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Sustainable finance – coming of age

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Sustainable finance is about incorporating environmental, social and governance (ESG) considerations into finance, thereby supporting the "green transformation" of the economy. For the financial sector, sustainable finance is steadily moving up the priority list. The global volume of ESG-labelled assets grew to USD 35 tr in 2020 and may reach USD 41 tr by the end of this year. Such estimates, however, suffer from a lack of clear definitions.

Sustainable finance largely builds on conventional asset classes (mainly equity, but also bonds). Assets are screened for their ESG characteristics and in- or excluded from portfolios depending on the sustainable investment strategy. The most frequently used strategies are "ESG integration", "negative screening" and "shareholder engagement".

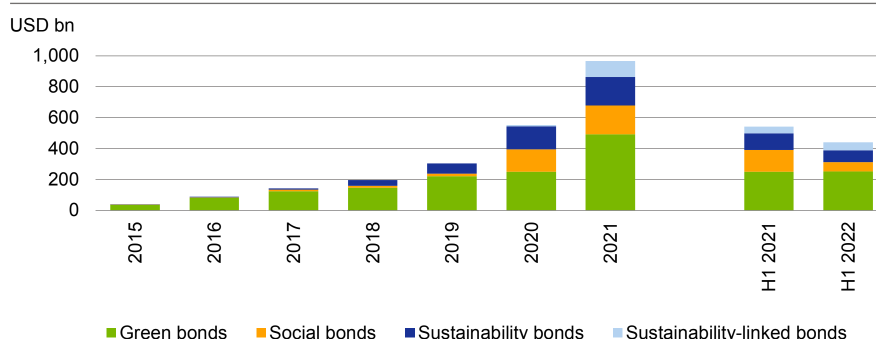
ESG-labelled investment funds manage about USD 3 tr in assets globally. Most of these funds have a broad sustainability label. *Sustainable bonds* include green, social or sustainability(-linked) bonds. In 2021, their issuance grew to USD 1 tr, with green bonds accounting for half of it.

Despite strong growth, sustainable finance still faces obstacles: (1) The absence of a universally accepted definition of ESG or sustainable investment. (2) A lack of data on ESG metrics. (3) Uncertainty about long-term policies for the green transition.

Regulation is trying to keep pace with market dynamics. Regulators aim to facilitate the flow of funds into sustainable activities and to provide a coherent and robust framework. Key initiatives include the establishment of taxonomies, disclosure rules and product-related regulation (e.g. green bond standards).

Sustainable finance will continue to grow and mature conceptually. The fundamental drivers remain intact and may become even stronger once a stringent regulatory framework is in place. In the short term, however, the market faces headwinds from adverse macroeconomic conditions and the multitude of emerging regulatory requirements.

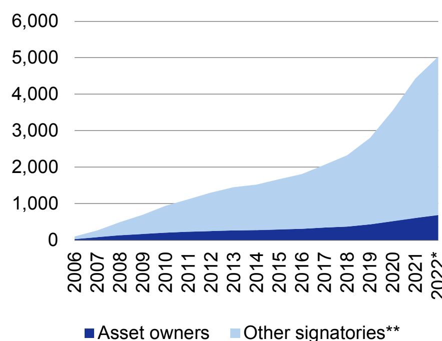
Sustainable bond issuance – growing rapidly and becoming more diverse



Sources: Dealogic, Deutsche Bank Research

Principles for Responsible Investment – signatory growth 1

Cumulative number of signatories



* 2022 as of July 14.
** Includes investment managers and service providers.

Sources: PRI, Deutsche Bank Research

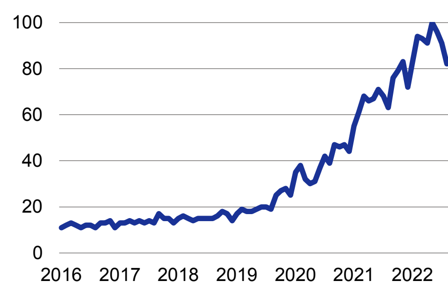
ESG – what does it stand for? 2

Pillars	Key issues (not exhaustive)
Environment	Climate change mitigation and adaptation, preservation of biodiversity, water and land usage, pollution and waste management
Social	Human rights, labour standards, health and safety, training, inclusion and diversity, product responsibility, community relations
Governance	Corporate governance and behaviour, incl. management structures, accounting, accountability and transparency, management of risks and corruption

Sources: Deutsche Bank Research, based on European Commission, IMF and World Bank

ESG climbs high on the attention scale 3

Popularity of the term "ESG" on Google search, scale from 0 to 100 (peak popularity of a term)



Sources: Google Trends, Deutsche Bank Research

Sustainable finance – channelling the green transition through the financial sector

The world has set out to limit global warming to well below 2, preferably 1.5 degrees Celsius, compared to pre-industrial levels, as agreed in Paris in 2015. So far, however, measures and efforts to decarbonise the economy have proven insufficient on a global scale. In 2021, driven by the economic recovery from the coronavirus pandemic, global CO_2 emissions reached a record-high 36.3 gigatons, according to International Energy Agency (IEA) estimates. Against this backdrop, expectations are growing that the financial sector, too, should play its part in the green transformation. Put simply, the idea is that banks, asset managers and investors will increasingly move away from “brown” carbon-intensive assets and instead turn to “green” low-carbon assets.

Financial sector committed to supporting the green transition. For the financial sector, sustainable finance is indeed steadily moving up the priority list. This is driven mainly by two factors:

— The industry is becoming more aware of the potential material impacts of climate change and is increasingly taking climate-related risks into account when making decisions, both with regard to the carbon footprint from own operations but even more in the allocation of capital to customers. These climate-related risks include physical risks from climate change (e.g. increased likelihood of floods and droughts) and transition risks related to a changing regulatory environment (e.g. hikes in carbon prices or a ban of certain technologies). Such risks have also caught supervisors’ attention and for instance been in focus in the ECB climate stress-test conducted in H1 2022.

— The financial sector’s motivation to enter the sustainable finance space may also be values-driven. For example, surveys[1] suggest that the main reason for both issuers and investors to enter the green bond market is the desire to (1) demonstrate alignment with own environmental and social commitments, (2) be part of the trend while tapping into new customer segments, (3) reduce business and especially reputational risks. These motivations are at least as salient as possible direct financial benefits.

Numerous financial market players have pledged to contribute to a more sustainable sector through several initiatives. Prominent examples are the Principles for Responsible Investment (PRI, see Chart 1) and the Glasgow Financial Alliance for Net Zero (GFANZ). To date, in total more than 500 banks, asset managers and owners, insurers, service providers and advisors have joined the latter.

This paper will discuss where sustainable finance stands today and where it is heading to by (1) taking a look at the recent evolution of the sustainable finance landscape and laying out how it differs from conventional finance; (2) highlighting some barriers that sustainable finance needs to overcome as it grows further; (3) providing an overview of current regulatory initiatives.

The sustainable finance landscape

Sustainable finance is about integrating environmental, social and governance (ESG) considerations into finance (Charts 2 and 3). It thus goes far beyond climate, even though this subcomponent receives a lot of attention. Over the past years, more and more banks, asset managers and investors have begun to

[1] See for example Maltais, Aaron, and Björn Nykvist (2020). Understanding the role of green bonds in advancing sustainability. In: Journal of Sustainable Finance & Investment, p. 1-20.

take ESG factors into account in their investment decisions, guided by the Paris Agreement and the UN Sustainable Development Goals. As a result, the global volume of ESG-labelled assets grew to USD 35 tr in 2020 – equivalent to a third of total assets under (professional) management – and may reach USD 41 tr by the end of this year, according to Bloomberg Intelligence and the Global Sustainable Investment Alliance. However, these impressive figures need to be put into perspective:

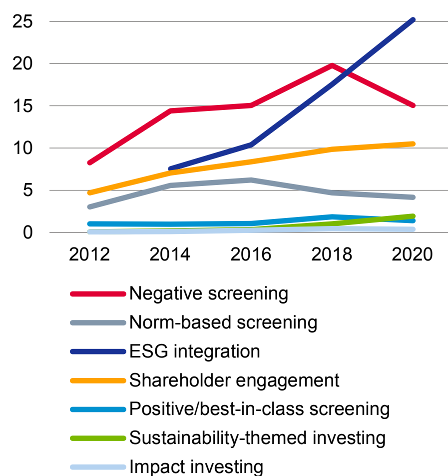
— Despite the focus on climate, new funds flowing into climate finance are still estimated to fall 3 - 6 times short of what would be required to meet the Paris Agreement.[2]

— A lack of global definitions and a certain opacity make it difficult to nail down sustainable finance precisely, both in terms of content and volume. So far, sustainable finance largely builds on conventional asset classes (mainly equity, but also bonds). These assets are screened for their ESG characteristics and then included or excluded from the portfolio depending on the sustainable investment strategy applied.

Sustainable investment strategies – from exclusion to impact investing. Different strategies, often used in combination, allow for the incorporation of ESG considerations into investments (see Charts 4 and 5). An early strategy was negative screening. Assets considered harmful or not aligned with investor values were excluded from the portfolio (e.g., tobacco or weapons). While this rather simple strategy is still widely used, on its own it does not contribute to sustainability goals. Rather, it is a form of responsible investing, seeking to achieve minimal safeguards. A similar approach is norm-based screening, which filters out assets that are not aligned with international standards.

Sustainable investment strategies globally – ESG integration is the most popular 4

Net value of funds, in USD tr



Note: Funds can fall under different strategies.

Sources: GSIA, IMF, Deutsche Bank Research

Overview – Sustainable investment strategies 5

Strategy	Description	Impact objective
Negative screening	Exclusion of certain sectors, practices or companies from the investable universe based on values (e.g. tobacco, weapons)	Avoid harm
Norm-based screening	Exclusion of assets with an underlying business practice that is not in line with international norms (e.g. ILO standards)	
ESG integration	Systematic and explicit integration of ESG factors into the financial analysis and investment decision-making	Benefit all stake-holders
Shareholder engagement	Using shareholder power to influence corporate behaviour, incl. direct engagement and proxy voting	
Positive/best-in-class screening	Including only assets that have a superior ESG performance relative to their peers	Contribute to solutions
Sustainability - themed investing	Investing in themes and assets that are directly related to sustainability (e.g. green buildings)	
Impact investing	Investing to achieve a (specific) positive social and/or environmental impact	

Sources: Deutsche Bank Research based on GSIA (2021), Quatrini (2021) and Nordea (2020)[3]

The limits of these approaches gave rise to other strategies such as ESG integration which systematically incorporates ESG factors into the investment

[2] Intergovernmental Panel on Climate Change (IPCC) (2022). Climate Change 2022. Mitigation of Climate Change. Working Group III. Sixth Assessment Report, April.

[3] Global Sustainable Investment Alliance (GSIA) (2021). Global Sustainable Investment Review 2020; Quatrini, Simone (2021). Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis. In: Ecosystem Services, vol. 48, p. 1-15; Nordea (2020). The Guide to Sustainable Investing.

analysis and decision. This involves assessing a company's ESG performance, e.g. by combining ESG ratings from external providers with own research based on non-financial corporate reports. The resulting ESG scores often vary greatly. This is because of (1) diverging methodologies that, in the absence of a common definition, include different ESG aspects; and (2) a lack of data as company reporting is largely voluntary, which prompts investors and rating agencies to make assumptions or use estimates.[4]

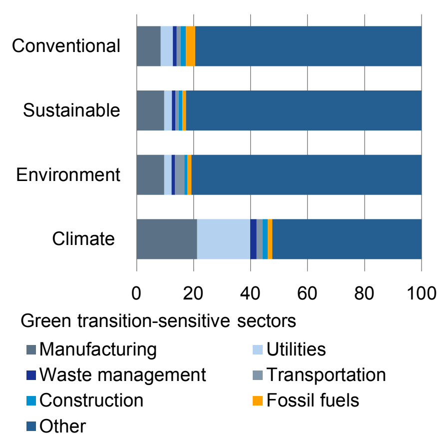
Depending on how the ESG scores are included in the investment decision, ESG integration contributes to varying extent to sustainability goals. Investors can, for example, decide to invest in companies with the highest ESG score in their respective sector (best-in-class approach) or in companies with good and upward-trending ESG scores (positive screening).

Investors who want a measurable environmental or social impact of their investment – along with the return – engage in impact investing. This segment is rather limited in size as it is often linked to specific projects and thus involves private equity, private debt or venture capital. Another increasingly popular strategy is shareholder engagement whereby investors seek to influence a company's sustainability behaviour by (1) directly engaging with senior management or (2) using shareholder power via filing of proposals or proxy voting.

Sustainable investment funds – mostly with a broad sustainability tag. Largely based on these screening approaches, the investment fund sector has started to integrate ESG considerations and to launch ESG-labelled funds. Global sustainable fund assets reached close to USD 3 tr by the end of 2021, according to Morningstar, with Europe accounting for about 80%. Although growing faster than their conventional peers, sustainable funds stood for a relatively small share of about 7% of total assets under management by investment funds at the end of 2020, according to IMF estimates. Most of these funds have a broad sustainability label (accounting for about 80% of the volume of all ESG-labelled funds), while relatively few have an explicit environment (16%) or a specific climate label (4%).[5] The majority of sustainable investment funds is actively managed, although the volume of passive funds is steadily increasing.[6]

Climate-labelled funds focus more on sectors with higher transition potential 6

Sectoral composition of different fund types, in % (as of Q4 2020)



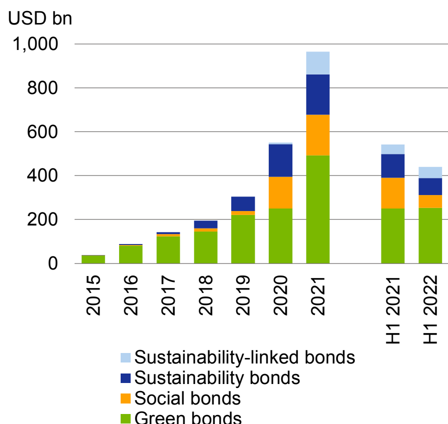
Sources: IMF, Deutsche Bank Research

In terms of sectoral holdings, climate-labelled funds differ most from conventional funds as they have, on average, larger holdings in industries with high transition potential (see Chart 6). As these are rather emission-intensive industries that are expected to reduce their emissions significantly over the next few years, climate-labelled funds on average tend to have a *higher* portfolio carbon intensity[7] than conventional funds. By contrast, sustainability-labelled funds have a carbon intensity *below* average. Still, there are concerns that sustainable funds are not yet on a "Paris-aligned" transition pathway. The lack of a regulatory basis for what qualifies as a sustainable fund has long been considered an obstacle to growth in this area. This is set to change with the recently enacted disclosure rules for funds and asset managers in the EU and a proposal for similar rules in the US presented by the SEC in May.

Sustainable bonds – mostly green, but increasingly diverse. In the bond market, too, there is an evolving sustainable segment with labels such as green, social, sustainability, sustainability-linked and transition bonds. With a volume of roughly USD 1 tr (see Chart 7), sustainable bonds accounted for around 11% of

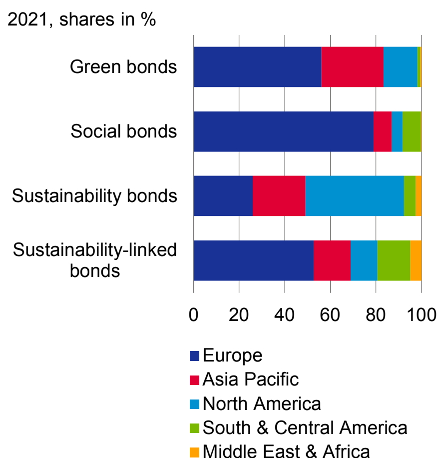
[4] OECD (2021). ESG Investing and Climate Transition: Market Practices, Issues and Policy Considerations.
[5] IMF (2021). Global Financial Stability Report: COVID-19, Crypto, and Climate – Navigating Challenging Transitions, October.
[6] Deutsche Bank Research (2022). Flow Tracker: US Industry Mutual Fund & ETFs, July 19.
[7] Carbon intensity refers to tons of CO_2 equivalents relative to revenue, see IMF (2021).

Sustainable bond issuance – growing rapidly and becoming more diverse 7



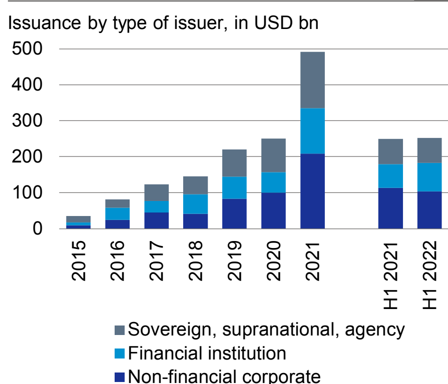
Sources: Dealogic, Deutsche Bank Research

Europe is leading sustainable bond issuance 8



Sources: Dealogic, Deutsche Bank Research

Green bond growth driven by the private sector 9



Sources: Dealogic, Deutsche Bank Research

global bond issuance in 2021.[8] However, they still make up less than 2% of total bonds outstanding.[9] Most sustainable bonds are aligned with voluntary standards such as the Sustainable bond principles issued by the International Capital Market Association (ICMA). It is yet to be seen to what extent the market will take up the proposed voluntary EU Green Bond Standard.

— Green bonds. With an issuance volume of about USD 500 bn in 2021, green bonds are the most prominent sustainable bond. They are structured in a similar way as conventional bonds except for a clause stating that proceeds will be used for a green investment. In 2021, almost 80% of green bond proceeds were earmarked for renewable energy, green building, clean transportation and energy efficiency.[10] The disclosure of the use of proceeds, often coupled with a second-party opinion, add to the confidence in green bonds as a sustainable finance instrument. Europe, with its increasing focus on the green transition, has emerged as the dominant issuance region, accounting for 56% of the total in 2021 (see Chart 8). An important factor for the rapid growth of the green bond sector was the strong uptake by financial and non-financial corporates. They accounted for more than half of green bonds issued in 2021 (Chart 9).
Green bond issuers tend to have good credit ratings[11] and could have financed their green projects with conventional bonds at overall similar cost. In terms of pure borrowing costs, studies suggest the existence of a "greenium", i.e. lower capital costs for an issuer when issuing a green instead of a conventional bond.[12] The cost difference is mainly driven by the large demand for green bonds. However, next to potentially lower borrowing costs, issuers of green bonds face extra costs for monitoring, reporting and second-party opinions. Thus, green bonds cannot be expected to shift funds towards green technologies or projects that are still associated with uncompetitive cost levels. Rather, their added value lies in the earmarking of funds for green investments, allowing both issuers and investors to convey their commitment to sustainability goals.[13]

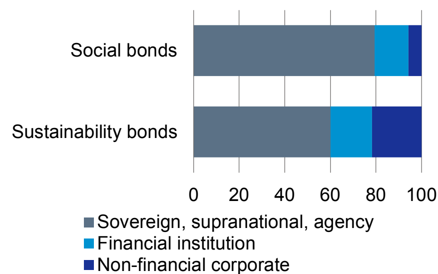
— Social and sustainability bonds are akin to green bonds. Proceeds of social bonds are used for social purposes. With the financing of COVID-19 pandemic-related response measures, social bonds experienced a boost, especially in Europe. Sustainability bonds combine the elements of green and social bonds. They are especially popular in North America. Although most sustainability bonds in 2021 were issued by the public sector and supranational organisations, they may gain traction among private companies as well (Charts 8 and 10).

— Sustainability-linked bonds. Unlike green bonds, the proceeds are not earmarked for a specific project, but the issuer commits to a sustainability performance target – mostly a reduction of greenhouse gas emissions. This is linked to a bonus-malus mechanism, usually with a coupon step-up if the issuer misses the target. Sustainability-linked bonds are attractive for corporates in transition which do not have a large green project they could finance through a green bond. The introduction of the ICMA principles for sustainability-linked bonds in June 2020 and the ECB's decision to accept them as collateral paved the way for their adoption on a broad scale. In 2021, the issuance of sustainability-linked bonds grew to over EUR 100 bn. The issuers were almost exclusively non-financial companies from various,

[8] Moody's (2022). Sustainable bonds to hit record $1.35 trillion in 2022, January 31.
[9] IIF, Global Debt Monitor and Global Sustainable Debt Monitor.
[10] Moody's (2022).
[11] Pictet and IIF (2022). Bonds that build back better. The pivotal role of fixed income markets in the ESG revolution, January.
[12] For example, Löffler et al. (2021). Drivers of green bond issuance and new evidence on the "greenium". In: Eurasian Economic Review (2021). Vol. 11, p. 1-24.
[13] Maltais and Nykvist (2020).

Social and sustainability bonds mainly issued by the public sector 10

2021 issuance by type of issuer, shares in %



Sources: Dealogic, Deutsche Bank Research

mostly energy-intensive sectors.[14] Sustainability-linked bonds are considered a growth area. However, investors are still hesitant because of some challenges: it is not clear whether sustainability-linked bonds provide a sufficiently strong incentive for sustainable company behaviour, especially since the coupon step-up is mostly set at a rather modest 25 bp. Another difficulty is the setting of relevant, measurable, ambitious ("Paris-aligned") and at the same time achievable targets.[15]

— Transition bonds. This novel ESG bond category is also designed to support high-emitting companies in their transition to greener activities or production methods. From the first launch in 2017 until the end of 2021, there have been only few issuances with a total volume of USD 7 bn. While some see great potential, others believe the transition bond label to be superfluous and not clearly defined. To date, such bonds can build on the ICMA Climate Transition Finance Handbook published in 2020. The key for issuers will be to present concrete and credible "Paris-aligned" transition pathways.

Next to sustainable bonds, and smaller yet still sizeable, there are also sustainable loans with similar tags such as green or sustainability-linked loans. In 2021, sustainable loan issuance amounted to roughly USD 400 bn.[16]

Temporary slowdown due to high inflationary pressure and geopolitical clashes. Like the rest of the market, sustainable finance faces the headwinds of high inflationary pressure, monetary tightening by central banks (rate hikes, end of asset purchase programmes) as well as increased uncertainty due to the war in Ukraine. In the sustainable *bond* market, the slowdown already began in H2 2021 after record-high issuance of USD 542 bn in H1. In the first half of this year, the issuance volume dropped further to USD 440 bn (-19% yoy, see Chart 7), with green bonds relatively resilient though. At the same time, inflows into ESG *funds* more than halved compared to the prior year. However, they remained positive, unlike those of conventional fund peers which experienced net outflows.[17]

Secondly, and specific to the sustainable finance segment, the war in Ukraine reopened the debate on what kind of investments should be covered by ESG labels, especially when it comes to the holding of Russian assets or the financing of defence or nuclear energy. Some advocate for an inclusive approach. Others believe that ESG is meaningful only when a clear line is drawn, arguing that excluding these assets from sustainable labels does not exclude them from all funding. The question of where to draw the line is at the heart of sustainable finance, with regulators attempting to provide greater clarity through taxonomies.

The resolution of such conceptual questions should provide sustainable finance with a new impetus. In any case, given the intact fundamental drivers of the transition, the current slowdown may very well remain short-lived, and even more so if market conditions become more favourable again.

Some barriers to scaling up sustainable finance

Despite the very dynamic evolution of sustainable finance, there are several obstacles still impeding further development:

— Blurred lines diminish market confidence. In the absence of a universally accepted definition of ESG or sustainability, there is no common understanding of what constitutes a sustainable investment. Asset

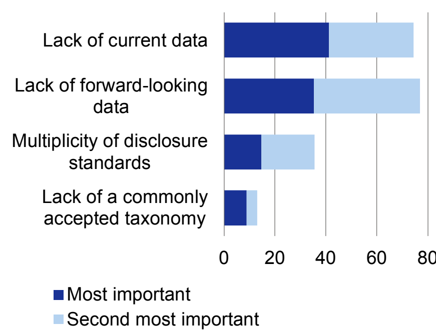
[14] Moody's (2022).
[15] Pictet and IIF (2022).
[16] IIF Global Sustainable Debt Monitor.
[17] IIF (2022). Signs of Recovery in ESG Markets. In: IIF Green Weekly Insight, July 7.

managers, issuers and rating agencies use their own and often slightly divergent definitions which makes it difficult for investors to understand what is behind an “ESG”, “sustainable” or “green” label. The lack of clarity risks diminishing market confidence in sustainable finance. This is related to concerns about “greenwashing”, i.e. unsubstantiated claims about the sustainability of a business or product. Investor scrutiny in that area has risen substantially and may also dampen growth going forward, while leading to overall better quality in the ESG market.

— Insufficient data on companies’ ESG metrics. A lack of data is another major difficulty for investors and asset managers trying to see behind the sustainability characteristics of companies and assets (see Chart 11). The disclosure of such characteristics, e.g. the level of greenhouse gas emissions, has so far been largely voluntary and therefore patchy. For example, climate-related risks are most frequently disclosed by large companies, often from energy-intensive sectors.[18] In many cases, especially forward-looking metrics that would help to assess a company’s future transition path are still lacking. Overall, there are concerns about the limited comparability and sometimes insufficient quality of the available data.

Lack of data seen as biggest impediment to sustainable investments 11

Main obstacles for integrating transition-related risks into the investment decision, in % of respondents



Source: IMF (2021), survey among 38 portfolio managers, representatives of asset managers and asset owners.

— Uncertainty about transition-related policies. Sustainable finance is just one element in the transition towards a sustainable economy. Equally important is a broad, coherent, long-term policy guiding the transition. The European Green Deal is an example, to be implemented through the Commission’s “Fit-for-55” package of legislative proposals, which seeks to expand the EU emission trading system and ban combustion engines by 2035. Other jurisdictions are currently developing similar policies, which could in turn spur the sustainable finance ecosystem. For instance, a carbon price or the phase-out of environmentally harmful subsidies may increase incentives for sustainable investments. Moreover, by providing clarity on the transition pathway, such long-term policies would contribute to mitigating transition risk, i.e. the investment risk associated with changes in policies to achieve a more sustainable economy.

Regulation trying to keep pace with market dynamics

As sustainable finance is growing, so are efforts to regulate it. Regulators particularly aim to facilitate the flow of funds into sustainable activities and to address the challenges outlined above. At this early stage, key regulatory initiatives include the establishment of taxonomies, disclosure rules and product-related regulation (e.g. green bond standards).

ESG-related regulation in major jurisdictions 12

	Disclosure rules			Taxonomies	
		Non-financial corporates			
	Financial sector	Listed firms	Unlisted firms	Green	Social
EU	■ (green)	◩ (green/yellow)	◩ (green/yellow)	■ (green)	■ (yellow)
UK	◩ (green/yellow)	◩ (green/yellow)	■ (yellow)	■ (yellow)	
US	■ (yellow)	■ (yellow)			
China*	□ (green outline)	□ (green outline)		■ (green)	■ (green)

■ (green) rule in place, mostly in a phase-in process
■ (yellow) rule in development

* Disclosure rules exist for key emitters and some listed firms.

Source: Deutsche Bank Research

Taxonomies – classifying sustainable activities

Spreading around the globe. Taxonomies establish a classification of activities that contribute to sustainability goals. Beyond providing clarity on what can officially be considered “sustainable investments”, taxonomies often form the basis for disclosure requirements or product standards. The most prominent example may be the EU Taxonomy, setting out criteria and thresholds to identify environmentally sustainable economic activities. China is also among the pioneers with its Green Taxonomy, which lists assets and projects eligible for green bonds. While green taxonomies also exist e.g. in Japan or Malaysia, about 20 countries are currently working on such a framework.[19] Likewise,

[18] The Conference Board (2022). Sustainability Disclosure Practices in the Russell 3000, S&P 500, and S&P MidCap 400. 2022 edition.
[19] See Climate Bonds Initiative (2022). Global green taxonomy development, alignment, and implementation, February.

several jurisdictions are developing social taxonomies. China has issued a 'technical report on SDG Finance Taxonomy' and in the EU, the Platform on Sustainable Finance in February proposed a framework for a social taxonomy.

EU Taxonomy in brief | 13

Under the EU Taxonomy, an investment is considered environmentally "sustainable" if it fulfils all of the following four prerequisites:

1. It contributes substantially to at least one of six environmental objectives:
   - climate change mitigation
   - climate change adaptation
   - sustainable use and protection of water and marine resources
   - transition to a circular economy
   - pollution prevention and control
   - protection and restoration of biodiversity and ecosystems
2. It "does not significantly harm" any of these objectives.
3. It respects minimal social safeguards.
4. It complies with technical screening criteria set out in delegated acts.

Source: Deutsche Bank Research, based on the EU Taxonomy Regulation

EU Taxonomy – important milestone, will evolve further. By defining what constitutes a "sustainable investment" (see Chart 13), the EU Taxonomy provides more clarity and sets important signposts for the market. However, the discussion over the EU Commission's decision to designate nuclear and gas as sustainable under certain conditions indicates that the taxonomy has not yielded consensus on what is supposed to be a green investment. Some investors prefer to stick to stricter screening criteria. At its core, the discussion is about how to handle transition activities within the taxonomy framework. The chosen two colour "green"/"non-green" scheme for classifying activities indeed does not fully capture the ongoing transition and its financing needs. In this context, the Platform on Sustainable Finance in March recommended a more nuanced scheme for an extended taxonomy with the aim of facilitating financing of transition activities.

A key element of the taxonomy are the technical screening criteria, detailing what shall be considered a sustainable activity. They overall have to strike a balance between clarity on the one hand, and complexity, ease of use, and regulatory burden on the other. So far, these criteria have been established for activities regarding two objectives: climate change mitigation and adaptation. The corresponding Delegated Act covers a total of 350 pages. The criteria for the remaining four environmental objectives have yet to be defined. Adding to the complexity, taxonomies should be dynamic and adaptive, allowing for the integration of new technologies and insights, while remaining a reliable classification for investors.

Concerns about regulatory fragmentation are growing as more and more countries establish their own taxonomies. Inconsistent definitions of green investment set serious hurdles for global financial markets and especially cross-border investments. Although the problem has been recognised, a global taxonomy is still far away, and it would anyway realistically be a lowest common denominator. As a first step, the EU and China pulled off a taxonomy comparison exercise, resulting in the non-binding Common Ground Taxonomy yet to be completed. Moreover, the EU Taxonomy is emerging as a benchmark for some. The UK as well as South Africa, Mexico and other emerging markets are orienting themselves on the EU in developing their taxonomy.[20] The International Platform on Sustainable Finance (IPSF), launched by the EU, is pursuing further harmonisation.

Disclosure rules – demanding consistent and relevant information

Disclosure becomes increasingly mandatory. The so far patchy, inconsistent and non-comparable disclosure of ESG-related data on a voluntary basis has led to various regulators taking action. Their goal is to strengthen transparency and thus market efficiency. Standardised reporting will allow investors to make sustainability-related comparisons of otherwise similar companies. Likewise, disclosure rules are also about companies themselves becoming aware of sustainability risks. The hope is that once the key sustainability metrics are measured, they will get managed. For companies, however, these rules initially imply a lot of work. Europe leads the way in disclosure requirements, but the US is following suit.

— EU – disclosure rules for financial industry, more to come for other sectors. The Sustainable Finance Disclosure Regulation (SFDR) requires financial market actors, including financial advisors, to disclose to what extent they

[20] Climate Bonds Initiative (2022).

integrate sustainability considerations into their investment products.[21] Key elements are the (1) disclosure of potential "principal adverse impacts" (PAI) of the investment, which is mandatory for large financial firms (i.e. those with 500+ employees),[22] and (2) a proof of taxonomy-alignment for products marked as sustainable. The SFDR entered into force in March 2021 and will be fully applicable by January 1, 2023.

In addition, the EU is in the process of significantly extending disclosure requirements for non-financial companies with the draft Corporate Sustainability Reporting Directive (CSRD). Replacing the Non-Financial Information Disclosure Directive (NFRD), it will introduce (1) the concept of double materiality (i.e. an assessment of how sustainability risks affect the company and, vice versa, the company's impact on society and environment), (2) reporting in line with the SFDR and the EU Taxonomy, and (3) an audit requirement. The proposal has yet to be adopted by the Council and the Parliament and then will need to be transposed into national law. Reporting under the CSRD is scheduled to begin in 2024, with a phased rollout based on company size and type, and exemptions for SMEs until 2028.[23]

— UK – disclosure pioneer. The UK was the first G20 country to make disclosure mandatory based on the widely accepted Taskforce on Climate-Related Financial Disclosure (TCFD) framework (see Chart 14). Currently, this is an obligation for listed firms and some other financial market participants under the Financial Conduct Authority's (FCA) remit. Meanwhile, a Sustainability Disclosure Requirement (SDR) is underway. It is largely seen as an answer to the EU disclosure rules and would bring TCFD-aligned disclosure requirements for non-financial companies and financial firms under one umbrella.

TCFD: 4-pillar disclosure framework 14

Sources: TCFD, Deutsche Bank Research

— US – new SEC rules in the making. In spring, the SEC consulted on climate-related disclosure rules for listed companies which are expected to be finalised by the end of the year. According to the proposal, corporates would have to report on climate-related risks for their business. This includes information on the management of these risks, the level of greenhouse gas emissions (scope 1 - 3) and, if available, the disclosure of transition plans and the scenario analysis framework used. The new rules are to be phased-in gradually till 2026, with no legal liability for scope 3 emissions estimated in good faith.[24]

In May, the SEC proposed another set of rules to add clarity about ESG-labelled funds. First, an update of the "names rule" would request funds to specify the ESG term used in their name and to ensure that at least 80% of the fund's assets adhere to this definition. Second, ESG-labelled funds would be subject to enhanced disclosure rules and notably be required to provide information about the sustainable investment strategy applied.

— China – stepping-up disclosure requirements: In contrast to its pioneering role in taxonomy and green bonds, China's ESG disclosure requirements are rather light by international standards.[25] Since early 2022, new rules of

[21] The SFDR distinguishes between (1) funds without an explicit ESG mandate, (2) funds that "promote environmental or social characteristics" (Article 8, also labelled as "light green") and (3) funds with a sustainability objective (Article 9, also labelled as "dark green").
[22] The PAI reporting follows a standardised format, including greenhouse gas emissions, impact on biodiversity, water, waste as well as social and employee matters.
[23] EU Council (2022). New rules on corporate sustainability reporting: provisional political agreement between the Council and the European Parliament. Press release, June 21.
[24] Forbes (2022). The SEC's proposed climate disclosure rules, March 31.
[25] Fitch Ratings (2021). Proposed Rules May Strengthen China's ESG Disclosure. Fitch Wire, October 28.

the Ministry of Ecology and Environment apply, under which large emitters and some listed companies are required to disclose emissions and how they manage environmental issues.

ISSB standard as a global baseline? In view of the large number of emerging disclosure regimes, there are concerns about regulatory fragmentation. They are addressed by the International Sustainability Standards Board (ISSB) which is working on harmonised rules. It has been consulting on two proposed standards on sustainability- and climate-related disclosure requirements, aiming to finalise them by the end of the year. These proposals will determine new IFRS reporting standards. Several factors could help turn them into a common global baseline: (1) the ISSB is widely supported, e.g. by the G20, (2) the draft standards have been announced while the major jurisdictions are still working on their disclosure rules, (3) the standards allow countries to build their specific requirements on top of them.

Outlook: Sustainable finance growth to mature – backed by regulation and technology

Integrating sustainability criteria into the financial system involves significant costs. It will continue to bind substantial resources in many companies – financial and non-financial alike – to

1) align strategies, governance structures and processes with own sustainability ambitions
2) measure, disclose and manage relevant sustainability metrics
3) keep pace with the evolving regulatory framework.

Meanwhile, regulatory fragmentation remains a risk. It could tie up even more resources and, at worst, render sustainable finance a mere box-ticking exercise. However, leaving sustainable finance in limbo is no option either. The evolving regulation will provide more clarity and transparency. Moreover, efforts by international standard-setting bodies like the ISSB to coordinate and harmonise the rules governing sustainable finance could help to establish a framework suiting the global nature of financial markets. While now it is still about getting the metrics right, in the medium term, the focus will shift towards the impact of sustainable finance. Taken together, this will contribute to reducing frictions, building confidence and growing a more robust sustainable finance landscape.

Going beyond climate. Much of the regulatory effort such as the EU Taxonomy or the proposed ISSB standard has focused on climate as a first priority. But sustainability is much broader than that and regulators are striving to cover other aspects. On the environmental pillar, biodiversity is coming into focus.[26] For example, the EU's Platform on Sustainable Finance recently released recommendations on how to account for biodiversity, water, pollution control and circular economy under the taxonomy. Moreover, the Taskforce on Nature-related Financial Disclosure (TNFD) is working on a framework to incorporate the risk of nature loss into business and investment decisions. Similarly, the social pillar is receiving more attention, e.g. with the Platform on Sustainable Finance's recent proposal for a social taxonomy.

Sustainable finance supported by technology. Data is a key component of sustainable finance which may therefore increasingly reap the benefits of advanced technologies. Artificial intelligence (AI), for example, can help to retrieve and analyse relevant ESG data from vast, mostly unstructured and qualitative sources such as company reports and websites. In this context, AI is

[26] Helm, Thomas (2022). Biodiversity concerns set to be the next frontier after climate change. IFLR, February 21.

currently mainly used by professional data providers. Likewise, modern technologies can support companies in capturing relevant ESG data, such as pollution levels with Internet of Things (IoT)-enabled sensors or the monitoring of supply chain linkages with blockchain technology. For both financial and non-financial corporates, advanced data analytics will also prove useful for modelling transition pathways and understanding the impact of climate-related risks on business models.

Overall, sustainable finance will continue to grow, and mature conceptually. Further growth in the medium to long term will be driven by the fundamental trend of climate change and the increasing efforts of countries and companies to transition towards a carbon-neutral economy as well as support from investors. In the short term, however, sustainable finance faces headwinds from (1) adverse macroeconomic conditions (rising inflation and interest rates, fear of recession, war in Ukraine) and (2) the multitude of emerging regulatory requirements which are expected to streamline the ESG market.

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