identifying the disclosed PAIs, and measuring and tracking progress over time.

In this analysis, based on the above requirements, entities that disclosed incomplete PAI reports, as per Exhibit 45, were analysed alongside those that published complete ones.

Exhibit 45. SFDR – Key Points of SFDR Article 4[45]

Entity Level PAI Statement Checklist

- Details of policies to define and focus on key negative sustainability impacts and indicators
- A statement of the PAIs identified and the actions taken or planned to address them
- Short overview of engagement policies, including links to global due diligence and reporting standards and alignment with PA targets

PAI Requirements as of 2022 Delegated Regulation (EU) 2022/1288

	Mandatory	Optional	Minimum requirements
Investee Companies	14	+2	16
Sovereigns / Supranationals	2	+2	4
Real Estate Assets*	2	+1	3

*The term Real Estate Assets is not defined in the RTS.

Sources: PwC Global AWM & ESG Research Centre, European Commission.

44. UCITS ManCos only have the UCITS license whereas Super ManCos have both AIFM and UCITS licenses.

45. All entities must either:
Issue a PAIs Declaration and PAI Report. This involves:
• Issuing a report for the local entity, and not just the larger company.
• Reporting at group level with a statement on the local website (statement could be found in the overall PAI statement).
Or declare their intention not to report.
• The entity must issue a local-level declaration to not report explaining why it has decided not to issue a PAI report. It must be clear and reasonable.
• This only applies to companies with more than 500 employees. Larger companies must issue a PAI report.

5.1.1. Specific PAI Requirements for different FMPs

PAI reporting requirements differ by asset class as per the current SFDR set up

PAI reporting requirements differ depending on the types of assets held by different financial actors (i.e., investee companies, real estate assets, sovereigns and supranationals investments).

The PAI report should not only include each PAI indicator but also how it was measured, its impact, and an outline of how the reporting entity has or will improve in this area, among other factors.

Initial revisions to the PAI framework have already been introduced, starting with the first issuance of SFDR Level II in April 2022. Another review was proposed in the ESA's latest consultation paper in April 2023 which calls for more indicators for all FMPs [46].

5.1.2. PAI Categories

SFDR Level II divides PAI indicators into three categories:

Mandatory indicators

Undertakings

1. Greenhouse Gas Emissions (scope 1, 2, 3, total)
2. Carbon Footprint
3. GHG intensity of investee companies
4. Exposure to companies active in the fossil fuel sector
5. Share of non-renewable energy consumption and production
6. Energy consumption intensity per high impact climate sector
7. Activities negatively affecting biodiversity-sensitive areas
8. Emissions to water
9. Hazardous and radioactive waste ratio
10. Violations of UN Global Compact principles and OECD Guidelines for Multinational Enterprises
11. Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises
12. Unadjusted gender pay gap
13. Board gender diversity
14. Exposure to controversial weapons (antipersonnel mines, cluster munitions, chemical weapons and biological weapons)

Sovereigns / Supranationals

15. GHG intensity
16. Investee countries subject to social violations

Real Estate Assets

17. Exposure to fossil fuels through real estate assets
18. Exposure to energy-inefficient real estate assets

46. Joint Committee of the European Supervisory Authorities (2023). Joint Consultation Paper: Review of SFDR Delegated Regulation regarding PAI and financial product disclosures. April 12, 2023. https://www.esma.europa.eu/sites/default/files/2023-04/JC_2023_09_Joint_consultation_paper_on_review_of_SFDR_Delegated_Regulation.pdf

Additional opt-in indicators: Climate and other environment-related

Undertakings

1. Emissions of inorganic pollutants
2. Emissions of air pollutants
3. Emissions of ozone-depleting substances
4. Investments in companies without carbon emission reduction initiatives
5. Breakdown of energy consumption by type of non-renewable sources of energy
6. Water usage and recycling
7. Investments in companies without water management policies
8. Exposure to areas of high water stress
9. Investments in companies producing chemicals
10. Land degradation, desertification, soil sealing
11. Investments in companies without sustainable land/agriculture practices
12. Investments in companies without sustainable oceans/seas practices
13. Non-recycled waste ratio
14. Natural species and protected areas
15. Deforestation
16. Share of securities not issued under Union legislation on environmentally sustainable bonds

Sovereigns / Supranationals

17. Share of bonds not issued under Union legislation on environmentally sustainable bonds

Real Estate Assets

18. GHG emissions (scope 1, 2, 3, total)
19. Energy consumption intensity
20. Waste production in operations
21. Raw materials consumption for new construction and major renovations
22. Land artificialisation

Additional opt-in indicators: Social and employee, respect for human rights, anti-corruption and anti-bribery matters

Undertakings

1. Investments in companies without workplace accident prevention policies
2. Rate of accidents
3. Number of days lost to injuries, accidents, fatalities or illness
4. Lack of a supplier code of conduct
5. Lack of grievance/complaints handling mechanism related to employee matters
6. Insufficient whistleblower protection
7. Incidents of discrimination
8. Excessive CEO pay ratio
9. Lack of a human rights policy
10. Lack of due diligence
11. Lack of processes and measures for preventing trafficking in human beings
12. Operations and suppliers at significant risk of incidents of child labour
13. Operations and suppliers at significant risk of incidents of forced or compulsory labour
14. Number of identified cases of severe human rights issues and incidents
15. Lack of anti-corruption and anti-bribery policies
16. Cases of insufficient action taken to address breaches of standards of anti-corruption and anti-bribery
17. Number of convictions and amount of fines for violation of anti-corruption and anti-bribery laws

Sovereigns / Supranationals

18. Average income inequality score
19. Average freedom of expression score
20. Average human rights performance
21. Average corruption score
22. Non-cooperative tax jurisdictions
23. Average political stability score
24. Average rule of law score

Sources: PwC Global AWM & ESG Research Centre, European Commission[47]

47. European Commission, *Commission Delegated Regulation* (EU) 2022/1288 of 06 April 2022; Annex 1. https://eur-lex.europa.eu/eli/reg_del/2022/1288/oj

5.2. PAI ANALYSIS FINDINGS

PAI reporting is still in its early stages and FMPs follow a wide range of different approaches

Despite the mandatory PAI disclosure being fully in force, the study found that 180 (37%) of FMPs issued neither PAI reports nor declarations aligned with the SFDR requirements (cf. Exhibit 46.1). The entities that issued reports showed a variety in terms of their level of detail and were not always complete.

5.2.1. Regulatory Requirements

Of all 485 surveyed FMPs, 99 published a PAI report at the local level, which forms the basis for analysis in the following sections

While more than half (57%) of the 485 companies surveyed for this study adhered to the regulation and the 'comply or explain' requirements, only 109 (22%) published a report at the group or entity level and 169 (35%) issued a declaration not to report on the PAIs of their investment decisions. Additionally, 180 companies (37%) did not meet the declaration or reporting requirements.

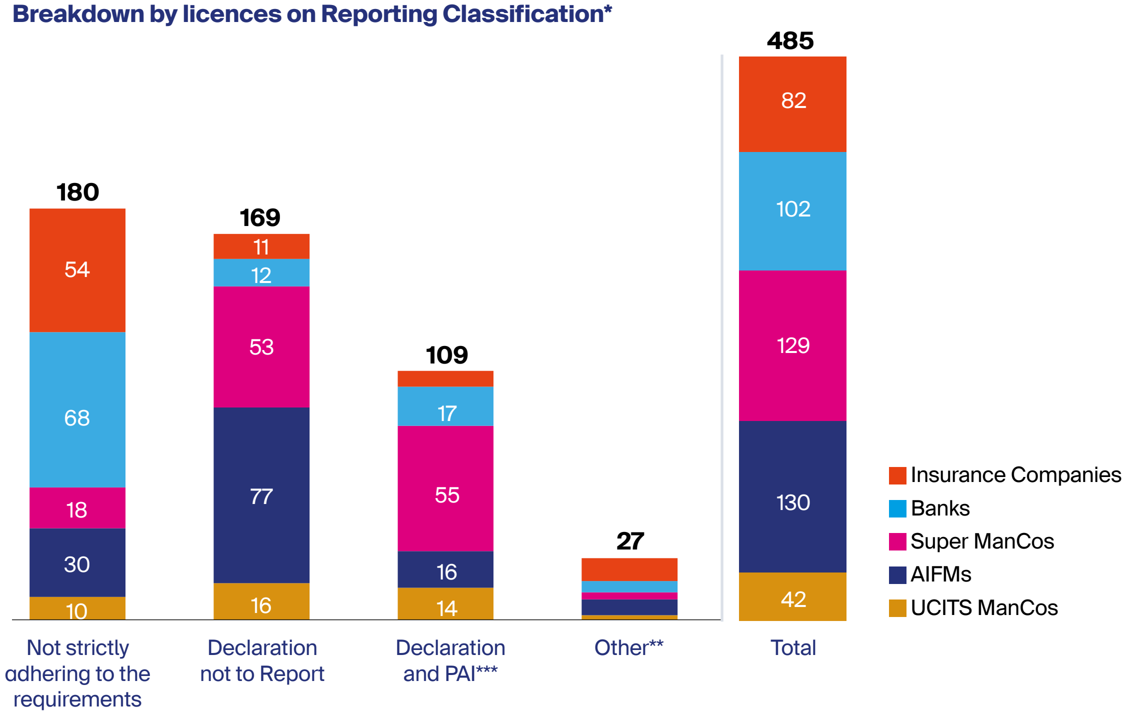
Further analysed cases included FMPs with ambiguous statements on their intention to publish a PAI report, certain firms that did not publish a PAI report after stating that they would, and others that did not explain why they chose not to disclose mandatory PAIs.

Of the 485 companies surveyed, 99 (20%) published a PAI report at the local level, and an additional ten published PAI reports at the group level. However, for the purpose of this study, which focuses on the state of sustainable finance in Luxembourg, only the PAI statements produced by Luxembourg entities were considered.

Of the 99 companies that published a report, 79 provided a complete version. 72% of the PAI reports were filed within the prescribed time frame. Overall, 40% of all Super ManCos, 33% of all UCITS ManCos, 14% all of Banks, 12% of all AIFMs, and 10% of all insurance companies submitted PAI reports at the local level.

Exhibit 46.1 Overview of PAI reporting classifications by type of FMP (1/2)

Breakdown by licences on Reporting Classification*



Classification

Declaration not to Report

- Issuing a clear, reasonable statement at the local level explaining why it did not report.

PAI Declaration and PAI Report

- Issuing a PAI Report at the local entity level
- Reporting at larger company level with a statement on the local website (statement could be found in the overall PAI statement)

Not strictly adhering to the requirements

- Failing to clearly state why they did not report
- Failing to issue a report or statement at the local level
- Only issuing a report at the fund level
- Failing to issue a statement regarding Article 4 consideration

Other**

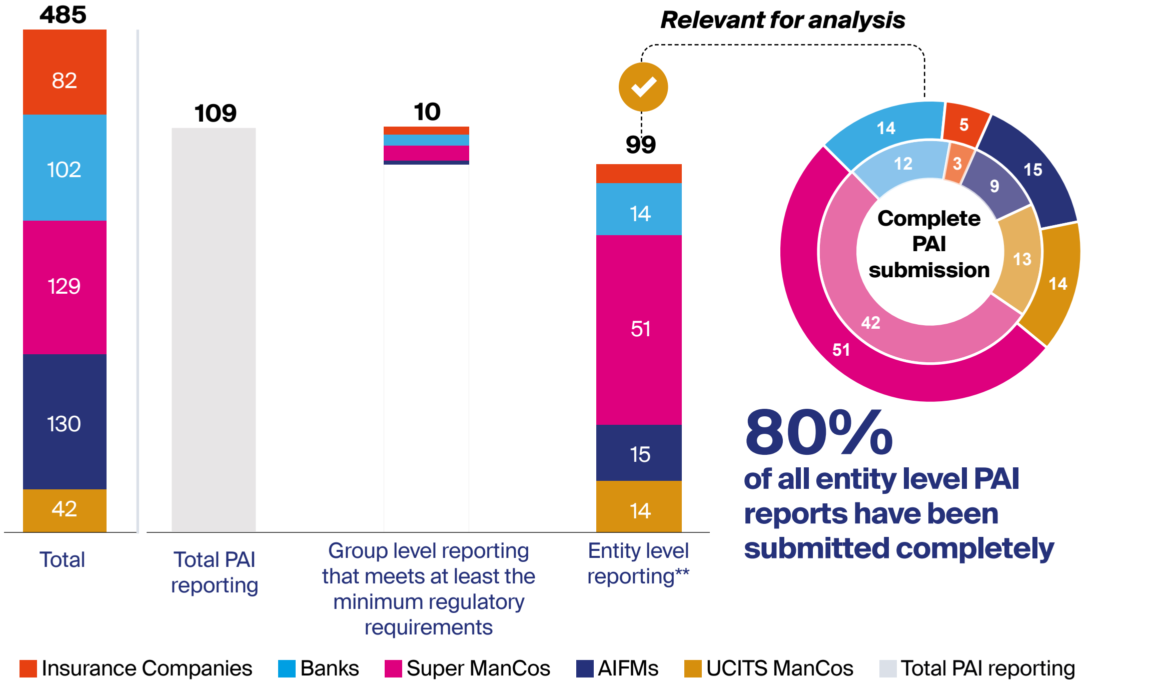
- FMP identified as bankrupt, merged or acquired or for which no online presence could be found

Note: *Data excludes reinsurance companies. **The Other category includes entities which are still part of the ESMA register that were identified as bankrupt, merged or acquired. ***Some statements are password protected and inaccessible.

Sources: PwC Global AWM & ESG Research Centre

Exhibit 46.2 Overview of PAI reporting classifications by type of FMP (2/2)

Breakdown on PAI Reporting Levels, by licences*



Note: *Data excludes reinsurance companies. **In the case of password protected and inaccessible statements, it has been removed from the further analysis of the reports of Luxembourg entities as the data could not be accessed.
Sources: PwC Global AWM & ESG Market Research Centre

5.2.2. Mandatory PAI Coverage

A high level of reporting coverage can be observed for nearly all PAIs

The reporting coverage measures the percentage of entities that reported a numeric value for a given PAI indicator, not taking into account the accuracy or correctness of that reported value. From the analysed sample of FMPs, at least 80% of entities published a numeric value for the first 14 mandatory PAI indicators[48]. Given the novelty of the SFDR reporting requirements, this coverage overview aims to provide an insight into the current reporting gaps.

This study takes into account that companies only have obligations to disclose PAIs with regards to activities they invest in. For example, banks that have no investments in real estate were not considered for the coverage of PAIs 17-18 on exposure to fossil fuels through real estate assets and to energy-inefficient real estate assets respectively. Given this context, only 21% of banks that do invest in real estate reported on PAIs 17 and 18. This figure was 40% for insurance companies (cf. Exhibit 48).

48. PAI 1 to 14 are applicable to FMPs with investments in companies. PAI 15 and 16 are only mandatory for FMPs with investments in sovereigns and supranationals, PAI 17 and 18 for FMPs with investments in real estate assets. The coverage was calculated with respect to the investment universe of each company.

Exhibit 47. List of mandatory PAIs[49]

PAI 1.1: GHG Scope 1

PAI 1.2: GHG Scope 2

PAI 1.3: GHG Scope 3

PAI 1.4: Total GHG emissions

PAI 2: Carbon Footprint

PAI 3: GHG intensity of investee undertaking

PAI 4: Exposure to companies active in the fossil fuel sector

PAI 5: Share of non-renewable energy consumption and production

PAI 6: Energy consumption intensity per high-impact climate sector

PAI 7: Activities that negatively affect biodiversity-sensitive areas

PAI 8: Emissions in water

PAI 9: Hazardous waste and radioactive waste ratio

PAI 10: Violations of UN Global Compact principles and OECD Guidelines for Multinational Enterprises

PAI 11: Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises

PAI 12: Unadjusted gender pay gap

PAI 13: Board gender diversity

PAI 14: Exposure to controversial weapons (antipersonnel mines, cluster munitions, chemical weapons and biological weapons)

PAI 15: GHG intensity of investee countries

PAI 16: Investee countries subject to social violations

PAI 17: Exposure to fossil fuels through real estate assets

PAI 18: Exposure to energy-inefficient real estate assets

Sources: PwC Global AWM & ESG Research Centre, European Commission[50]

Exhibit 48. Robust reporting coverage* of Mandatory PAIs

	AIFMs	UCITS ManCos	Super ManCos	Banks	Insurance Companies
PAI 1.1(2)	100%	93%	100%	100%	100%
PAI 1.2(2)	100%	93%	100%	100%	100%
PAI 1.3(2)	88%	93%	98%	100%	100%
PAI 1.4(2)	100%	93%	98%	93%	80%
PAI 2(2)	100%	93%	100%	100%	100%
PAI 3(2)	100%	93%	100%	100%	100%
PAI 4(2)	100%	93%	98%	100%	100%
PAI 5(2)	100%	93%	100%	93%	100%
PAI 6(2)	88%	93%	98%	100%	100%
PAI 7(2)	100%	86%	100%	100%	100%
PAI 8(2)	88%	93%	98%	100%	100%
PAI 9(2)	100%	93%	100%	100%	100%
PAI 10(2)	88%	93%	100%	100%	100%
PAI 11(2)	100%	93%	100%	100%	100%
PAI 12(2)	100%	93%	100%	100%	80%
PAI 13(2)	100%	93%	100%	100%	100%
PAI 14(2)	88%	86%	100%	100%	100%
PAI 15(3)		83%	96%	93%	100%
PAI 16(3)		83%	96%	79%	80%
PAI 17(4)	78%		68%	21%	40%
PAI 18(4)	78%		58%	21%	40%

Note: *PAI 1 to 14 are applicable to FMPs with investments in companies. PAI 15 and 16 are only mandatory for FMPs with investments in sovereigns and supranationals, PAI 17 and 18 for FMPs with investments in real estate assets. The coverage was calculated with respect to the investment universe of each company. (2) Only AIFMs that do not exclusively invest in real estate were included in the analysis for the coverage. One AIFM was excluded due to the PAI statement not being publicly available. (3) Coverage is only calculated for the entities that declared having investments in sovereigns. (4) Coverage is only calculated for the entities that declared having investments in real estate.

Sources: PwC Global AWM & ESG Research Centre

49. FMPs that invest in:
- Investee companies must disclose Mandatory PAIs 1-14. They must also disclose at least two other indicators – one environmental, and one social (14+2).
- Supranational and sovereign assets: must disclose Mandatory PAIs 15-16 as well as one additional indicator (2+1).
- Real estate assets: must disclose Mandatory PAIs 17-18 (only mandatory for these real estate assets) and one additional indicator (2+1).

50. European Commission, *Commission Delegated Regulation (EU) 2022/1288 of 06 April 2022; Annex 1.* *https://eur-lex.europa.eu/eli/reg_del/2022/1288/oj*

5.2.3. Reporting Patterns for Optional PAIs

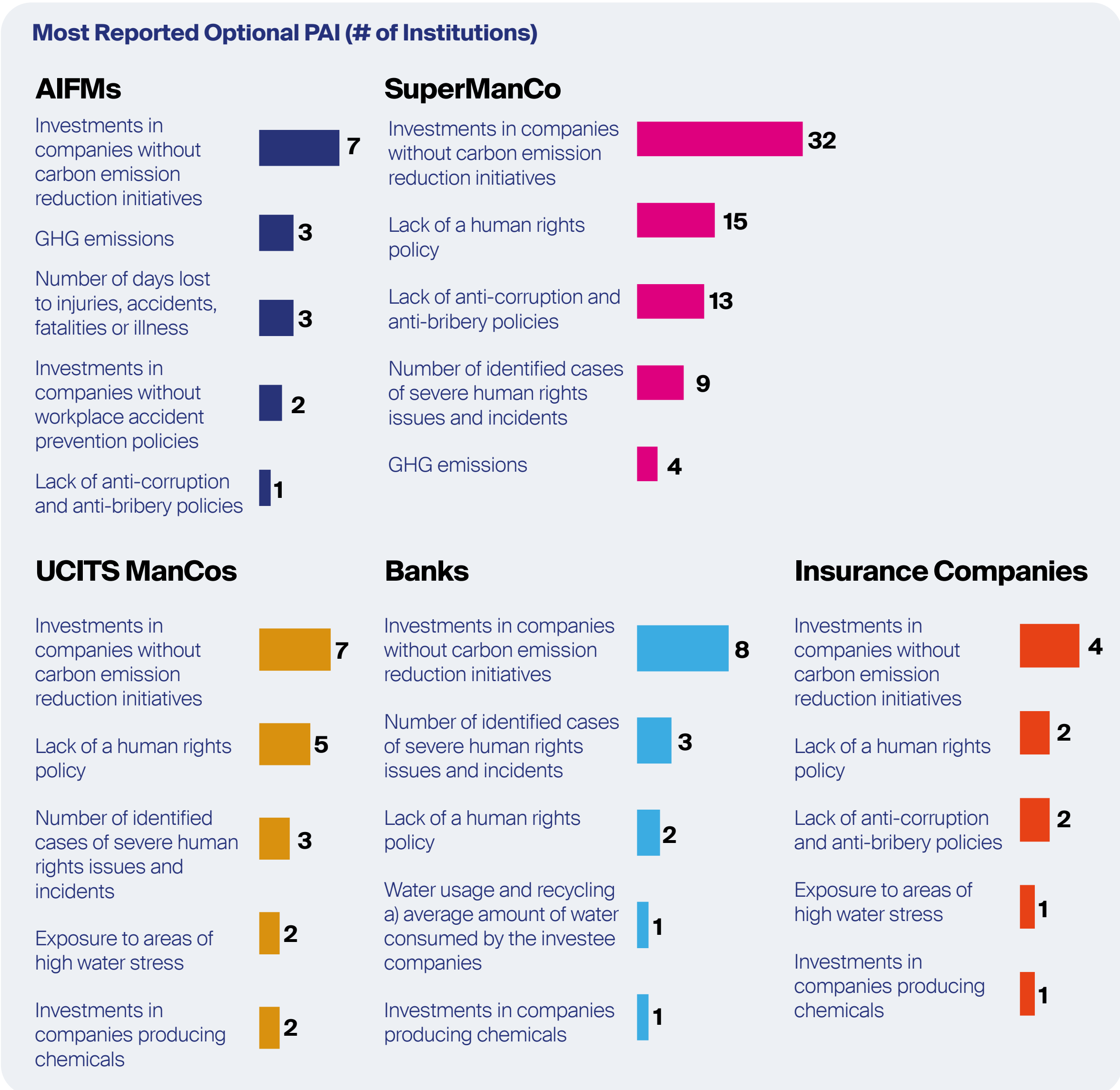
The most reported optional PAI across all FMPs was "Investments in companies without carbon emission reduction initiatives"

As FMPs are required to disclose two optional PAIs which can be selected from a range of 46 environmental, social and governance indicators (cf. Exhibit 49), this sub-section aims to provide an insight into the most widely reported optional PAIs.

The majority of surveyed firms disclosed the *investments in companies without carbon emission reduction initiatives* (PAI 4 of Climate and other environment-related indicators). Another common indicator was the lack of human rights policy (PAI 9 of Indicators for social and employee, respect for human rights, anti-corruption and anti-bribery matters)[51], which was the second most common optional PAI indicator to be reported by Super ManCos, UCITS ManCos and insurance companies. Most companies disclosed the same optional indicators, although the order of the top 5 often changed.

The content and length of the explanation field in FMPs' PAI reports varied greatly, and there was generally little consistency in terms of methodologies and approaches towards PAIs reporting.

Exhibit 49. Most reported optional PAI (number of institutions)



51. Ibid.

5.3. PAI INDICATORS BY TYPE OF FINANCIAL ACTOR

An initial attempt to compare a selection of PAIs of FMPs in Luxembourg

The following subsection provides a more in-depth view on a selection of mandatory indicators disclosed by different types of FMPs with the objective to assess progress over time on the status of standardised metrics. For the purpose of this analysis, 7 PAIs indicators were selected: three environmental indicators (PAI 3, PAI 4 and PAI 7), three social indicators (PAI 10, PAI 12 and PAI 13) and one governance indicator (PAI 11). These specific choices were guided by the fact that these facilitate cross-institutional comparisons, comprehensively encompassing different facets of ESG. Any additional text or multiple breakdowns beyond the scope of the regulation were excluded from the analysis, since they were not easily comparable and therefore could not be included in the calculations. As a result, the coverage seen in these examples may differ from the one shown in subsection 5.2.2.

For these seven PAIs except for PAI 3 (GHG Intensity of investee companies), all zero values were omitted from the analysis to not distort the data. This determination was made based on the improbability of a company truly having zero emissions. Therefore, we assume that these zeros signify missing data. Conversely, for all other indicators, zeros had to be retained, due to a lack of clarity in distinguishing between missing and real values, taking into account the feasibility or technical possibility in the given context.

This is an initial attempt to measure and compare the PAIs of FMPs in Luxembourg. Considering that the data sample is still very limited, the below figures are to be looked at as a first attempt which does not fully reflect the state of the industry and should be interpreted with caution.

5.3.1. Super ManCos

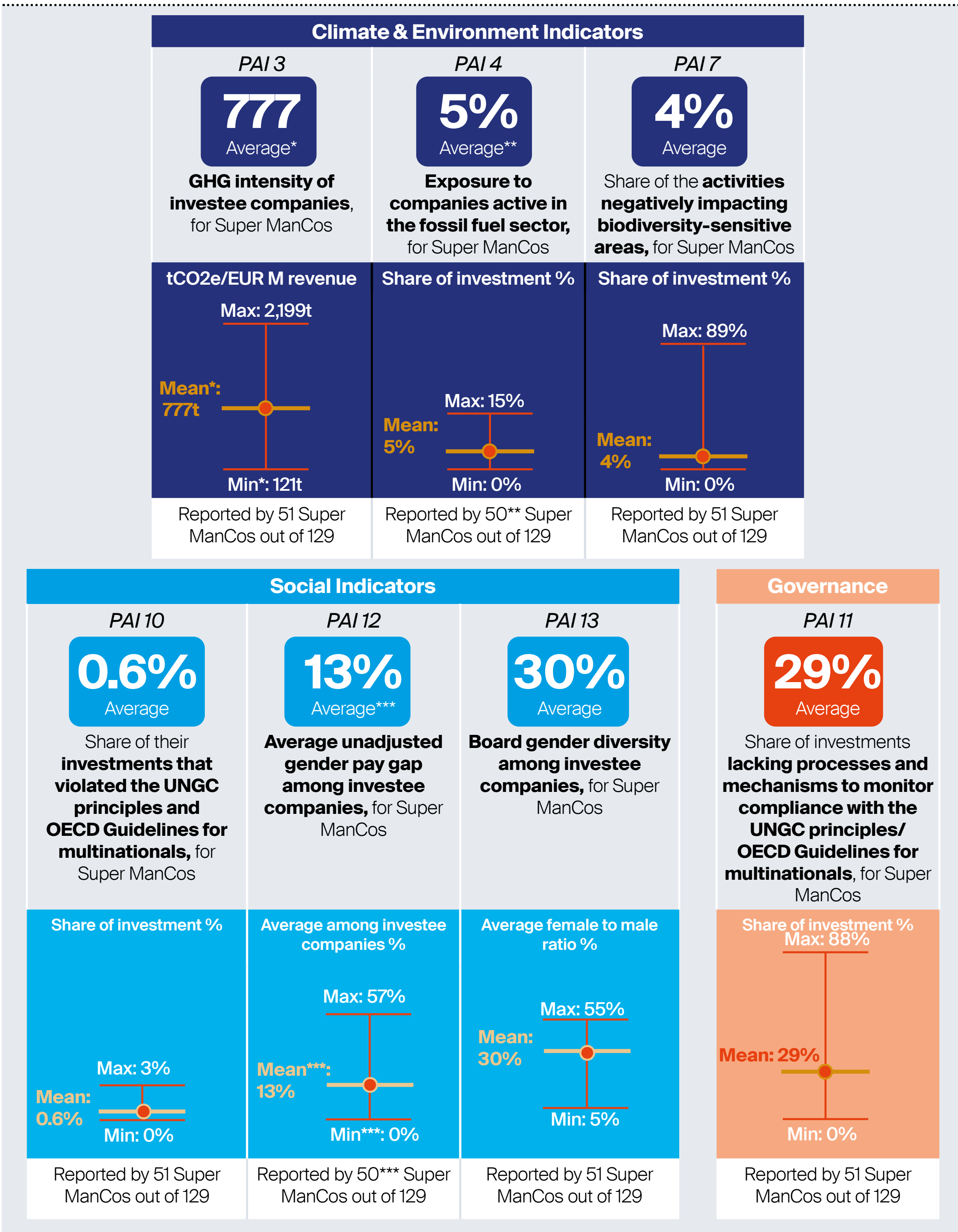
Super ManCos observe the lowest average unadjusted gender pay gap (PAI 12) among investee companies

Out of 129 Super ManCos in Luxembourg, 51 reported on the PAIs listed in Exhibit 79 (except for one that did not report on PAI 4 – Exposure to companies active in the fossil fuel sector). This represents a solid share of reporting entities, substantially higher than the share for AIFMs and even exceeding the share for UCITS ManCos, banks, and insurance companies.

Compared to other FMPs, Super ManCos exhibit the lowest average unadjusted gender pay gap among investee companies (PAI 12). However, they also had the highest average proportion of investments in investee companies with a lack of processes and compliance mechanisms to monitor compliance with the UNGC principles/OECD Guidelines for Multinational Enterprises (PAI 11).

For the remaining PAI indicators, Super ManCos fare similarly to their UCITS ManCo and AIFM counterparts (cf. Exhibit 50).

Exhibit 50. PAI statement indicators – Super ManCos



Notes: *Excluding zeroes **One entity did not report on this PAI ***Excluding one entity that reported a negative figure.
Sources: PwC Global AWM & ESG Research Centre

5.3.2. UCITS ManCoS

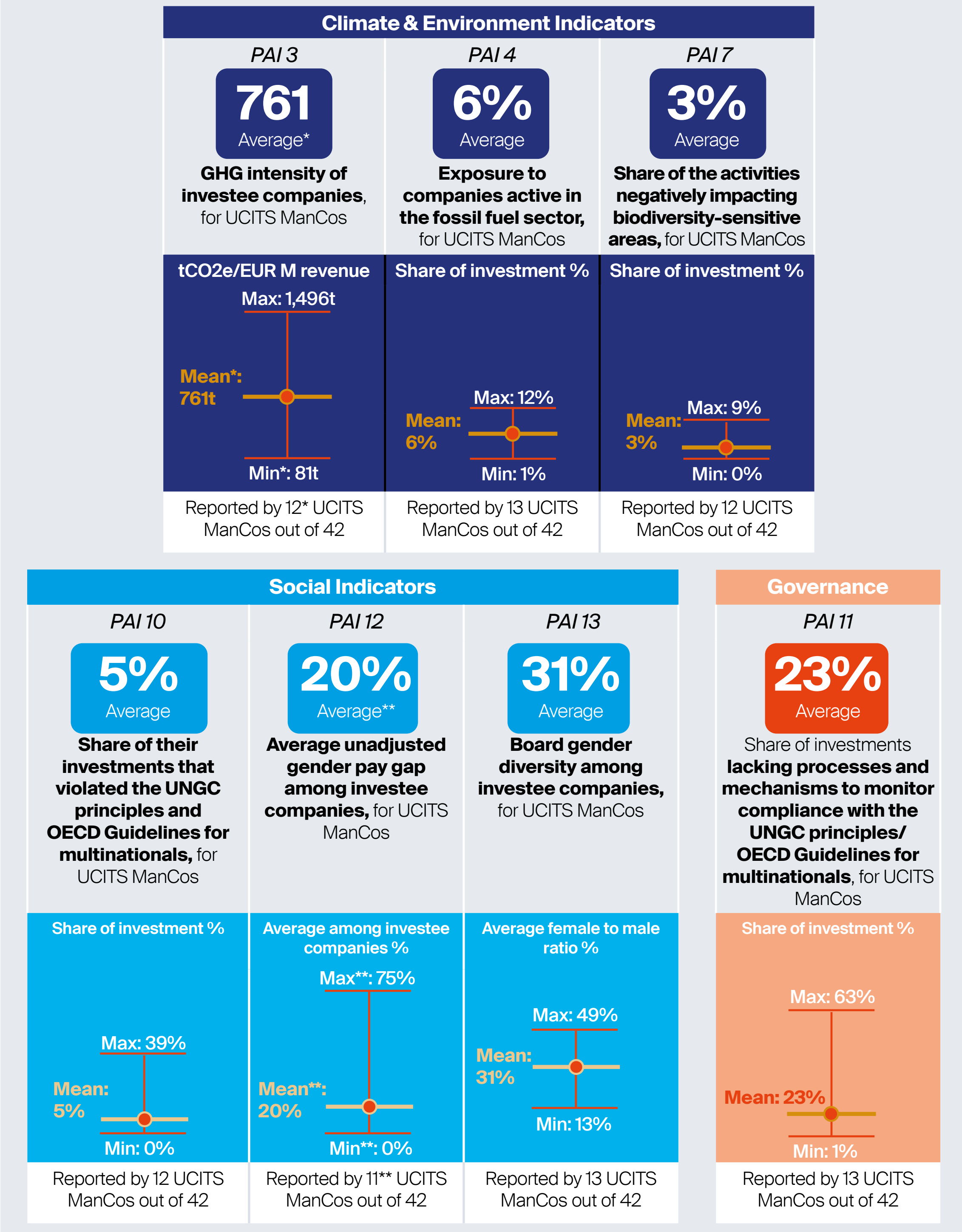
Among ManCos, UCITS ManCos have the lowest GHG intensity of investee companies (PAI 3) and the highest share of investments in companies active in the fossil fuel sector (PAI 4)

As with AIFMs, only a small number of UCITS ManCos published PAI statements this year. Comprehensive data is only available for 14 out of 42 UCITS fund managers (33%).

Among this small sample of UCITS ManCos, we notice that they had the highest average unadjusted gender pay gap of investee companies (PAI 12) among all FMPs, as well as the largest range for this metric[52].

In addition, some of the values in the UCITS ManCos' published PAI statements appeared to be outliers. For example, although UCITS ManCos had the lowest average GHG intensity of investee companies (PAI 3), one entity reported more than 100 Mt CO2-eq per EUR million of revenue (i.e., more than one hundred tonnes of CO2 per EUR) which is highly unlikely.

Exhibit 51. PAI statement indicators – UCITS ManCos



Notes: *Excluding zeroes and one outlier that reported a value above 100Mt **Excluding two outliers, one that reported a unitless figure and one that reported a negative figure.

Sources: PwC Global AWM & ESG Research Centre

52. PAI 12 (unadjusted gender pay gap) is the only indicator where a higher number is a positive social effect. In other words, the lower the figure is, the higher the gender pay gap is.

5.3.3. AIFMs

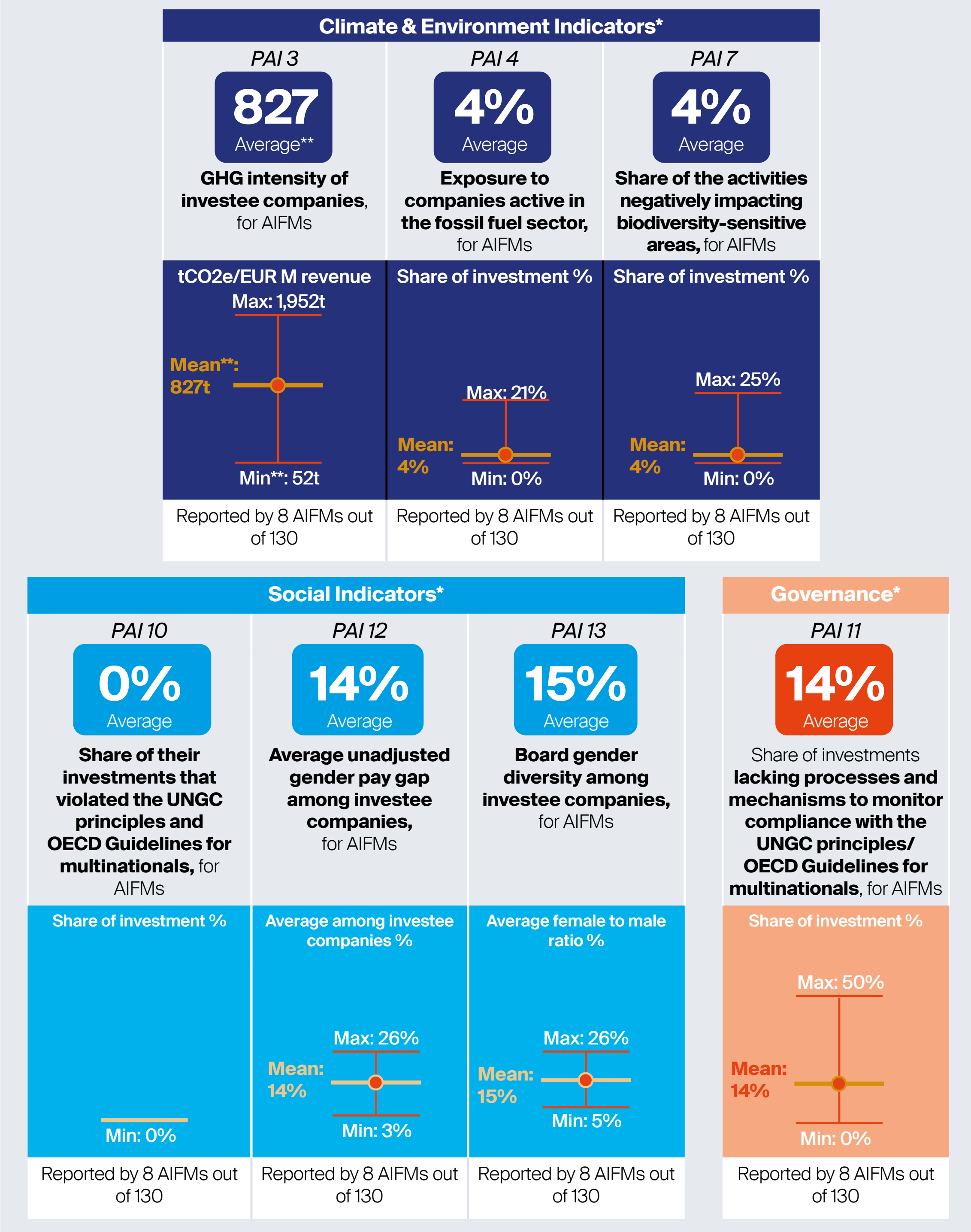
AIFMs reported the highest range and average value of GHG intensity of investee companies (PAI 3), albeit based on a limited sample size

Although only eight AIFMs in Luxembourg published a PAI statement this year, the range of reported values in terms of GHG intensity of investee companies (PAI 3) was the highest. All licences considered, the maximum reported GHG intensity of 1,952t CO2-eq per EUR million of revenue and the minimum observed value of 52t CO2-eq per EUR million were reported by AIFMs.

Compared to other FMPs, AIFMs also reported the highest average value for this metric, as the average GHG intensity of their investee companies (PAI 3) stood at 827t CO2-eq per EUR million, compared to 761t per EUR million for UCITS ManCos and 777t per EUR million for Super ManCos. Additionally, AIFMs had the lowest average levels of gender diversity on the boards of their investee companies (PAI 13), roughly half as much as other types of FMPs.

Notably, all of the AIFMs disclosed that none of their investments violated the UNGC principles and OECD guidelines for multinationals.

Exhibit 52. PAI statement indicators – AIFMs



Notes: *Excluding AIFMs that only manage real estate assets **Excluding zeros.

Sources: PwC Global AWM & ESG Research Centre

5.3.4. Banks and Insurance Companies

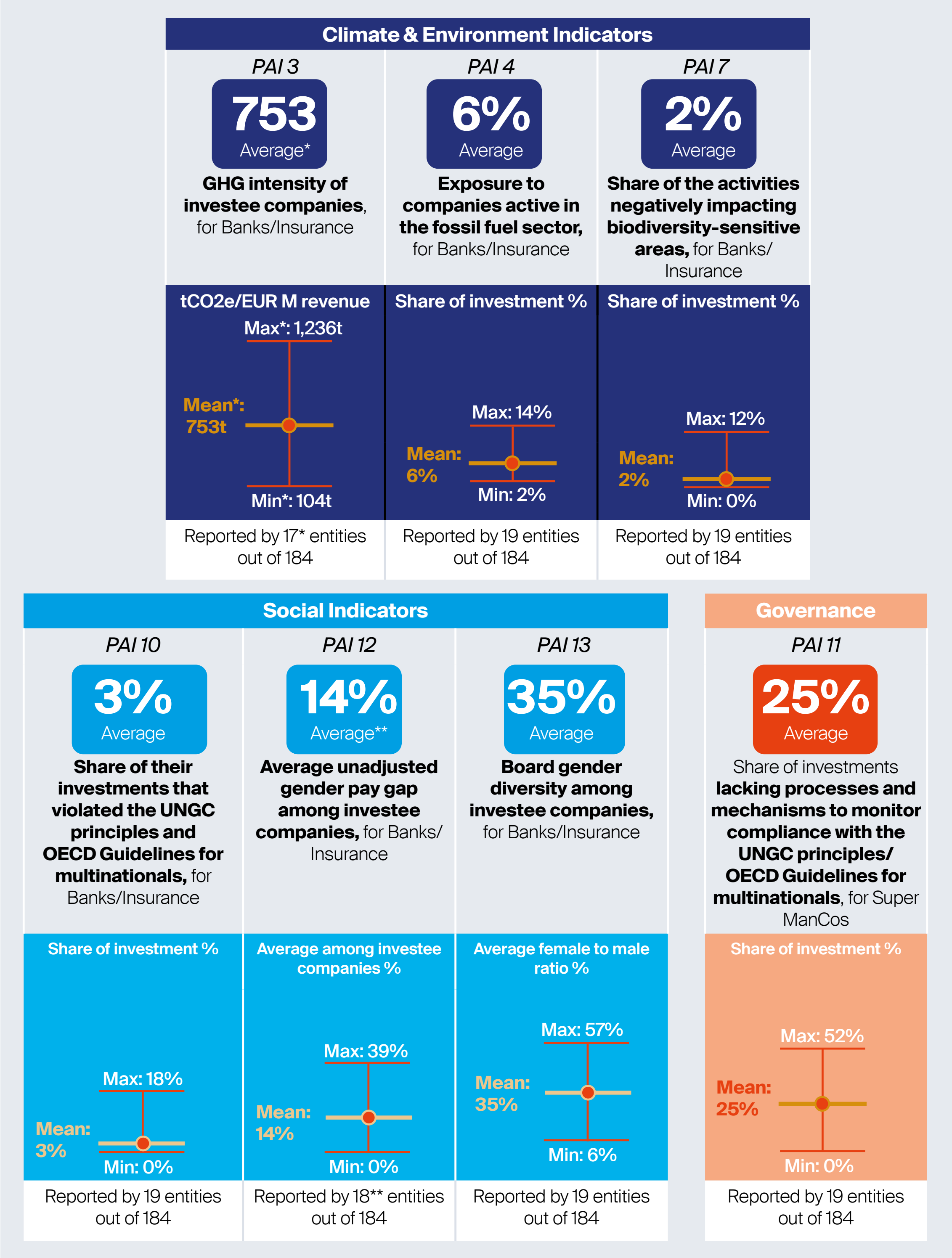
Compared to other FMPs, banks and insurance companies have a higher average of board gender diversity among their investee companies (PAI 13)

Despite having a higher share of investments in companies active in the fossil fuel sector (PAI 4) than Super ManCos and AIFMs, players in Luxembourg's banking and insurance sectors[53] reported the lowest share of activities negatively affecting biodiversity-sensitive areas (PAI 7) and the lowest GHG intensity (PAI 3), although the latter is only marginally lower than the figures for UCITS ManCos. However, banks and insurance companies have more women on the boards of their investee companies (PAI 13) than ManCos, especially AIFMs.

It is worth noting that different institutions calculated GHG intensity in different ways. Some only measured Scope 1 and 2 emissions, while others also measured Scope 3 emissions, although the formula used to compare these figures was provided by regulatory authorities.

53. Banks and insurance companies were measured together as their investment strategies tend to be similar.

Exhibit 53. PAI statement indicators – Banks/Insurance Companies



Notes: *Excluding two outliers, one that reported a value above 400Mt and the other a value below 2t **One entity did not report on this PAI.

Sources: PwC Global AWM & ESG Research Centre

5.4. OBSERVED PAI STATEMENT PRACTICES

Implementing a sustainable finance framework is a work in progress

According to a July 2022 report by the European Supervisory Authorities (ESAs), FMPs' PAI disclosures are lacking in detail, the overall level of compliance concerning details required to explain why PAIs are not taken into account appears to be low, and some FMPs had fragmented PAI statements which were hidden either in legal documents in pdf form or in the section of the annual report on the integration of sustainability risks, or even mixed with risk management related information[54]. A follow-up report published in September 2023 noted some improvements in the accessibility of PAI statements, but maintained that "there is still a significant variation in the extent of compliance with the disclosure requirements both across FMPs and jurisdictions"[55].

Nevertheless, stakeholders in general – be it regulators and public authorities, to FMPs and the general public – tend to be aware that implementing a sustainable finance framework is a work in progress.

Current practices are not yet fully standardised and coherent, rendering the PAI statements difficult to compare at times. Reports may also contain ambiguous judgements rather than objective results. The following are general observations of the reporting practices and trends found over the course of this study:

1. Reporting practices

Most FMPs opt not to issue PAI reports, which limit the extent to which a broad and representative view of the industry can be obtained. Of those that published a report, some FMPs opted to disclose PAI only at group level. Entities that did not report offered a wide range of justifications, from clear reasons for not reporting, to vague statements (e.g., data limitations or employee threshold).

2. PAI report accessibility

Not all reports are equally accessible. Some are easy to find in prescribed sections of company homepages, but others are placed in sub-menus, or incorporated into other documents rather than being stand-alone reports. Others are only posted on the parent company sites, or password protected. Some institutions (mostly insurance companies) do not even post them on their websites.

3. Formula application

Some FMPs followed the SFDR Level II formula, while others applied proprietary calculations and did not disclose their methodologies, resulting in significant variations in the calculated values, which hindered result comparisons.

4. Information quality

Some entities published concise descriptions of their current activities, due diligence and transparency policies, quantifiable objectives, and detailed future programmes, while others made general descriptions without practical measures to be implemented. The latter group was vague when describing their plans and actions, and often used standardised language.

5. Data quality

The quality of underlying data ranged from clear and well-sourced data with comprehensive coverage to incomplete data, which did not include coverage information or its sources.

6. Template application

The application of the RTS mandatory reporting template has not yet been established as industry standard. This led to differences in presentation of data among the evaluated PAI statements.

54. Joint Committee of the European Supervisory Authorities (2022). *Joint ESA's Report on the extent of voluntary disclosure of principal adverse impact under the SFDR*. July 28, 2022. https://www.esma.europa.eu/sites/default/files/library/jc_2022_35_-_joint_esas_report_on_the_extent_of_voluntary_disclosures_of_pai_under_sfdr.pdf

55. Joint Committee of the European Supervisory Authorities (2023). *2023 Joint ESA's Report on the extent of voluntary disclosure of principal adverse impact under SFDR*. September 28, 2023. https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2023/1062224/Joint%20ESAs%E2%80%99%20Report%20on%20the%20extent%20of%20voluntary%20disclosure%20of%20principal%20adverse%20impact%20under%20the%20SFDR.pdf

It should be noted that the general observations highlighted by this study, along with the PAI reporting trends that it uncovered, closely match those published by ESMA[56].

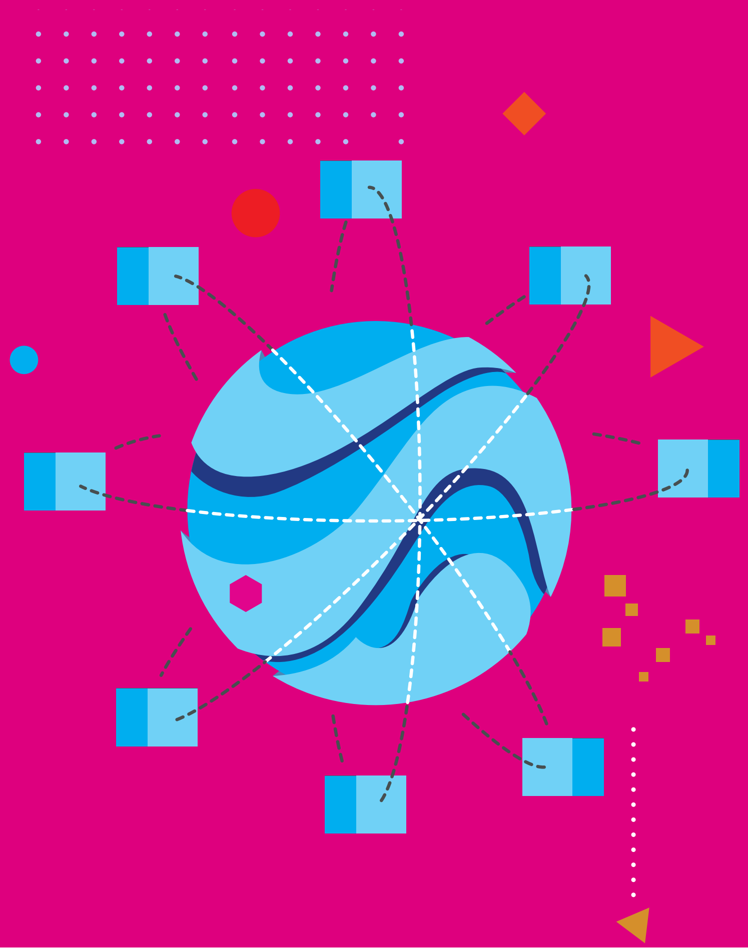
As PAI statements reporting was made compulsory in 2023, it is expected that these practices will improve as the SFDR reporting becomes more mature.

The advent of PAI reporting represents a gain for sustainable finance and a harbinger of greater regulatory compliance in Luxembourg and Europe. With new EU ESG regulations taking effect in the coming years, such as the Corporate Sustainability Due Diligence Directive (CSDDD), ESG reporting in the financial sector can be expected to become more streamlined, comparable, and accessible.

56. Joint Committee of the European Supervisory Authorities (2023). Joint Consultation Paper Review of SFDR Delegated Regulation regarding PAI and financial product disclosures. April 12, 2023. https://www.esma.europa.eu/sites/default/files/2023-04/JC_2023_09_Joint_consultation_paper_on_review_of_SFDR_Delegated_Regulation.pdf

6.

OVERVIEW OF THE EUROPEAN ESG TEMPLATE (EET)



In early 2022, FinDatEx – an industry-led initiative to "support the development and use of standardised technical templates for the exchange of data between product manufacturers, distributors and other stakeholders"[57] – developed the European ESG Template (EET) to address the difficulties FMPs are facing when it comes to sustainability reporting.

Unlike ESG regulations, the EET is not mandatory and is only a supporting document designed to ease regulatory compliance and data exchange. It provides guidance on how to report on the already existing EU sustainability disclosure regulations (SFDR, Taxonomy, IDD, MiFID) and provides templates for every possible disclosure requirement. Ultimately, it seeks to streamline sustainability reporting, make EU entities' reports easy to compare and promote transparency in the European sustainable finance landscape.

Given that the EET was finalised and made public in March 2022[58] – and hence was not included in last year's edition of the study – this Section looks at this newly available source of data to try to assess whether some trends could be identified and progress can be tracked over time in the Luxembourg's sustainable finance landscape.

6.1. OVERVIEW OF THE EUROPEAN ESG TEMPLATE (EET)

A standardised ESG reporting template for funds

The analysis in this Section focuses on how funds in Luxembourg have reported through EET, specifically looking at the difference between funds' estimated (pre-contractual) proportion of sustainable investments or investments with E/S characteristics with the actual (reported) proportion.

This Section uses data from the whole Luxembourg UCITS universe, namely 9,708 funds active as of the end-Q3 2023. Nearly half of the funds in the sample are SFDR funds, mostly disclosing as per Article 8 requirements. To ensure consistency, this analysis is confined to 2,097 funds that have published both the pre-contractual and reported data.

The main finding of this Section is that the anticipated values are often lower than the actual (reported) values. This implies that entities are anticipating the ESG characteristics of their investment strategies very conservatively.

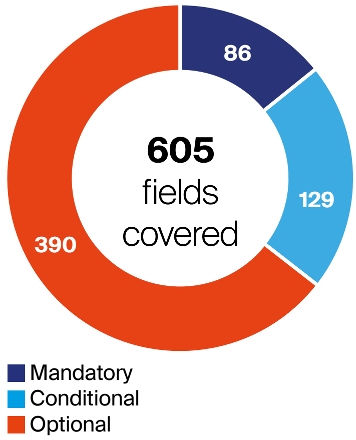
57. FinDatEx (n.d.). Mission statement & objectives. https://findatex.eu/about/mission-statement-and-objectives
58. FinDatEx (n.d.). Current templates. https://findatex.eu/

Exhibit 54. Overview of the European ESG Template – EET fields statuses and SFDR split

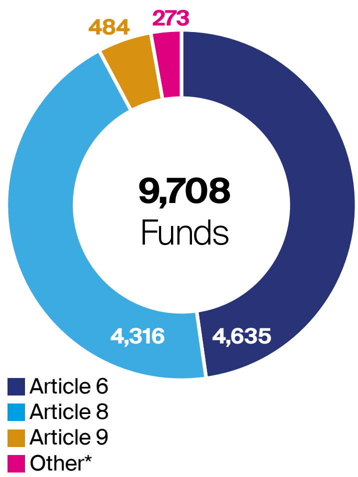
EET overview

1 Template	• In March 2022, the FinDatEx (Financial Data Exchange) working group published the EET as a standardised and machine-readable template covering financial products' key ESG characteristics. • The EET should be filled out for funds and structured financial products, on a share class level. • The EET is intended for a wide range of FMPs, notably insurers, distributors, and funds of funds.
600+ Fields	• There are more than 600 fillable fields in the template. • The fields cover information required for other reporting templates, so no new measures are necessary • The fields mostly take pre-defined values (e.g., only “Yes” or “No”).
3 Field Statuses	• Fields can be either mandatory (for funds reporting under Article 8 and 9), conditional, or optional. • A field’s status may change over time. • For example, in January the SFDR-related fields changed from optional to conditional
9,708 Funds	• The dataset used in this analysis covers 9,708 mutual funds in Luxembourg active as of the end of September 2023. • Just under half of the funds in the extract are SFDR funds, the vast majority of which are reporting under Article 8.

EET fields statuses



SFDR split



*Other includes funds that have not reported their SFDR status to Refinitiv Lipper and funds for which no data is available.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

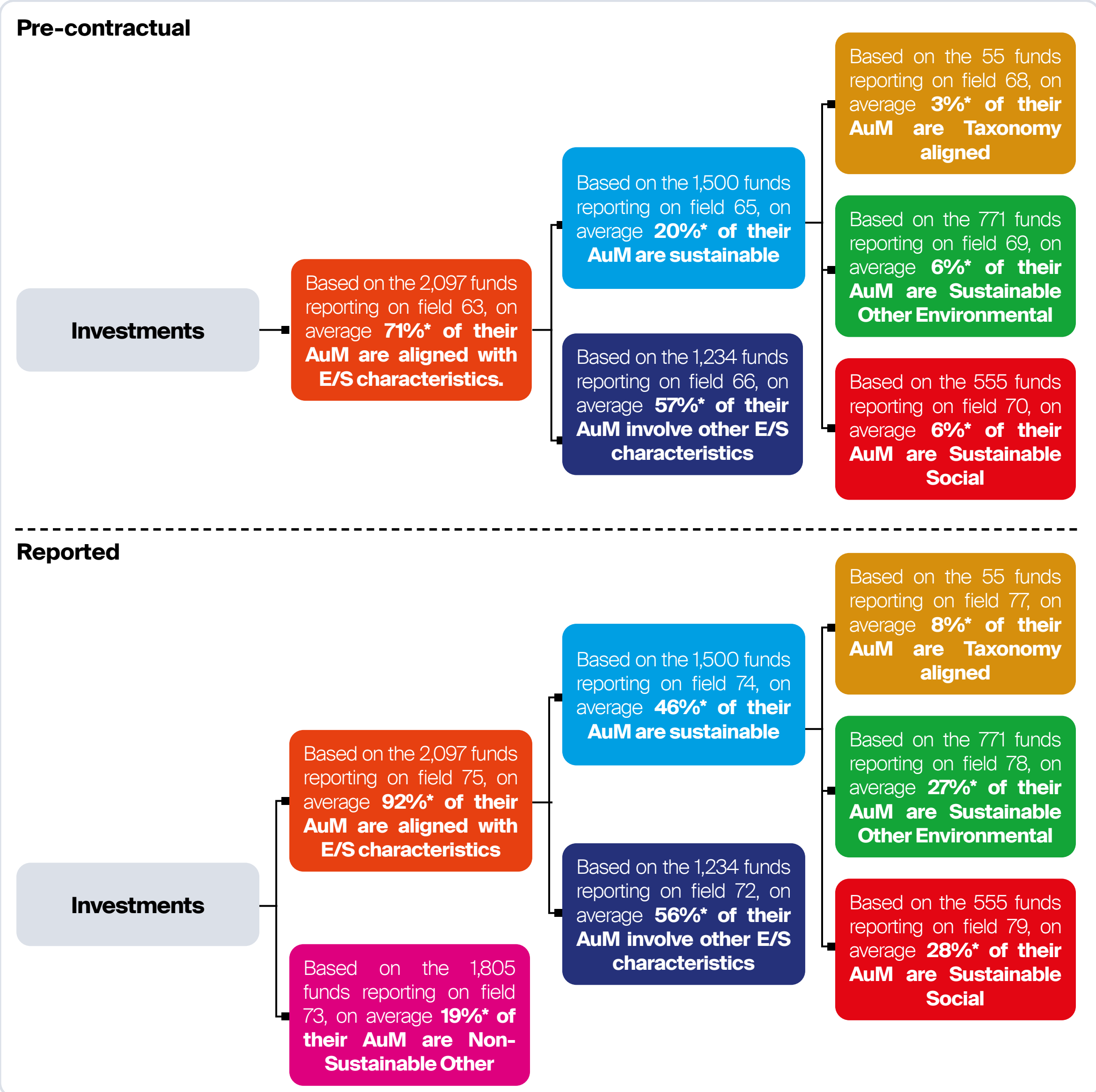
6.2. SFDR EET FIELDS: PRODUCT-LEVEL DISCLOSURES UNDER ARTICLE 8

Most funds disclosing as per Article 8 requirements, did not use EET to report on their key ESG characteristics

Exhibit 55 illustrates the mean values disclosed by funds under Article 8 for selected EET fields. Funds may disclose data either at (1) the precontractual stage, highlighting the share of minimum planned or anticipated investments promoting E/S characteristics, or (2) at the reporting stage, highlighting the share of investments aligned with E/S characteristics. Some funds only disclose either pre-contractual or report values. However, this analysis only considers funds that have disclosed values at both levels.

To compare the patterns of reporting of pre-contractual and reported information, we compared the pre-contractual values provided by fields 63, 65, 66, 68, 69 and 70 of the EET with the reported values provided by fields 72, 73, 74, 75, 77, 78 and 79.

Exhibit 55. SFDR EET fields - Funds reporting as per Article 8**



Notes: *Percentage of values that are non-blank and strictly positive, among primary funds reporting under Article 8 and excluding funds of funds. **For the sake of consistency, this study analyses data at fund level (rather than share class level).

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

The study has found that the share of minimum planned or anticipated investments was lower than actual E/S investments. On average, 2,097 funds disclosing under Article 8 have reported that 92% of their investments align with E/S characteristics (field 75), a noteworthy increase compared to the pre-contractual average of 71% by the same funds. Similarly, 1,500 funds disclosing as per Article 8 have reported that, on average, 46% of their investments are sustainable (field 74), representing a substantial rise from the pre-contractual average estimate of 20%.

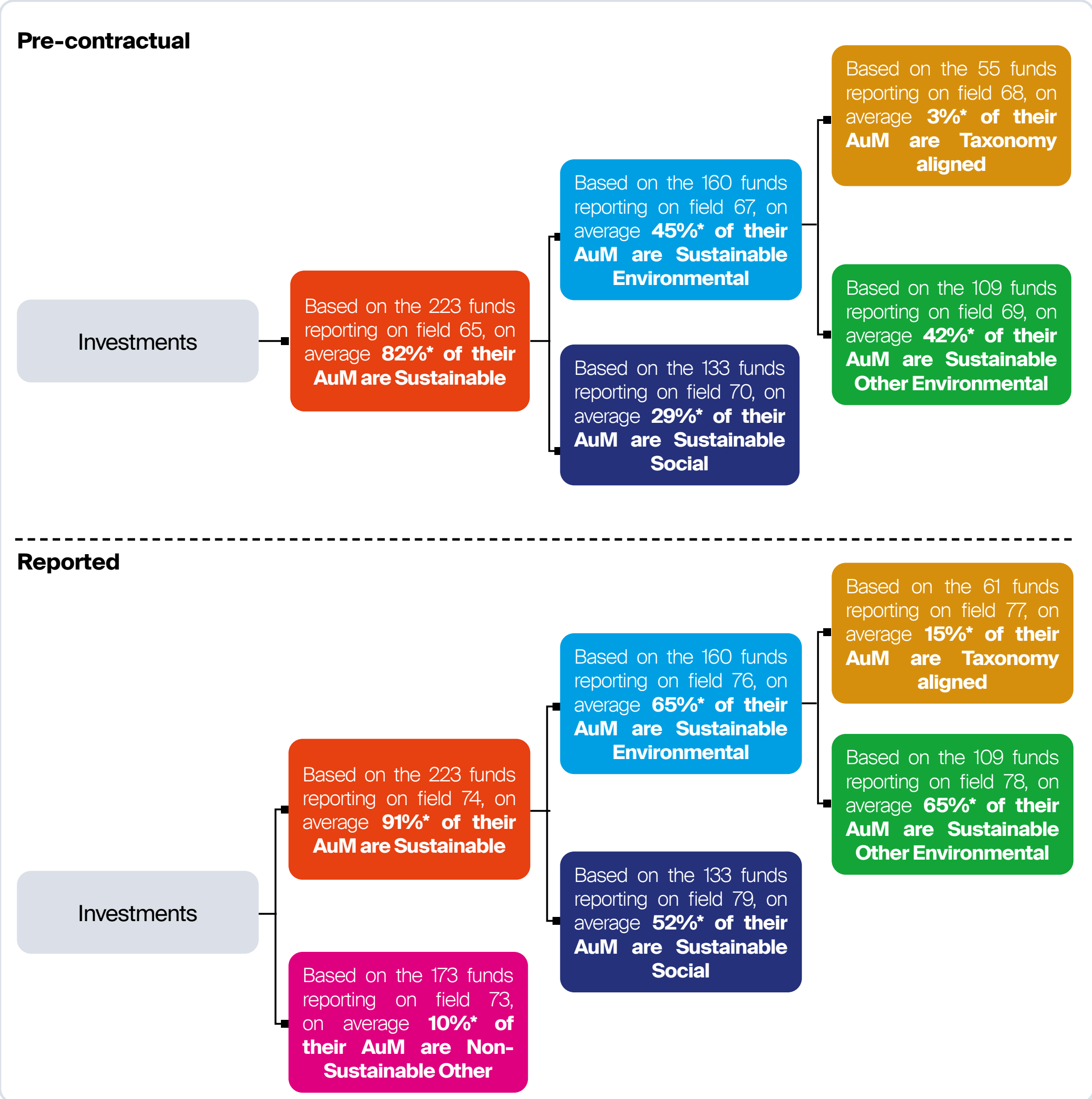
6.3. SFDR EET FIELDS: PRODUCT-LEVEL DISCLOSURES UNDER ARTICLE 9

Funds reporting as per Article 9 appear to be more focused on environmental than social sustainability

Similar to funds under Article 8 requirements, funds under Article 9 requirements exhibit a cautious approach during the pre-contractual phase. This analysis is again confined to funds that have published both the pre-contractual and reported data.

On average, 223 funds reporting under Article 9 disclosed that 91% of their investments are sustainable (field 74), compared to 82% reported by the same funds pre-contractually. Similarly, 160 funds disclosing as per Article 9 requirements report that 65% of their investments are environmentally aligned (field 76), representing a notable increase from the pre-contractual planned average of 45%. This data emphasises how funds tend to report conservatively prior to contract formalisation.

Exhibit 56. SFDR EET fields - Funds reporting as per Article 9**



Notes: *Percentage of values that are non-blank and strictly positive among primary funds reporting under Article 9 and excluding funds of funds. **For the sake of consistency, this study analyses data at fund level (rather than share class level).

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

7.

LUXEMBOURG PLAYERS' ADHERENCE TO CLIMATE INITIATIVES AND TOOLS

In this Section, LSFI aims to contribute towards a general understanding of how FMPs in Luxembourg are positioned with regards to the adoption of the major climate-related initiatives and tools. The present section does not aim at assessing whether these firms are effectively implementing all the requirements associated with a given initiative or tool, nor at evaluating the impact the full implementations of these requirements would actually have on climate change.

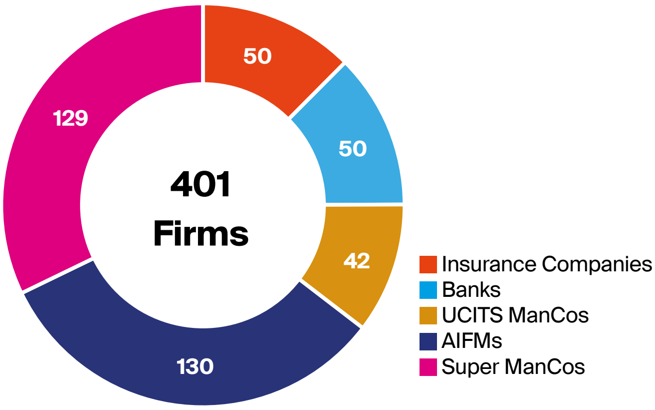
7.1. CLIMATE AFFILIATIONS STUDY METHODOLOGY

A relatively small proportion of the analysed Luxembourg-based firms[59] adhere to one of the following climate initiatives or tools: GFANZ, PCAF and SBTi.

For the purpose of the analysis, the only assumption made was that, if a financial institution adheres to a climate initiative or tool at the group level, we assume that its Luxembourg subsidiary[60] follows only if it issues a statement announcing that it fully aligns with the parent company. This assumption was only used in four cases.

The sample includes: all the ManCos present in Luxembourg according to the ESMA register, the top 50 banks domiciled in Luxembourg (based on their assets according to their balance sheets and publicly available data), and the top 50 insurance companies in Luxembourg (by total premiums according to the Commissariat aux Assurances) (cf. Exhibit 57).

Exhibit 57. Sample of financial institutions



Sources: PwC Global AWM & ESG Research Centre

59. The analysis was limited to the biggest 50 banks (by assets) and insurance companies (by total premiums collected). The only assumption made was that in the absence of information at Luxembourg entity level, the status of the parent entity was applied, if the Luxembourg entity explicitly stated that they fully follow the parent company policies.
60. Guichet.lu, Starting up a Luxembourg subsidiary or branch office. *https://guichet.public.lu/en/entreprises/creation-developpement/constitution/filiale-succursale/filiale-ou-succursale.html*

7.2. OVERVIEW OF CLIMATE INITIATIVES AND TOOLS

This study examines three international climate initiatives and tools that financial institutions can adhere to. The Glasgow Financial Alliance for Net Zero (GFANZ)[61] is a global coalition of eight independent net-zero financial alliances whose members have committed to supporting the transition to net zero by 2050 and help achieve the objectives of the Paris Agreement. It was launched in April 2021 at the COP26 summit, in partnership with the United Nations Framework Convention on Climate Change (UNFCCC) Race to Zero campaign, and it currently comprises over 650 financial institutions from 50 countries[62]. The eight sector-specific alliances which are part of GFANZ are:

- Net-Zero Asset Owner Alliance (NZAOA)
- Net-Zero Asset Managers initiative (NZAM)
- Paris Aligned Asset Owners (PAAO)
- Net-Zero Banking Alliance (NZBA)
- Net-Zero Insurance Alliance (NZIA)
- Net Zero Financial Service Providers Alliance (NZFSPA)
- Net Zero Investment Consultants Initiative (NZICI)
- Venture Climate Alliance (VCA)

The Partnership for Carbon Accounting Financials (PCAF) emerged within the financial industry itself and has created a standard for GHG calculations that allows financial institutions to quantify and disclose GHG emissions associated with loans and investments. It is led by a committee with representatives from various distinguished financial institutions, as well as a representative from the UN-convened NZAOA. To date, it has more than 440 signatories[63].

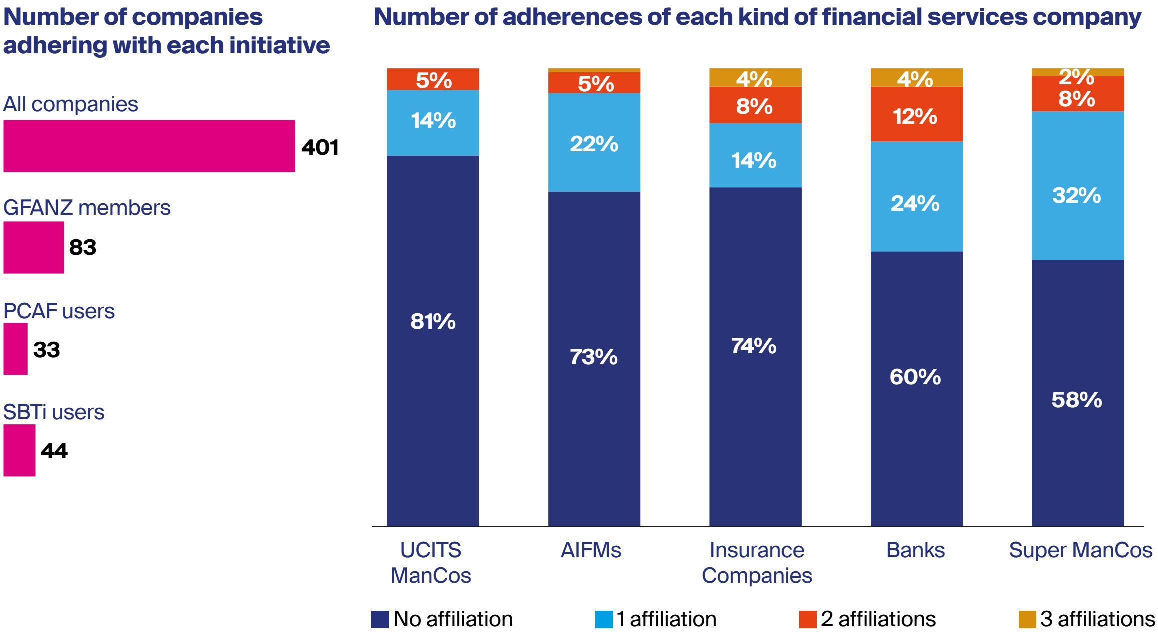
The Science-Based Targets Initiative (SBTi) supports financial institutions who want to set science-based targets to align their investments with the Paris Climate Agreement. The SBTi was created through a partnership between the Carbon Disclosure Project (CDP), the United Nations Global Compact, the World Resources Institute (WRI), and the Worldwide Fund for Nature (WWF). To date, 244 financial institutions are working with the SBTi, having set science-based targets, or having committed to developing targets[64].

7.3. OVERVIEW OF LUXEMBOURG ENTITIES' ADHERENCES

Among the analysed Luxembourg-based financial firms, entities that have any adherence to climate initiatives or tools are the minority as most of them do not adhere to any of the assessed ones. Super ManCos are the segment with the most overall adherences, where 42% of them have at least one. The sector with the least is UCITS ManCos, with 81% of entities having no adherence. Additionally, adherences are not mutually exclusive, meaning that some companies adhere to multiple initiatives and tools. However, only a small minority adheres to multiple. Banks are the sector with most entities having multiple adherences, as 12% of banks adhere to two and 4% to three. UCITS ManCos are the least likely to adhere to more than one initiative or tool (cf. Exhibit 58).

61. GFANZ, *About Section*. https://www.gfanzero.com/about/
62. GFANZ, *Shaping the Future*. https://www.gfanzero.com/membership/#:~:text=Shaping%20the%20future,the%20transition%20to%20net%20zero
63. Partnership for Carbon Accounting Financials, *Financial Institutions Taking Action*. https://carbonaccountingfinancials.com/en/financial-institutions-taking-action#overview-of-financial-institutions
64. Science Based Target Initiative, *Companies Taking Action*. https://sciencebasedtargets.org/companies-taking-action

Exhibit 58. Number of adherences

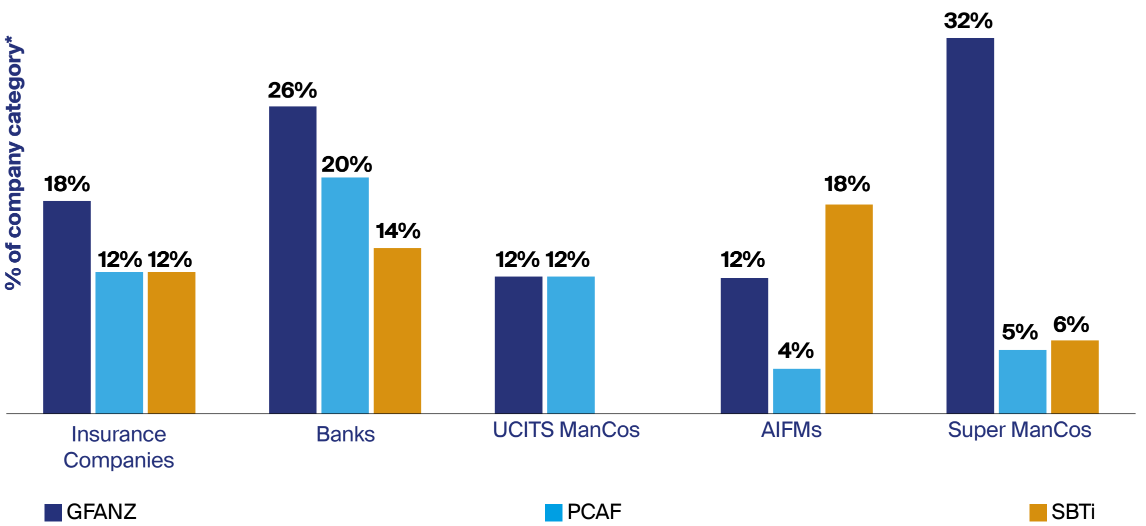


Sources: PwC Global AWM & ESG Research Centre

Regarding the specific initiatives and tools, of the 401 companies in the study, 21% (83) are adhering to GFANZ, 8% (33) to PCAF and 10% (44) to SBTi. Super ManCos were the most likely category to adhere to GFANZ, with 32% (41) of the entities in our sample having an affiliation with at least one of the constituent alliances, followed by banks, standing at 26% (13). AIFMs, on the other hand, were the least likely to have this affiliation, with just 12% (5) of them adhered to GFANZ (cf. Exhibit 59).

Partnership for Carbon Accounting Financials (PCAF) is the least popular initiative/tool in this study. Among the analysed institutions, banks are the most likely to adhere to it, with one in five banks in our sample adhering to it. This can be explained by the purpose of PCAF, which provides a methodology to quantify and disclose GHG emissions of loans.

Exhibit 59. Adherences by type of financial services company



*For example, 44% of the 50 banks in the sample were affiliated with the GFANZ.

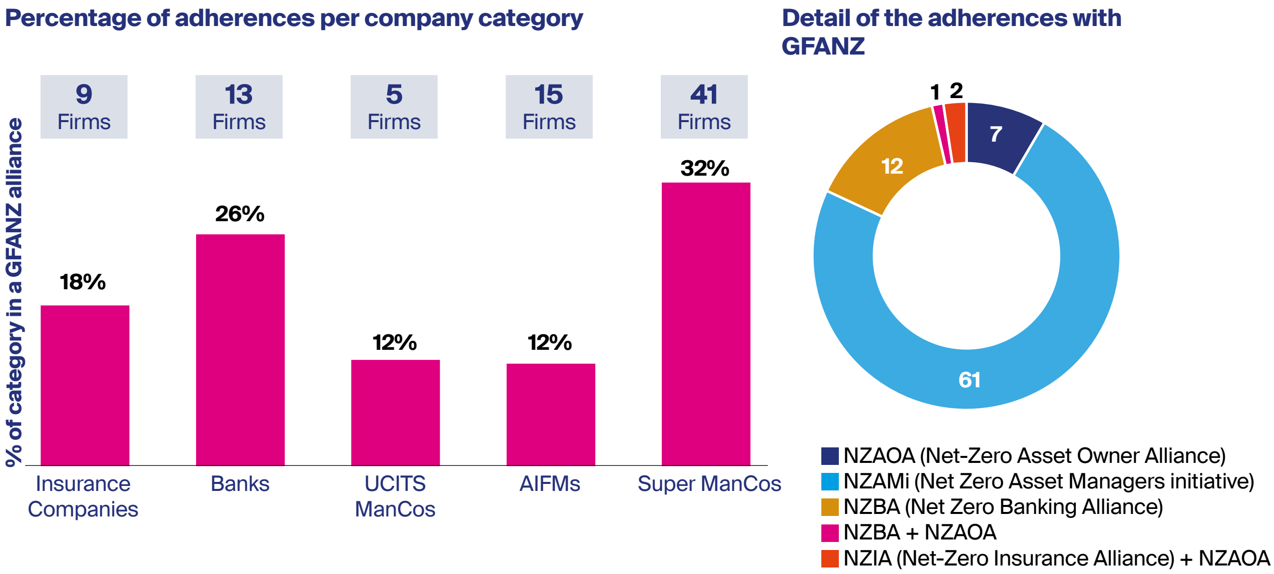
Sources: PwC Global AWM & ESG Research Centre

7.3.1. GFANZ

Members of the GFANZ must meet certain criteria to join one of its eight sector-specific alliances. This study considers a company to adhere to GFANZ if it is part of one of the following 5 sector-specific alliances (NZAOA, NZAMi, NZBA, NZVCA, NZIA), as they were the ones most relevant for our analysis.

In total, 83 firms in Luxembourg adhere to GFANZ. Super ManCos make up nearly half of these, with 41 entities. The sectors with the least GFANZ adherences are UCITS ManCos and AIFMs, each with 12% (cf. Exhibit 60).

Exhibit 60. Adherence to GFANZ



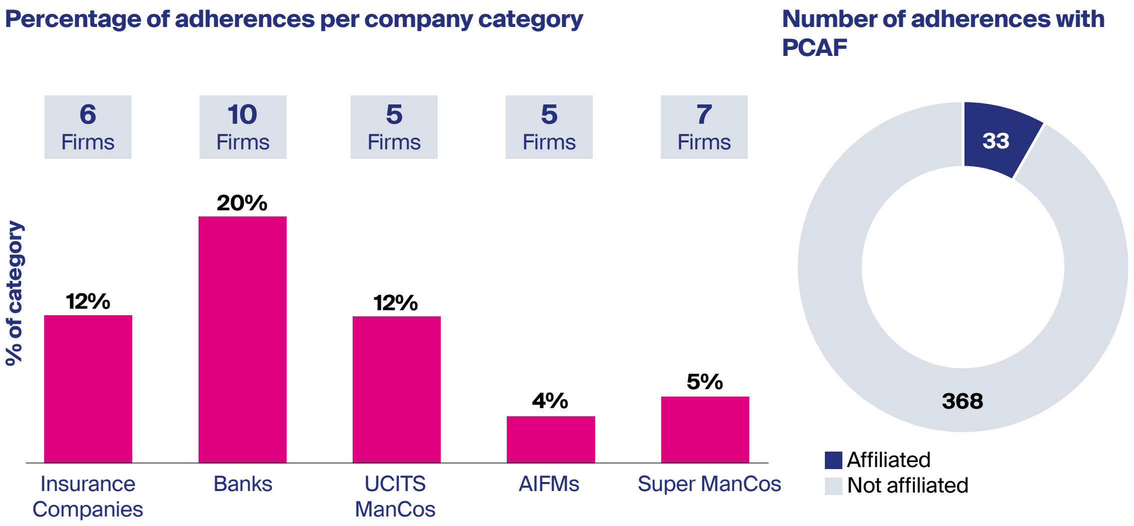
Note: The majority, 61 out of 83, of entities in Luxembourg that adhere to GFANZ adhere to NZAMi. An additional 12 entities are Net-Zero Banking Alliance-linked (NZBA) and another seven are Net-Zero Asset Owner Alliance-linked (NZAOA).

Sources: PwC Global AWM & ESG Research Centre

7.3.2. PCAF

Financial companies are considered adherent to PCAF whether they actually use the PCAF's standard or just commit to using it. The LSFI Climate Measurement and Reporting working group outcome report highligthed that PCAF is a very suitable and comprehensive tool to support financial institutions in their net zero transition and, thus, unambiguously recommended it to all financial institutions in the scope of the working group. However, according the present analysis, PCAF has the least popular affiliation in this study, with only 33 entities adhering to it. Of these, 10 are banks, representing 20% of banks in our sample. As for AIFMs and Super ManCos, only 4% and 5% respectively adhere to PCAF (cf. Exhibit 61).

Exhibit 61. Adherence to PCAF



Sources: PwC Global AWM & ESG Research Centre

7.3.3. SBTi

Companies join the SBTi by committing to the use of science-based targets and submitting their targets for approval by the SBTi. Companies are considered adherent if they have committed to setting at least one target.

There are three main categories of emissions reduction targets in the SBTi: near-term (within ten years), long-term (more than ten years), and net-zero. In the sample, there are more companies with commitments to set near-term goals than companies that have already set targets, although in both cases they are considered to adhere to the SBTi. 15 companies have committed to setting targets, whereas ten have already set them.

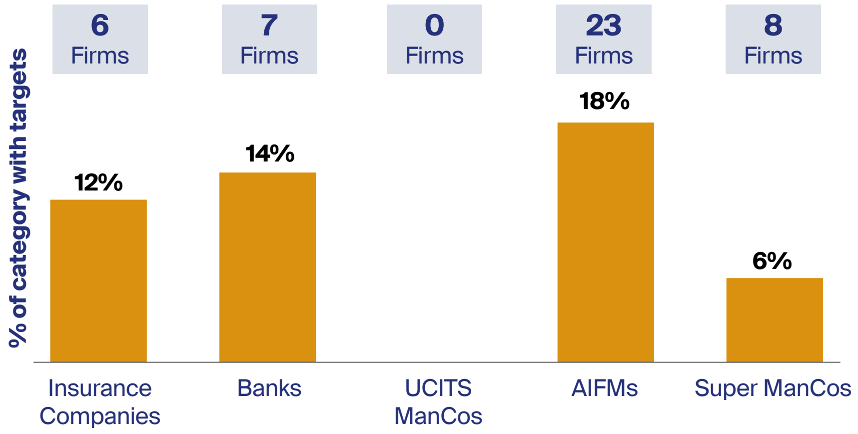
Exhibit 62. Detail of the adherences to the SBTi

	Near-term commitment	Near-term targets set
No net-zero commitment	15	10
Net-zero commitment	12	7

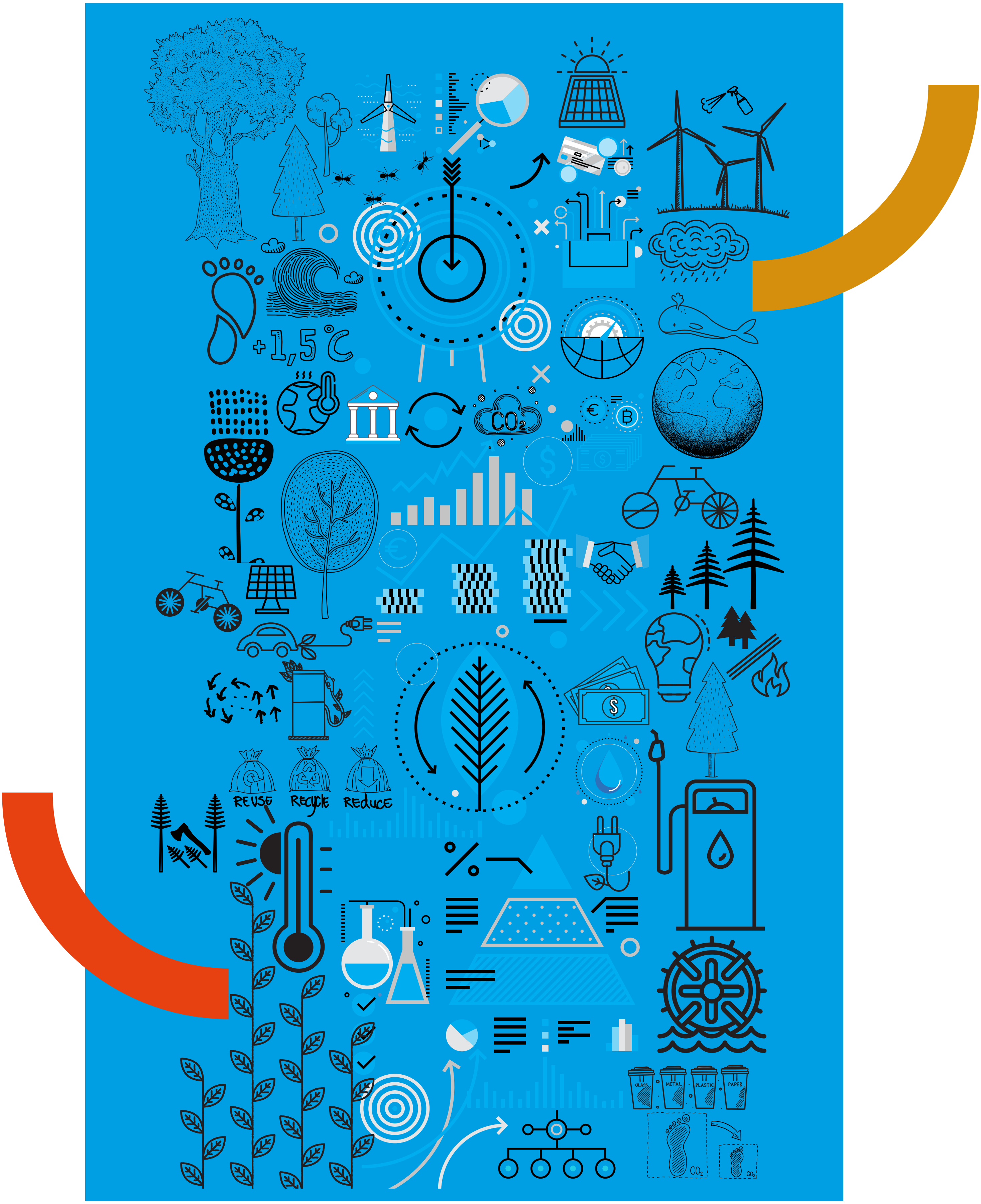
Sources: PwC Global AWM & ESG Research Centre

AIFMs are the firms with the most adherence to the SBTi, with 18% of them linked to this initiative. UCITS ManCos fall on the other end of the spectrum with no affiliations. 14% of banks from our sample – seven in total – adhere to the SBTi (cf. Exhibit 63).

Exhibit 63. Percentage of adherences per company category



Sources: PwC Global AWM & ESG Research Centre


+1,5°C
CO2
REUSE
RECYCLE
REDUCE

8.

FUTURE SUSTAINABILITY CONSIDERATIONS

Given that the fund industry is the only segment under study for which (paid) consolitated and agregated data is publicly available , this section focuses instead on the banking and insurance segments, highlighting both the sustainability risks, and the priorities these sectors will need to focus on in the coming years.

8.1. OVERVIEW OF SUSTAINABILITY RISKS IN THE INSURANCE SECTOR

The insurance sector is increasingly affected by and expected to address climate risks as it plays a crucial role in providing coverage against climate-related hazards, and a growing number of insurance companies are considering and addressing the impact of climate change on their portfolios, particularly the prospect of increasingly severe and regular natural disasters. In Europe, according to EIOPA, only about one quarter of total economic losses caused by climate related impacts and extreme weather conditions are insured, leaving a considerable unmet need for insurance protection[65]. This implies the establishment of climate risk models, shifting investments towards more sustainable activities, and fostering policies that stimulate climate-resilient practices.

The insurance industry has traditionally relied on historical data and catastrophe models to estimate and calculate the costs of natural catastrophes. Given the current reality of global warming, these models may no longer be adequate and often differ significantly from those of climate scientists.

While there is no universal approach to climate risk assessment that encompasses all policies and their implications, the industry has developed innovative responses to the emergence of primary and secondary risks through the development of insurance-linked securities (ILS) and catastrophe bonds[66]. The rising interest in these types of products is particularly visible in areas prone to more extreme weather phenomena. Recognising the limitations of actuarial scenario modelling, it may be prudent for supervisors and financial market participants to adopt qualitative, narrative scenarios and visual representations to assess the implications of tipping points and the interrelated impacts of climate change[67]. In the meantime, investors are actively constructing portfolios to reduce climate risks and favour industries that can cope with extreme weather events.

8.2. OVERVIEW OF SUSTAINABILITY RISKS DISCLOSURE IN THE BANKING SECTOR

Banks are positioned to be one of the biggest catalysts for the transition towards sustainability. While banking regulation on sustainable disclosure has received slightly less attention than fund or company-specific regulation, the European Banking Authority (EBA) is playing its part to incentivise the banking sector to help impel sustainable change.

The EBA published recommendations in May 2020 and June 2021[68] on how banks could incorporate ESG risks. Despite enacting sustainability risk policies, including PAI statements and requiring banks to advise clients on Article 8 and 9 funds, banks decide how they take ESG factors into account.

Recognising several potential challenges, such as the time horizon, data, and information barriers, the EBA provided several interim recommendations in 2020 and 2021.

One of these is that banks are stress tested for their ESG resilience, in addition to the usual stress tests the EBA carries out on banks' resilience to economic shocks. The EBA recognises that balancing short-term gains against long-term ESG risks is a challenge for banks. It also stipulates that obtaining high quality information on ESG impacts is a problem banks face both for transitioning and investing.

65. EIOPA (2023). *The role of insurers in tackling climate change: challenges and opportunities. April 26, 2023.* *https://www.eiopa.europa.eu/publications/role-insurers-tackling-climate-change-challenges-and-opportunities_en#:~:text=The%20expected%20growth%20in%20physical,coverage%20against%20climate%2Drelated%20hazards*

66. These instruments shift the responsibility for offering insurance coverage against natural disasters from insurers to investors in the capital markets.

67. The Institute and Faculty of Actuaries (IFoA) and the University of Exeter (2023). *https://actuaries.org.uk/media/qeydewmk/the-emperor-s-new-climate-scenarios_ifoa_23.pdf*

68. European Banking Authority (2021). *EBA Report on management and supervision of ESG risks for credit institutions and investment firms.* June 23, 2021. *https://www.eba.europa.eu/eba-publishes-its-report-management-and-supervision-esg-risks-credit-institutions-and-investment*

Exhibit 64. EBA ESG risk challenges and recommendations

Recommendations	Challenges
Strategic Planning: the time frame needs to be extended to 10 years instead of the usual 3-5 years	Upskilling staff in risk mitigation techniques and climate-related risk assessment
ESG risks and factors should be incorporated in the decision-making process (as determining factors of financial risk)	Getting Accessing the right data (ESG data providers provide diverging data). *Note: Banks expect the CSRD to make ESG assessments easier in the future*
Stress testing scenarios should to be created (to test a bank's resilience to ESG risks)	Governance: transforming banks' company culture so that sustainability is taken into account at every level
CSSF published a Luxembourg-specific directive that banks take into account "all material risks, including environmental, social and governance" risk (revised version of Circular 12/552)	Each bank has to decide how to weigh short-term gains against long-term climate-related risks. *Note: sustainable alternatives to "brown" assets that bring the same profits are not always available*

Sources: PwC Global AWM and ESG Research Centre, EBA

8.3. ALIGNING LUXEMBOURG BANKS WITH EVOLVING SUSTAINABILITY PRIORITIES

The European Central Bank's (ECB) third supervisory assessment[69] showed that while about half of the assessed banks currently disclose Scope 3 financed emissions, these disclosures are considered inadequate in about 85% of cases[70]. Consequently, there is still a strong need for banks to step up their efforts to improve these disclosures beyond generic information.

In Luxembourg, the Commission de Surveillance du Secteur Financier (CSSF) is fully aligned with the drive towards greater transparency on sustainability matters.

The CSSF's 2022 self-assessment[71] circular highlights that there is room for improvement when managing climate-related and environmental risks. In most cases, banks in Luxembourg are partially aligned with CSSF recommendations.

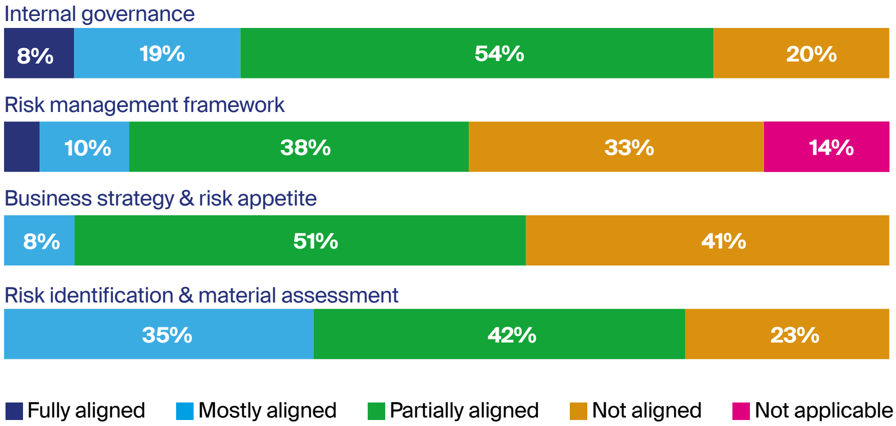
69. Review of 103 SIs, 28 LSIs, and benchmark of 12 G-SIBs outside the EU against EU banks.

70. European Central Bank (2023). *The importance of being transparent: A review of climate-related and environmental risks disclosures practices and trends.* https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.theimportanceofbeingtransparent042023~1f0f816b85.en.pdf

71. CSSF (2022), *Circular CSSF 21/773 on climate related and environmental risks. Outcomes of the self-assessment exercise 2022.* https://www.cssf.lu/wp-content/uploads/Closing-webinar_Circ21773_SA_200623.pdf

Exhibit 65. Findings of CSSF's 2022 self-assessment circular

Degree of alignment with CSSF expectations (2022-23)



Good practices
Business strategy and risk appetite – KPIs & KRIs

Indicator	Activity	Indicator implemented
KPI	Wealth management	Proportion of AuM classified as sustainable must attain a minimum of 30% by 2025
	Depositary	Proportion of funds/AuM allocated to high-risk sectors or nations
	Depositary	Percentage of sub-custodians and third-party vendors conducting operations within high-risk geopolitical regions
KRI	Own portfolio	The bank's securities portfolio classified under FVOCI must achieve a specified minimum ESG rating, which combines both external assessments and internal scoring system
	Own portfolio	Maintain the portfolio's exposure to assets susceptible to climate-related risks at levels below 20%
	Lombard loans	Collateral sourced from countries or sectors identified as vulnerable according to internal criteria should not exceed 30% for any individual client
	Corporate loans	Gradually discontinue investments in sectors that do not align with the institution's objectives regarding CR&E risks

Source: CSSF[72]

72. CSSF, *Circular CSSF 21/773 on climate related and environmental risks. Outcomes of the self-assessment exercise 2022.* https://www.cssf.lu/wp-content/uploads/Closing-webinar_Circ21773_SA_200623.pdf

8.4. THE EBA'S PILLAR 3 COMMENCES

The EU tightened its rules on environmental risk disclosures for European banks in 2023

Starting in 2023, European banks are mandated to make disclosures on selected components of Pillar III ESG risks, a framework developed by the EBA in January 2022. In practice this means rolling out ten quantitative ESG disclosure templates and three qualitative ESG disclosure templates.

To facilitate a transition to this new regime, the EBA has established a phased approach spanning from 2023 to 2025. The aim behind the implementation of these metrics is to transparently show how effectively banks integrate ESG risks into their business strategies and governance structures. This reporting will make it easier to compare, detect and analyse banks exposure to environmentally sensitive sectors and areas.

It is imperative for banks to take advantage of the phased approach to align internal and external resources towards data collection, thus fulfilling their environmental reporting obligations. This is particularly urgent as the new obligations will require a significant influx of new material and data. For instance, disclosures on Scope 3 emissions, alignment metrics, the EU taxonomy and other KPIs will require banks to source new data, skills, and processes[73].

73. European Banking Authority (2022). *EBA publishes binding standards on Pillar 3 disclosures on ESG risks. January 24, 2022.* https://www.eba.europa.eu/eba-publishes-binding-standards-pillar-3-disclosures-esg-risks

Exhibit 66. Overview of ESG Pillar 3 disclosures

Risk Disclosure 2023
- Sector- and Asset-Related Contribution to Climate Change by exposure to vast emitting activities
- Sector- and Asset-Related Assessment of risk exposure to physical risk by climate change

GAR & BTAR* Dec. 23/ Jun. 24
- Exposure to NFRD and non-NFRD Corporates and Retail financing of taxonomy-aligned activities in line with the Paris Agreement
- Measured by contribution and enablement of CCM and CCA

Mitigating Actions
- Supportive functions contributing to the transition or adaptation of counterparties to reach carbon neutrality through favourable financing conditions for non-taxonomy-aligned activities

Qualitative Disclosures
- ESG Consideration in Risk Management, Business Models & Strategy, and Governance Arrangements

Why are the GAR and the BTAR important?
- When fully effective in 2024, banks will be able to track and monitor their strategies and set clear targets, and even banks with low scores on these KPIs can assess the extent to which they intend to change their financing activities to meet the goals of the Paris Agreement.
- To understand how institutions are funding operations in line with the Paris Agreement objectives of climate change mitigation (CCM) and climate change adaptation (CCA), drawing on the EU Taxonomy.

How does the EBA's disclosure fit with all the other disclosure initiatives?

Based on the recommendations of the FSB's TCFD reports

Taking the EU Taxonomy as a reference point

Using data from the banks' largest borrowers falling under the Non-Financial Reporting Directive

On the basis of data gathered on a bilateral level, in accordance with the EBA loan origination and monitoring guidelines

Q1 2022
Publication Pillar 3 ITS

Q4 2022
First effective disclosure reference date

2023
First template submision

2024
First GAR ratio submission

2024
First BTAR Ratio submission (full scope template submission)

Sources: PwC Global AWM & ESG Research Centre, EBA[74]

74. European Banking Authority, *Environmental Social and Governance Pillar 3 Disclosures*. https://www.eba.europa.eu/sites/default/documents/files/document_library/News%20and%20Press/Communication%20materials/Factsheets/1026177/EBA%202021.5984%20ESG%20Factsheet%20update2.pdf

9.

STUDY CONCLUSION

CONCLUSION

Coordinated actions by stakeholders in the public and private sectors across the years have led the Luxembourg financial centre to emerge as a leading global hub for sustainable finance. Now that sustainable finance is on the brink of a pivotal acceleration, further action is imperative more than ever if we are to pursue a sustainable, just and inclusive future.

As demonstrated by this study, sustainable finance has experienced steady growth and development, with Luxembourg-domiciled ESG UCITS funds managed assets worth EUR2,758.3bn in Q2 2023, net inflows increasing and evident recovery amid an overall turbulent economic environment. This evolution is supported by heightened awareness, regulatory initiatives, and the growing recognition of the imperative need to integrate sustainability into risk management and investment decisions. However, it is crucial to note that despite the current status of development and the various global policies being introduced aiming to address the ongoing social and environmental crisis, this journey is only in its initial stages.

While the efforts are undeniable, the journey of sustainable finance is confronted with challenges and shortcomings, with one of them closely tied to data, reporting, and transparency. Despite continuous endeavours from both market players and regulators, data standardisation remains limited, and with it, the possibility to effectively measure and track progress on the impact sustainable finance is achieving. As mentioned in this study, (paid) available data is only accessible for UCITS. Going forward, expanding the scope of data is essential for the industry's development; similarly, standardising these data is crucial to ensure a level playing field is established. In this regard, the banking and insurance industries stand as significant drivers for the transition toward sustainability and are also largely affected by the consequences arising from social and environmental crises.

Over the last few years, significant attention has been devoted to compliance with regulatory requirements within the sustainable finance landscape, which play a crucial role in fostering sustainable investments and addressing shortcomings. Additionally, investment strategies, such as exclusion, have served as the first step for many financial institutions in embarking on this journey. These actions have contributed to the development of sustainable finance, elevating this critical domain on the agenda of financial institutions, companies, and public bodies.

Moving forward, the focus needs to shift to measuring impact. Assessing the impact of our investments and the resulting changes in the real economy represents a pivotal moment. Once again, reliable, comparable and quality data will be of utmost importance to measure the impact of the investments and financial flows, as well as to track progress over time.

This study at hand is part of our broader efforts to help financial market participants in the Luxembourg financial centre in their transition towards sustainability, resolving these existing challenges, finding synergies and supporting solutions. It reaffirms the LSFI's continued commitment to offering and disseminating updated methodologies, timely insights, toolkits and best practices among financial industry participants within the sustainable finance landscape, while recognising that data availability and consistency are limiting factors.

The financial sector plays a crucial role in the transition towards sustainability. Propelling the adoption of ESG strategies, being well-equipped with the tools and skills needed to implement sustainable finance, while constantly measuring its impact will help the sector address and confront the sustainability-related challenges, as well as mitigate the risks that might arise in the future. By being sustainability front-runners, financial institutions are poised to experience the positive outcomes of the global sustainability transition.

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GLOSSARY

REGULATIONS AND DIRECTIVES

- **AIFMD**

The Alternative Investment Fund Managers Directive is designed to protect investors and regulate private equity, real estate, hedge funds and other Alternative Investment Fund Managers (AIFMs).

- **CRR II**

The Capital Requirements Regulation sets out general prudential requirements with regard to risk, large exposures, liquidity, reporting, public disclosure for institutions, financial holding companies, and mixed financial holding companies.

- **CSDDD**

The Corporate Sustainability Due Diligence Directive applies to large companies and lays down certain sustainability rules companies need to adhere to, both in respect to their own operations and those carried about by subsidiaries and business partners. It will come into effect in 2024.

- **CSRD**

The Corporate Sustainability Reporting Directive is an EU regulation that requires companies to report on the impact of their environmental social activities regularly. Its purpose is to amend and strengthen the current requirements of the NFRD.

- **DNSH principle**

Do No Significant Harm Principle. It is one of the main requirements in both the SFDR and the EU Taxonomy for an investment (in the SFDR) or an economic activity (in the EU Taxonomy) to be categorised as sustainable: no significant harm can be done to one sustainable goal while pursuing another sustainable goal.

- **ESRS**

The European Sustainability Reporting Standards are the standards that set out concrete rules (such as structured templates) for mandatory CSRD disclosures.

- **IDD**

The Insurance Distribution Directive aims to regulate how insurance products are designed and distributed in the EU. It also aims to harmonise and standardise insurance market regulations across EU member states.

- **MIFID II**

The Markets in Financial Instruments Directive is an EU regulation that aims to increase transparency across EU financial markets. It provides a standardised framework for regulatory disclosures required by any firm operating in Europe.

- **NFRD**

The Non-Financial Reporting Directive is designed to provide investors and company stakeholders with information regarding environmental and social matters. Examples include environmental impact, human rights issues, anti corruption, bribery and diversity levels in company management.

- **Scope 1, 2 and 3 emissions**

Scope 1 emissions are the emissions a company produces through the assets and sources it directly controls. Scope 2 emissions are those indirectly caused by a company (for example, by purchasing energy to power its offices). Scope 3 emissions are the emissions a firm emits across its entire supply chain.

- **SFDR**

The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation introduced in 2019 that came into effect in March 2021. The regulation's main aims are to increase transparency in the sustainable investment products market, reduce greenwashing, and increase transparency around the sustainability claims made by financial market participants.

- **SFDR RTS / SFDR Level II**

The Regulatory Technical Standards for the SFDR (see above) show FMPs how to disclose statements, pertinent information, and data under the SFDR.

- **Solvency**

This EU directive aims to harmonise EU Insurance regulation, focusing on the minimum capital that EU Insurance companies are required to hold to reduce the risk of insolvency.

- **UCITS**

The Undertaking for Collective Investments in Transferable Securities is a regulatory framework created to facilitate the cross-border distribution of UCITS funds within the EU.

ASSOCIATIONS AND BODIES REFERENCED IN THE STUDY

- **ALFI**

As its name suggests, the Association of the Luxembourg Fund Industry represents the fund industry in the Grand Duchy.

- **Commissariat aux Assurances**

This body supervises insurance companies in Luxembourg.

- **CSSF**

Commission de Surveillance du Secteur Financier is Luxembourg's financial regulator. It supervises the professionals and products of the Luxembourg financial sector.

- **EBA**

The European Banking Authority works to ensure effective and consistent prudential regulation and supervision across the European banking sector. Its overall objectives are to maintain financial stability in the EU and to safeguard the integrity, efficiency and orderly functioning of the banking sector.

- **EFAMA**

The European Fund and Asset Management Association is a trade association that represents the asset management industry in Europe, promoting the interests of its members and raising awareness on the importance of the asset management industry and the services it offers.

- **ESAs**

The European Supervisory Authorities are European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). Its mission is to harmonise financial supervision standards across the EU. They are also responsible for assessing risks and vulnerabilities within the financial sector.

- **ESMA**

The European Securities and Markets Authority is an independent EU authoritative body tasked with protecting investors and ensuring stability in financial markets.

MISCELLANEOUS

- **EET**

The European ESG Template is a voluntary template FinDatEx created to harmonise ESG-related data disclosures on financial products and make them more transparent.

- **ESG**

Environmental, Social and Governance. Whenever this acronym is used in our report to describe funds, it refers to funds that at least apply ESG screening criteria . As per the European Commission, "sustainable finance is understood as finance to support economic growth while reducing pressures on the environment to help reach the climate- and environmental-objectives of the European Green Deal, taking into account social and governance aspects"[75]. Although there is no precise or universal definition of ESG to date, Article 2 (17) of the SFDR defines "sustainable investment" as "an investment in an economic activity that contributes to an environmental objective [...] or an investment in an economic activity that contributes to a social objective [...] provided that such investments do not significantly harm any of those objectives and that the investee companies follow good governance practices."

- **ESG Exclusion**

This cluster includes ESG flagged funds that apply one or more exclusion criteria.

- **ESG Involvement**

This cluster includes ESG flagged funds that apply one or more of the following sub-strategies: Best-In-Class, Positive Tilt, Thematic, Microfinance, Sustainable Development Goals, and Sustainable Bonds. These funds could also apply exclusion criteria.

- **ESG Screening**

This cluster contains ESG flagged funds which apply ESG factors into their overall screening process but cannot be categorised as ESG Exclusion or ESG Involvement.

- **FinDatEx**

Financial Data Exchange, created by representatives of the European financial services industry, aims to coordinate and standardise the use of technical templates and facilitate data exchanges between product manufacturers, distributors and other stakeholder applying relevant European financial markets laws.

- **GFANZ**

The Glasgow Financial Alliance for Net Zero is a global coalition of eight independent net-zero financial alliances whose members have committed to support the transition to net zero by 2050 and help achieve the objectives of the Paris Agreement.

- **Impact Investments**

Impact investments are investments made with the intention to generate positive, measurable social and environmental impacts as well as financial returns. Impact investments can be made in both emerging and developed markets and target a range of returns from below market to market rate, depending on investors' strategic goals.

- **Mixed Assets**

Funds which invest in a mixture of securities (bonds, equities etc.) or other funds.

- **Other funds**

Open-ended funds with investments that cannot be classified in the conventional categories (bond, equity, mixed, money market). These usually include real estate, commodities, and absolute return strategies.

- **PAI**

A Principal Adverse Impact is a negative effect an investment could have on sustainability-related matters (which include climate change, human rights, and anti-corruption issues). Under the first iteration of the SFDR, an annual PAI statement became mandatory for FMPs and Financial Advisors (FA). This is essentially a statement by the FMP or the FA on whether or not they consider the PAIs of their investment decisions. Under SFDR Level II, FMPs need to disclose PAI information at a product level – which is also referred to as the PAI report .

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75. European Commission (n.d.). *Overview of sustainable finance*. *https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en#:~:text=In%20the%20EU's%20policy%20context,account%20social%20and%20governance%20aspects*

- **PCAF**

The Partnership for Carbon Accounting Financials emerged within the financial industry itself and has created a standard for GHG calculations that allows financial institutions to quantify and disclose GHG emissions associated with loans and investments.

- **SBTi**

The Science-Based Targets Initiative supports financial institutions who want to set science-based targets to align their investments with the Paris Climate Agreement.

INDUSTRY-SPECIFIC ABBREVIATIONS

- **AIFs**

Alternative Investment Funds

- **AIFM**

Alternative Investment Fund Manager

- **AuM**

Assets under Management

- **CAGR**

Compound Annual Growth Rate

- **ETF**

Exchange-Traded Fund

- **FA**

Financial Advisor

- **FMP**

Financial Market Participant (FMP) is a broad umbrella term. As per Article 2 of the SFDR[76], FMPs refer to insurance companies which make “available an insurance-based investment product,” investment firms that provide portfolio management services, institutions for occupational retirement provision, manufacturers of pension products, alternative investment fund managers, pan-European personal pension product providers, managers qualifying as venture capital or social entrepreneurship funds, UCITS management companies, and credit institutions that provide portfolio management services.

- **GHG**

Greenhouse Gases

- **ManCo**

Management Company in the context of the asset and wealth management industry.

- **SICAV**

Société d’Investissement à Capital Variable, or investment company with variable capital

- **Super ManCo**

A Super Manco is a management company licensed to trade in both UCITS and in alternative markets. It is therefore both a ManCo and an AIFM.

- **UCITS**

Undertakings for Collective Investments in Tradable Securities

76. EU Regulation 2019/2088 on sustainability-related disclosures in the financial services sector. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R2088

APPENDIX

A.QUANTITATIVE ANALYSIS: SUB-STRATEGIES UNDER ESG INVOLVEMENT

This Appendix complements Section 3.5 "Overview of ESG Involvement funds Sub-Strategies" by providing greater detail on the six investment sub-strategies under the ESG Involvement strategy for readers interested in a deep-dive of the subject matter.

It is important to note that as the data coverage of the Lipper database has been substantially improved between 2022 and 2023, there can be apparent mismatches between last year report's 2022 figures and this year's 2022 figures. This report's 2022 figures have replaced the ones used on last year's figures.

A.1. POSITIVE TILT

A.1.1. AuM and Net Flows

In comparison with the other sub-strategies, Positive Tilt is the only sub-strategy where there is a fairly equal distribution in AuM between bonds and equity, whereas in the other sub-strategies the balance tends to be strongly skewed in favour of one over the other.

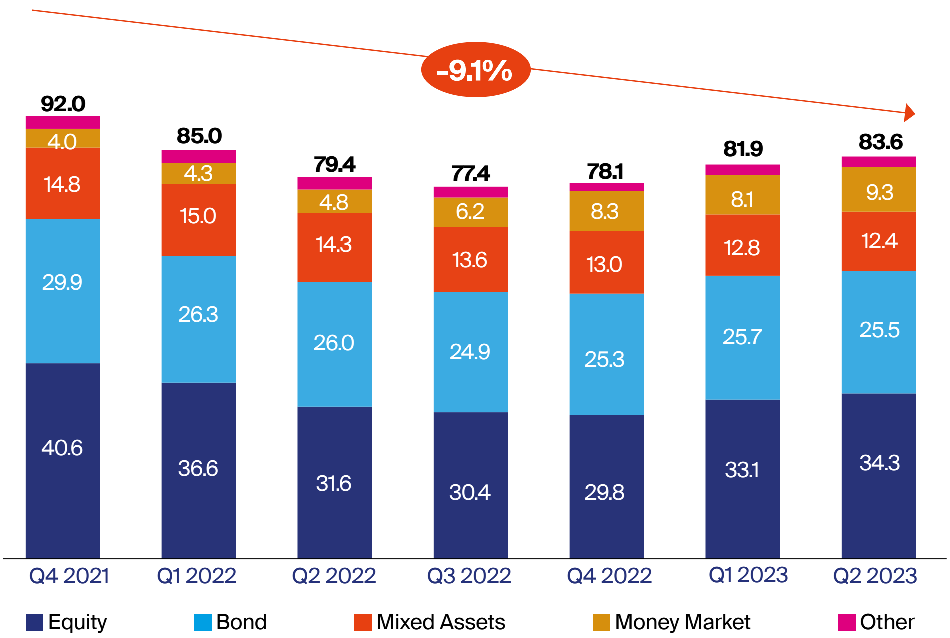
Positive trend, with Money Markets and Equity growing the most

A typical Positive Tilt Fund might be just as likely to invest only in bonds or in equity, with a small proportion of funds turned towards money markets or investing in a diversified set of assets. Equity and money markets are the only two segments that increased their AuM since Q2 2022 (cf. Exhibit 68).

In terms of AuM, Positive Tilt funds rank 5th in popularity among the six sub-strategies as they accounted for 13% of ESG Involvement funds' AuM in Q2 2023. Data shows that there were 87 and 93 Positive Tilt funds in Luxembourg in Q2 2022 and in Q2 2023 respectively.

Despite their relative lack of popularity in the ESG space, Positive Tilt funds showed a noteworthy resilience in Q2 2023, being the only sub-strategy where net positive inflows in H1 2023 have already surpassed their 2022 net flows (cf. Exhibit 67).

Exhibit 67. Positive Tilt funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Exhibit 68. Positive Tilt funds' net flows in Luxembourg (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	-1.4	0.5
Bond	-1.7	-0.3
Mixed	-0.1	-1
Money Market	4.3	0.9
Other	-1	0.5
Total	**0.1**	**0.6**

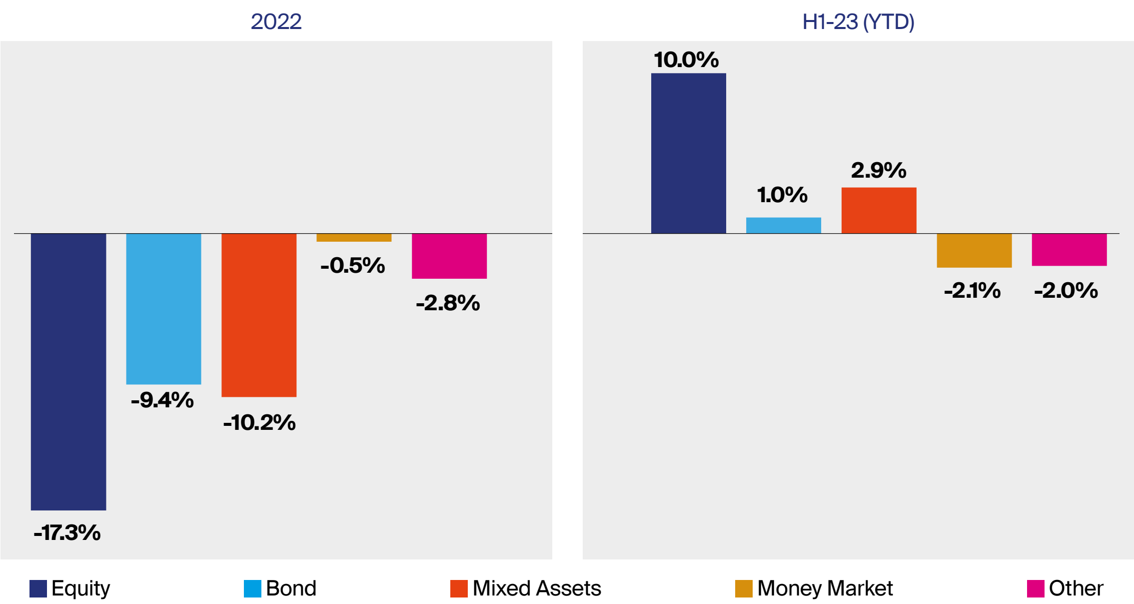
Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.1.2. Performance by Asset Class

As far as Positive Tilt funds are concerned, the overall positive net flows in H1 2023 can be attributed to the inflows coming into their equity and money markets funds. However, in H1 2023 performances were only positive for equity, bonds and mixed assets, with money markets and other asset classes registering a negative performance (cf. Exhibit 69).

Exhibit 69. Positive Tilt funds average gross returns* by asset class



Note: *Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

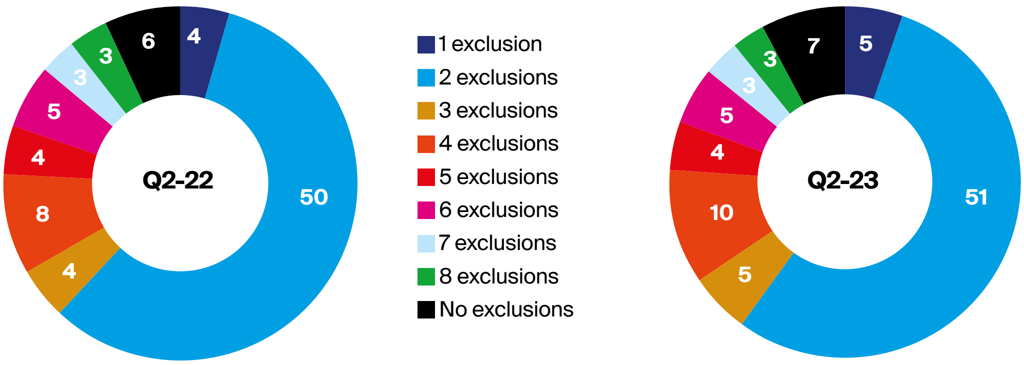
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.1.3. Exclusions and Asset Allocation

Significant shifts in asset allocation; two exclusions the most popular choice

Our analysis indicates that more than half of Positive Tilt funds stick to only 2 exclusions, with the remaining 30 applying 3 or more exclusions as of Q2 2023. This does not mark any notable change compared to 2022 (cf. Exhibit 70). Typical exclusions for ESG funds involve companies involved in weapons manufacturing or suspected of breaching human rights.

Exhibit 70. Number of exclusions applied (# of funds)

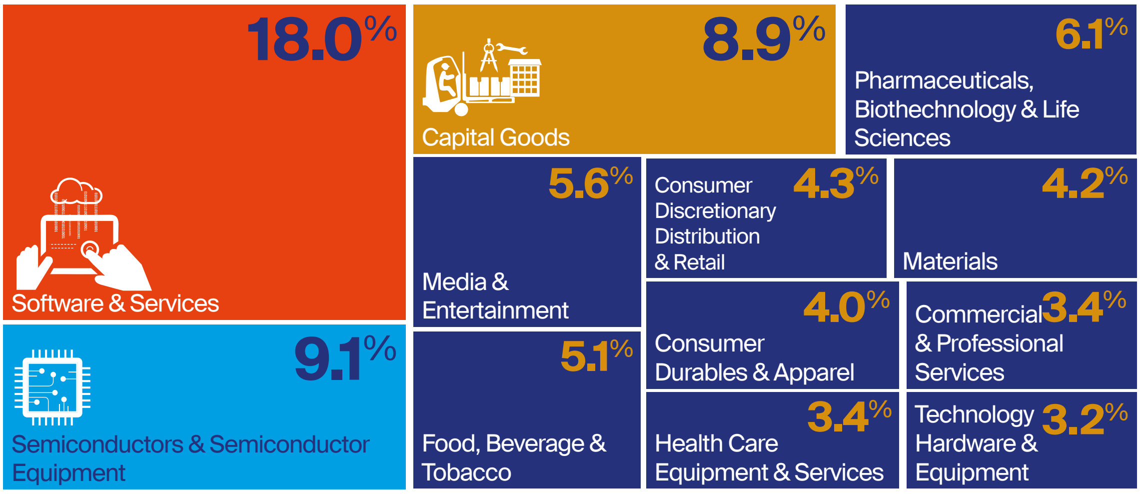


Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

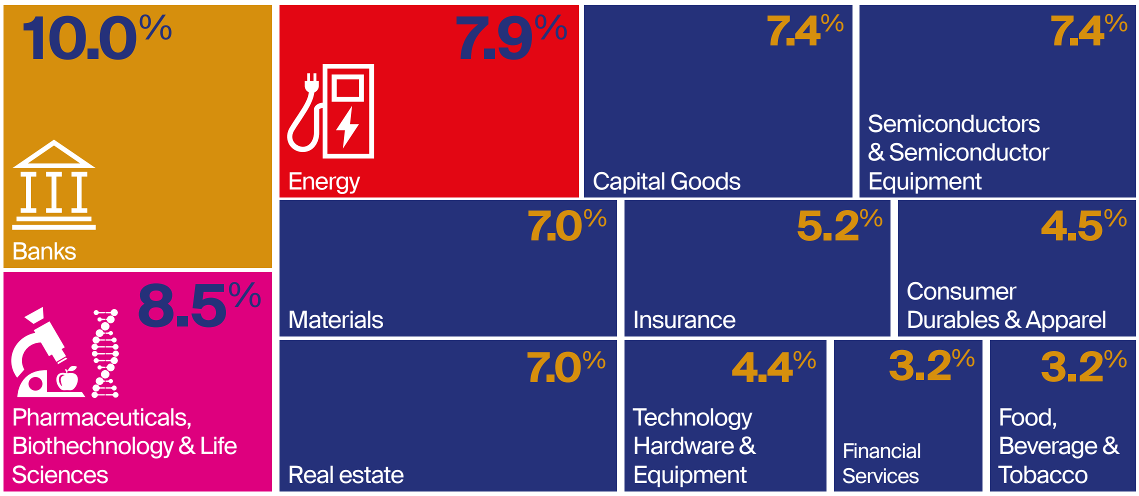
AuM asset allocation to various sectors shifted around significantly between 2022 and 2023 within Positive Tilt funds. A category that did not appear at all in last year's top sectors was Banks, which took the top spot this year. New top categories that did not appear at all in 2022 include Energy (7.9%), Insurance (5.2%) and Real Estate (7%), while four categories disappeared, one of which – Software & Services – had been in the leading position (the other three sectors that disappeared are Consumer Durables, Media & Entertainment, and Commercial & Professional Services). This sub-strategy seems to have experienced the most significant shifts in asset allocations of all sub-strategies (cf. Exhibit 71).

Exhibit 71. Positive Tilt AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data was available for H1 2023 is EUR9.1bn or 10.9% of the EUR83.6bn in this fund cluster. The remaining sectors account for 24.4% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.2. BEST-IN-CLASS

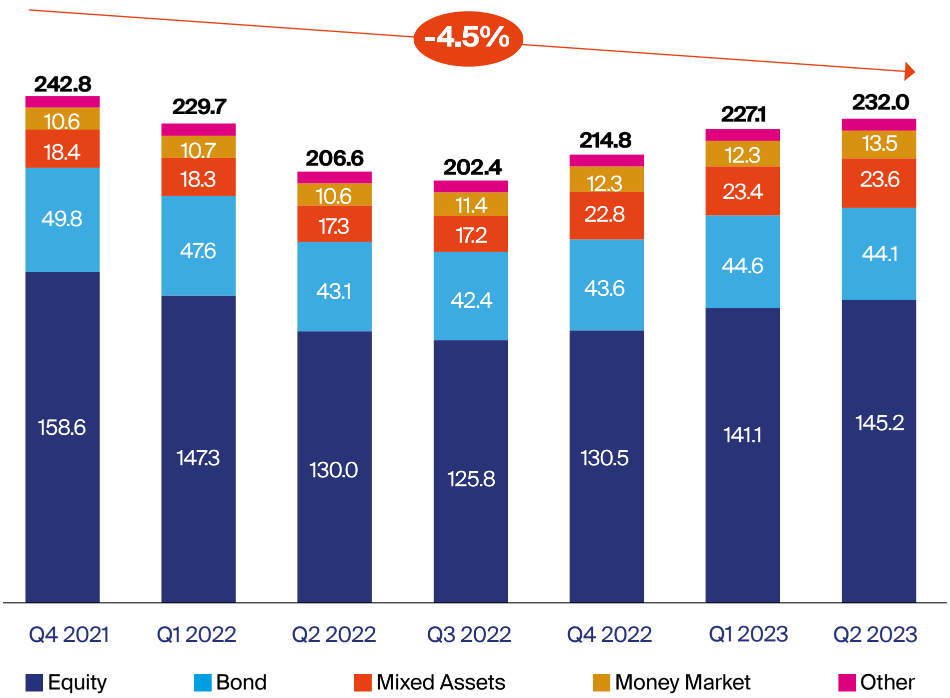
Given that Best-in-Class funds build a portfolio by selecting companies that are ESG leaders in their sector and/or geography, they do not necessarily exclude controversial sectors such as coal or tobacco. Instead, they invest in the companies which, each within their sector, are making the most efforts to become carbon-neutral for instance, or adopt best human rights and social or governance practices.

A.2.1. AuM and Net Flows

Best-in-Class remains the most popular sub-strategy, and increased in AuM during H1 2023

Best-in-Class funds represent the most popular type of ESG Involvement funds in Luxembourg, comprising 463 funds and standing at EUR232 bn in AuM (cf. Exhibit 72). Like all other sub-strategies, Best-in-Class funds surpassed their Q2 2022 AuM levels in Q2 2023, as markets were slowly but surely recovering during the first half of 2023. It can be observed that equity funds account for more than 60% of the total Best-in-Class AuM, and that all types of funds – except those specialised in bonds – have been able to increase their AuM in H1 2023.

Exhibit 72. Best-in-Class funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

In terms of net flows, Best-in-Class funds saw strong performances in both 2022 and H1 2023, especially when it comes to equity funds. Indeed, Best-in-Class funds saw the most net inflows from investors of all the sub-strategies in 2023 (cf. Exhibit 73).

Exhibit 73. Best-in-Class funds' net flows in Luxembourg (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	1.1	1.9
Bond	-1.1	-0.2
Mixed	1.7	0.1
Money Market	1.5	0.9
Other	0.3	-0.1
Total	**3.5**	**2.5**

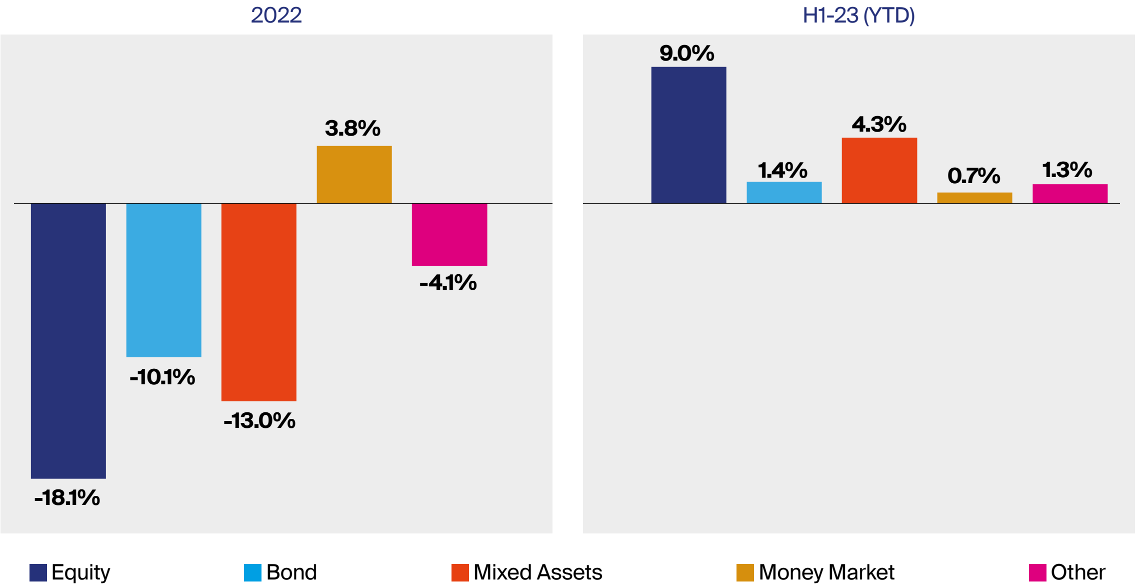
Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.2.2. Performance by Asset Class

Across all asset classes, Best-in-Class funds witnessed positive returns in H1 2023 – with the equity asset class having the most pronounced returns, standing at 9.0%, followed by mixed assets, standing at 4.3% (cf. Exhibit 74).

Exhibit 74. Best-in-Class funds average gross returns* by asset class



Note: Gross returns* indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

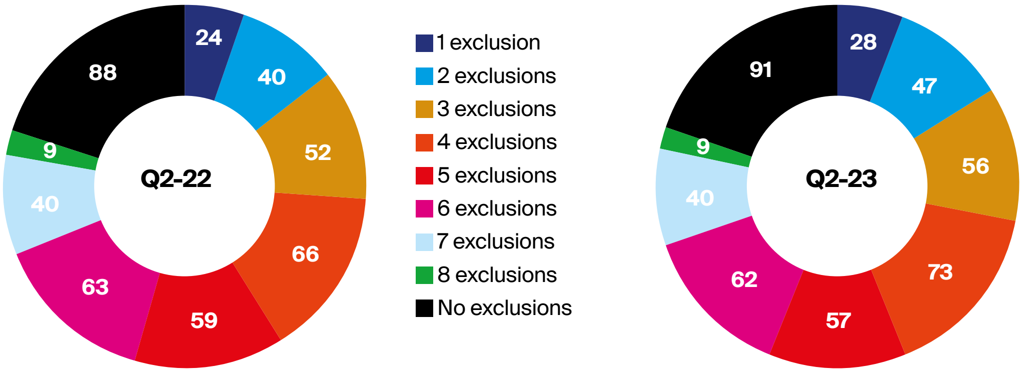
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.2.3. Exclusions and Asset Allocation

Stable configuration between 2022 and 2023

Best-in-Class funds practise a wide variety of exclusions. However, among all sub-strategies, Best-in-Class features the highest proportion of funds not applying any exclusions; this holds true in 2023 as it did in 2022 (cf. Exhibit 75).

Exhibit 75. Best-in-Class funds number of exclusions applied (number of funds)

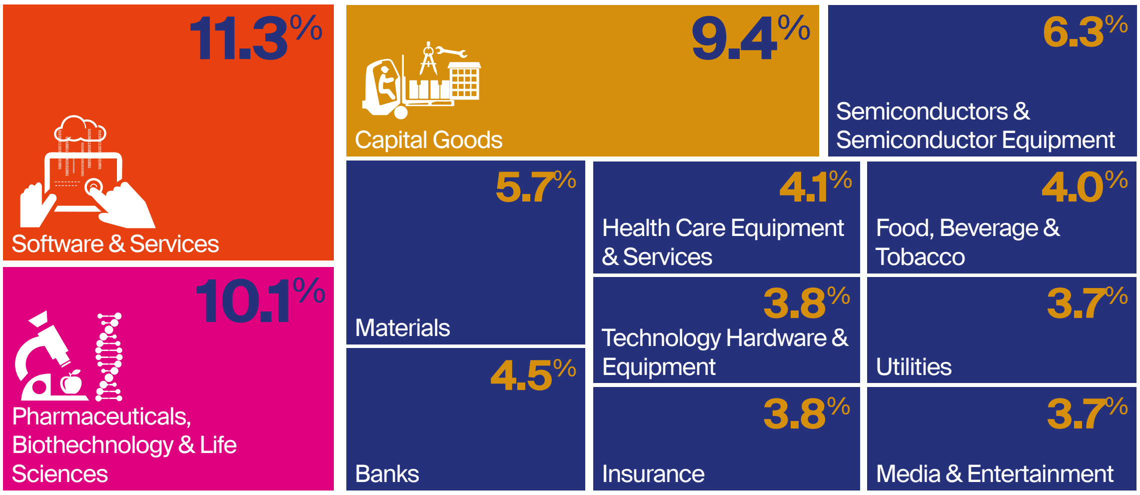


Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

No big year-on-year shifts in sector allocations took place in funds using the Best-in-Class strategy either. Capital Goods moved from 9.4% to 11.2% of asset allocation, taking the top spot, while Software & Services moved from first to second spot. Shift of similar – limited – magnitude can be observed across all sectors identified in 2022. As opposed to what can be observed for Positive Tilt asset allocation, no sector disappeared from the ranking between 2022 and 2023 (cf. Exhibit 76).

Exhibit 76. Best-in-Class AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*

Note: The total AuM of funds for which sector data was available for H1 2023 is EUR78.6bn or 33.9% of the EUR232.0bn in this fund cluster. The remaining sectors account for 28.4% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.3. THEMATIC

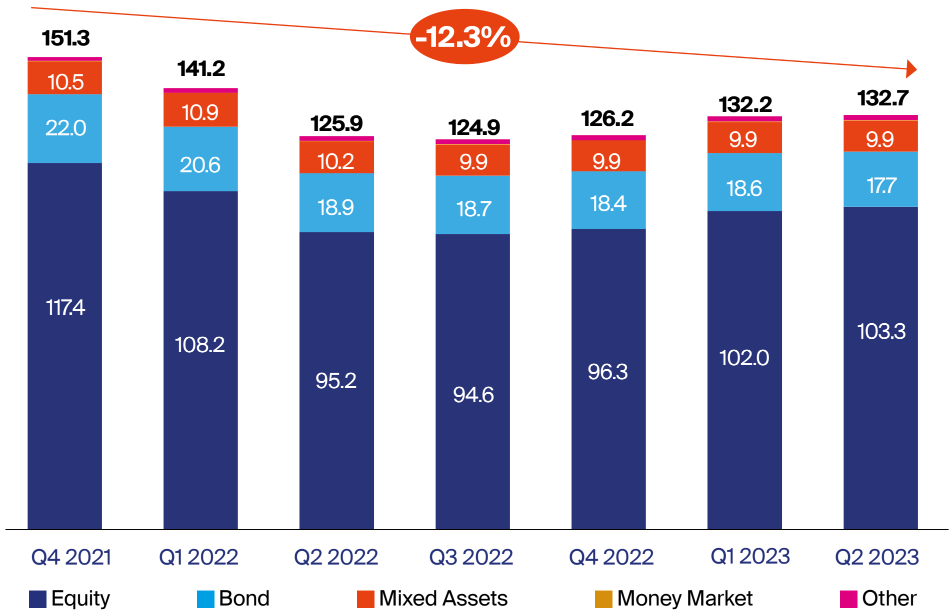
Thematic funds represent the third most popular ESG sub-strategy. They allow ESG-conscious investors to concentrate on one particular theme – be it gender equality, sustainable infrastructure, human rights, energy efficiency or low pollution – rather than on a broad ESG objective. Equity funds represent by far the largest percentage of AuM in this sub-strategy.

A.3.1. AuM and Net Flows

Growth in Equity but overall AuM growth slowed down

As of Q2 2023, Thematic funds' AuM reached EUR132.7bn – a modest recovery from the lows of Q3 2022, but still a long way from the heights of Q4 2021 (cf. Exhibit 77).

Exhibit 77. Thematic funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

The overall negative net flows in H1 2023, which stood at EUR -2.1bn, slowed down growth in AuM (cf. Exhibit 78).

Exhibit 78. Thematic funds net flows (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	1.5	-1.2
Bond	-1.8	-0.6
Mixed	0.8	-0.5
Money Market	0	0
Other	0.2	0.2
Total	**0.7**	**-2.1**

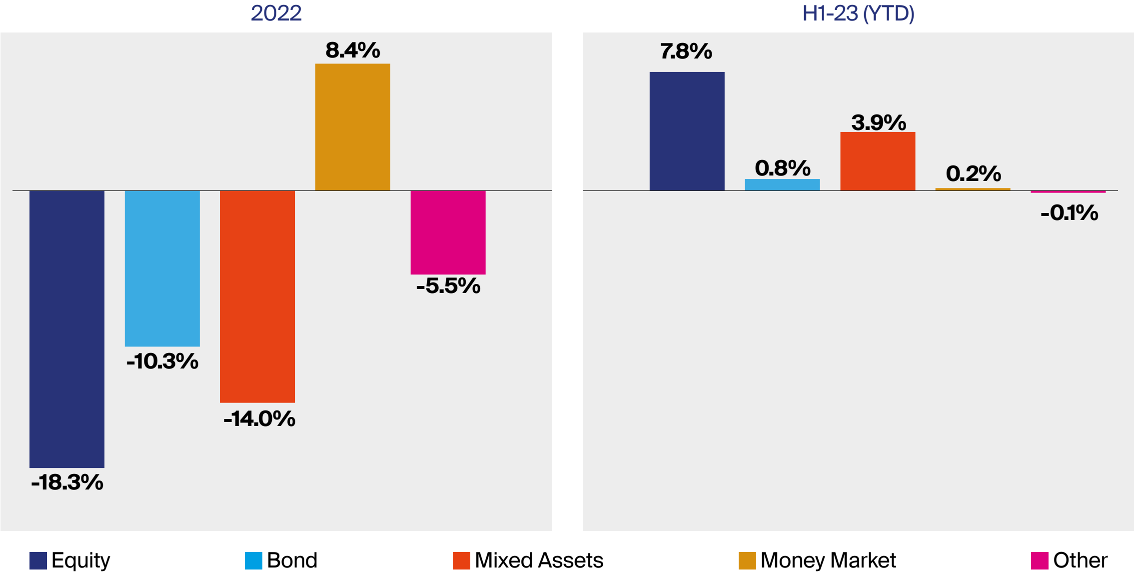
Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.3.2. Performance by Asset Class

Despite the net outflows, virtually all asset classes within Thematic funds experienced positive gross returns, with the equity asset class experiencing the strongest returns (7.8%) (cf. Exhibit 79).

Exhibit 79. Thematic funds' average gross returns* by asset class



Note: Gross returns* indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

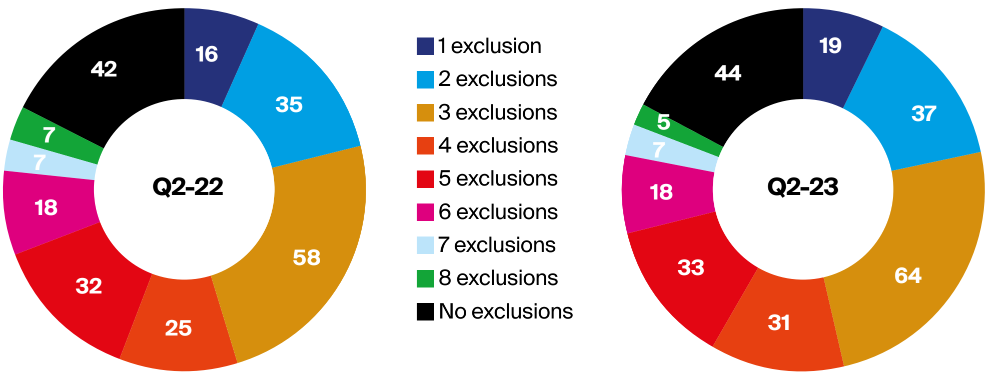
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.3.3. Exclusions and Asset Allocation

Exclusions and Asset Allocation remain very stable between 2022 and 2023

As for Best-in-Class funds, a wide variety of exclusion strategies are used by Thematic funds, and while funds increased in number here as in other sub-strategies, no notable reconfiguration of funds' exclusion practices took place between 2022 and 2023 (cf. Exhibit 80).

Exhibit 80. Thematic funds number of exclusions applied (number of funds)

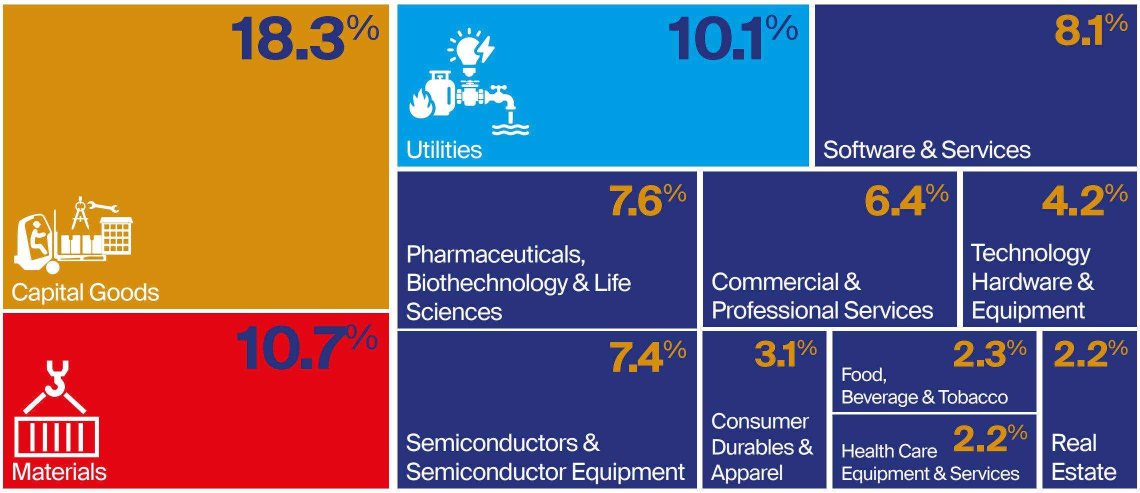


Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

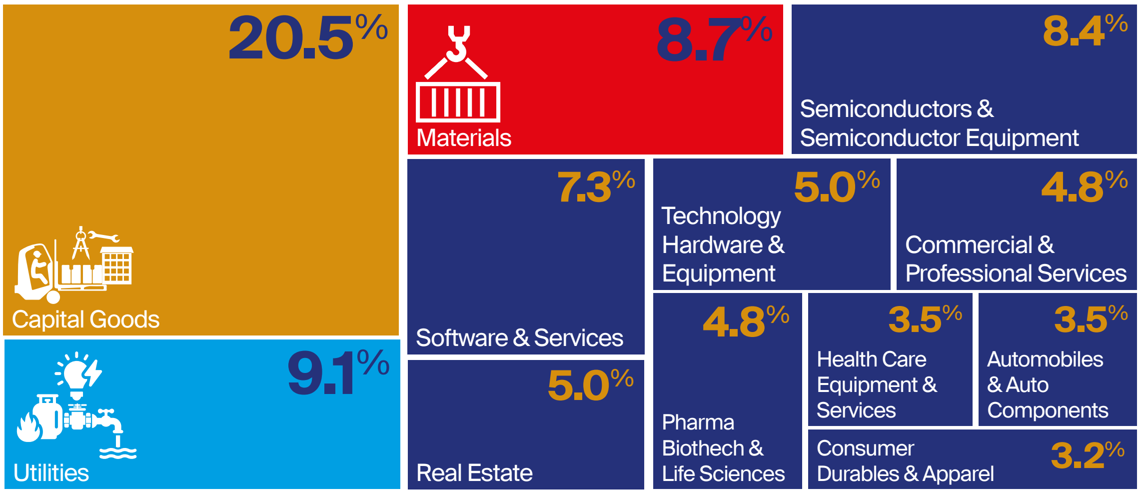
The top three allocation sectors remain the same as last year, with Capital Goods remaining a sizable frontrunner (20.5%). One new category, Automobiles & Auto Components, appeared in 2023. Real Estate, Pharmaceutical, Biotechnology & Life Sciences and Software & Services decreased in AuM percentage allocation, while Semiconductors increased (cf. Exhibit 81).

Exhibit 81. Thematic funds' AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data was available for H1 2023 is EUR67.8bn or 51.1% of the EUR132.7bn in this fund cluster. The remaining sectors account for 16.3% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.4. SUSTAINABLE DEVELOPMENT GOALS (SDGs)

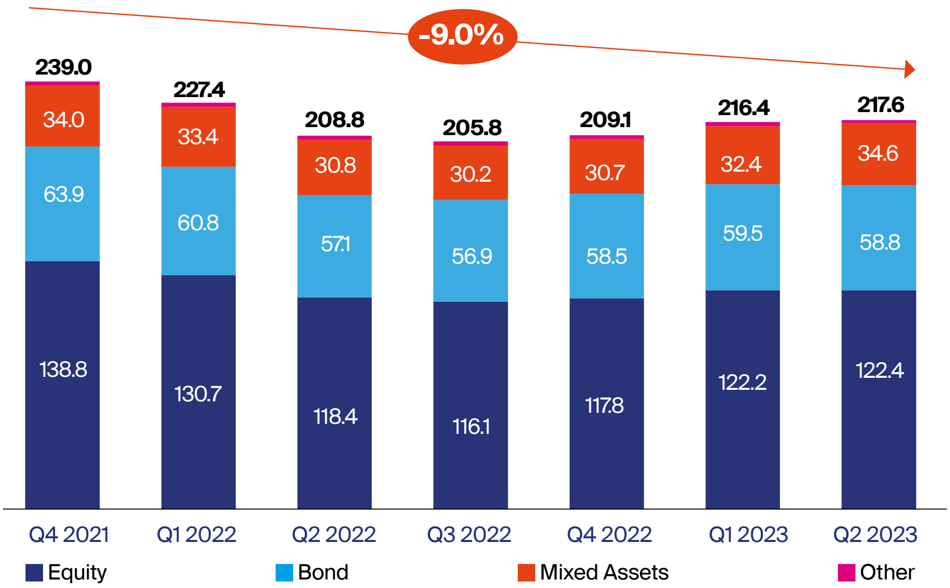
Funds that follow the SDGs strategy have attracted some controversy in July this year when Clarity AI identified a gap during their research between certain funds' stated intentions and their actual impact on countries who have the greatest need for sustainable development[77]. However, these funds remain an attractive choice[78], since the UN's 17 objectives allow funds to hone in on specific themes if they so wish to, while still offering a significant degree of flexibility.

A.4.1. AuM and Net Flows

SDG funds: Recovering from 2022

The SDGs sub-strategy was the second most popular type of ESG sub-strategy for ESG Involvement funds in Luxembourg, with funds following the sub-strategy having EUR 217.6bn in AuM (cf. Exhibit 82) and 461 funds in Q2 2023.

Exhibit 82. AuM of funds following the SDGs sub-strategy (by quarter; EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

While SDGs funds recovered from their 2022 low point and have seen their AuM increase since Q3 2022, this growth has slowed down in 2023, as they have experienced negative flows so far this year (cf. Exhibit 83).

Exhibit 83. Net flows of funds applying the SDGs sub-strategy, by asset class (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	2.2	-4.4
Bond	1.2	0.5
Mixed	1.7	0.6
Money Market	0	0
Other	0.1	-0.1
Total	**5.1**	**-3.5**

Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented here are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

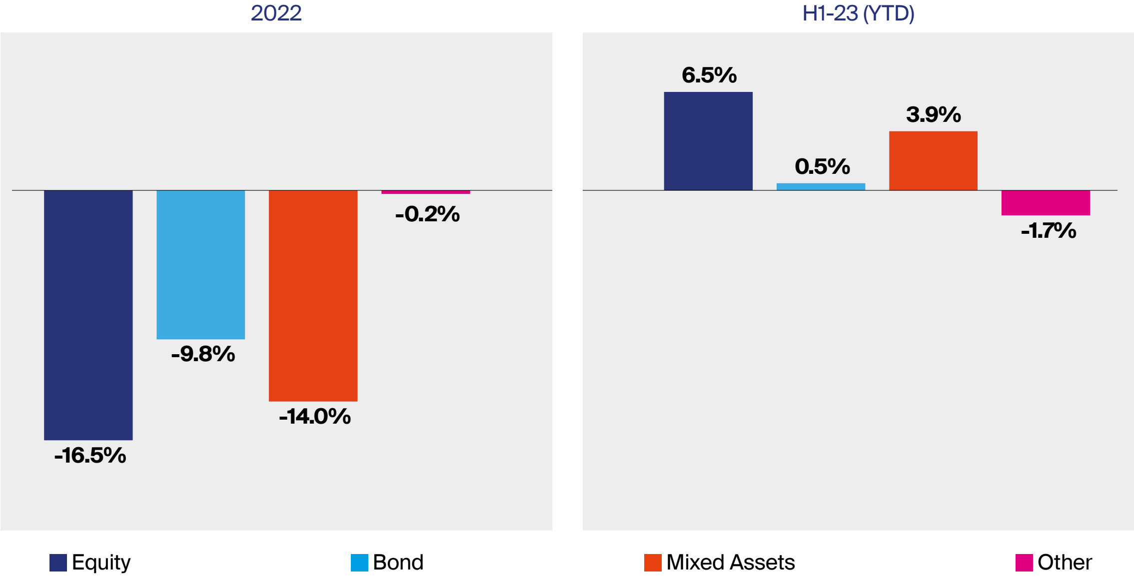
77. Heistruvers, S. (2023). *'Significant gap' between SDG funds' intentions and impact: research.* Ignites Europe, July 18, 2023. *https://www.igniteseurope.com/c/4154884/535114?referrer_module=article&referring_content_id=4163884&referring_issue_id=535334*

78. Heistruvers, S. (2023). *AllianzGI launches SDG global equity fund.* Ignites Europe, June 16, 2023. *https://www.igniteseurope.com/c/4114654/529384?referrer_module=searchSubFromIE&highlight=AllianzGI%20launches%20SDG%20global%20equity%20fund*

A.4.2. Performance by Asset Class

Although the equity asset class experienced substantial outflows in H1 2023, it witnessed an average gross return of 6.5%, while mixed assets generated a return of 3.9% (cf. Exhibit 84).

Exhibit 84. Average gross returns* of funds following an SDGs sub-strategy, by asset class



Note: Gross returns* indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 re not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

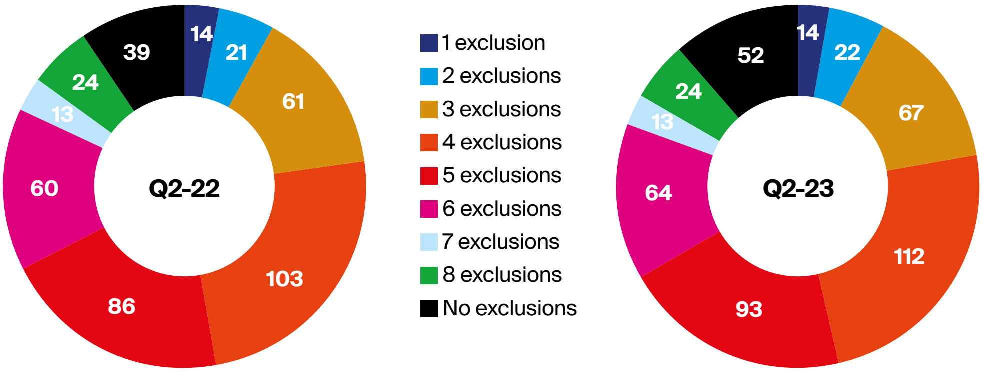
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper.

A.4.3. Exclusions and Asset Allocation

4 to 5 exclusions typically applied; no major shifts in asset allocation

Around one in ten (11.3%) of the funds following the SDGs sub-strategy applied no exclusions either in 2023, slightly higher than in 2022 (9.3%). The majority applied at least 3 exclusions, with a small number of funds applying 7 and 8 exclusions (13 and 24, respectively) in 2023 (cf. Exhibit 85).

Exhibit 85. Number of exclusions applied by funds following an SDGs sub-strategy (number of funds)

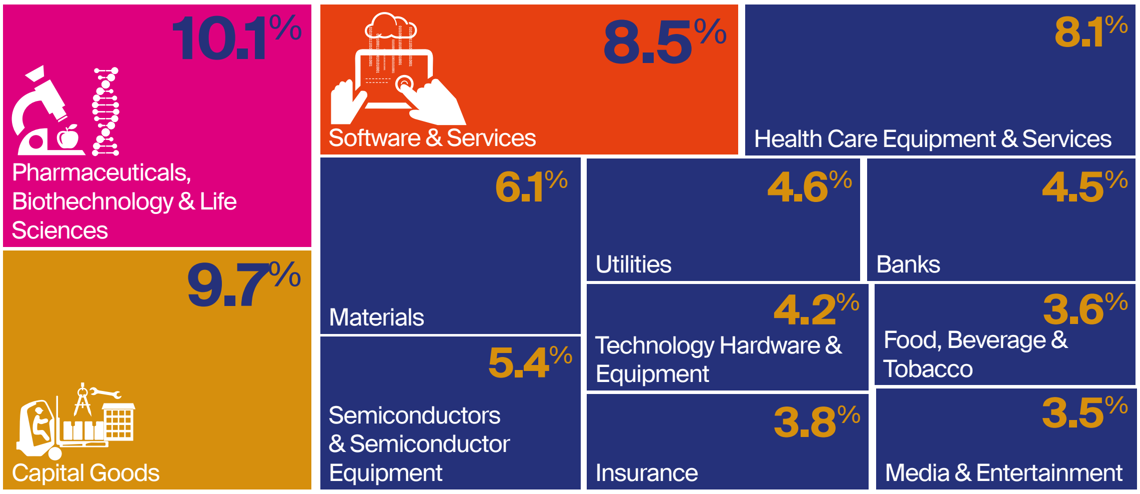


Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

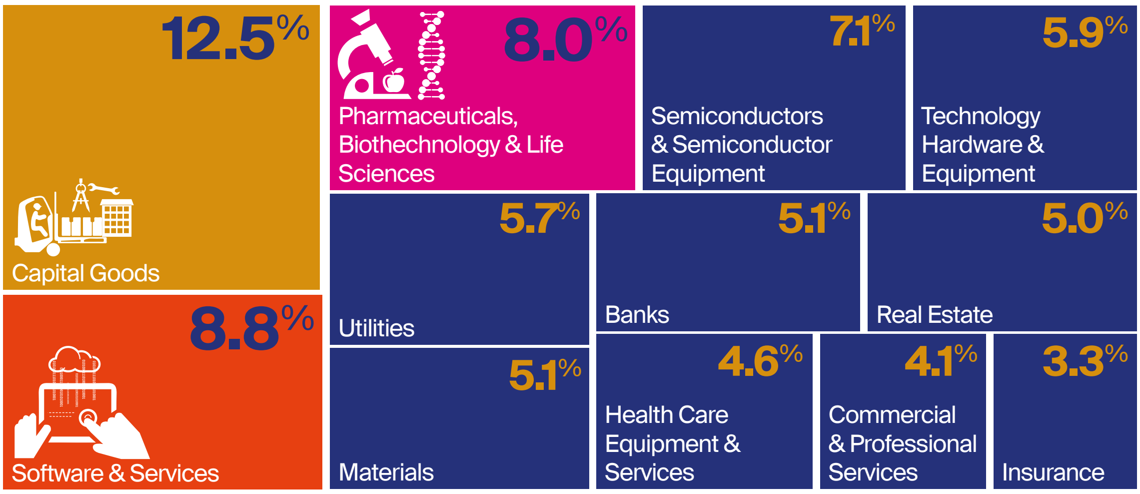
Biotech, Capital Goods and Software & Services remain – in a new order – the top three sectors for SDG funds' investments. No significant shifts between top sectors can be observed between 2022 and 2023, apart from Capital Goods going from 9.7% to 12.5% – taking the top spot here as in some other sub-strategies. Semiconductors went up from 5.4% to 7.1%, while Technology Hardware & Equipment went up from 4.2% to 5.9%. No new top categories emerged in 2023 apart from Commercial & Professional Services (cf. Exhibit 86).

Exhibit 86. SDGs funds AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)



Indicative AuM percentage allocation to top sectors (as of June 2023)*



Note: The total AuM of funds for which sector data was available for H1 2023 is EUR122.8bn or 56.4% of the EUR42.9bn in this fund cluster. The remaining sectors account for 24.7% of the allocation. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The figures presented here are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

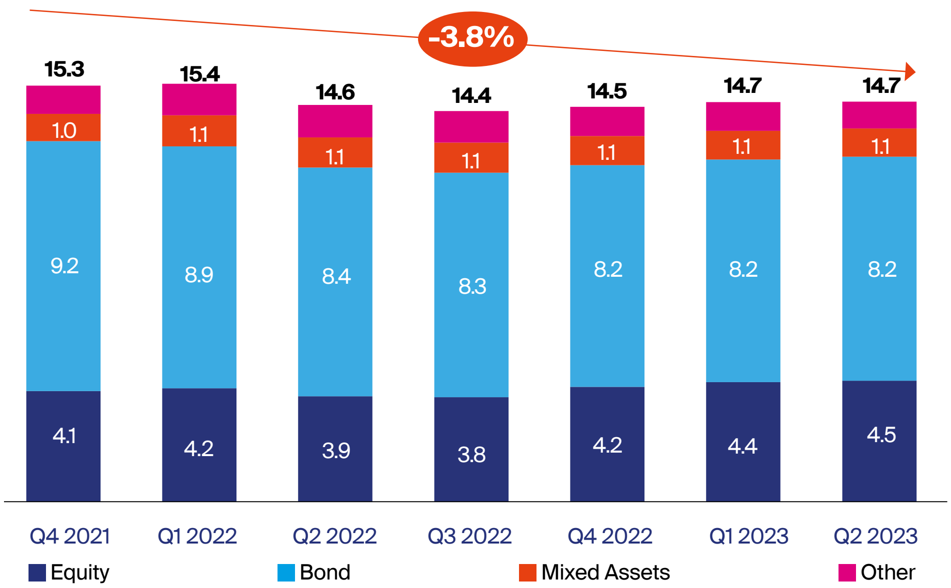
A.5. MICROFINANCE

Funds are classified as Microfinance funds when they invest in Microfinance projects, even though they may also apply other strategies (and, as our study shows, most do indeed take this approach). All Microfinance funds were actively managed both in 2022 and 2023.

A.5.1. AuM and Net Flows

This sub-strategy's overall AuM relies heavily on bonds and is applied by 25 funds holding a combined EUR14.7bn in AuM as of June 2023. Microfinance funds' AuM dropped in the first quarters of 2022 but was already recovering in Q4 2022, resisting the 2022 downturn well. However, growth has been slow ever since, with no change in AuM between Q1 and Q2 of 2023 (cf. Exhibit 87).

Exhibit 87. Microfinance funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Between Q4 2022 and Q2 2023, overall growth in AuM for this sub-strategy has been solely carried by equity funds, while both bond funds' and mixed assets funds' growth stagnated. Only equity was able to attract positive net flows as well in H1 2023 (cf. Exhibit 88). Given that most Microfinance funds are bond funds, this accounts for the stagnation in AuM growth observed so far this year.

Exhibit 88. Microfinance funds net flows (EUR mn)

Asset Class	2022	H1-23 (YTD)
Equity	786	22.7
Bond	-441.5	-11.7
Mixed	123.3	-31.1
Money Market	0	0
Other	17.3	-120.7
Total	**485**	**-140.8**

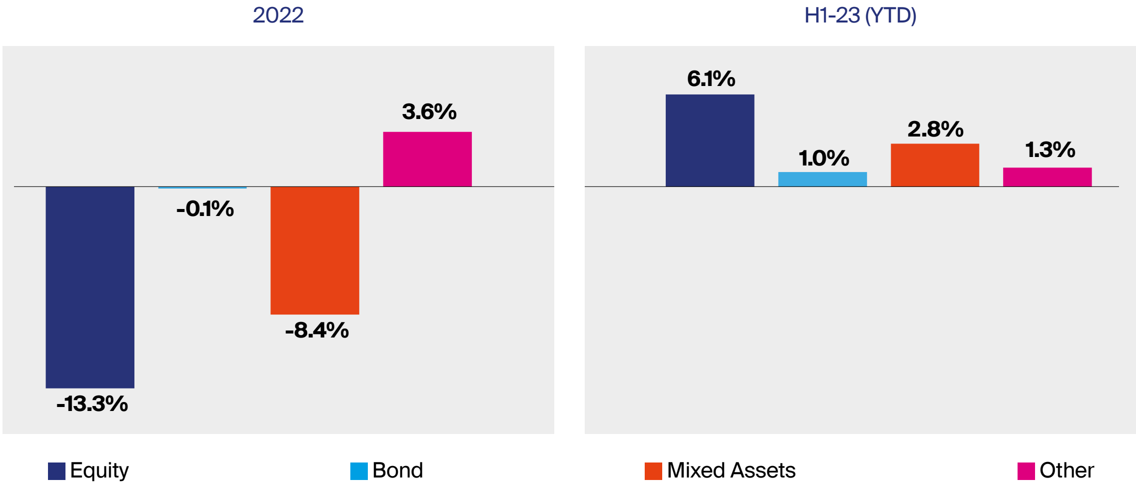
Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.5.2. Performance by Asset Class

Despite the stagnating AuM and the outflows in H1 2023, Microfinance funds have seen positive average gross returns for the equity, bonds and mixed assets classes (cf. Exhibit 89).

Exhibit 89. Microfinance funds average gross returns* by asset class



Note: Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

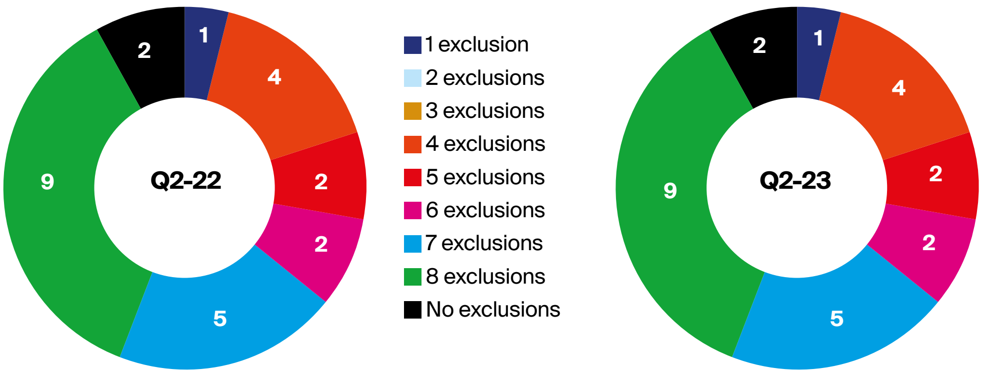
A.5.3. Exclusions and Asset Allocations

Most funds apply at least 7 Exclusions and all but one practice additional sub-strategies

Interestingly, Microfinance funds apply the most exclusions of all the sub-strategies. 14 of the 25 funds applied at least 7 exclusions – far above the average among ESG Involvement funds – only 2 implement no exclusions. (cf. Exhibit 90).

A typical Microfinance fund in 2023 would thus be a Bonds fund excluding around 8 sectors from its portfolio.

Exhibit 90. Number of exclusions applied by Microfinance funds (number of funds)



Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.6. SUSTAINABLE BONDS FUNDS

Sustainable bonds and other sustainability-linked bonds have become increasingly common in recent years and have performed well both in terms of returns and issuance, 2022 excepted[79]. There is a growing demand for – and willingness to provide – well thought-out products that offer access to sovereign or quasi-sovereign sustainable bonds[80]. As of October 2023, LGX hosted over 1,820 sustainable bonds, worth over EUR960bn[81], making it the leading venue for the listing of sustainable bonds worldwide.

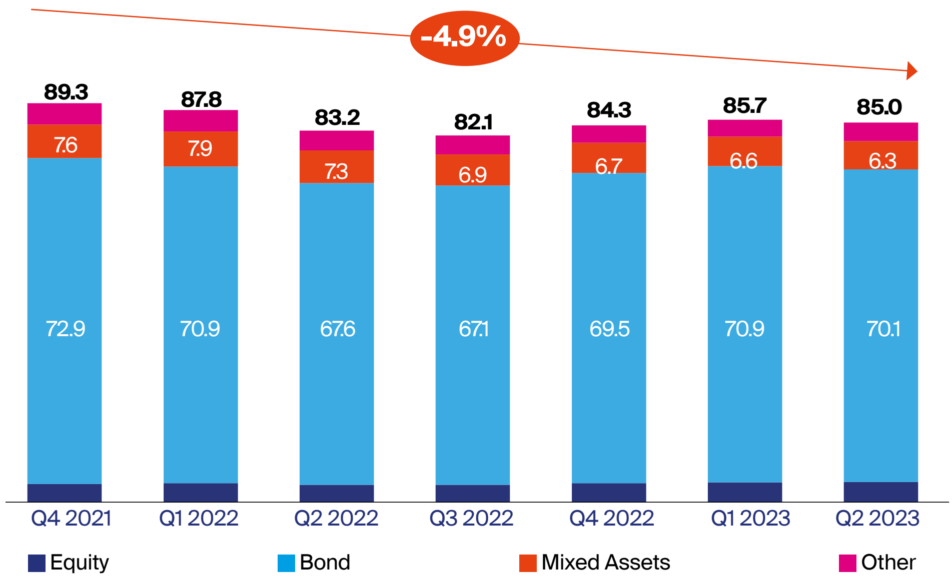
A.6.1. AuM and Net Flows

Sustainable Bonds funds continue to attract investors

As their name indicates, these funds are focused on investments in sustainable bonds or other similar categories. As of the end of Q2 2023, this strategy reached an AuM of EUR85.0bn, making it a sizable but still less common sub-strategy. Sustainable Bonds funds suffered a low point in Q3 2022 but have been slowly recovering ever since, although they – like the other Involvement sub-strategies – have yet to reach their Q4 2021 levels again (cf. Exhibit 91).

79. Meng, A. (2023). *Have green bonds staged a comeback?, Financial Times – Partner Content, date n/a.* https://www.ft.com/partnercontent/lseg/have-green-bonds-staged-a-comeback.html
80. Heistruvers, S. (2023). *Schroders converts bond fund into sustainable strategy.* Ignites Europe, October 24, 2023. https://www.igniteseurope.com/c/4290134/551464?referrer_module=searchSubFromIE&highlight=sustainability%20bonds
81. Luxembourg Stock Exchange (2023). *The home of sustainable finance.* October 2023. https://www.luxse.com/discover-lgx

Exhibit 91. Sustainable Bonds funds AuM in Luxembourg (by quarter, EUR bn)



Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Given that bonds haven't been doing especially well in 2022 among investors at large and within the other sub-strategies, it is noteworthy that Sustainable Bonds funds managed to attract positive inflows (cf. Exhibit 92).

Exhibit 92. Sustainable Bonds funds net flows (EUR bn)

Asset Class	2022	H1-23 (YTD)
Equity	0.8	0
Bond	5.1	1.2
Mixed	0.3	-0.9
Money Market	0	0
Other	-0.7	0.2
Total	**5.6**	**0.5**

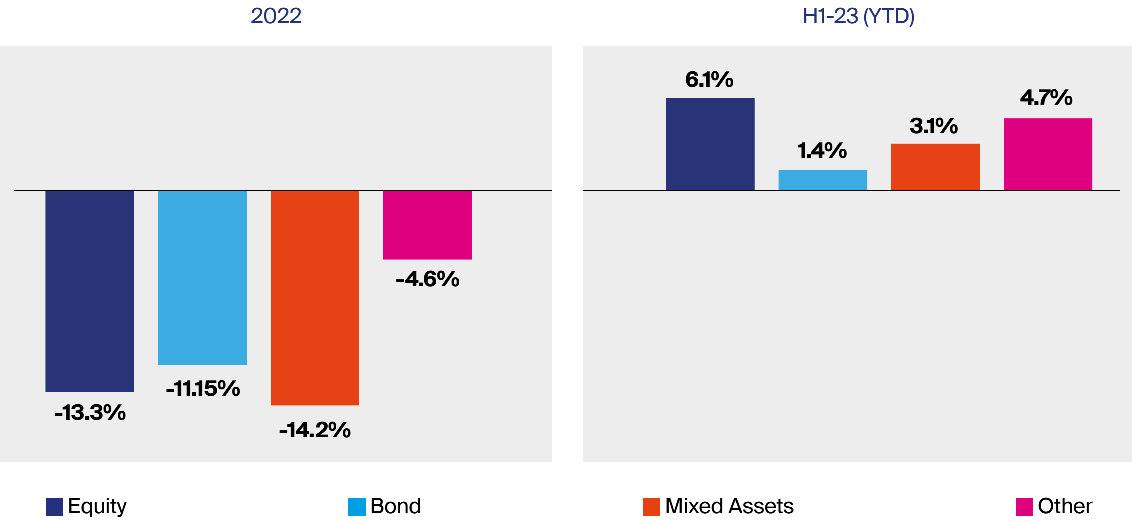
Note: The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database. It is worth noting that the data indicate that bond funds can also invest in equities and mixed assets up to an undetermined threshold of tolerance at the discretion of the regulatory authorities.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.6.2. Performance by Asset Class

All asset classes within Sustainable Bonds funds had positive performances in H1 2023 though, with bonds performing better here than in the other sub-strategies (except for Best-in-Class, who had a similar performance for bonds) (cf. Exhibit 93).

Exhibit 93. Sustainable Bonds funds average gross returns* by asset class



Note: Gross returns indicate the funds' average nominal returns over the period of reference. The returns for H1 2023 are not annualised for sake of comparison. Gross nominal returns include inflation and all-in fees. The figures presented in this exhibit cannot be compared with the figures from the 2022 edition of this study as Refinitiv Lipper's database has been updated. The 2022 figures presented above are from the updated database.

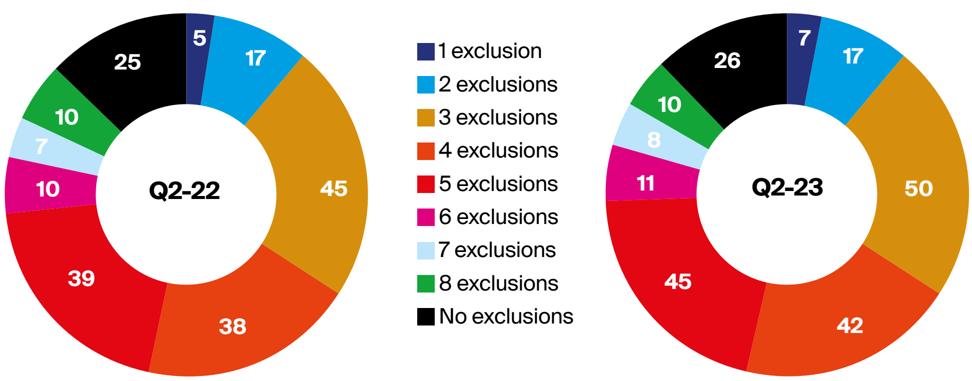
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

A.6.3. Exclusions and Asset Allocation

At least 4 exclusions, Utilities the leading asset class

Only 26 funds apply no exclusions as part of their strategy, with the total number of exclusions applied being highly variable. 116 funds apply between one and four exclusions, and 74 apply more than four. The distribution of exclusions is similar to what it was in 2022 (cf. Exhibit 94).

Exhibit 94. Number of exclusions applied by Sustainable Bonds funds (number of funds)



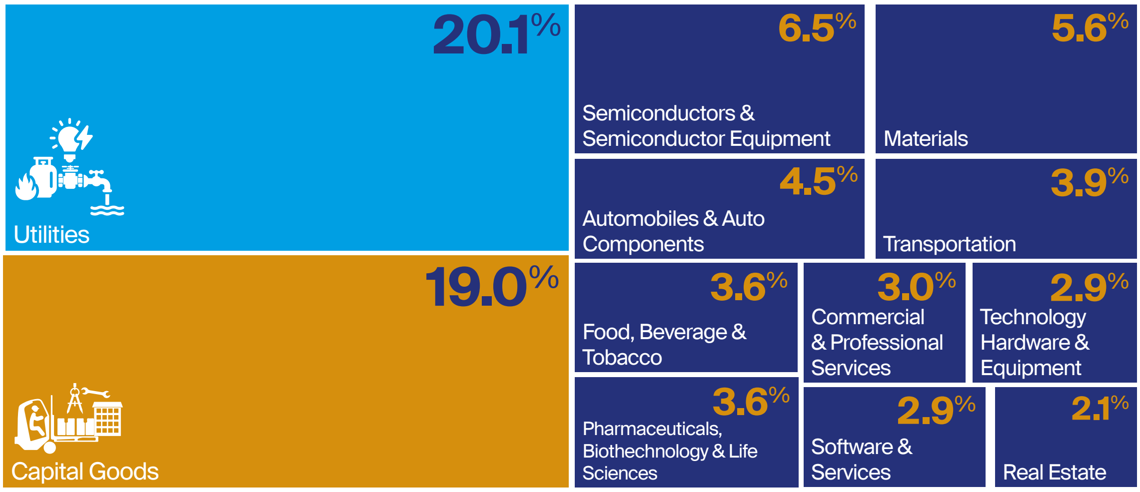
Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

Funds following a Sustainable Bonds strategy appear to be highly committed to specific sectors, with Utilities alone accounting for 20.1% of the allocation in 2023, a huge jump compared to 2022 and signalling that bonds designed to fund green transition projects have risen in popularity. Capital goods make up another 19.0% of market allocation, up from 9% in 2022. Sustainable bonds issued by entities belonging to the Semiconductors & Semiconductor Equipment sector and the Materials sector represent respectively 6.5% and 5.6% of the total asset allocation into sustainable bond funds. This means that the four largest sectors make up more than half of the total asset allocations, with 51.2% of assets (cf. Exhibit 95).

Exhibit 95. Sustainable Bonds funds AuM percentage allocation to top sectors (Comparison June 2022/June 2023)

Indicative AuM percentage allocation to top sectors (as of June 2022)

Indicative AuM percentage allocation to top sectors (as of June 2023)*



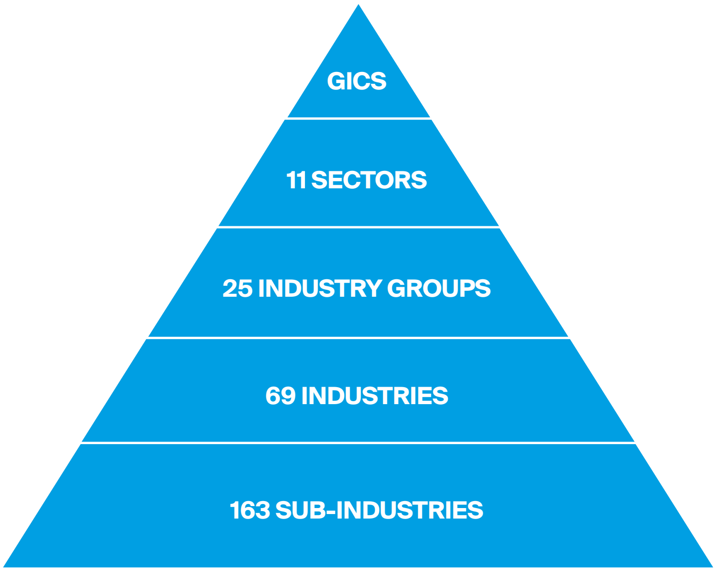
Note: The total AuM of funds for which sector data was available for H1 2023 is EUR1.7bn or 2.0% of the EUR85.0bn in this fund cluster. The remaining sectors account for 22.3% of the allocation.

Sources: PwC Global AWM & ESG Research Centre analysis based on Refinitiv Lipper

B. SECTOR DEFINITIONS

This analysis follows the MSCI Global Industry Classification Standard (GICS®), a framework developed to offer detailed perspectives on economic sectors and to streamline investment decision-making[82].

Exhibit 96: The GICS® classification structure



Source: MSCI

We have applied the second GICS® pillar, specifically the 25 Industry Groups, in our analysis. We made this decision because we find that this level of granularity strikes the right balance, offering sufficient detail without overwhelming the reader with extraneous specifics. The 25 industry groups we will focus on are as follows:

Table 1: The 25 GICS® industry groups

Automobiles & Components	Equity Real Estate Investment Trusts (REITs)	Real Estate Management & Development
Banks	Financial Services	Semiconductors & Semiconductor Equipment
Capital Goods	Food, Beverage & Tobacco	Software & Services
Commercial & Professional Services	Health Care Equipment & Services	Technology Hardware & Equipment
Consumer Discretionary Distribution & Retail	Household & Personal Products	Telecommunication Services
Consumer Durables & Apparel	Insurance	Transportation
Consumer Services	Materials	Utilities
Consumer Staples Distribution & Retail	Media & Entertainment	
Energy	Pharmaceuticals, Biotechnology & Life Sciences	

Source: MSCI

82. Al information for this segment was obtained on the MSCI GICS® website: https://www.msci.com/our-solutions/indexes/gics

For clarity, and considering that MSCI does not provide an overarching definition of the industry groups, we have organised the industry groups into 74 specific industries, as outlined in the following tables:

Table 2: The GICS® industry groups and their underlying industries

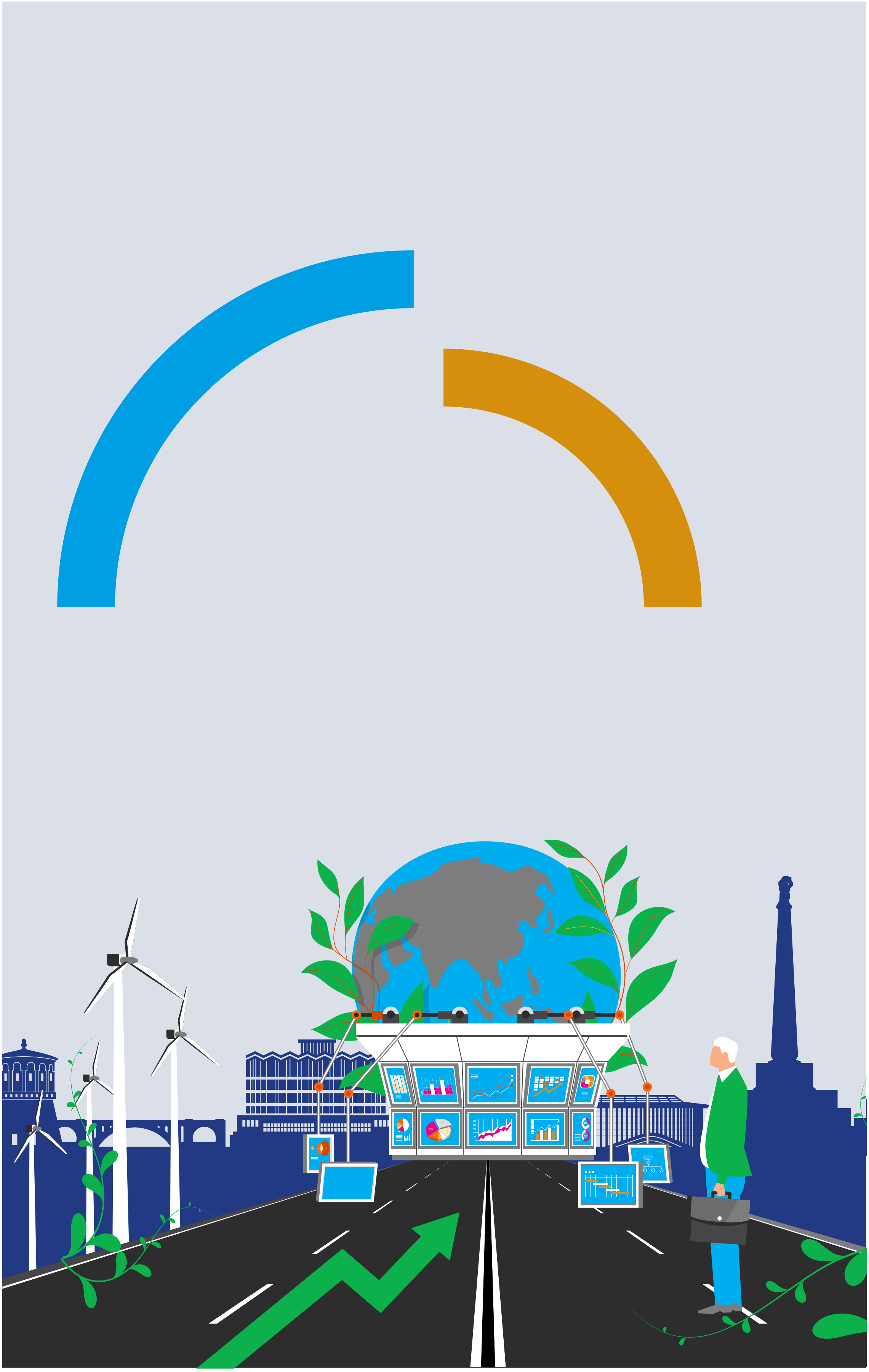
Industry Group	Industry
Automobiles & Components	Automobile Components
Automobiles & Components	Automobiles
Banks	Banks
Capital Goods	Aerospace & Defense
Capital Goods	Building Products
Capital Goods	Construction & Engineering
Capital Goods	Electrical Equipment
Capital Goods	Industrial Conglomerates
Capital Goods	Machinery
Capital Goods	Trading Companies & Distributors
Commercial & Professional Services	Commercial Services & Supplies
Commercial & Professional Services	Professional Services
Consumer Discretionary Distribution & Retail	Distributors
Consumer Discretionary Distribution & Retail	Broadline Retail
Consumer Discretionary Distribution & Retail	Specialty Retail
Consumer Durables & Apparel	Household Durables
Consumer Durables & Apparel	Leisure Products
Consumer Durables & Apparel	Textiles, Apparel & Luxury Goods
Consumer Services	Hotels, Restaurants & Leisure
Consumer Services	Diversified Consumer Services
Consumer Staples Distribution & Retail	Consumer Staples Distribution & Retail
Energy	Energy Equipment & Services
Energy	Oil, Gas & Consumable Fuels
Equity Real Estate Investment Trusts (REITs)	Diversified REITs
Equity Real Estate Investment Trusts (REITs)	Industrial REITs
Equity Real Estate Investment Trusts (REITs)	Hotel & Resort REITs
Equity Real Estate Investment Trusts (REITs)	Office REITs
Equity Real Estate Investment Trusts (REITs)	Health Care REITs
Equity Real Estate Investment Trusts (REITs)	Residential REITs
Equity Real Estate Investment Trusts (REITs)	Retail REITs
Equity Real Estate Investment Trusts (REITs)	Specialised REITs
Financial Services	Financial Services
Financial Services	Consumer Finance
Financial Services	Capital Markets
Financial Services	Mortgage Real Estate Investment Trusts (REITs)
Food, Beverage & Tobacco	Beverages
Food, Beverage & Tobacco	Food Products
Food, Beverage & Tobacco	Tobacco
Health Care Equipment & Services	Health Care Equipment & Supplies
Health Care Equipment & Services	Health Care Providers & Services
Health Care Equipment & Services	Health Care Technology

Industry Group	Industry
Household & Personal Products	Household Products
Household & Personal Products	Personal Care Products
Insurance	Insurance
Materials	Chemicals
Materials	Construction Materials
Materials	Containers & Packaging
Materials	Metals & Mining
Materials	Paper & Forest Products
Media & Entertainment	Media
Media & Entertainment	Entertainment
Media & Entertainment	Interactive Media & Services
Pharmaceuticals, Biotechnology & Life Sciences	Biotechnology
Pharmaceuticals, Biotechnology & Life Sciences	Pharmaceuticals
Pharmaceuticals, Biotechnology & Life Sciences	Life Sciences Tools & Services
Real Estate Management & Development	Real Estate Management & Development (New Code)
Semiconductors & Semiconductor Equipment	Semiconductors & Semiconductor Equipment
Software & Services	IT Services
Software & Services	Software
Technology Hardware & Equipment	Communications Equipment
Technology Hardware & Equipment	Technology Hardware, Storage & Peripherals
Technology Hardware & Equipment	Electronic Equipment, Instruments & Components
Telecommunication Services	Diversified Telecommunication Services
Telecommunication Services	Wireless Telecommunication Services
Transportation	Air Freight & Logistics
Transportation	Passenger Airlines
Transportation	Marine Transportation
Transportation	Ground Transportation
Transportation	Transportation Infrastructure
Utilities	Electric Utilities
Utilities	Gas Utilities
Utilities	Multi-Utilities
Utilities	Water Utilities
Utilities	Independent Power and Renewable Electricity Producers

Source: MSCI

For more information, please refer to the MSCI GICS® website[83] or the GICS® detailed methodology[84].

83. GICS® website. https://www.msci.com/our-solutions/indexes/gics
84. GICS® methodology. https://www.msci.com/index/methodology/latest/GICS



ABOUT THE SPONSORING COMPANIES

ABOUT THE LUXEMBOURG SUSTAINABLE FINANCE INITIATIVE (LSFI)

The Luxembourg Sustainable Finance Initiative (LSFI) is a not-for-profit association and a public-private partnership, founded in 2020 by the Ministry of Finance, the Ministry of the Environment, Climate and Biodiversity, Luxembourg for Finance (the agency for the development of the financial centre) and the High Council for Sustainable Development (Conseil Supérieur du Développement Durable), which is an independent advisory body to the Luxembourg Government about sustainable development matters. The LSFI serves as a coordinating entity of all Luxembourg sustainable finance actors with the mission to:

- raise awareness on sustainable finance;
- help the financial sector further transition towards sustainability;
- be the central point of information on sustainable finance;
- design and implement the Luxembourg Sustainable Finance Strategy for the Luxembourg financial centre.

Through its past and current projects, the LSFI aims to achieve its objective of helping the financial sector transition towards sustainability, raising awareness of Sustainable Finance, and fostering collaboration and regular dialogue among all the stakeholders within the Luxembourg Sustainable Finance landscape (financial institutions, public bodies, civil society, research and education, and corporates, among others). It acts as a central source of information for all Sustainable Finance actors in Luxembourg by regularly collating news, events, regulatory updates, publications, and tools. The LSFI also fosters dialogue and coordination, facilitating regular exchanges on Sustainable Finance topics, challenges, and needs, in a bid to advance Sustainable Finance at the country level.

In addition, the LSFI has the mandate from the Luxembourg Government to design and implement the Luxembourg Sustainable Finance Strategy for the Luxembourg financial centre. In particular, under the Luxembourg Sustainable Finance Strategy Pillar 3, "Measuring Progress", the LSFI seeks to help the industry understand where it stands and the progress made in terms of Sustainable Finance, which are fundamental to identifying areas for improvement. The materialisation of this involves analysing and reporting on progress in Sustainable Finance and also conducting regular studies on Sustainable Finance in Luxembourg, which are adapted based on data availability, the regulatory landscape, and other identified needs. As the second in the series, this study is meant to be objective and provide a regular analysis for the country to understand its strengths and challenges - with an emphasis on continuously expanding the scope in subsequent editions, while the available metrics evolve. Its ultimate objective is to include all actors and financial vehicles/products to be able to provide a comprehensive view of the status of sustainable finance in Luxembourg.

The LSFI is not a regulatory, public affairs or advisory entity. Thus, it does not provide commentary on regulation. However, following its mission to raise awareness, the LSFI regularly follows and relays the latest regulatory update to industry participants in a neutral way.

Find out more by visiting **www.lsfi.lu**

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PwC Luxembourg (**www.pwc.lu**) is the largest professional services firm in Luxembourg with over 3,700 people employed from 94 different countries. PwC Luxembourg provides audit, tax and advisory services including management consulting, transaction, financing and regulatory advice. The firm provides advice to a wide variety of clients from local and middle market entrepreneurs to large multinational companies operating from Luxembourg and the Greater Region. The firm helps its clients create the value they are looking for by contributing to the smooth operation of the capital markets and providing advice through an industry-focused approach.

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 151 countries with over 364,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com and www.pwc.lu.

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