Amundi
Investment Solutions

Trust must be earned

Responsible Investment Views 2025

January 2025

Foreword

As the world struggles to keep the goal of carbon neutrality by 2050 alive and to set the path towards halting and reversing the trend of biodiversity loss, the urgency of responsible investment has never been more critical. The reality is that current global policies are projected to lead us towards a 3.1°C temperature increase by 2100[1]. This forecast highlights the acute nature of the challenges we face with looming climate and nature-related risks, and the pressing need for sustainable, and equitable, economic growth, compelling us to continuously adapt and innovate our investment strategies.

At Amundi, we recognize that our role is pivotal in enabling the transition by mobilizing the capital necessary to support the transformations towards a low-carbon economy, aiming to drive positive change in the world by serving our clients. In 2024, we have observed a continued normalization in responsible investment funds growth, alongside a notable increase in corporate commitments to sustainability. Companies keep on taking meaningful action, setting ambitious targets, and enhancing their disclosures, placing climate and nature-related risks at the forefront of their long-term strategies, providing every day resounding evidence of the materiality of these risks and the of the cost of inaction.

However, we must also acknowledge the challenges that lie ahead. Regulatory divergence across regions poses significant hurdles, and the need to render responsible investment strategies and sustainable finance more palatable to the end savers and across the distribution value chain is dire. As we navigate the complexities of a maturing market, we are witnessing a shift towards greater scrutiny and accountability, driven by regulatory advancements and evolving investor expectations.

In this second edition of Amundi Responsible Investment Views, we reflect on the key events of 2024 in the responsible investment space, going beyond the headlines to discuss the short-term dynamics and secular trends that will shape 2025 and their potential impact on investors. We explore four critical angles:

1. 2024 responsible investment dynamics: what are the implications of the great normalization?
2. The geopolitics and economics of the energy transition: are we shifting gears toward self-acceleration?
3. Shifts in the responsible investment landscape: will increased demand for real-world impact products provide a new impetus in a context of and increased wariness about transition risk?
4. Sustainable finance regulation at a crossroads: what to expect from the announced reset and how to navigate regulatory divergence?

Responsible investing is transitioning to a more standardised and regulated environment. To effectively address the environmental and social challenges of today's economy while meeting the highest client standards, the industry must enhance transparency and clarify the value proposition of "sustainable finance". We need to scale and accelerate our efforts across multiple sustainability fronts, as responsible investment must rise to this challenge.

The coming years are critical for achieving a sustainable and inclusive transition to a low-carbon economy. Urgent coordinated action is required from all stakeholders, including the financial industry, to avoid significant financial, environmental, and social costs associated with a delayed or unsuccessful transition and serve the long-term interests of investors and society. At the same time, we must seize the vast opportunities that the transition presents, as one might debate on sign of the second order derivative, but the transition is happening..

Amundi will remain committed to this path.

1. UNEP, Emissions Gap Report 2024, October 2024

Highlights on 2024 responsible investment dynamics

The Responsible Investment market is maturing

The responsible investment market is stabilising, with positive inflows in first three quarters of 2024 in Europe collecting €57bn, reflecting a maturing landscape amid heightened regulatory scrutiny

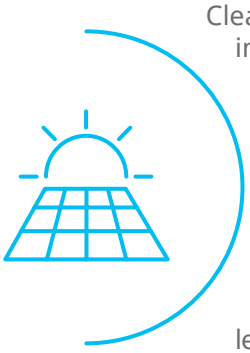
Heightened corporate mobilization on the back of increased materiality

Corporates are increasingly integrating climate and nature risks into their strategies, with an increase of 30% in first three quarters of 2024 of companies committed to the SBTi , and over 500 companies committed to report on nature-issues through TNFD

A consolidating ESG data landscape

Major ESG data providers are consolidating offerings, leading to the development of tailored, sector-specific and specialised indicators that address the complexities of a maturing market

Key areas to watch in 2025



Momentum Shifting to Clean Energy Investments

Clean energy added $320 billion to the world economy in 2023, outpacing fossil fuel investments at a close to 2:1 ratio. We expect this ratio to continue to expand, driven by a widening competitive gap

Geopolitical shifts to impact energy transition

Policy packages will continue to drive investments in clean technologies, with a need to overcome remaining barriers to clean energy development in developed economies while also paving the way for increased investments in EMDEs

Physical risks are materializing

The effects of climate change will keep on intensifying, impacting companies' value chains, leaving no options but to take action. The interrelation of environmental and social crises – across the nexus climate-biodiversity-health-food-water – is putting many business models at risk

A continuing interest for Responsible Investments

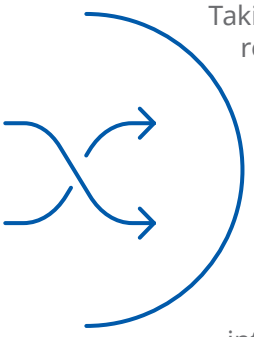
Appetite for Responsible Investments will remain strong despite political challenges, with 54% of investors indicating they are likely to increase their allocation to RI in their portfolios

All eyes turned on "outcome-oriented" products

The drive for tangible real-world impacts will fuel demand for innovative financial solutions in 2025, including green bonds, nature-debt swaps, and various impact investments

The Sustainability toolbox is expanding

New metrics that focus on biodiversity, social factors, and real-world indicators are expected to enhance sustainability frameworks and improve risk management assessments, including climate stress tests



A need for client-centric approaches

Taking better account of investors' heterogeneity and variable needs, and of the practical reality of financial product distribution will be crucial to really give investors the ability to express their sustainability preferences

Streamlining regulatory frameworks

Streamlining complex regulations will be essential to improve investor understanding and accessibility in sustainable finance, ultimately fostering greater accessibility to Responsible Investment products

Addressing regulatory divergence

In a context of increased regulatory fragmentation, we expect greater focus on international alignment and interoperability, with the view to facilitate compliance for corporations and financial institutions

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2024 responsible investment dynamics

What are the implications of the great normalization?

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Responsible investment flows and performance: Making sense of the current growth plateau

Resilient flows in a year marked by additional transparency requirements and continued companies' commitments

2024 has been a year of divergence for responsible investment, amid a landscape shaped by increasing geopolitical uncertainty and polarized views on sustainable investing. ESG remains an essential pillar in investment discussions, with inflows into responsible investment (RI) funds totalling €57 billion in the first three quarters of the year, but lagging behind those in the broader non-RI market, which has witnessed over €98 billion in Europe[2]. RI funds' market shares stabilised globally, with Article 8 and Article 9 funds maintaining an asset market share of c. 59% in Q3 '24 vs. 56% in Q3 '23[3].

A significant development this year has been the crystallization of regulatory frameworks going beyond mere transparency requirements to focus on minimum standards setting, with frameworks such as ESMA's guidelines and France's ISR label imposing stricter standards around fund designation or labelling. The Corporate Sustainability Reporting Directive (CSRD) will also add another layer of disclosure for corporates over the next couple of years, progressively requiring around 50,000 companies, of which 10,000 outside the EU, to disclose extensive sustainability information. The combined complexity of these frameworks highlights the need for simplified regulation that enhances investor understanding, ensuring that requirements do not widen the gap between regulatory expectations and investor insight.

2. Amundi business intelligence analysis based on Broadridge data as of September 2024, excluding Money Market
3. Morningstar SFDR Article 8 and Article 9 funds reports for Q3 2023 and Q3 2024

Performance behaviour is reflecting the widening range of responsible investment approaches

"The performance of ESG indices has been a prominent topic of discussion in the last few years. As always varying approaches yield different performances and this was very much the case in 2024, a year defined by the remarkable performance of the U.S. Megacaps, and an exceptionally high concentration of returns.

At Amundi, we provide investors with a full breadth of methodologies, enabling them to strike the right balance between relative performance against the benchmark and their environmental and social considerations. Whilst ESG continued to attract significant assets in 2024, we noted a growing preference for approaches bringing a lower level relative risk"

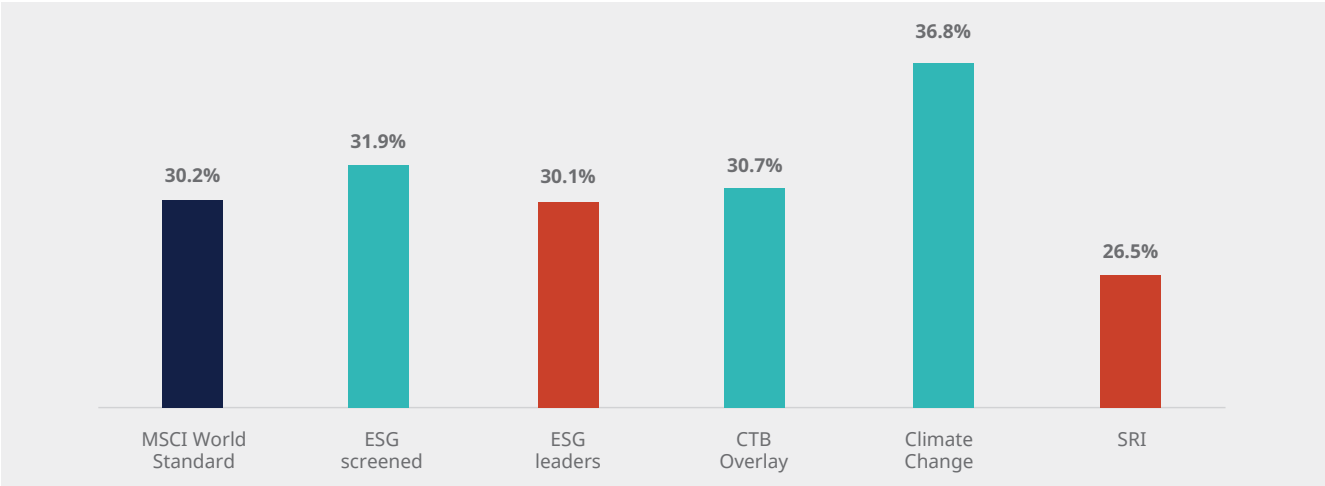
Benoit Sorel, Global Head of ETF, Indexing and Smart Beta at Amundi

It is important to understand that the performance of responsible investment funds can be heavily influenced by the industries and sectors in which they invest (or in which they are prevented to invest), leading to significant performance differences between different approaches depending on market cycles. This variability means that investors may see returns that are as much a product of sector performance as they are of the fund's commitment to environmental and social values, highlighting the importance of understanding each framework's unique approach and its potential impact on long-term financial results.

A good illustration of this effect is a comparison between the different responsible investment variants of the MSCI world where we can observe over the last 12 months as of 31st October 2024[4]

- Respective performances of +180bps and -10bps of the MSCI World ESG screened and the ESG leaders Index vs. standard index, with over and under performance mostly due to variation of exposure to high performing sectors such as information technology ;
- Overperformance of +660bps of MSCI World Climate Change vs. standard index due to higher exposure to the investment technology industry and lower exposure to energy and consumer staples which have strongly underperformed ;
- The MSCI World SRI index underperformed -360bps compared to standard index, suffering the underweight in Nvidia and overweight of ASML in the index.

MSCI World index net performance over one year as of 31 Oct. 2024 (EUR)[5]



Source: MSCI Index factsheet as of October 2024

4. All figures based on MSCI data as of 31 Oct. 2024, net results, in EUR. The MSCI information may only be used for your internal use, may not be reproduced or re-disseminated in any form and may not be used as a basis for or a component of any financial instrument or product or index

5. MSCI. The MSCI information may only be used for your internal use, may not be reproduced or re-disseminated in any form and may not be used as a basis for or a component of any financial instrument or product or index (i) ESG screened: The index excludes companies linked to controversial activities and targets a minimum 30% reduction in carbon emission intensity compared to the parent index (ii) ESG Leaders: targeting 50% coverage of each sector based on ESG criteria while excluding those involved in specific activities (iii) CTB overlay: objective of 30% reduction in weighted average greenhouse gas intensity, a 7% annualized reduction, and excludes companies involved in controversial weapons, severe ESG controversies, and tobacco manufacturing (iv) Climate change: The index re-weights securities for a lower carbon economy while minimizing exclusions and exceeding EU CTB benchmark standards (v) SRI: market capitalization-weighted indexes that represent companies meeting specific values- and climate change-based criteria, targeting 25% sector coverage based on ESG criteria

It is critical to consider that there are as many ESG performances behaviour as there are different responsible investment approaches, therefore there is a lot at stake to ensure investors have a good understanding on how responsible investment products are structured. When it comes to performance, understanding the structural biases ex ante remains is necessary.

Clarity and investors usability: the next goal

Research from Amundi on fund naming found that while "climate" resonates strongly with investors, many other responsible themes and acronyms are less understood, with 79% of respondents not able to explain what is exactly behind an ESG financial strategy[6]. This highlights the need for more effective investor education and communication around responsible investment propositions. Addressing this knowledge gap is essential, as accessible, jargon-free communication of sustainability strategies can enhance investor confidence and better align Responsible Investment products with performance expectations.

Looking ahead, the responsible investment sector may benefit from a recalibration of regulatory frameworks that prioritizes clarity and investor usability. By simplifying Responsible Investment requirements and enhancing transparency around performance, the industry can better support long-term investor engagement and make responsible investment a cornerstone of future portfolios.

On the path to net zero: heightened corporate mobilisation in a world of rising emissions

Beyond short-term political cycles: Countries are expected to set more stringent targets that reflect the urgent need for climate action

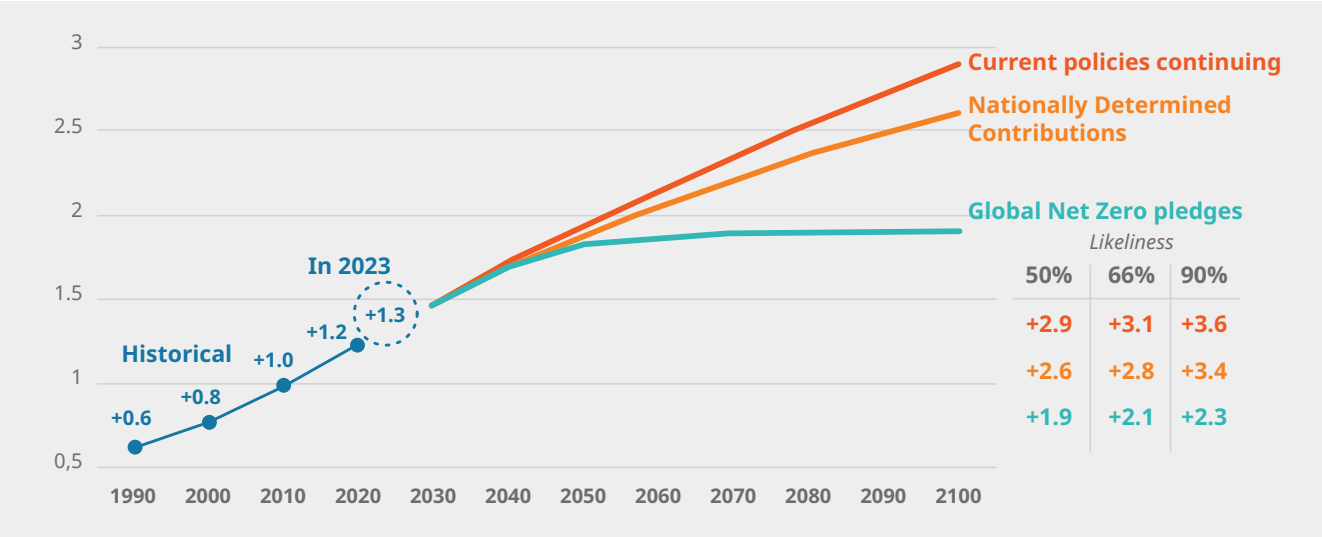
In 2024, the drive toward decarbonization and sustainable development has encountered both progress and bottlenecks, influenced by global energy market shifts and geopolitical dynamics. China, for example, holds approximately 80% of the world's solar PV, 60% of wind power, and 70% of EV battery manufacturing capacity, highlighting a concerning concentration of clean energy production that poses risks to supply chain resilience. However, while having a pivotal role in renewable energy supply, and having played a critical role in the sustained drop in costs, China's own emissions grew in 2023 due to rising energy demand and a challenging year for hydropower generation, which led to a greater reliance on coal. This dichotomy illustrates the complexities countries face in balancing rapid economic growth with sustainable energy transitions.

Global greenhouse gas (GHG) emissions continued to rise in 2023, reaching a record 53Gt CO_2eq[7], marking a 1.9% increase from 2022. This increase is driven largely by major economies. China remains the largest emitter, producing nearly 30% of global GHGs, as an illustration its emissions from power generation reached close to 2GT CO_2eq, surpassing the combined emissions of rest of the world by ~500mt CO_2eq. The U.S., facing policy shifts towards energy sovereignty, ranks second, while India's emissions have seen the largest relative increase among major emitters as it leans heavily on coal to support economic growth and observed a 6.1% emissions rise compared to 2022.

The Global Stocktake, conducted under the Paris Agreement, assessed the world's progress toward meeting climate goals every five years. This review is critical, as it evaluates collective action against the target of limiting global warming to 1.5°C. The 2023 Stocktake revealed a significant gap between current policies and the climate targets, emphasizing that countries need to increase their ambition. The global outlook remains concerning, as the United Nations warns of potentially catastrophic warming scenarios if mitigation efforts are not significantly intensified. According to the UN, if current policies continue without enhancement, global warming is projected to reach 2.9°C by 2100 with a 50% chance outcome. Furthermore, there is merely a 3% likelihood that temperature increases will remain below 2°C[8].

6. Amundi 2024 Fund Naming study based on 384 French participants with >5,000€ invested in OPCVM
7. European Commission
8. UNEP Emissions gap report 2024

Temperature pathways scenario to 2100 (°C)



Source: Climate Action Tracker, November 2024 update; UNEP; Amundi analysis

While various countries and sectors have made progress, the UN's findings highlight a need for more robust international cooperation and transformative policies to counteract rising emissions and avert further climate destabilisation. This Stocktake's findings will have substantial consequences for defining Nationally Determined Contributions (NDCs) for 2025. Countries are now expected to align more rigorously with the Stocktake's insights, setting more stringent targets that reflect the urgent need for action. For many nations, this may involve revisiting and tightening targets around emissions reductions, renewable energy adoption, and climate adaptation strategies. It is likely that 2025 NDCs will require not just aspirational goals but also concrete, measurable plans for implementation, with greater accountability mechanisms in place.

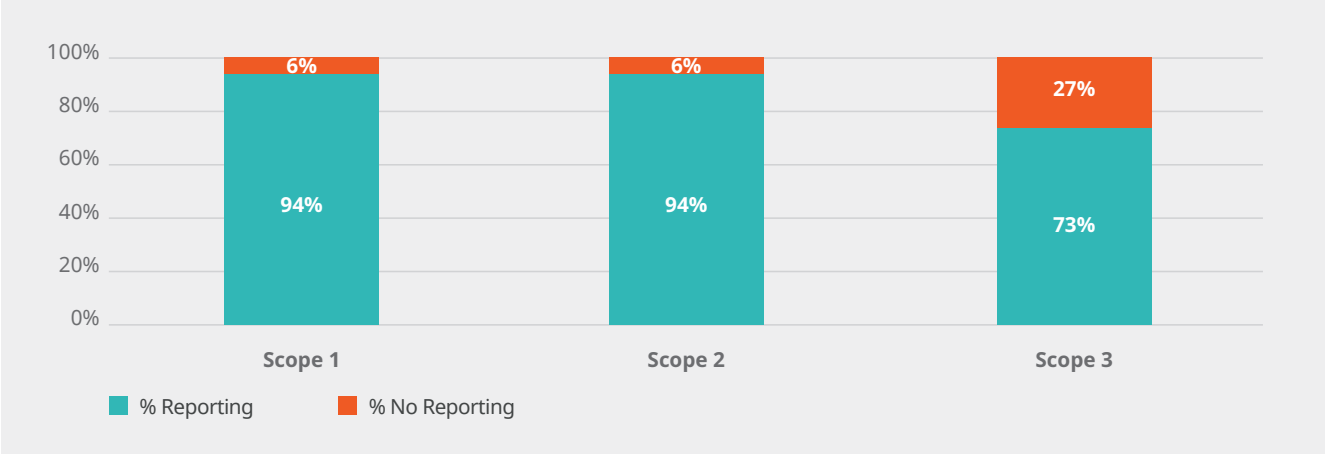
Corporates are increasingly including climate and nature-related risks in their long-term strategy planning.

On the corporate side, commitments to measurable climate action are also advancing. This year saw a significant expansion in Science Based Targets initiative (SBTi) commitments, with over 2,000 new companies joining—an increase of 30% over 2023, after a record increase of 67% last year. While some companies faced compliance challenges, the momentum remains strong, underscoring a global shift toward science-based decarbonization. In North America, more than half of the MSCI index companies have climate pledges, with similar momentum in Europe and emerging markets, signalling a broadening commitment to concrete emissions reduction.

Disclosure practices are on the rise. In Europe, this trend is primarily driven by stricter regulations. Meanwhile, in the U.S., we are witnessing an increase in voluntary disclosures. Despite having few mandatory requirements for emissions reporting, many large corporations are choosing to be transparent about their practices. In fact, around three-quarters of companies in the S&P 500 are now publicly reporting their Scope 3 emissions[9]:

9. Morgan Stanley Research

Share of Companies in S&P 500 Reporting Scope 1, 2, 3 emissions



Source: SBTi ; Morgan Stanley Research

This growing momentum is driven by two main effects:

- Companies are becoming increasingly aware of the impacts of climate change and the slow pace of the energy transition, which are beginning to negatively affect their value chains. Climate risks can lead to heightened costs, potentially accounting for 10% annual sales for certain businesses according to WEF[10];
- Rise in regulatory requirements, particularly in Europe, mandating due diligence on climate risks and their public disclosure, which is also influencing multinational corporations to enhance their reporting practices.

"We believe that companies need to contribute financially, as their operating environments move closer to their limits. Thus, within our global Net Zero universe, we use the concept of "Environmental Capital" which adjusts a company's returns to account for its transition to a low-carbon world."

Piergaetano Iaccarino,
Head of Equity Solutions at Amundi

Case Study: factoring in the costs and investments required to achieve Net Zero goals

In searching for companies that are likely to meet their Net Zero targets, we believe investors should embrace four principles: a bottom-up analytical framework, realistic carbon reduction ambitions, a strong ESG stewardship and a robust valuation approach that includes transition costs.

Investors need to focus on companies that have the financial firepower to adjust for carbon costs and make the investments needed to meet their Net Zero ambitions. Historically, investors assessed quality by looking at return on capital employed (ROCE) which is calculated by dividing a company's earnings by its invested capital. However, the costs and investments to meet Net Zero goals can be factored into return forecasts within a global universe, by adjusting companies' ROCE by reducing earnings by the cost of carbon and increasing their invested capital by the investment needed to attain their planned reduction in emissions ("Environmental Capital"). The value of this capital figure is equal to the present value of the future capital required by the company to reach its Net Zero goals. This ROCE adjustment creates a level playing field that allows valuation comparisons across the market.

Another important metric to look at is whether a company has set a time-bound target to reduce its carbon emissions. Finally, engagement with management to discuss strategy, capital allocation and markets has always been an important input in selecting stocks. Now, ESG engagement on environmental issues is crucial in fully understanding a company's ability and commitment to tackling climate change challenges.

10. WEF: Accelerating Business Action on Climate Change Adaptation

Even though biodiversity is not as mature a topic as climate for corporates, it is gaining momentum with more and more companies beginning to assess their impacts and dependences on biodiversity and therefore better addressing their nature-related risks. During COP16 on Biological Diversity in October 2024 in Colombia, the Taskforce on Nature-related Financial Disclosures (TNFD) announced a 57% increase in their membership, with over 500 organizations, including 129 financial institutions representing $17.7 trillion of asset under management committed to TNFD aligned risk management and corporate reporting.

Green Financial Instruments continue to grow and further innovate

The sustainable debt market continues to thrive in H1 2024

At the end of the first half of 2024 the Green, Social, Sustainability (GSS+) bond market has surpassed the $5tn mark in cumulative issuances. Despite the fact that global interest rates remained higher than had initially been expected going into 2024, Climate Bond Initiative's (CBI) analysis demonstrates that new issuers are entering the market at pace. Total aligned GSS+ bond[11] volumes reached $554bn by the end of H1 2024, an increase of 7% from H1 2023.

Regionally, Europe was the largest source of sustainable debt volume, but Africa has shown the most aggressive growth.
Europe was the largest source of H1 aligned GSS+ volume contributing $291bn, a 13% increase YOY. The Federal Republic of Germany was the single largest contributor to European volumes, pricing nine aligned GSS+ bonds totalling $14bn in H1. Africa produced the most aggressive YOY regional growth with $6.6bn, an increase of 412% from H1 2023.

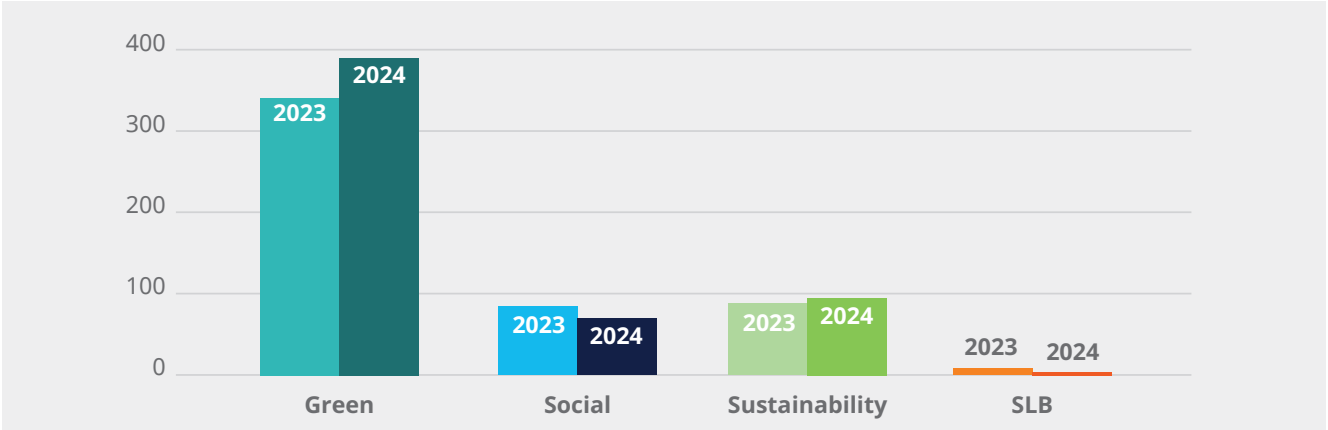
Non-financial corporate issuers pave the way and sovereigns had a record issuance during the first half of 2024.
Volume from non-financial corporate issuers made the largest contribution among the issuer types, reaching $145bn, a 47% increase compared to H1 2023. This included 35 aligned deals of at least $1bn, the largest of which was a $8bn green loan from U.S. low-carbon energy company, Pattern Energy.

Sovereign issuance had a record first half in H1 2024 with 33 countries pricing a total volume of $104bn aligned sovereign GSS+ volume, a 12% increase compared to the $93bn captured for H1 2023. In H1 2024, cumulative aligned sovereign GSS+ volume had reached $591bn.

The lion's share is dominated by green issuances
From a sovereign issuance perspective, green issuances were also the largest share. In H1 2024, green bonds were deployed by 36 sovereign issuers, which accounted for roughly 80% ($478bn) of cumulative aligned sovereign GSS+ volume ($591bn).

Compared to last year, sustainability bond volumes increased 8% while at the same time Social and sustainability linked bonds (SLBs) decreased 21% and 45% respectively.

Aligned GSS+ volumes recorded an increase of 7% in the H1 2024 compared to H1 2023 ($bn)



Source: Climate Bond Initiative

11. Aligned GSS+ bond refer to bonds meeting the requirements outlined in Climate Bonds screening methodology qualify for inclusion in the datasets and are classified as aligned.

"The green bonds market is poised for growth in 2025, driven by a robust ecosystem that attracts both issuers and investors. Upcoming regulations, such as in Europe the EU Green Bond Standards and ESMA's guidelines, will be pivotal in shaping this landscape, with the objective to enhance confidence among transitioning companies and investors alike. As we move forward, it will be interesting to observe the momentum of innovative products, such as nature-debt swaps."

Alban de Faÿ, Head of Fixed Income SRI processes and Credit Portfolio Manager at Amundi, Vice-Chair of the ICMA's Principles

Still a higher expectation from transition-themed sustainable debt

While both use of proceed bonds (e.g., green, sustainability, climate bonds) as well as SLBs have been largely dedicated to climate transition finance, the picture for transition finance in the hard-to-abate industries and fossil fuel sector is different. To date, financing from green, sustainability and sustainability linked bonds to these sectors comes to an estimated $119bn, representing only 3.6% of the total outstanding amount for these bond categories. The debate on transition is now at the core of both policy and market considerations, with a call to action for greater market-led financing.

The ICMA, in its latest publication, *Transition Finance in the Debt Capital Market*[12], has made a series of recommendations to further develop transition-themed guidance in sustainable debt markets such as expanding the transition theme by:

- Encouraging official sector and market taxonomies to integrate "transition" considerations, integrating characteristics related to transition and safeguards to avoid carbon lock-in;
- Developing tools and frameworks that consider decarbonisation pathways and roadmaps that can help transition finance navigate the challenge of supporting transition in the hard-to-abate industries;
- Moving from a voluntary to mandatory adoption of disclosing on transition plans.

Debt-for-nature swaps, a pathway to conservation & restoration of biodiversity and debt relief

Debt-for-nature swaps are an innovative mechanism that allows countries to restructure their debt in exchange for commitments to fund conservation efforts. This approach alleviates financial burdens while promoting environmental sustainability. For instance in 2024:

- The Bahamas unlocked over $120m through a $300m debt swap financed by Standard Chartered and backed by private sector. This funding will support the restoration of hurricane-damaged mangroves and support a new project to protect the entire Bahamian ocean area[13].
- El Salvador initiated a debt-for-nature swap aimed at reducing its debt by up to $600 million, with plans to allocate $150 million towards reforestation and sustainable land management projects to combat deforestation and support biodiversity[14].

In 2024, we observed renewed activity from both Ecuador and Barbados, which have a history of engaging in debt-for-nature swaps. This trend demonstrates that this financial instrument is maturing and becoming an increasingly viable tool for supporting environmental conservation efforts:

- Barbados completed the world's first debt-for-nature swap focused on climate resilience, combining an almost $300m buy-back of its domestic bonds with funding from the Inter-American Development Bank and Green Climate Fund. The project will see Barbados invest $165m in water infrastructure, food security, and environmental protection[15].
- Ecuador announced a debt conversion expected to unlock approximately $460 million over 17 years for the conservation of its Amazon rainforest. This initiative, supported by The Nature Conservancy and other partners, aims to enhance the management of 4.6 million hectares of protected areas and bolster climate resilience while promoting the well-being of local communities[16].

12. ICMA, Transition Finance in the Debt Capital Market, February 2024
13. Reuters article, Which countries have completed debt swaps for nature and climate, December 2024
14. Reuters article, Which countries have completed debt swaps for nature and climate, December 2024
15. Reuters article, Which countries have completed debt swaps for nature and climate, December 2024
16. The Nature Conservancy, Ecuador announces its first debt conversion, December 2024

These transactions are complex and will not grow exponentially but we expect the momentum to continue.

Additionally in 2024, a new coalition of six global environmental organisations, including Conservation International and The Nature Conservancy, was formed to scale climate and conservation outcomes through sovereign debt conversions. This coalition aims to create a shared pipeline of projects and develop the first-ever practice standards for sovereign debt conversions focused on nature and climate. By leveraging sovereign debt conversions, the coalition estimates a potential to unlock up to $100 billion for climate and nature finance.

Mobilizing capital for sustainable development with securitization risk transfer (SRT)

Securitization risk transfer (SRT) allows banks to transfer risk from loan portfolios, freeing up capital for new lending while incorporating environmental and social considerations. Recent development include:

- The SRT deal involving Newmarket Capital and the Inter-American Development Bank (IDB) facilitated the securitization of a $1 billion loan portfolio, allowing private investors to acquire multilateral development bank assets from Latin America and the Caribbean. This transaction not only enhances access to finance for sustainable infrastructure projects but also aligns with the G20 agenda to mobilize private sector investment and exemplifies the shift towards an originate-to-distribute model in sustainable finance.

These innovative financial structures are crucial for mobilizing private capital towards sustainable development initiatives, reflecting a growing recognition of the importance of sustainability in financial markets.

ESG data landscape is evolving to enhance offering, driven by market consolidation and demand for tailored solutions

Evolving data needs and regulation drive the development of offering

On the ESG data front, 2024 was smooth sailing compared to the past few years. During the year, ESG data providers have worked on consolidating their existing offers around regulatory metrics and climate for instance, while expanding only marginally on some topics such as biodiversity.

On regulatory data packages, a much needed improvement of existing packages has begun. As for investors, the learning curve was steeped because of the lack of available and reported data and the vague definition of indicators provided by regulators. Data providers have refined their indicators and improved their coverage. They have also corrected various errors in some of the many data points within the Principle Adverse Impact indicators for instance. On EU taxonomy, the reporting of corporates is getting mainstream with more than 1600 companies reporting on EU taxonomy alignment figures as of end 2024, supporting improvement of availability of data overtime. Nevertheless, there is still a lot to be done to reach acceptable coverage and comparable data points across funds and entities.

On climate related data, the work is focused around transforming existing data points into risk measurement or so-called stress test. A lot of effort is being deployed on transition risks, to assess the financial exposure of corporates and portfolios through scenario analysis or Value-at-Risk. These types of approaches are likely to raise interest from investors by easing the ESG integration. Indeed, they provide insights on the exposure of corporates to extra-financial risks that are not

necessarily factored-in at the moment. They also integrate in one-single output all the data related to a corporate's transition plan. For instance, Amundi works with the MIT to integrate scenario analysis in a traditional risk framework[17]. To do so, we leverage an extensive database that encompasses providers' data and scenario outputs.

On biodiversity, mainstream providers (e.g., MSCI, S&P, etc.) have made efforts to catch-up the early players in the field (e.g. Iceberg Data Lab, Carbon4Finance, etc.). They have developed their own offers around two key metrics: the MSA or Mean Species Abundancies and the PDF or Potentially Disappeared Fraction.

"With major players continuing to consolidate and acquire smaller firms, the ESG landscape is rapidly evolving, driven by new regulations that not only shape data providers in Europe but also impact American actors. This year, we've seen the emergence of biodiversity packages and a focus on advanced metrics, creating a fertile ground for more sophisticated reporting and sector-specific indicators."

Tegwen Le Berthe, Head of ESG scoring and methodology at Amundi

Big trends to watch in 2025: Satellite imagery, AI and open-source data

2024 seems to mark a first maturity stage for ESG data providers. The partnership between MSCI and Moody's around ESG scores also shows that after plenty of years of expansion, mainstream ESG data providers seem to refocus around core offers.

In the meantime, some key areas of growth emerged. We see three big trends to watch in 2025 and later:

- The rise of satellite imagery. While the technology has been there for several years, the use cases in the ESG space are only emerging. This technology coupled to asset-level databases seems promising to develop climate related metrics (e.g., measurement of methane emissions) or biodiversity related metrics (e.g. deforestation assessment) ;
- The mainstreaming of AI. With AI being everywhere lately, we anticipate data providers to invest significantly in this technology to develop forecast or completion models or even new products such as
  - Automated and early controversy detection;
  - Scraping of complex sustainability data points;
  - Dedicated tool to provide transparency of ESG scores with clear explanations of the factors and methodologies used in their calculation;
- The emergence of open-source data. With the CSRD (Corporate Sustainability Reporting Directive) coming in, investors will be able to gather a lot of reported data. Even though these data point will not be directly accessible before 2027 (when the ESAP[18] is expected), data providers will have to cope with this potential threat.

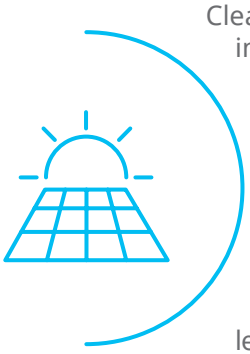
17. Amundi research, Climate-related stress-testing and Net-Zero valuation, November 2023
18. European Single Access Point

02

The geopolitics and economics of the energy transition

Are we shifting gears toward self-acceleration?

Key areas to watch in 2025



Momentum Shifting to Clean Energy Investments

Clean energy added $320 billion to the world economy in 2023, outpacing fossil fuel investments at a close to 2:1 ratio. We expect this ratio to continue to expand, driven by a widening competitive gap

Geopolitical shifts to impact energy transition

Policy packages will continue to drive investments in clean technologies, with a need to overcome remaining barriers to clean energy development in developed economies while also paving the way for increased investments in EMDEs

Physical risks are materializing

The effects of climate change will keep on intensifying, impacting companies' value chains, leaving no options but to take action. The interrelation of environmental and social crises – across the nexus climate-biodiversity-health-food-water – is putting many business models at risk

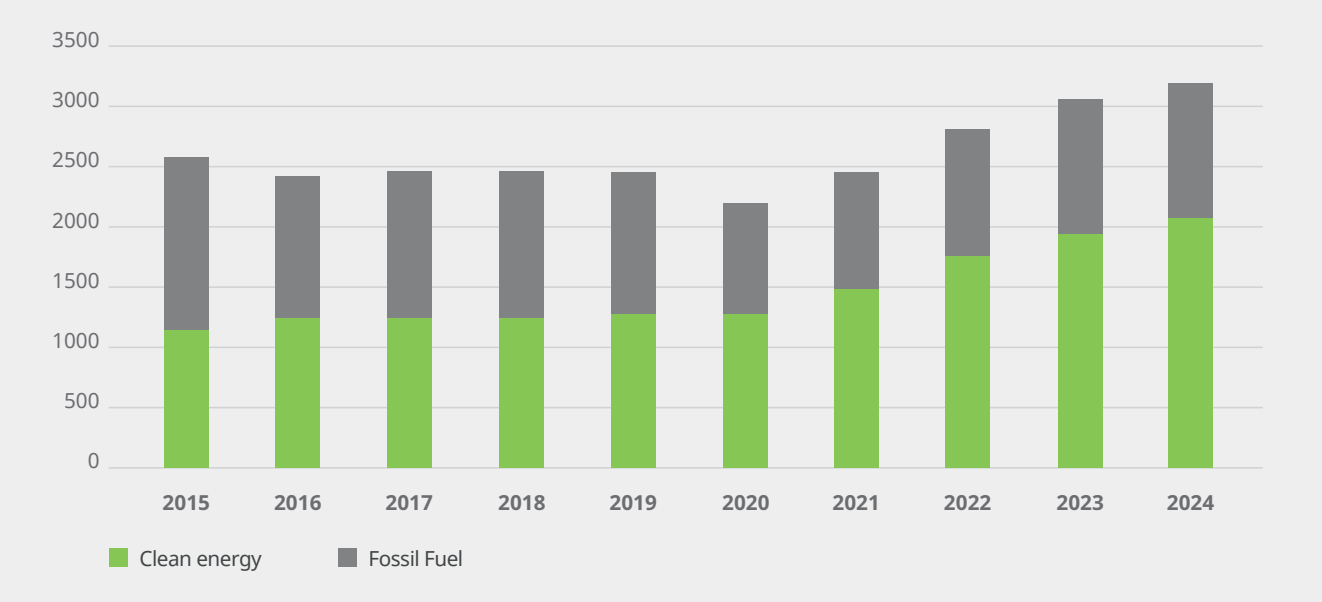
The surge in green energy demand

Clean energy investments are outpacing fossil fuel investments

The energy transition ecosystem is currently witnessing a significant surge in investments, particularly in renewable sectors like solar and wind. Clean energy spending is now outpacing fossil fuel investments at a ratio close to 2:1[19]. This shift is largely driven by key government policies, including the U.S. Inflation Reduction Act, the EU Green Deal, and China's "Made in China" initiative, alongside the growing competitiveness of green technologies across nations as they become increasingly economically viable. As an illustration, the global weighted average levelised cost of electricity (LCOE) for utility-scale solar PV plants has decreased by 90% from USD 0.460/kWh in 2010 to USD 0.044/kWh in 2023, with a year-on-year reduction of 12% in 2023 alone[20].

19. IEA, World Energy Investment report, May 2024
20. IRENA report, Renewable Power Generation Costs in 2023, September 2024

Global investment in clean energy and fossil fuels ($bn)



Source: IEA, World Energy Investment report, May 2024

The International Energy Agency (IEA) highlights that this surge in clean energy investment is not only crucial for meeting climate targets but also plays a significant role in boosting economic growth[21]. In 2023, clean energy investments contributed approximately $320bn to the global economy, accounting for 10% of overall GDP growth. This growth is particularly pronounced in major economies, with clean energy driving 50% of investment growth in China and 20% in the United States.

As countries work to meet their climate goals and the global consumption of energy is still growing, the demand for renewable energy sources is expected to keep rising. Global investments in renewable energy are set to increase further, fuelled by technological advancements and decreasing costs. This trend reflects a growing recognition among investors and policymakers of the importance of transitioning to sustainable energy systems.

Significant hurdles remain to reach the next breakthrough

However, the transition is not without challenges. Complex regulatory frameworks and the need for substantial investment in grid infrastructure can create obstacles to project execution. In the U.S., the permitting process has been identified as a significant hurdle, leading to average delays of 6.5 years for transmission projects and 4.5 years for energy projects[22]. 2.6 terawatts (TW) of renewable energy projects, which could power the U.S. energy demand twice over, face significant hurdles, mainly due to the electricity transmission permitting process. The complexity and length of this process can lead to delays of up to seven years, hindering timely project execution. Stakeholders must navigate a maze of regulatory requirements, local opposition, and environmental assessments, which can stall critical infrastructure development. Streamlining permitting processes will be essential to avoid bottlenecks that impede progress toward broad electrification of the grid.

Similar issues are seen in Europe, where onshore wind and hydropower projects face average delays of around 7 years. Streamlining these permitting processes will be essential to avoid bottlenecks that could hinder progress toward a fully electrified grid.

In Europe, the urgency to invest in grid infrastructure is equally critical. The EU's commitment to achieving climate neutrality by 2050 requires a robust and interconnected energy grid capable of accommodating an increasing share of renewable energy sources. However, substantial investment in grid upgrades and expansions faces challenges, including regulatory barriers, funding constraints, and the complexity of cross-border projects, which can slow infrastructure development and jeopardize the EU's energy transition goals.

AI is set to play a significant role in the energy sector, with its share in total energy consumption currently estimated at 2-3% of global usage and projected

21. IEA, Clean energy is boosting economic growth, April 2024
22. Clean Power paper on U.S. permitting delays

to double by 2026[23]. However, the opportunities presented by AI can outpace demand, as it facilitates energy efficiency, optimizes grid management, and encourages big tech involvement. Recent investments by technology companies to further grow their own power generation[24] are just one indicator of the potential impact of AI development on global electricity demand.

Additionally, the supply chain dynamics for critical materials, essential to renewable energy technologies, must be addressed. The reliance on materials such as copper, lithium, cobalt, and rare earth elements is crucial for the production of batteries and other grid and renewable technologies, with most of these materials sourced from emerging markets. The IEA estimates that the global demand for those materials would be multiplied by 1.5 to 8.7 depending on each mineral by 2040 in the NZE scenario, while their combined market value would more than double[25], with a rising geographical concentration of mining and refined production activities in a limited number of countries such as Chile, Indonesia, DRC and China. Ensuring a stable and sustainable supply of these materials will be vital for the continued growth of the clean energy sector.

As investments in clean energy continue to surge, it will be essential for governments and industry leaders to collaborate on creating supportive policies that facilitate infrastructure development and address supply chain vulnerabilities. The interplay of effective government policies, market dynamics, and geopolitical considerations will be pivotal in shaping a resilient and sustainable energy landscape.

"Investors can capitalise on structurally growing thematics such as industrial automation and energy management solutions. Within our portfolios, we have exposure to a French-listed company whereby part of the business is exposed to manufacturing mass market products to help energy management in both home and commercial settings. The business also has exposure to the fast growing theme of data centres which are an essential part of the drive towards AI. By helping data centres better manage their power usage, this can have considerable environmental benefits given the high electricity use. This has been a strong growth driver for the company, and something we believe will continue to attract investors towards the name."

Andrew Arbuthnott,
Senior Portfolio Manager at Amundi

Geopolitical shifts implications for energy transition

Industrial policy renewal is increasingly central to the green tech race for energy sovereignty

Beneath the surface, an undercurrent of investments in clean energy continues while inflation, higher interest rates and geopolitical uncertainties influence near term performance on clean technology solutions. There is a groundswell of investments in areas such as renewable energy generation (solar, wind), electric vehicles, energy storage solutions, and smart grid technologies, stoked by regulatory policies in Asia, Europe and the United States that have helped to incentivize investments in the energy transition.

While the prospects for clean energy transitions have accelerated in recent years, they will need to progress at an even faster pace to meet climate objectives. Emissions are projected to peak soon, but a rapid decline is essential.

23. IEA (2024), Electricity 2024, IEA, Paris
24. According to SEIA's latest Solar Means Business report, Meta, Google, and Amazon added the most solar to their electricity portfolios through Q1 2024 and those three also have the largest pipelines of new solar procurements under contract in the U.S. Google is also the largest corporate user of battery energy storage, boasting 312 MWac of capacity. Big tech firms have signed several agreements with nuclear power companies in 2024, with Google signing an agreement to buy power from small modular nuclear reactors, Microsoft agreeing on a deal that will see the reopening of a plant in Pennsylvania, and Amazon buying a nuclear-powered data centre, Reuters report and WEF
25. IEA (2024), Global critical minerals outlook 2024, IEA, Paris

Government policies have played an important role in jump starting the growth in the energy transition. The effectiveness and focus of these policies can vary across regions, influenced by local resources, economic conditions, and environmental goals. For instance, while the U.S. has emphasized solar and wind energy through tax credit initiatives like the Inflation Reduction Act (IRA), Europe has adopted a broader approach with the European Green Deal, targeting a diverse range of renewable sources, energy efficiency measures and other environmental policies. In Asia, as part of the "Made in China 2025" initiative, China has made massive investments, particularly in solar manufacturing and electric vehicles, with $680 billion of renewable energy investments set to be spent in 2024 alone[26]. Finally, Japan's GX plan committed 150 trillion JPY (approx. US$1 trillion) in public-private investment for its "green transformation" (GX), revolving around carbon pricing, regulatory measures, and collaboration among companies, government, and academia aimed at increasing competitivity[27].

Significant progress triggered by policy packages

As of 2024, the European Green Deal has made considerable progress in advancing the EU's sustainability agenda, aiming for climate neutrality by 2050. Notable achievements include the EU adding approximately 50 gigawatt (GW) of new renewable energy capacity, bringing its total EU energy mix to over 45%. This significantly contributes to EU's Fit for 55 Package goals of at least 55% reduction in GHG emissions by 2030[28]. Further progress is seen in the momentum gain of large-scale green hydrogen projects and the promotion of electric vehicles (EVs). In the top five European countries, EVs are leading the market with a 56% market share in the third quarter of 2024[29].

Similarly, in the United States the Inflation Reduction Act (IRA) has helped increase the adoption of EVs, with total EV market share in the third quarter of 2024 exceeding 20% for the first time[30]. Additionally, tax credits spurred greater investments in energy storage technologies, such as battery storage capacity, carbon capture and utilization (CCU) projects, and renewable energy installations.

Across the Green Deal and US IRA, policies have helped to drive further job creation. In 2023, U.S. added 142,000 clean energy jobs, which is roughly 5% of all new jobs created nationwide that year and grew twice as fast as the overall economy[31]. In terms of total clean energy jobs, China led in 2023 with an estimated 7.4 million renewable energy jobs, or 46% of the global total. The EU followed suit with 1.8 million, and U.S. had just over 1 million[32].

U.S. IRA has proven to be a catalyst for private sector investments in clean energy, with private sector investments that reached over $300bn[33] in energy transition financing for clean energy technologies, including renewable energy, electric vehicles, power grid investment and others. Notably, a majority of IRA investments ($161 billion out of $203 billion) are flowing into Republican-leaning states[34]. With an incoming Trump administration, this dynamic underscores the potential for renewable energy to transcend political divides, offering economic opportunities that benefit communities across the political spectrum.

While fundamentals remain very strong, Trump's will undoubtedly affect the energy transition landscape in the short-run

The re-election of Donald Trump in 2024 signals a significant shift in the geopolitical landscape, impacting global supply chains and climate change initiatives.

Trump's "America First" approach, marked by protectionist policies and a focus on domestic manufacturing, is likely to disrupt established global supply chains. Some companies are already starting to alter their strategies to sidestep political pressures while ensuring access to materials, technology and markets (eg. Chinese and European, but also US Electric Vehicle (EV) firms are entering new partnerships).

26. Report: World Energy Investment 2024, IEA
27. Overview of Japan's Green Transformation, GR Japan, 2023
28. 2023: A milestone year for renewable energy in Europe, Solar Power Europe, 2024
29. Electric Vehicle Sales Review Q3-2024, Strategy&, 2024
30. ibid
31. DOE Report Shows Clean Energy Jobs Grew at More Than Twice the Rate of Overall U.S. Employment, US DOE, 2024
32. Renewable energy and jobs: Annual review 2024, IRENA
33. Sustainable Energy in America 2024 Factbook, The Business Council for Sustainable Energy
34. Biden Is Giving Red Districts an Inconvenient Gift: Green Jobs, 2024, Bloomberg Opinion

On energy policies specifically, two paradoxical forces play concomitantly:

- Protectionist policies aimed at boosting domestic manufacturing in green tech will also generate some headwinds for green energies, fostering their development but potentially increasing their production costs.
- The goal of achieving the "lowest cost of energy of any industrial country" could on the contrary be a tailwind, enhancing the competitiveness of energy technologies, including renewables, but it will also be supportive of fossil fuel production, with a negative impact on climate change.

Moreover, Trump's will to leave the Paris Agreement could lead to a domino effect of countries reducing their ambitions on climate and energy transition. At a time where new enhanced Nationally Determined Contributions (NDCs) are expected for the next Climate COP30 in Belem, we expect to see an impact on the level of political ambition of some nations.

The dynamics of energy transition and green technology will be significantly influenced by these geopolitical shifts. As nations reassess their supply chains and prioritise domestic production, the demand for green technologies and renewable energy solutions will be affected, more local green technologies may also mean more costly solutions, which in turn may delay the pace of adoption. This presents both an opportunity and a challenge for innovation and investment in sustainable practices, and therefore requires to carefully assess the impact of trade dynamics.

"If one accepts the prior that clean energy has become cost competitive, a pro-energy pro-growth agenda should also be beneficial to the renewable energy sector. On the international scene, US leadership is of course a critical factor but China, Europe and Japan, are the largest net importers of energy. Clean energy development has become a matter of both competitiveness and sovereignty in most parts of the world."

Timothée JAULIN, Head of Responsible Investment Development and Advocacy

Emerging markets and developed economies (EMDEs) are set to lead the future of clean energy investments

EMDEs are at the heart of global emissions reduction challenge

As a group of countries, EMDEs tend to rely more on fossil fuels for domestic energy consumption than developed markets. In fact, they account for most of the last decade's increase in greenhouse gas emissions (95%). Their share of global emissions is also likely to continue rising, since EMDEs are expected to account for 98% of global population growth in this decade[35]. EMDEs are therefore critical to global climate change mitigation efforts. Financing their decarbonization while ensuring energy security will require massive investments across sectors.

At the same time, EMDEs receive only about one quarter of the required financial flows to fund climate mitigation and adaptation efforts[36]. This is due to several factors, ranging from shallow or bank-dominated financial markets, to relatively higher political or macroeconomic risks compared to developed countries.

In this challenging context, governments of emerging and developing countries have increasingly recognized the need to fit decarbonization targets into the policy priorities for the next decades. In fact, there are several reasons to believe that EMDEs are particularly well-positioned to drive a global acceleration in clean energy investments.

35. World Economic Forum, 2022.
36. World Economic Forum

High population growth, rapid urbanization and economic development to create additional power supply requirements in most EMDEs

While major risks emerge in the face of such a fast increase in energy needs, these trends will also create unique opportunities to invest in clean energy infrastructure (solar, wind, hydropower, geothermal) and to replace traditional energy-intensive production methods with low-carbon ones. At the moment, recent increases in clean energy investment have mostly come from China (and developed economies), while other EMDEs account for just a small share of this increase (15%). As a result, the required increase in investment is particularly steep in developing countries: under the NZE Scenario, annual spending on clean energy grows more than six-fold across EMDE outside of China[37].

China is also expected to play a key role in the decarbonization of developing economies, as a major provider of renewable energy solutions. Moving forward, China will likely continue to expand its efforts on trade, investment and standard-setting in clean energy markets across Belt and Road Initiative (BRI) partners.

Market, technology and policy factors are accelerating clean energy development and investments in EMDEs

In several countries, governments have been enacting policies to stimulate investments in the renewable energy sector, such as India or South Africa, and fiscal incentives have been put in place like in Colombia. The Southeast Asian region also shows particular potential to grow its renewable energy industry in the next years: Vietnam recently implemented policies to attract investment and the Philippines is considered as a future renewable energy leader due to its competitive electricity market and key policy incentives[38]. Additionally, Indonesia announced a commitment under the Just Energy Transition Partnership (JETP) to mobilize $20 billion over the next three to five years to accelerate its energy transition, further enhancing the region's renewable energy landscape[39]. This combined with the declining cost of renewable technologies, and the fact that EMDEs typically have abundant renewable energy resources are likely to create commercial opportunities and drive the growth of the industry.

Considering that the materials and manufacturing sectors are very often central to the economies of emerging markets, these industries now have the opportunity of becoming the off takers of many clean energy deals. According to S&P estimates, emerging markets as a whole should develop 5,800 GW of clean energy projects, of which solar photovoltaics and wind assets represent about 60% and 30%, respectively. This amounts to around $5 trillion in clean energy investments[40].

"We are at a juncture where we must recognize that the future trajectory of GHG emissions at a global scale will hinge on the growth and inevitable development in emerging markets, particularly in regions like India, Middle East and Africa. As these economies grow and standards of living improve their implied impact on global emissions will be progressively more and more significant than the policies implemented in developed markets, highlighting the need to prioritize our focus on these critical areas"

Yerlan Syzdykov, Global Head of Emerging Markets & Co-Head of Emerging markets Fixed Income at Amundi

37. IEA World Energy Outlook 2024
38. Verisk Maplecroft, 2024
39. JETP Indonesia website
40. S&P Global research report, 2024

Case study: Net zero is generating opportunities among copper miners in the EMs

The energy transition will place pressure on copper demand. We expect copper demand to grow by 3-4% per annum and mining companies are finding it difficult to keep pace[41]. Copper is the preferred mineral for electric transmission and distribution networks that links homes and businesses to renewable sources and is also one the critical minerals in the manufacturing of solar panels, wind turbines and EV batteries. Meanwhile, copper supply is inelastic. Not only is the lead time on new mining operations coming into production very long but also grade depletion of mines in operation is also restricting supply as well unexpected supply shocks (e.g. a mine can be closed for environment or social concerns). Despite viable solutions, such as new technologies extraction and/or increased recycling, there is speculation that a copper deficit is very possible within a year or two. Given the demand/supply dynamics, the copper price could reach historical peaks for a sustained period in a net zero emissions scenario. To capitalise on the attractive outlook for copper miners, investors need to focus on high quality companies with strong management to reduce idiosyncratic risk, and make sure companies apply the highest social and environmental standards.

Growing fragmentation on the geopolitical scene is increasingly leading countries and companies to pursue "nearshoring" and "friendshoring" strategies

"Nearshoring" and "friendshoring" strategies consist in moving supply chain operations to neighbouring countries or countries that share similar values. For many companies, this has translated into a diversification of economic and trade partners outside of China – the China Plus One model – creating opportunities for other emerging or developing economies, such as India, Vietnam, Mexico and Turkey, including in the clean energy sector.

According to the 2024 Amundi/CREATE-Research Survey of global pension funds, thematic funds investing in renewable energy, as well as sustainable bond funds are the preferred options for pension funds to access Asian emerging markets. Considering this and the immense investment potential in EMDEs, it is up to governments, regulators and supervisors across regions to continue developing more favourable legal, financial and policy frameworks, to attract private investors to the clean energy space. In this context, risk-sharing mechanisms must expand with the support of Development Finance Institutions (DFIs), to increase confidence among long-term investors and thereby address the long-standing issue of limited energy infrastructure funding in EMDEs.

Looking forward, while EMDEs face significant challenges in financing their decarbonization efforts, they are also uniquely positioned to be the drivers of global clean energy investment due to their rapid economic growth, urbanization and abundance of access to renewable energy sources. By leveraging these opportunities, alongside favourable policy environments and international collaboration, EMDEs can play a central role in tackling climate change. However, in order to achieve this potential, continuous improvements are required in financial frameworks to increase investment flows, attract private investors, strengthen relationships with Development Finance Institutions (DFIs) and foster partnerships that mitigate obstacles to limited funding of clean energy infrastructure in EMDEs.

41. International Energy Forum, "How copper shortages threaten the energy transition", January 2024

Trends and future prospects in green energy technologies

EV-to-ICE price parity imminent thanks to new battery technologies

Battery Energy Storage (BES): Upscaling and innovation (across design, manufacture and deployment) have continued to characterize the BES sector throughout 2024. Last year, we focused on sodium-ion batteries; a cost-effective alternative eliminating the need for scarce and expensive minerals such as lithium, cobalt and nickel. 2024 has been a year of superlatives for this new technology, including; the commissioning of the world's biggest stationary storage facility, able to power 12,000 homes; ground-breaking of BYD's new 30GWh sodium-ion battery Gigafactory; and

Previously, the characteristics of sodium-ion technology made it best suited to stationary energy storage applications. Performance improvements from significant progress in design and manufacture (such as research from the Korea Advanced Institute of Science and Technology which have unlocked high-power hybrid sodium-ion batteries capable of charging in seconds) indicate potential adoption of sodium-ion batteries in EVs. BYD's new Gigafactory, mentioned above, will produce significant volumes for lightweight personal EVs such as scooters and three-wheelers. As this trend continues, it is plausible that sodium-ion batteries may be used in larger passenger EVs.

One of the primary barriers to mass-adoption of EVs is retail price. Representing roughly 30-40% of the final sticker price, cheaper battery packs can give a competitive advantage to Auto makers. Pack prices have fallen dramatically over the past decade (from over $1000/kWh in 2011 to $115/kWh in 2024), attributable to economies of scale, design improvements, and excess manufacturing capacity. In addition to sodium ion, there are many chemical (lithium ion, lithium iron phosphate) and architectural (solid state, dry cathode coating) pathways to better, cheaper, batteries. Overall, this leads to expected price parity with ICE vehicles as soon as 2026, as pack prices break the $100/kWh threshold.

The abundance and global distribution of sodium means batteries made from the mineral are not only cheaper, but also more resilient to supply chain issues. From a geopolitical perspective, it offers the opportunity to be less dependent on China for processed lithium; an incentive unique to sodium-ion.

Low-carbon steel already a technical, but not economic, reality

The technologies required for low-carbon steel already exist, and certain elements of the process have been operating commercially for decades. Traditionally, steel production relies on two key processes. First, using coal-based blast furnaces (BF), coal-derived coke is used to remove oxygen atoms from iron ore to produce iron. Second, the molten iron is transferred to a basic oxygen furnace (BOF) where pure oxygen is blown into the mixture removing carbon and silicon by oxidation, resulting in steel.

There are several proven technology pathways which could offer significantly reduced emissions compared to traditional steel making. Two such technologies are summarized below:

Step 1 - Producing Iron from Iron Ore: Direct Reduced Iron (DRI) is a gas-based alternative commercialized in the 1980s, with nominal global capacity in 2024 around one-tenth that of BF. DRI with green hydrogen instead of natural gas dramatically reduce emissions. However, the much higher cost of green hydrogen renders the end product uncompetitive.

Step 2 - Producing Steel from Iron: Electric Arc Furnaces (EAF) can replace BOFs and have a multi-decade commercialization. When operated with renewables, EAF is very low emission. However, the ultimate steel carbon intensity still depends on step 1. EAFs can take scrap as a feedstock, but stability of supply and prices impact competitiveness.

There are other technical benefits and challenges with DRI and EAF, but the primary blocker remains economics. Steel is a globally-traded commodity and producers have limited scope for differentiation with price-sensitive purchasers. The market demand for 'green' steel does not yet justify the cross-value chain investment needed to align green hydrogen, DRI and EAF at scale. Governments have indicated strong support for green steel, both implicitly through climate policies and explicitly through one-time grants towards conversion costs. We feel that support would be better provided on the demand side, by creating policy conditions which encourage consumers to favour green steel. Market confidence would enable businesses and investors to commit to upscaling, and over the long-term reduce costs through economies of scale and innovation – much like the EV industry.

03

Shifts in the responsible investment landscape

Will increased demand for real-world impact products provide a new impetus?

Key areas to watch in 2025

A continuing interest for Responsible Investments

Appetite for Responsible Investments will remain strong despite political challenges, with 54% of investors indicating they are likely to increase their allocation to RI in their portfolios

All eyes turned on "outcome-oriented" products

The drive for tangible real-world impacts will fuel demand for innovative financial solutions in 2025, including green bonds, nature-debt swaps, and various impact investments

The Sustainability toolbox is expanding

New metrics that focus on biodiversity, social factors, and real-world indicators are expected to enhance sustainability frameworks and improve risk management assessments, including climate stress tests

Understanding transition and physical risks

Climate impact is increasing

As climate risks, both chronic and acute, increasingly affect investments, it is crucial for investors to act with urgency. According to the World Economic Forum, extreme physical risks brough by climate change are a concern for both the short- and long-term horizon with massive surges expected in the upcoming years. These risks elevate capital expenditure (CAPEX) costs and can reduce annual turnover by approximately 10%, while also eroding market value by up to 4% for businesses.

EMDEs also remain at a significantly higher amount of risk due to the current status quo of severe underfinancing. Currently, for developing economies a massive financing gap in countering physical risk remain at an estimated $194bn to $366bn per year for EMDEs[42]. According to CPI, adaptation finance is still low at 9% of total climate finance in 2021-22. Although adaptation finance increased by 29% in from $49bn in 2019 to $63bn in 2022, the share of total climate finance halved in the same period. To mitigate deteriorating climate risks and related impacts, a dramatic increase is required in adaptation finance with financing needs requiring to be 10 to 18 times greater than current flows, about 50% more than previous estimation.

42. UNEP – Adaptation Gap Report 2023f

The integration of physical risks within financial products

Equity valuations should be considered to assess whether companies with higher resilience to physical risks can lower their cost of equity, enabling investors to make more informed decisions based on accurate climate risk assessments. Other market players such as MDBs and DFIs play a crucial role in financing adaptation and resilience programs, by providing concessional lending and grants, which amounted to $24 billion in 2021-22. Significant innovations in the investment industry such as building the insurance linked securities (ILS), which are financial instruments dependent on insurance-related, non-financial events saw a growth of 20% between 2022 and 2023 from $35.5bn to $43.1bn. These catastrophe bonds help transfer risks from issuers to investors by raising money for companies in the insurance industry in the event of a natural disaster. These considerations can further positively impact the transition risks landscape.

Case Study: Integrating Adaptation and Resilience into Investment Frameworks

The AIIB-Amundi Climate Change Investment Framework is a pioneering tool designed to align with the Paris Agreement's objectives of climate mitigation, adaptation, and net-zero transition. It provides investment metrics to assess progress toward these goals. For climate adaptation, it focuses on two main metrics:

- Risk Exposure Assessment: Evaluates the proportion of a company's operations in high-risk regions and the likelihood of climate hazards ;
- Risk Management: Assesses efforts to enhance asset resilience against physical risks.

Additional considerations include assessing the company's infrastructure investments, reliance on climate-sensitive raw materials, and the financial impact of climate disruptions. This framework helps investors target companies that lead on climate resilience while also positioning portfolios to benefit from the future repricing of climate risks. It has already been applied to Amundi's debt portfolios, demonstrating its potential to mobilize private capital and address the climate financing gap in developing countries.

Responsible investment resilience amidst geopolitical changes

ESG backlash fuels political divide and regulatory challenges

The discourse surrounding Environmental, Social, and Governance (ESG) investing has become increasingly complex, often characterized by a perceived backlash that some view as the "politicization" of sustainable finance. This has its roots in broader ideological debates concerning climate change, corporate responsibility, and government intervention and its material impact on financial performance. These differing perspectives are particularly evident in the United States, where the debate over ESG has intensified in recent years. Positions for or against sustainable investing have begun to influence the management of state public pension funds and other financial decisions, leading to a polarized environment.

Several U.S. states have introduced or passed legislation aimed at restricting pension funds from incorporating sustainability factors into their investment strategies. These laws are often justified by the argument that focusing on ESG criteria may compromise financial returns in favour of social objectives, raising concerns among investors about the potential impact on their portfolios. As the dialogue around ESG continues to evolve, it remains crucial for investors and stakeholders to navigate these complexities thoughtfully and responsibly.

On the other side, Europe remains committed to responsible investing, driven by strong regulatory frameworks like the EU Taxonomy and the Sustainable Finance Disclosure Regulation (SFDR), which aim to standardize and strengthen sustainability reporting. In contrast, the U.S. faces a growing divide as federal support for

sustainable finance disclosures clashes with state-level restrictions. Global firms must balance these challenges with increasing pressure from European regulations mandating sustainability disclosures and climate-risk assessments. Furthermore, emerging markets are also increasingly attentive to responsible investment, especially in Asia, where countries like Japan and South Korea are developing sustainable finance policies. The politicisation of responsible investing and the polarisation of attitudes towards sustainable commitments has resulted in a challenging landscape for investors and end-savers to navigate.

A continuing interest for Responsible Investment

Amidst political challenges, responsible investment demand persists, especially from institutional investors who recognize that climate risk is material to financial returns. In 2024, sustainable fund AUM globally reached a new high of $9.4tn as of June, up 10.4% from the end of 2023[43]. Hence, the polarization of views should be interpreted as a sign of an industry maturing, indicating that beyond declarations, real change is underway, with next steps aimed at clarifying value propositions. For investors and end-savers, the politicisation of responsible investing does create a multifaceted environment. It is essential for investors to rely on their governance frameworks to establish clear objectives and provide sufficient transparency to end-savers'.

The current landscape for responsible investing suggests that while the ESG discourse may influence certain markets, the global momentum toward sustainable investing remains resilient. This resilience indicates that even in polarised contexts, responsible investments have continued to evolve and adapt to regional dynamics. The evolution of transition scores highlights a growing recognition among investors of the need to adopt integrated approaches that facilitate the transition of the real economy while minimizing the disconnect between investment portfolios and carbon pathways. New tools for modelling climate risks and stress testing are evolving, increasingly incorporating social dimensions. This development fosters resilience in sustainable investing, and empowers investors to navigate this dynamic environment effectively.

An ever stronger business case for Blended Finance

Blended finance has not yet managed to fully leverage private investment

Well into 2024, it appears that this year will be the warmest since climate records began[44] and the recent violent climatic events in Spain, Peru, Bangladesh, the French oversea territory of Mayotte and the U.S. to name a few, emphasize yet again the urgency for climate action. Emerging economies rest in an uncomfortable position in the worsening of climate change. First, as vulnerable countries for whom the road to meeting their net zero carbon emission targets is challenging, with high risks in material GDP losses and lower growth standards by 2050[45]. Emerging markets are also driving and will continue to drive economic and population growth in the 21st century, which combined with the reliance on fossil fuel-based energy seems incompatible with achieving the transition to net-zero emissions by 2020 as low- and middle-income countries already emit around two-thirds of greenhouse gases[46].

To achieve net-zero emissions by 2050, clean energy investment in emerging economies must triple to ~$2.8tn a year by 2030, however the IEA estimates that this increase could be digestible by the private sector capital markets[47]. Blended Finance provides innovative solutions to catalyse scarce public capital to partially de-risk and crowed-in private sector investments at a risk return profile that meets its requirements. As shown in the graph below, the total deal volume unlocked by blended finance over the past decade stands at just over $200bn, far short of what is required[48]. Common blended finance structures include the provision of funds below market terms (concessional capital), credit enhancement through guarantees and risk insurance, technical assistance, and design-stage grants to finance transaction design and preparation.

43. Amundi Business Intelligence based on Broadridge responsible investment data as of June 2024
44. EU Copernicus Climate Change Service (C3S), Copernicus: 2024 virtually certain to be the warmest year and first year above 1.5°C, October 2024
45. Amundi, Climate investing is an opportunity for Emerging Markets, May 2024
46. UNEP, Emissions Gap Report 2023, 2024
47. IEA, CO_2 Emissions in 2023, 2024
48. 2024 State of Blended Finance Report - Convergence

Growth of Annual Blended Finance Activities ($bn)

Source: 2024 State of Blended Finance Report - Convergence

2025: Moving pieces for blended finance

Blended finance solutions have become a growing force for the climate transition, with an ever increasing number of climate-related deals, and especially high volume deals, over the last years[49]. As a principle, it has also been recognised as a key driver for climate resilient infrastructure by the G20[50].

While the latest geopolitical developments, such as the recent election of Donald Trump as President of the United States, and current regulatory frameworks governing the stability and risk taking of the global financial system, might challenge, on one hand climate investments and on the other hand, investments in emerging markets, the outlook for blended finance appears to be strong.

As regulators and central banks are becoming more aware of the impact of climate change on national economies and financial systems, we see in a positive light the development of best practice networks, such as the Network for Greening the Financial System's Blended Finance Taskforce. In the 2024 Global RI Views, Amundi had underlined areas of improvement in MDBs' and DFIs' reforms to support the deployment finance: improved transparency and consistency in data, the standardization of full and partial guarantees, and local capital mobilization. While such changes will take a long time, initiatives such as the Multilateral Development Bank Reform Tracker, launched in 2023 and greatly improved in 2024, are a sign that the industry is globally realizing the necessary steps to support blended finance.

49. Convergence, State of Blended Finance 2024: Climate Edition, October 2024
50. OECD, G20/OECD report on approaches for financing and investment in climate-resilient infrastructure, July 2024

Case study: Navigating the Coal Transition: Blended Finance Solutions for Asia-Pacific's Energy Future

Countries in the Asia-Pacific region are most vulnerable to climate change, facing the risk of losing 35% in GDP due to climate change caused effects and natural hazard, thus undoing the decades of work toward economic and social development[51]. Yet, the region still generates nearly 60% of its energy from coal, representing for a third of its total GHG emissions.

While the case for coal phase out is straight forward on an environmental perspective, it is extremely challenging in practice: Asia owns the youngest float of coal plants, less than 15 years old on average, built to meet ever increasing energy demands[52]. Blended finance structures can provide attractivity to coal phase-out projects, while catalysing the huge investments needed. In our RI Asia Views 2024, we had discussed in length the Just Energy Transition Partnerships, which exist in a large ecosystem of phasing out solutions. Today, more market-based initiatives are being developed, to involve private investors.

An illustrative initiative is the Establish Energy Transition Acceleration Finance Partnership[53], established in 2024 by the Monetary Authority of Singapore (MAS) in collaboration with the Asian Development Bank and the Global Energy Alliance for People and Planet. The partnership aims to raise up to $2 billion in concessional and commercial capital, where MAS will play a significant role in pulling key stakeholders from the Singapore financial world. MAS will also support through enabling policies to guide investors towards transition planning, as illustrated with its Singapore-Asia Taxonomy.

Overall, a common understanding of blended finance best practice and standards will support further cooperation between public and private investors, thus enabling the scaling needed to meet the Paris Agreement Goal.

Real-world impacts fuelling the development of financial products

Investors are driving the increasing demand for real-world impact financial products

With the formalisation of sustainable regulatory standards there also has been a spur in the investor demand for sustainable financial products. Most financial actors with varying sustainability preferences are increasingly calling for more climate-positive products that are not only aligned with carbon neutrality goals but also contributing to real-world objectives. Based on a recent Amundi Investment Institute publication[54], net zero policies must thus aim to address both a portfolio decarbonization and transition financing dimension.

One of the key benefits of impact investing in sustainable products is the provision of long-term and stable financing to beneficiaries, which can be companies or projects. Such products like real asset strategies or GSS bonds finance projects with environmental, and/or social benefits, such as wind farms, solar or hydropower infrastructure, smart grids, green buildings and clean transports, provide a concrete way to track the impact on environmental and social factors.

Real-world impacts are fuelling the development of financial products, driven by investor demand. The GIIN estimates that over 3,907 organizations currently manage $1.571tn in impact investing assets under management (AUM) worldwide, representing 21% compound annual growth (CAGR)

51. WEF, Unlocking climate solutions at scale through blended finance, September 2024
52. Monetary Authority of Singapore, "From Coal to Clean: Managed Phaseout in the Asia-Pacific", June 2023
53. Asian Development Bank, ADB, GEAPP, and MAS to Establish Energy Transition Acceleration Finance Partnership in Asia, December 2023
54. Amundi research, Net Zero Investment Portfolios - Part 2. The Core-Satellite Approach, November 2023

of the total impact investing market since 2019. This was channelized by increasing client demands as mentioned by 72% of impact investors and increased pool of professionals with impact skillsets for 79% of investors[55].

Outcome-based financing is a new frontier that directly links between return on investment and success of project or activity. Outcome bonds make up $524m invested in 259 bonds, with a 6% CAGR demonstrated by the unique level of additionality it brings for a specific project to be funded by forgoing a coupon. In 2024, green bonds sales in the first half of the year topped $356bn, the busiest half year observed since the market's inception[56].

Assessing progress and obstacles in the Net Zero alignment journey

Updates for Net Zero frameworks provide clearer guidance to address climate risk at portfolios level

Decarbonisation has become more urgent than ever, with GHG emissions in 2023 increasing at a rate faster than pre-COVID levels. NZAOA[57] members remain committed towards Net Zero, recording annual financed emissions reductions of at least 6%, consistent with the IPCC[58]'s 1.5°C pathways. Moving forward, Net Zero investors face a critical five-year period with ambitious goals, including a new 50% decarbonization target by 2030. To support these heightened ambitions, TSP4[59] and NZIF[60] 2.0 released significant updates in 2024 to guide investors on their Net Zero journey.

The updates emphasize transition finance and organic decarbonization, extending coverage across asset classes—notably private assets and sovereign investments—and highlight the need for bottom-up alignment approaches. Engaging Asset Managers is now mandatory for Asset Owners who delegate their assets, with a stronger focus on climate policy engagement across the investment value chain, as detailed in the IIF Staff Paper: Resetting the Debate on the Role of Private Finance in the Net-Zero Transition.
Net Zero investors now have clearer guidance to integrate climate risks and targets within the investment process, focusing on two critical dimensions: contribution and alignment.

Alignment and contribution dimensions – Where do we stand?

A significant aspect of the NZAM is the establishment of alignment targets, which are designed to ensure that investment strategies contribute to decarbonization efforts in the real economy. According to reports, 53% of the targets set by signatories focus on alignment[61], however only 9% of NZAM signatories have set targets for climate solutions. The alignment dimension provides both backward- and forward-looking views on an issuer's Net Zero profile, introducing a temporal perspective. Through this dimension, two complementary strategies are recognized by NZAM: top-down decarbonization and bottom-up alignment approaches. While decarbonization strategies are widely adopted, the latter has yet to be democratized. In a non-linear decarbonisation scenario, they may even become crucial to continue justifying financed emission in high-emitting sectors that are not decarbonizing linearly or rapidly enough.

With around 84% of listed companies "not aligning" with Net Zero[62], some sophisticated investors, including Amundi, are now developing internal alignment methodologies, creating their own maturity scale. This enables investors to retain control over models, reduce dependence on external suppliers and avoid "black box" models. The integration of complex bottom-up alignment assessments into the investment process will then vary depending on client constraints, portfolio manager skills, or the overall investment philosophy.

55. GIIN, Sizing the Impact Investing Market, 2024
56. Bloomberg. Record sales of green bonds in H1 2024 article
57. Net Zero Asset Owner Alliance
58. Intergovernmental Panel on Climate Change
59. Target Setting Protocol 4
60. Net Zero Investment Framework
61. NZAM Target Disclosures Report 2024
62. Companies' misalignment with climate goals

"For a company to have credible carbon reduction ambitions, we believe that it first needs to display strong overall ESG credentials as well as having the financial firepower to deliver on its carbon plans. Hence, we place a strong focus on the integration of carbon, ESG, and financials within our fundamental analysis."

Peter O'Donoghue, Senior Portfolio Manager at Amundi

Case study: Integrating investors' ESG analysis into bottom-up stock selection to allow for a balanced distribution between different levels of Net Zero ambitions

Investors can obtain attractive risk-adjusted returns while targeting a certain amount of reduction in carbon intensity per annum. It is vital to select companies with realistic carbon reduction targets as well as robust social (S) and governance (G) frameworks. Carbon objectives cannot be met by relying on quantitative CO_2 data only. Rather, it is critical to use forward-looking analysis driven by both quantitative and qualitative data. This analysis helps investors to understand the cost of a company's carbon transition, its ability to transition, as well as whether its valuation offers attractive upside potential in the medium-term.

At Amundi, we have identified three types of companies that investors may consider when it comes to Net Zero ambitions: "Climate Champions", "Climate Enablers" and "Climate or ESG Committed". These businesses can contribute the most towards the rise in decarbonization, energy efficiency and digitalization, and many are found within the industrials, technology and materials sectors.

A broadly equal distribution across the three types can help to investors with Net Zero ambitions to avoid structural style biases and achieve high levels of diversification across all major market sectors.

Comprehensive approaches are being developed for climate stress testing

A climate stress test is a tool designed to evaluate the vulnerability of financial institutions to the risks posed by climate change, primarily focusing on the potential impacts of rising global temperatures. Additionally, climate-related stress tests also measure transition risk and particularly the exposure to regulatory policies aimed at limiting global warming.

Climate risk analysis projects the future impact of physical and transition risks, but the complexity and uncertainty in climate models can lead to substantial modelling risks. Assessments typically rely on interconnected models, such as climate scenario, macroeconomic, and financial models, each with distinct assumptions and limitations. This combination increases the risk of inaccuracies in outputs. For instance, Integrated Assessment Models (IAMs) simulate interactions between the economy and climate systems, often with varying assumptions that affect results. The lack of standardized data further compounds this risk, as incomplete or lower-quality data can lead to underestimated risks.

For investors, model uncertainty may overestimate or underestimate the true financial impact of climate risks, creating decision-making challenges. Some financial institutions are developing proprietary models, which offer greater transparency and can be tailored to specific portfolios, limiting certain modelling risks.

Amundi is actively developing climate stress testing to refine risk management practices, set climate-informed targets, and improve stakeholder engagement. In partnership with the MIT Joint Program on the Science and Policy of Global Change, we research links between long-term climate scenarios and company-specific valuation

metrics for high-emitting companies. Our research paper, "Climate-Related Stress-Testing and Net-Zero Valuation: A Case Study for Selected Energy-Intensive Companies," shows that companies exposed to low-carbon technologies may benefit from rapid transition scenarios, while high-emitting companies face penalties. This analysis is crucial for identifying potential equity shocks and implicit credit risks as regulatory frameworks evolve, ensuring robust investment strategies.

Additionally, Amundi developed a Transition Value at Risk (T-VaR) to quantify potential financial impacts from climate transition risks. This approach evaluates how different regulatory measures and market sensitivity can affect the financial stability of companies, enabling informed investment decisions that align with our sustainability goals and mitigate portfolio exposure to transition risks.

Dimensions and metrics outside climate are emerging

The interlink between climate and nature becoming clearer for investors, there is growing focus on integrating natural capital within Net Zero frameworks, as evidenced by the GFANZ[63] workstream consultation paper, which offers guidance on including nature in Net Zero transition plans.

Furthermore, the challenges equity investors face in accurately assessing the additionality of their investments have driven the development of new promising methodologies. These include metrics like *Expected Emission Reduction* (as advocated by GFANZ), *climate dividend*, or estimation of *avoided emissions* at company level.

Case study: Integration of chemical pollution within regulations and frameworks

PFAS (per- and polyfluoroalkyl substances) are a group of man-made chemicals used in various industrial and consumer products for their water- and grease-resistant properties. There is scientific evidence[64] chemical pollution has exceeded environmental limits within which humanity can safely operate, with trends of continuous increase[65], leading to growing uncertainty about the impact of companies' chemical footprint on society and the environment and the associated material risks for companies.

The majority of cases are recorded in U.S. but we expect lawsuits to become more common in Europe with rising evidence of contamination. Regulation in Europe and U.S. are also becoming stricter, while the subject becomes a regulatory topic in other parts of the world like in Japan, China, and Canada[66]. In U.S., state-specific policies, new PFAS reporting requirements, and stricter water regulation will likely increase administrative and detection and remediation costs (and lawsuits) fundamentally depending on how far regulators carry PFAS restrictions. In Europe, the European Chemicals Agency ("ECHA") published a comprehensive dossier concerning a ban on around 10,000 PFAS.

Considering the consequences this might have on the environment – and our health – Amundi made PFAS an integral part of our biodiversity policy. As a result, companies identified with significant PFAS issues are systematically engaged to address related risks.

63. Glasgow Financial Alliance for Net Zero
64. Planetary boundaries - Stockholm Resilience Centre
65. The Global Chemicals Outlook II: From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development (UNEP 2019)
66. China (Enviliance), Canada (report), Asia (Cosmetics Regulations), Japan (MoE)

With more than half of the global GDP relying on services provided by nature, biodiversity is also gaining momentum. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recently released a report on the climate-biodiversity-water-food-health nexus, assessing the interrelations between these five issues. It highlights the importance of healthy ecosystems and sustainable use of natural resources in order to maintain access to fresh water and food (both quantity and quality), to mitigate and adapt to climate change and to help maintain healthy living conditions for people. In this context, corporates are encouraged, both by regulations and a trend for a better risk-management, to assess their impact and dependences to nature. The challenge of accessible, reliable and relevant data will be an important one to be addressed in the next few years

"Nature and climate interrelated risks and opportunities are more and more understood by companies and investors, seeking solutions to enhance resilience and secure value chains as they face rising impacts from climate change. Beyond the growing focus on integrating natural capital within Net Zero frameworks, the challenge to properly translate those risks and opportunities into valuation will be critical in the next few years."

Caroline Le Meaux, Global Head of ESG research, engagement and voting at Amundi

Innovative indicators emerging to answer new products and investors demand

The emergence of transition scores

In last year's Responsible Investments views, Amundi was pointing out toward the two complementary dimensions of a decarbonization strategy, net-zero alignment and contribution, highlighting the need to combine both approaches to accompany the transition of the real-world economy and to limit the decoupling between portfolios and the economy carbon pathway. This approach has become central to net-zero investors and two important coalitions of net-zero investors (IIGCC[67] and NZAOA[68]) have updated their framework to highlight the need to balance in between both approaches.

"The NZIF has a comprehensive structure which supports investors to work to address these barriers within net zero strategies as part of maximising their efforts to 'finance reduced emissions' rather than 'reduce financed emissions"

IGCC, NZIF 2.0 June 2024

In reaction, tools have developed to increase the integration of these two core dimensions in the analysis of companies and funds.

Investors are increasingly developing tools to analyse the transition plans of companies. In particular, the focus has shifted from looking at static carbon emissions and objectives to integrate corporates' investment plans and strategies in the analysis. Regulators are also paving the way by integrating the transition dimension into the new version of the French SRI Label or even more directly when the Monetary Authority of Singapore publishes a taxonomy cantered around the need to finance the transition (Singapore-Asia Taxonomy[69]).

In Europe, the EU Taxonomy alignment of funds is mainstreaming and serve the need for net-zero contribution. As reported and more robust data on the green share of companies spread to investors, the development of contribution's investment vehicles can thrive. Even though, they limit to European companies, the EU taxonomy data promotes investments in companies that develop the technologies that the economy needs to transition. Green companies are now becoming the focus of certain net-zero approaches while they were being left out from carbon optimized funds.

67. Institutional Investors Group on Climate Change
68. Net-Zero Asset Owners Alliance
69. Singapore-Asia Taxonomy for sustainable finance 2023 edition

2025 should be a year for simplification and enlargement of the net-zero compass

Indeed even though these progress were absolutely necessary to a meaningful and viable contribution of investors to the net-zero objective, they also increased the complexity of net-zero integration. To avoid limiting the mainstreaming of such approaches, Amundi believes that aggregated and simplified signals should be developed. In particular, Amundi is developing an aggregated transition assessment that identifies the companies delivering on their ambitious carbon reduction objectives and/or investing significantly into green business.

Finally, the NZAOA Target-Setting Protocol Fourth Edition has kicked-off the reporting for alignment of sovereign investments. This will force investors to start measuring and monitoring their sovereign investments.

Integrating social issues, a new frontier in investment strategies

While climate risk frameworks have become well-established, social issues—such as human capital management and human rights—have received less focus from investors, largely due to challenges in quantifying and benchmarking these factors. However, with the rise of evolving reporting standards and better data availability, investors are increasingly addressing these gaps.

In the wake of the COVID-19 pandemic, which highlighted the need for resilient supply chains and robust risk management, the need for global policies on labour risks and human rights to support the social dimension of business operations are gaining momentum. The Corporate Sustainability Reporting Directive (CSRD) has brought greater attention to social issues, requiring disclosures on human rights, working conditions, and employee welfare. Along with the recently enacted Corporate Sustainability Due Diligence Directive, these regulations are expected to improve the availability of social data for investors.

In 2024, discussions around the relationship between social issues and corporate financial performance became more nuanced. Although the longstanding view holds that there is a strong relationship between diversity and financial performance, there are various studies that have demonstrated stronger links between employee satisfaction and long-term financial returns in certain markets. This increased scrutiny signals a maturing conversation that will continue to evolve in 2025.

A number of sovereigns and corporates have issued labelled sustainability bonds to help fund a just energy transition and address social inequalities. Some examples include the Latin American Telecoms company issuing a social bond to improve connectivity in impoverished areas in Chile; and a large Nigerian bank recently issuing a Green Private Placement Bond. Looking forward, we expect social sustainable green finance to gain traction which hopefully will help in reducing inequalities.

Nevertheless, given the complexity of social issues, identifying key metrics is critical for investors. The IFRS Foundation's International Sustainability Standards Board (ISSB) is working on guidelines for human capital disclosures, which will further help in aligning metrics with investor needs. The Shift Project has highlighted several indicators for focus, including:

- Board expertise on human rights and capacity for assessing social impacts;
- Indicators of social due diligence, tailored to specific business models (e.g., training outcomes, employee feedback on harassment prevention);
- Evidence of positive outcomes for people, such as improved human rights for workers or consumers.

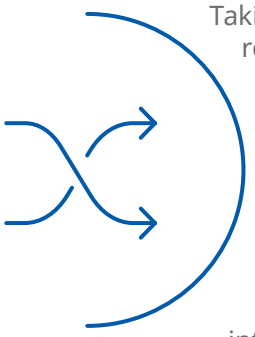
In 2025, attention will expand to the impact of AI on human capital and human rights. Notably, the AI Governance Disclosure Initiative, led by UNESCO and the Thomson Reuters Foundation, will release its first survey on AI deployment in summer 2025 and is expected to become a significant area of focus for both investors and regulators.

04

Sustainable finance at a crossroads

What to expect from the announced reset and how to navigate regulatory divergence?

Key areas to watch in 2025



A need for client-centric approaches

Taking better account of investors' heterogeneity and variable needs, and of the practical reality of financial product distribution will be crucial to really give investors the ability to express their sustainability preferences

Streamlining regulatory frameworks

Streamlining complex regulations will be essential to improve investor understanding and accessibility in sustainable finance, ultimately fostering greater accessibility to Responsible Investment products

Addressing regulatory divergence

In a context of increased regulatory fragmentation, we expect greater focus on international alignment and interoperability, with the view to facilitate compliance for corporations and financial institutions

Historical overview of the EU sustainable finance package

EU sustainable finance package has developed with a focus on transparency

In 2018, the EU adopted a sustainable finance action plan which proposed a renewed strategy and a series of legislative proposals for financing the transition of the bloc to a more sustainable economy. The three major legislative components focused on:

- Taxonomy Regulation (July 2020)[70]: which created the world's first ever "green" classification system for sustainable economic activities
- Climate Benchmarks Regulation (December 2020)[71]: allowed the creation of the EU Paris-Aligned and Climate Transition Benchmarks (PAB / CTB) which aim to facilitate the comparison of different financial products.
- Sustainable Finance Disclosure Regulation - SFDR (March 2021)[72]: which aims to aims to trigger changes in behavioural patterns in the financial sector, discouraging greenwashing, and promoting responsible and sustainable investments.

In addition to these regulations, the EU integrated an additional set of comprehensive measure in April 2021 to complement the above-mentioned regulations.

- EU Taxonomy Climate Delegated Act: which sets out technical screen criteria (TSC) to classify which activities best contribute to mitigating and adapting to the effects of climate change.
- MiFID II Amendments: new rules requiring financial advisors to consider clients' sustainability preferences when giving investment advice to encourage responsible investing.

70. Regulation (EU) 2020/852 on the establishment of a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088
71. Regulation (EU) 2019/2089 on Carbon Benchmarks
72. Regulation (EU) 2019/2088 on Sustainable Finance Disclosures

- Corporate Sustainability Reporting Directive: which ensures companies provide consistent and comparable sustainability information.

Furthermore, the EU has published other measures and delegated acts to complement existing regulation, such as but not limited to the EU Green Bond Standard Regulation (December 2023) and the ESMA Guidelines on funds' names using ESG or sustainability-related terms (May 2024).

EU Regulation: A catalyst for accelerating corporate sustainability transformation

CSRD & CS3D to disrupt corporate extra financial reporting

The European Union is pursuing responsible investment regulatory initiatives with pivotal directives like the Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD). The CSRD, adopted in November 2022 and effective from January 2024 for first reporting in 2025, replaces the Non-Financial Reporting Directive (NFRD) and will progressively expand its scope to approximately 50,000 companies, including 10,000 outside Europe. Key enhancements include extended reporting requirements, standardization through EU-approved standards, double materiality, third-party assurance, and a digital format for easier access. The CSRD features 82 disclosure requirements, with 161 mandatory data points, and mandates independent audits to improve the reliability of ESG data.

Approved in May 2024, the CS3D requires large companies to implement due diligence procedures to address adverse human rights and environmental impacts across their operations and value chains. Additionally, with the directive entering into force by 2027, organizations will be required to 'adopt and implement' a transition plan aligning their business activities with the Paris Agreement's 1.5°C target. While a PwC study shows that the CSRD can enhance environmental performance and stakeholder engagement, companies face challenges in implementation, including data availability and technology investments[73].

Recent public declarations indicate potential headwinds for ESG regulation in Europe. The Draghi report in September 2024 criticized sustainability reporting as a "major source of regulatory burden" due to its complexity. In response, the EU Commission announced plans on November 25 to restructure the CSRD, CSDD, and EU Taxonomy into an omnibus aimed at reducing reporting loads and enhancing interoperability. Ursula Van Der Leyen insisted on her will "to reduce this bureaucratic burden without changing the correct content of the law" that she contends "we all want"[74].

ISR labelling and SDR UK Development strengthening their requirements

Alongside the development of European regulation, European labels have strengthened their eligibility criteria and exclusion requirements to better articulate them around EU regulation. For instance, the criteria for the French "Label ISR" were recently revised to meet the higher expectations of savers and the scale of the collective challenges we face, particularly in the fight against climate change. This tightening of criteria enhances investor confidence in the real impact of their investments but may lead to more concentrated portfolios with risk/return profiles that deviate from benchmarks, which raises educational issues with regard to end clients.

In the UK, there is an increasing focus on transparency in investment practices. The development of Sustainable Disclosure Requirements (SDR) which aims to create a consistent framework for sustainable development. Set to phase in various components, including anti-greenwashing rules by May 31, 2024[75], the SDR supports the transition to a low-carbon economy and helps investors assess the sustainability performance of their investments. This initiative is part of the UK's wider strategy to support the transition to a low-carbon economy and meet its climate change targets.

73. PWC 2024 Global CSRD survey, June 2024
74. Real economy progress press article, November 2024
75. FCA finalised guideline on anti-greenwashing rule

ESMA fund naming guidelines pushing asset managers to restructure offering

Competitive pressures for asset managers to attract investors can increase the risk of "greenwashing." In response, ESMA launched a consultation in November 2022 and published guidelines in May 2024 regarding the use of ESG or sustainability-related terms in fund names.

The objectives of these guidelines are to:

- Ensure clarity and transparency for investors by standardizing fund naming conventions.
- Prevent misleading or deceptive fund names that could potentially mislead investors.
- Promote fair competition among fund providers by setting uniform standards for fund naming.
- Enhance investor protection by reducing confusion and ensuring that fund names accurately reflect the underlying investment strategy.
- Uphold the integrity and reputation of the fund industry by maintaining high standards of professionalism and ethics in fund naming practices.

These measures are pushing financial market participants to reorganise their offerings based on fossil fuel exclusion versus broad sector exposure. As product ranges become more polarised, it is essential for market participants to be pedagogical and transparent about the potential biases associated with investing in labelled funds, as this choice may results to divergences from benchmarks and reference indices.

The guidelines apply to all UCITS or AIF products marketed in the EU with ESG or sustainability-related names. They focus solely on fund names and categorize related terms into five groups: Environment or Generalist, Social or Governance, Transition, Impact, and Sustainable. Funds using these terms must ensure that at least 80% of their investments align with environmental or social objectives and apply either PAB or CTB exclusions[76].

The next steps for EU sustainable finance regulation

Recent regulatory initiatives in the European Union aim to improve transparency and accountability in companies' activities, helping investors make informed choices based on clearer insights into sustainability practices. Strengthened criteria for investment labels and better frameworks for sustainable disclosure demonstrate a commitment to boosting investor confidence and understanding of the companies and products they invest in. Guidelines to tackle the risk of greenwashing have also prompted asset managers to review their offerings to better support investor understanding.

However, to ensure these measures truly benefit investors, the EU must continue to simplify regulations and align them with countries outside Europe. Transparency alone is not enough for effective capital allocation; there remains a significant gap within EU sustainability frameworks to support the development of investor knowledge and international adoption.

The global impact of EU sustainable finance regulations

EU regulations is setting the standard for sustainable finance

The EU pack of sustainable regulations is an exemplary case study of how to set fundamental requirements at the investee, financial institution and financial product level. At the core, these set of regulations allow the industry in Europe to secure the need for quality, accurate and transparent sustainability-related information. Prior to its implementation, investors were left with financial institutions having the flexibility to define sustainable finance concepts. While well-intentioned, it exposed investors with legislative risk interpretation and without sufficient clarity on what could be considered sustainable investment.

One of the hallmarks of the EU regulations is the introduction of a *double materiality* perspective. It is widely accepted within financial markets that sustainability-related impacts on a company can be material and therefore require disclosure. Double materiality takes this notion one step further: it is not just sustainability-related impacts on the

76. ESMA, The translated guidelines can be found here

company that can be material but also impacts of a company on the climate – or any other dimension of sustainability, for that matter[77]. The introduction of this concept across the EU's pack of legislation (e.g., CSRD, SFDR), has allowed other regulators to follow suit in embracing transparency as a non-negotiable.

EU's global influence sparked diverse local approaches to sustainability

Not only does the pack of legislation continue to drive a better classification of sustainable finance activities, but it has indirectly influenced other national and regional jurisdictions to continue their path to establish proprietary taxonomies. While not a direct result of the EU's set of legislation, other countries have developed differentiated approaches to classification such as the UK SDR described before, the Singapore Asia Taxonomy or the ASEAN Taxonomy, among others. The main challenge across budding taxonomies around the globe remains in their interoperability, and investors' ability to meet their taxonomy requirements. One example of a preliminary comparative analysis between taxonomies has been the work of the International Platform on Sustainable Finance (IPSF) led by the EU, China and more recently Singapore[78]. Their instruction report, the *Multi-Jurisdiction Common Ground Taxonomy* (M-CGT) explores the synergies and interoperability of each jurisdiction's taxonomy. Their findings suggest that there is some degree of comparability of green activities across all three jurisdictions, however collaborative efforts should continue around defining harmonized eligibility criteria for certain sectors.

All in all, the EU's ability to coordinate and implement a regulatory response at the regional level can be lauded as a milestone for standard-setting. Moving forward, we expect the EU to continue its efforts on ensuring the application of mandatory disclosure requirements for regulated companies (e.g., CSRD) in national legislation of EU member countries. Similar to the challenge of taxonomies, interoperability with existing corporate sustainability disclosure standards (e.g., ISSB[79], SASB[80], PRI[81], etc.) will remain a key point of attention to ensure a streamlined and harmonized approach.

Global perspective on the diverse regulatory dynamics beyond Europe

Regulations are developing globally with increasingly divergent approaches

Outside of Europe, sustainable finance dynamics reflect a rapidly evolving landscape marked by regional nuances and varying levels of regulatory ambition. In North America, the United States is a focal point of both growth and contention in responsible investing. While federal agencies like U.S. Securities and Exchange Commission (SEC) which issued the climate-related disclosures rule, for public companies and in public offerings in U.S., that received record levels of feedback that watered down the proposed rule[82]. Canada, on the other hand is catching up, and has recently announced next steps for its long-awaited green taxonomy to advance reporting requirements and sustainable finance labelling. The move is welcomed, as new regulation is needed in Canada, especially as the country was listed as a "low regulation jurisdiction" on sustainable finance by the UN[83]. Across both countries, market-driven momentum in sectors like renewable energy and electric vehicles is significant, driven by investor demand and corporate climate pledges, though regulatory inconsistency creates challenges for standardized ESG adoption.

In Asia, sustainable finance is advancing steadily, supported by growing regulatory frameworks and corporate initiatives. Japan has been a leader in green bonds and has implemented its own Green Bond Guidelines to encourage transparency. Meanwhile, China has made great strides in developing its green finance markets and has seen rapid development of green industries over the past decade. Owed to consistency of green finance taxonomy to identify trends and provide recommended actions to further scale green

77. London school of economics and political science, "Double materiality": what is it and why does it matter?; April 2021
78. Monetary Authority of Singapore, Press release, November 2024
79. ISSB: International Sustainability Standards Board
80. SASB: Sustainability Accounting Standard Board
81. PRI: Principles for Responsible Investment
82. Deloitte. Executive Summary of the SEC's Landmark Climate Disclosure Rule. April 2024
83. UN PRI. A Legal Framework for Impact – Canada. 2023.

finance in China. Southeast Asian nations are also gradually adopting sustainability frameworks; for instance, Singapore and Malaysia have launched their own taxonomies, and a pan-ASEAN taxonomy is underway to encourage alignment across the region.

In Latin America and Africa, the momentum to integrate sustainability into the strategic agenda is slowly gaining traction, though the sustainable finance flows fall far short of the trillions needed to meet the climate goals in the regions. In Latin America, Brazil—with its vast and diverse geography, large economy, and abundance of critical environmental capital, including the Amazon rainforest, one of the world's three largest carbon sinks—accounts for over one-third of regional climate-finance opportunities[84]. Brazil has seen an uptake in ESG investments, with local sustainability and climate-related disclosures required for public companies in Brazil, starting 2026. In contrast to Mexico where reporting is expected to begin in 2025, while for Chile ESG related disclosures began in 2022, and showed that only 1 per cent of the assets under its supervision were managed under strict ESG criteria[85].
Current financing in African countries often takes the form of loans, potentially exacerbating debt burdens, and lacks sufficient transparency. To overcome these challenges and others of limited access to capital, Africa is increasingly exploring blended finance and green bonds, particularly with international support to fund energy transition projects. The African Development Bank, for example, has introduced the African Green Banks Initiative to attract private investment in sustainable projects across the continent.

Overall, while these regions face structural and financial barriers, the global surge in sustainable finance initiatives and disclosure frameworks signifies a broader shift, showing that responsible investment practices are taking root across diverse economic and regulatory environments worldwide. We can expect increased regulatory clarity and consistency across global markets, which will be essential for scaling sustainable finance initiatives.

Globally, investors are looking more and more beyond the materiality of business exclusively

Beyond growing recognition across jurisdictions, double materiality[86] is attracting investors' attention, as it enables investors to track the dynamics of financial impact over time. The application of double materiality assessments is growing, now undertaken by half of the G250, indicating an increased understanding of the need to disclose socio-environmental impacts alongside financial risks and opportunities[87].

Fostering international co-operation for sustainable finance

The need for international Cooperation and challenges for EMDEs

There is currently no consensus on what sustainable financial regulation should look like at the global level. This has led to a fragmentation of legislation and standards, resulting in a multitude of sustainable finance frameworks at national and regional levels.

However, recommendations and guidelines from international organizations and market initiatives have the potential to provide essential frameworks that can enhance international cooperation. This is particularly important for emerging markets and developing economies (EMDEs), which face significant challenges in financing their transitions.

The G20 Sustainable Finance Roadmap, developed by the Sustainable Finance Working Group (SFWG) to advance international efforts to scale up private and public sustainable finance is a key document in this regard[88]. It formulates recommendations to build international cooperation on sustainable finance frameworks, and to support emerging markets in developing roadmaps that are adapted to local contexts and realities.

84. McKinsey. Are Latin American financial institutions ready for sustainability?, 2023
85. International Bar Association. Current ESG standards regulation in the Chilean Stock Market, 2023
86. Double materiality recognizes that financial implications of sustainability factors have real value that must be priced, such as "financial/outside-in materiality," which reflects on a company's balance sheet, and "impact/inside-out materiality," which affects its ecosystem.
87. GRI press release, GRI global adoption by top companies continues to grow ; November 2024
88. IFRS, Biodiversity, ecosystems and ecosystem services, November 2024

Several recommendations from the roadmap are noteworthy:

- First, jurisdictions pursuing a taxonomy-based approach should develop sustainable finance taxonomies using similar language and references, encouraging regional collaboration.
- Second, the work of standard-setting bodies like the International Sustainability Standards Board (ISSB) should continue to build a global sustainability disclosure approach while allowing for flexibility to meet specific national and local needs.

However, the complexity of these disclosure standards can widen the data gap for companies in EMDEs, particularly small and medium enterprises (SMEs). To tackle these challenges, the international community should emphasize proportionality in reporting requirements and focus on capacity-building initiatives. Practical tools and guidance tailored to the needs of EMDE firms are essential. Organisations such as the Sustainable Banking and Finance Network (SBFN) are already providing valuable support to EMDEs in developing their sustainable finance roadmaps, policies, and principles in line with international approaches. They offer technical assistance to help EMDE financial institutions improve their ESG risk management and governance systems, including the management and disclosure of climate risks.

U.S. regulatory landscape and investor expectations

While international cooperation is crucial for fostering sustainable finance in EMDEs, the situation in North America, particularly in the United States, presents a different set of challenges. With the soon-to-come Republican administration under Donald Trump, the landscape of sustainable finance regulation may undergo significant changes, especially regarding international cooperation.

The current momentum toward sustainable finance, largely driven by federal initiatives like the SEC's climate disclosure rule, reflects an effort to align with global sustainability principles. However, the incoming administration raises questions about the future of these federal initiatives. Historically, Trump has favoured deregulation and state-level governance, which could lead to a shift away from federal mandates like the SEC's climate-disclosure rule, adopted in March 2024 but currently facing legal challenges. This could result in a fragmented regulatory environment, with states adopting varying standards for sustainable finance.

At the state level, California has been a leader in climate-related disclosure regulations. In September 2024, the state adopted a bill requiring TCFD-aligned disclosures from companies with significant revenues. Other states, including Illinois, New York, and Washington, are also introducing similar legislation. Given the U.S. regulatory dynamics, deeper corporate disclosures in line with global standards will likely be driven by market forces and investor expectations for transparency regarding material climate-related information.

The future of sustainable finance regulation in U.S. could hinge on balancing state autonomy with the urgent need for corporate transparency in the face of climate risks. As investor expectations rise and states like California lead the way, alignment on decision useful climate disclosures will strengthen both the overall transparency in sustainability initiatives in U.S. and assessment of the long-term resiliency of companies.

Client centric approach, the way forward

A client-centric approach is essential for asset managers, especially in sustainable finance, where regulations emphasize the need to prioritize client perspectives in investment processes.

In the European Union, there is a strong intent to put the clients at the centre, as the EU works to create a strong regulatory framework for responsible investment. This framework aims to provide clarity and transparency for end clients. However the complexity of these regulations and the variety of frameworks can make it hard for clients to understand their options.

"After years of broad consensus in responsible investing, the emerging criticisms reflect the industry's maturation and the structural changes underway. To address these narratives, we must bring greater clarity to the value propositions at the product level and the commitments made at the corporate level, as the current context demands transparency in our offerings."

Florent Deixonne, Head of ESG regulatory strategy at Amundi

It is crucial for regulators to address this issue by simplifying the communication and the content of these regulations, ensuring clients can easily understand how they allocate their investments. This highlights the need for regulations to clarify the investment landscape and make it more accessible. Asset managers have a role to play by advocating for the de-complexifying of regulations but also taking proactive steps to simplify the communication of these regulations, ensuring that clients can easily grasp the implications for their investments.

Research from Amundi on fund naming found that while "climate" resonates strongly with investors, many other responsible themes and acronyms are less understood, with 79% of respondents not able to explain what is behind an ESG financial product[89]. This highlights the need for more effective investor education and communication around responsible investment propositions.

As we look ahead to 2025, there is an increasing expectation that regulators will adopt a more client-centric approach to simplify the sustainable finance landscape, the anticipated CSRD omnibus aims to consolidate existing regulations. While ongoing discussions about future potential amendments of MiFID II and SFDR in a few years could enhance consumer protection and better supporting the green transition through product's categories.

89. Amundi 2024 Fund Naming study based on 384 French participants with >5,000€ invested in OPCVM

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