



November 2022

CIO Special



ESG Survey 2022
Trends and concerns

Contents

Authors:
Markus Müller
Chief Investment Officer
ESG & Global Head of Chief
Investment Office

Daniel Sacco, CESGA
Investment Officer EMEA

Afif Chowdhury, CESGA
Investment Officer EMEA

Arun Sudi
Investment Officer APAC

01	Introduction	p.2
----	--------------	-----

02	Key survey findings	p.3
----	---------------------	-----

Box 1: Key survey findings	p.3
----------------------------	-----

2022 update vs. 2021 survey	p.3
-----------------------------	-----

New 2022 findings	p.4
-------------------	-----

03	The current ESG paradigm	p.7
----	--------------------------	-----

ESG remains a priority for our investors	p.7
--	-----

Most investors remain focused on environmental issues	p.8
---	-----

Investors already appreciate the urgency of the problem	p.11
---	------

Box 2: Corporate drivers: a different perspective	p.13
---	------

The debate around ESG and performance	p.16
---------------------------------------	------

Box 3: Sectoral winners and losers	p.18
------------------------------------	------

The role of financial institutions	p.19
------------------------------------	------

04	Conclusion	p.20
----	------------	------



Please use the QR code to
access a selection of other
Deutsche Bank CIO reports
(www.deutschewealth.com).



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

01

Introduction



Markus Müller
Chief Investment Officer
ESG & Global Head of
Chief Investment Office

In 2021, we conducted our first survey of our clients' attitudes towards ESG. We wanted to understand their views on the role of ESG in portfolios and the relative importance of different ESG issues to them. We also identified some variations in attitudes between different age groups and male and female respondents.

This year we received 849 responses, down on the 2,130 responses last year, probably due in part to the much extended length and depth of the survey. Within Europe, however, this year's responses were much more evenly distributed. This has reduced last year's marked overweight to Spain and Italy, with the benefit of a more representative weighting for German clients.

In this year's survey we asked almost twice as many questions, with the aim of getting a more [complete view of our private, institutional and business clients' attitudes to ESG](#). In this year's survey we focus additionally on issues such as respondents' knowledge of underlying ESG concepts, biodiversity issues and nature-related risks, and investor confidence in the abilities of financial institutions in regards of different ESG related issues.

We have also tried to highlight any broad changes in our clients' attitudes towards ESG investment between 2021 and 2022. This has been [a period of continued ESG development and growth](#) in most (but not all) types of ESG assets under management (Figure 1). Over the last year, however, ESG investment has also experienced a [number of headwinds](#), both around methods and performance, and this has encouraged a [much-needed debate about what exactly ESG should be](#). As we argued in a previous [special report](#)¹, we now appear to have moved from awareness and then rapid growth in ESG investment to a new [third phase of ESG development characterised by a degree of consolidation and reorientation – and, potentially, changed expectations around ESG's impact on performance and risk management](#). Investors are becoming increasingly conscious of the details around ESG investment performance – both in terms of financial returns and “real world returns” (i.e. positive effects on the world around us). Moreover, ESG is getting more and more attention as an additional form of risk management in a rapidly changing world.

We summarise ten key findings from the survey in the section below. Five of these findings highlight key areas in comparison with last year's survey results, showing ongoing trends and confirming some existing beliefs across different areas. The other five findings are new.

In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

02

Key survey findings

Box 1

Key survey findings

2022 update vs. 2021

- 1 Investors confirm their commitment to ESG.** Some 78% of our investors slightly or strongly agree in this year's survey that their investments should have a positive impact on the world, slightly up on last year's 75%.
- 2 Environmental issues remain the top priority.** Across all the different survey respondents' age groups and amongst both women and men, "E" is regarded as the ESG pillar deserving the highest level of attention. 50% of investors regard environmental issues ("E") as the most important pillar in ESG investment, up from 46% last year. 28% put governance ("G") at the top of the list this year, similar to last year. The higher priority given to "E" and "G" came at the expense of the "S" pillar. Social issues ("S") are seen as most important by 23% of investors vs. 27% in 2021.
- 3 Within the "E" pillar, climate change is seen as the most important problem.** 53% of respondents regard climate change as the most important factor in investment decision making, up from 47% last year. It is clearly ahead of ocean pollution, land degradation, and biodiversity loss, which were selected respectively by 15%, 21% and 7% of survey respondents. The share of respondents selecting biodiversity loss fell slightly compared to last year (it was 11% in 2021), while the other two areas remained quite stable.
- 4 Concerns about climate change's economic impact remain high.** 78% (vs. 74% in 2021) of survey respondents believe that climate change either is already having a severe negative impact on the global economy, or will have it in the next 10 years if left unchallenged.
- 5 More respondents still agree that ESG can manage risk in a portfolio than disagree.** 44% of respondents strongly or slightly agree with this, down only slightly from 48% last year, and higher than the 16% who strongly or slightly disagree. But, with four in ten respondents saying that they don't know, or neither agree or disagree, many still have to be convinced.

New 2022 findings

- 6 **There is moderate optimism that we can manage climate change and biodiversity loss.** 51% of investors are either very optimistic or optimistic that humankind will be able to manage climate change through technological innovation; 47% have faith in the power of nature-based solutions.
- 7 **Awareness of underlying concepts is accompanied by knowledge shortfalls.** Only 18% claim sophisticated or good knowledge of nature-based solutions; the equivalent figure for the concept of natural capital is 20%. Moreover, less than one in five of our respondents had this level of knowledge of the triple planetary crisis.
- 8 **Millennials seem to be more aware of underlying ESG issues compared to other age groups.** Almost one in four among Millennials say that they have sophisticated knowledge of the concept of a net-zero emissions economy. They are also more knowledgeable and more optimistic about solutions to the triple planetary crisis.
- 9 **Biodiversity issues are seen as important for portfolio returns and risks.** 41% strongly or slightly agreed that including biodiversity considerations into investment decisions would boost portfolio returns; over 60% thought it would reduce nature-related risks.
- 10 **Investors are looking to financial institutions to help manage the transition journey.** 68% of investors expect their financial institution to accurately measure and manage nature-related risks; 75% expect appropriate protection of portfolios. But financial institutions can only be one driver – alongside individual investors, corporates and governments – of necessary economic change. Among others, greater investors' knowledge is necessary to achieve this goal.

We look in more detail at the 2022 survey findings in the next section. As it will be discussed, the survey reveals **continued investor enthusiasm for ESG** as 56% of our clients agree (either strongly or slightly) that ESG will become standard, despite slightly increased scepticism about its portfolio risk management capabilities. There was also (as noted above) some investor optimism that such investments can help us in tackling climate change and biodiversity loss through technological or nature-based solutions. **A variety of other issues (e.g. ocean health) may also still be underappreciated and knowledge of some underlying ESG concepts may be limited.**

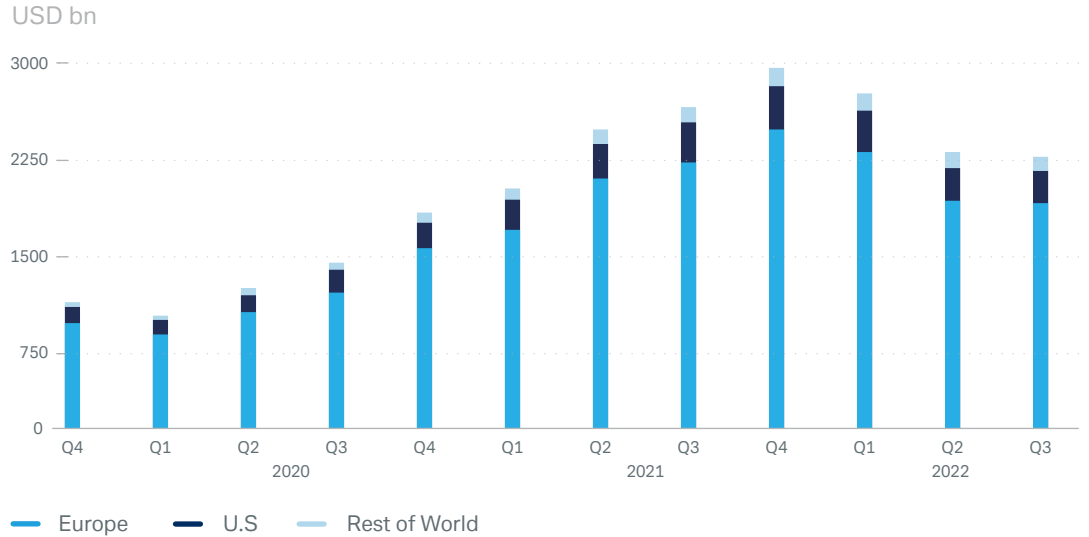
In this year's survey, we have also gained an important insight into investor expectations towards financial institutions, which can be seen as a result of a shift in overall awareness. As we discuss later, it is evident that many investors expect the financial sector to lead the way in measuring and managing nature-related risks, and protecting portfolios from them, but there is uncertainty whether financial institutions can currently do this. Demonstrating such financial sector capabilities – along with closing investor knowledge gaps – are among the key challenges ahead.

"This has been a period of continued ESG development and growth in most (but not all) types of ESG assets under management"

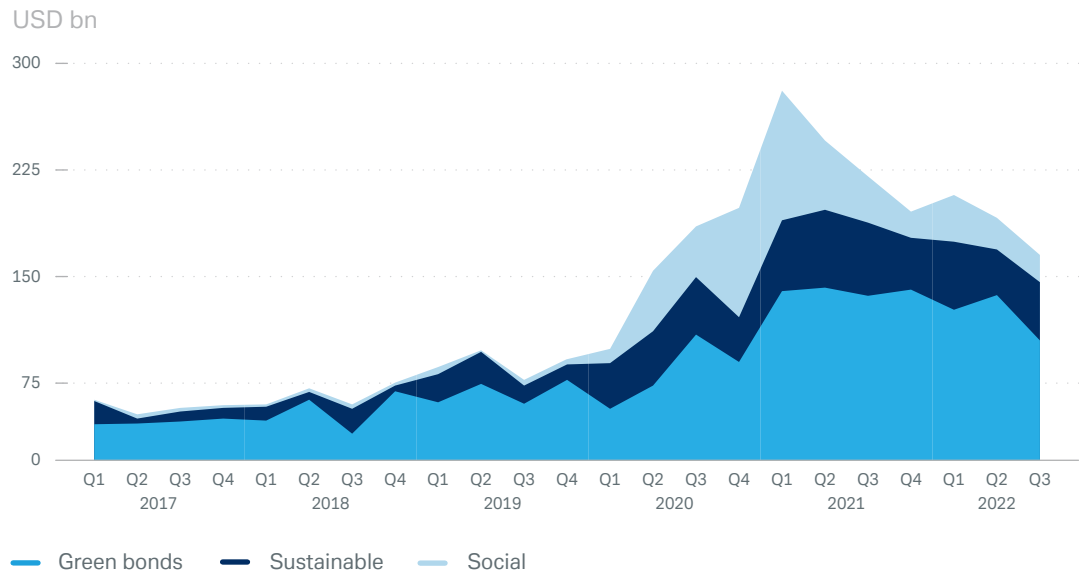
Figure 1: Key ESG investment financial market statistics

Sources: Morningstar Direct, Refinitiv, Bloomberg, Deutsche Bank AG. Data as of October 2022.

Quarterly global sustainable fund assets



Global ESG bond issuance



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

MSCI World vs. MSCI World ESG Leaders

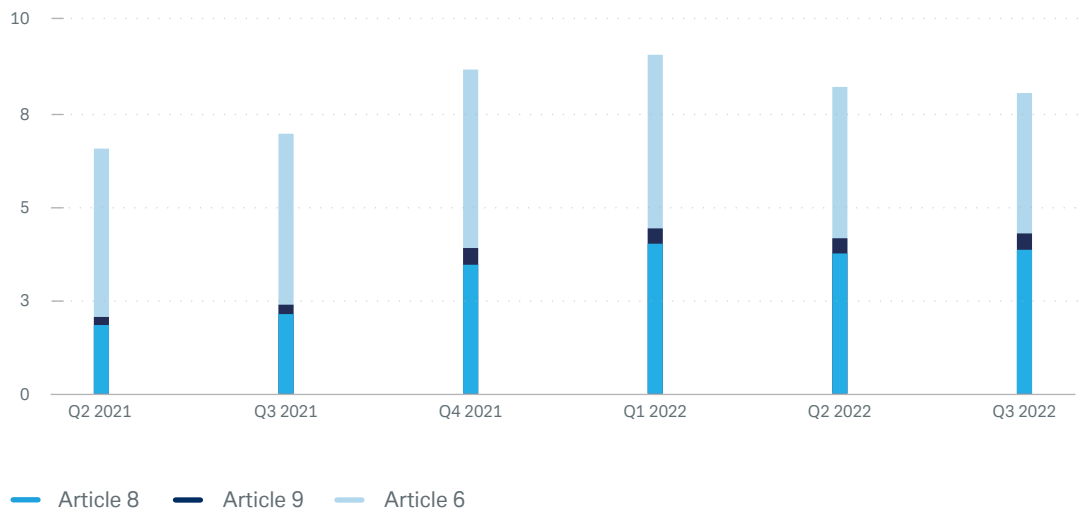
Total return in USD



Note: YTD as of October 28, 2022.

Quarterly assets breakdown by SFDR classification and SFDR fund

EUR tn



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

03

The current ESG paradigm

ESG remains a priority for our investors

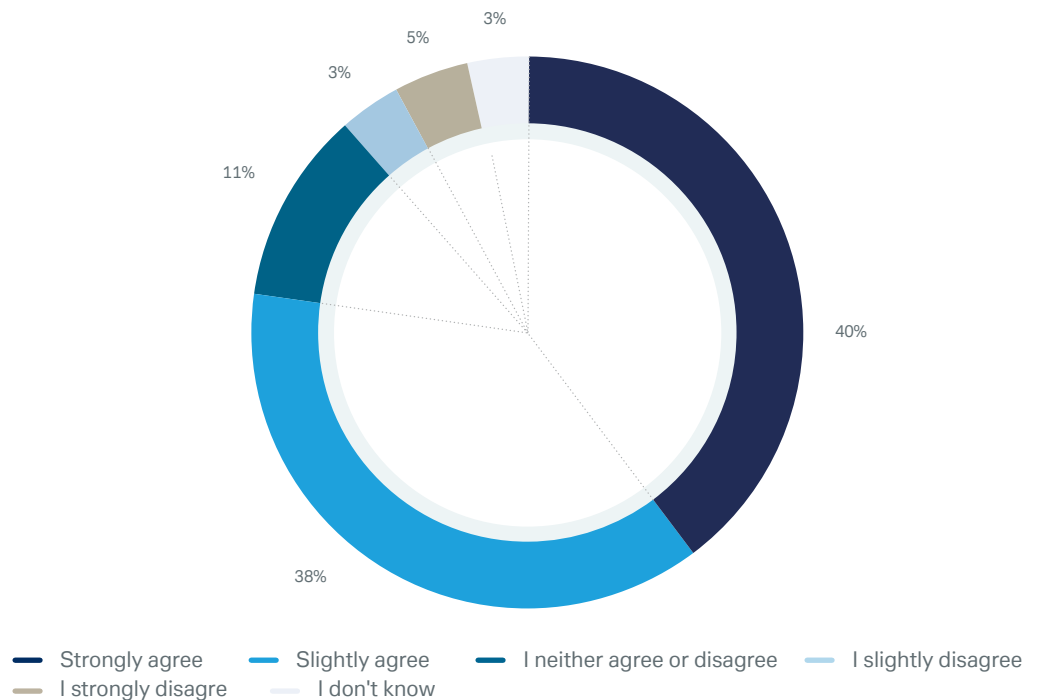
As noted in the introduction, there have been [increased headwinds for ESG](#) in the past year. Performance of some ESG portfolios has suffered temporary reversals in 2022, in many cases due to the Russia/Ukraine war boosting less ESG-acceptable commodity and energy sectors.²

There have also been [broader-based questions over ESG's ability to deliver meaningful change](#), about the underlying metrics and investment methodology, and about its detailed implementation. After historical periods of ESG awareness and then rapid growth we may now be entering a period of consolidation, reorientation and deeper understanding of what ESG investment can and should do.^{3,4}

But, as our survey shows, even in a complex and uncertain economic environment, [ESG remains a priority for our investors](#). 78% of overall survey respondents strongly or slightly agree that their investments should have a positive impact on the world (Figure 2). This proportion is similar to last year's survey. 78% also strongly or slightly agree that investing to support our planet's health is their legacy for their children and grandchildren.

Figure 2: My investments should have a positive impact on the world

Source: Deutsche Bank AG. Data as of October 2022.

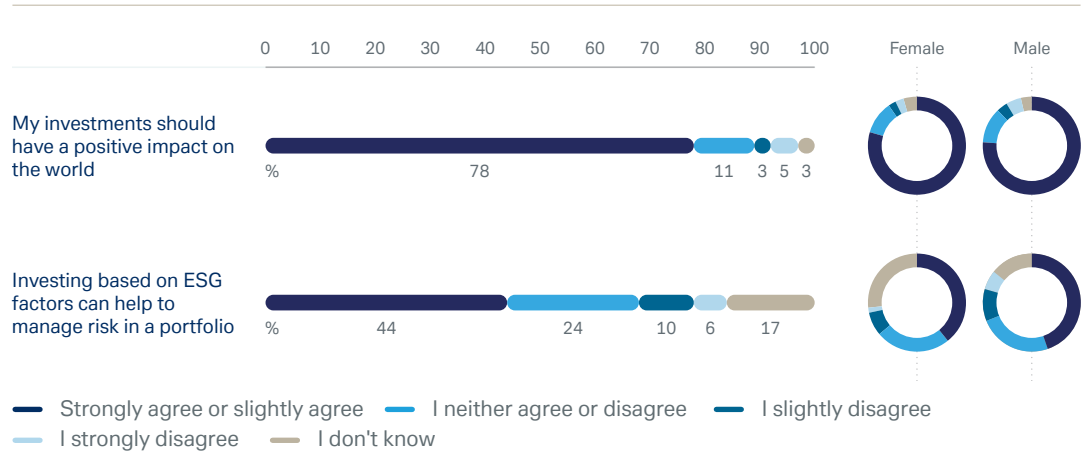


In last year's survey we noted that [more women than men strongly agreed that their investments should have a positive impact on the world](#). This is true this year too: 50% of female respondents strongly agreed with this statement, vs. 38% of male respondents. (By contrast, different age groups did not have significantly different responses.) Figure 3 illustrates these differences in the survey population.

In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Figure 3: Responses on investment impact and risk management – by gender

Source: Deutsche Bank AG. Data as of October 2022.



Most investors remain focused on environmental issues

Most investors remain focused on environmental issues, rather than social and governance concerns. Figure 4 shows that 50% think environmental issues are most important when making investment decisions, followed by governance (28%) and social (23%) issues. This division is broadly similar to last year, and concurs with general perceptions (e.g. in the WEF's Global Risk Report, 5 of the 10 most severe risks on a global scale over the next 10 years are related to environmental issues).⁵

Figure 4: Most important ESG component when making investment decisions

Source: Deutsche Bank AG. Data as of October 2022.



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Last year, we noted that millennials were more inclined to put a greater weight on social issues than other age groups and it remains the case this year – 30% of millennials thought that the “S” pillar was the most important ESG component, vs. just 23% for other age groups combined. A much higher proportion of women than men also say that social factors are important to them when investing (46% vs. 34%). An additional question in this year’s survey revealed significantly more women than men identifying social issues such as workers’ rights, consumer protection, support for communities, and support for supranational standards as highly important.

Two points are worth noting here. First, historically, Europe has been particularly focused on the “E” pillar and since most of our survey responses are from Europe, this will affect the overall picture. A second issue, looking forward to future developments in ESG as an investment framework, refers to the fact that splitting out “E”, “S” and “G” pillars is in some ways an artificial process.

This is because, as ESG investment drives a globally acceptable transformation of our economic and social structures, we think that “S” and “G” issues will increasingly be seen as integral to progress on the “E” pillar and gain more prominence. We think that this may be particularly evident in relation to the energy transition (and how we handle changing energy prices) and in the “Global South”: countries that are likely to be more affected by the negative effects of climate change tend also to be economically weaker and may have more acute social concerns.⁶ Their difficulties in adapting to, and mitigating, climate change will have to include “S” and “G” considerations. Indeed, three out of the 10 most pressing risks for investors mentioned in the WEF study referenced above stemmed from social issues.

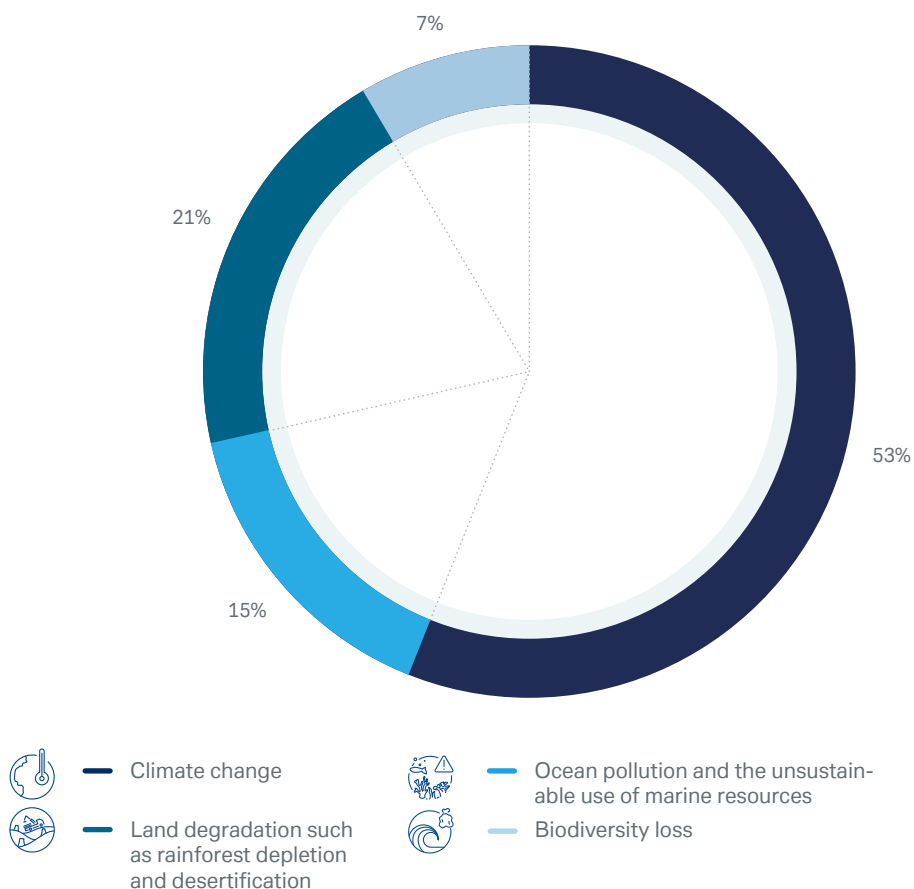
Within the “E” pillar, climate change is still regarded as the most important factor in investment decision making (Figure 5). 53% placed it first vs. 46% in last year’s survey. In this year’s survey 21% of respondents think that land degradation is the most important issue, with 15% identifying ocean pollution and the unsustainable use of marine resources. These values have not changed substantially in comparison to the 2021 survey.



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Figure 5: Most important environmental category when making investment decisions

Source: Deutsche Bank AG. Data as of October 2022.



However, the share of investors viewing biodiversity as the most important issue decreased from 11% in 2021 to 7% in 2022. This is a counterintuitive result, given the increased focus on biodiversity loss by governments and regulators, with hopes of an agreement on a Global Biodiversity Framework (GBF) at the COP15 meeting in Montreal in December 2022.⁷

Priorities here are likely to be driven in part by current levels of media attention and the associated public awareness. This view is supported by the fact that the term “climate change” is searched on public search engines far more often than other terms such as “biodiversity”.⁸ But, as environmental knowledge grows, we think that it will become clearer that all three categories – biodiversity, the ocean and land degradation – have an essential role to play in limiting climate change. As noted above, we think that ESG provides a more holistic view, and investor attitudes and available metrics will reflect this.

Guidance provided by regulatory policy developments will support market-driven efforts. However, it seems likely that investors are severely underestimating the negative consequences of biodiversity loss for the global economy and investments. On one estimate, more than half of the global GDP is either moderately or highly dependent on ecosystem services provided by nature.⁹ The biodiversity gap – defined as “the difference between the current total annual capital flows towards global biodiversity conservation and the total amount of funds needed to sustainably manage biodiversity and maintain ecosystems integrity”¹⁰ – is estimated to be between USD 600 – 800bn per year.¹¹ This is too big to be closed by public funding alone and will require the support of private financing.

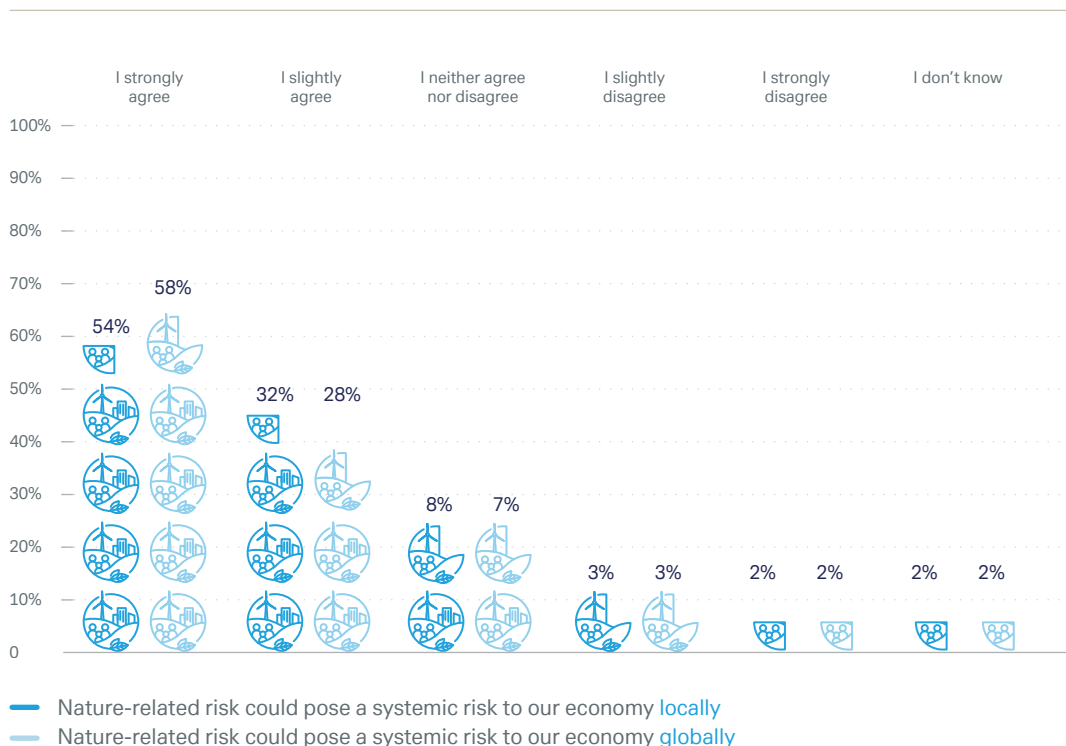
In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Investors already appreciate the urgency of the problem

Investors already appreciate the urgency of the problem, meaning that the stage is set for deeper engagement. 59% of survey respondents agree that climate change is already having a severe negative impact on the global economy. Only a slightly smaller share thought that land degradation (53%) and ocean pollution (49%) was already having such an impact.

Figure 6: Systemic threat posed by nature-related risks

Source: Deutsche Bank AG. Data as of October 2022.



Seen in aggregate, the vast majority of respondents also agreed or slightly agreed that nature-related risks could pose a systemic threat to local and global economies (Figure 6).

This sense of urgency is accompanied by moderate optimism that humankind will be able to manage biodiversity loss, ocean degradation and climate change through technological innovation or solutions given by nature (Figure 7). It is worth mentioning, however, that a significant share of survey respondents remained neutral or pessimistic. This is understandable: in the course of the last 120 years, global CO₂ emissions have risen from 1.95bn tons to 34.80bn tons (2020). Emissions have thus increased eighteenfold during this period and, while countries have set ambitious goals, we are still far from a net zero economy.¹²



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Figure 7: Perceived ability to manage biodiversity loss and climate change

Source: Deutsche Bank AG. Data as of October 2022.



"This sense of urgency is accompanied by moderate optimism that that humankind will be able to manage biodiversity loss, ocean degradation and climate change through technological innovation or solutions given by nature"

In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Corporate values and beliefs are important

Box 2

Corporate drivers: a different perspective

Survey responses from corporates provide a rather different perspective on ESG. **Corporate values and beliefs** are considered the main reason for factoring biodiversity loss into company strategies: 62% of companies view this as highly important (44%) or important (18%). Customer demand and regulation are also considered very important or important reasons to do this (38% and 36% of respondents, respectively). **Data and disclosure requirements** related to minimizing greenhouse gas emissions are seen as an opportunity (32%) or major opportunity (11%) by survey respondents, with only 11% and 6% seeing them as a threat or major threat.

Corporates acknowledge the importance of **innovation** and think that innovation will gain some tailwinds through the transition to a net-zero economy. 80% of our corporate clients strongly or slightly agree that the pathway to a **net-zero economy** is a driver of innovation. 79% think that innovative companies will thrive in the pathway to a net-zero economy. Around half of companies say they are using innovation to keep up or gain advantage in the pathway to a net-zero economy (51%).

However, while survey respondents are still enthusiastic about ESG investment and are optimistic about finding solutions to biodiversity loss and climate change, **investors are less confident that they have good or sophisticated knowledge of underlying environmental concepts**. Figure 8 shows investor awareness/knowledge of seven key concepts – the net-zero emissions economy, the triple planetary crisis, nature-based solutions, the UN sustainable development goals (SDGs), the net-positive emissions economy, nature-related risks and natural capital.



Figure 8: Awareness/knowledge of underlying ESG concepts

Source: Deutsche Bank AG. Data as of October 2022.

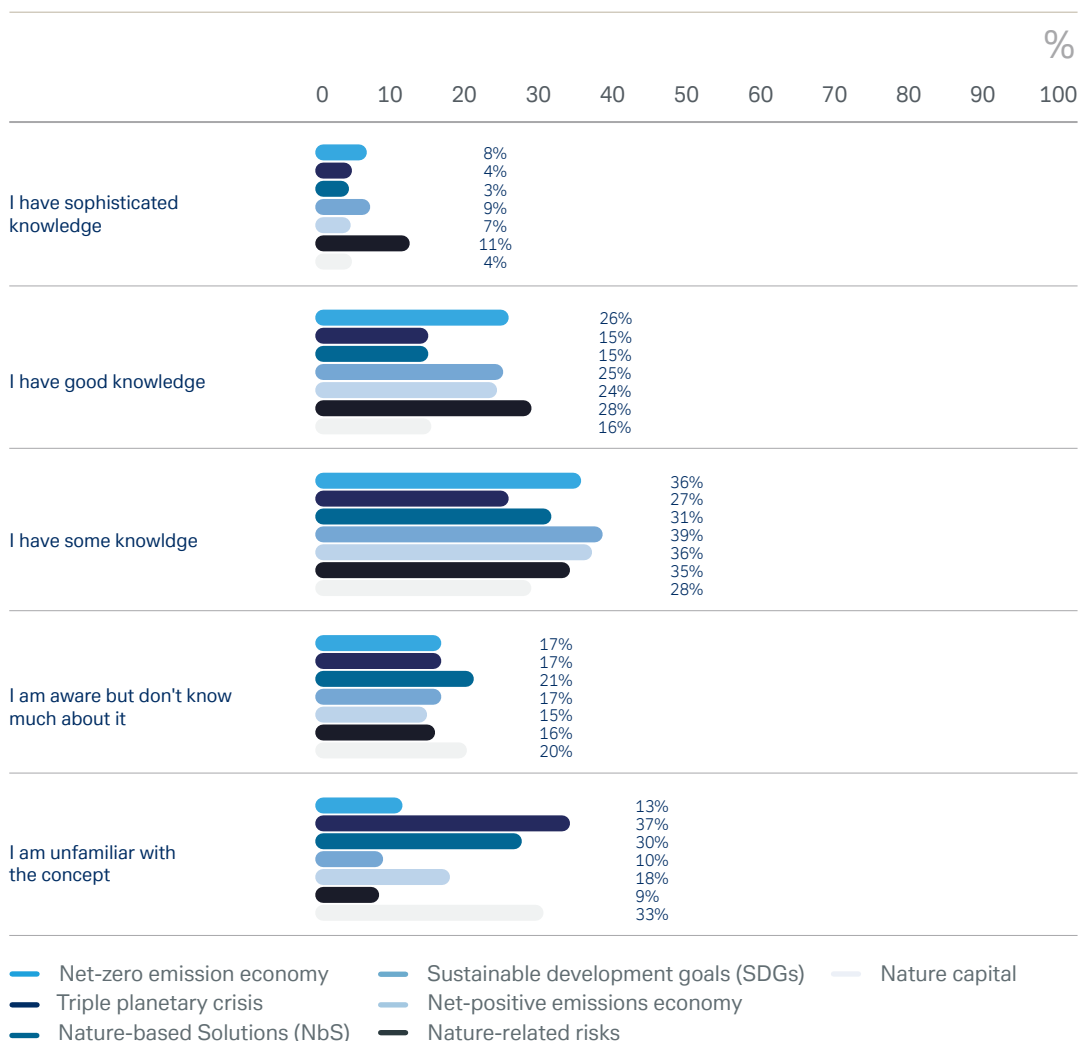
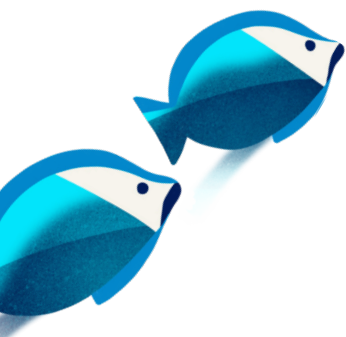


Figure 8 shows that most investors have some awareness or knowledge of most of these concepts. But there are clearly still some significant “knowledge gaps”. Few investors claim to have sophisticated or good knowledge of several concepts – only 18% in the case of nature-based solutions and 20% for natural capital. The concepts with the biggest “knowledge gaps” include the triple planetary crisis (54% do not know much about it, or are unfamiliar with the concept), natural capital (53%), and nature-based solutions (51%). Closing these “knowledge gaps” will involve a greater understanding of underlying ESG metrics: as these deepen and become more sophisticated, appreciation of such long-term issues may increase – but it could be a lengthy process.

Education is seen by 38% of survey respondents as either a highly important or important driver of ESG development. We are also only at the start of a long journey regarding detailed and comprehensive knowledge of the exact and long-term interrelationship between ESG and performance. Some 51% of respondents agree that investing based on ESG factors is especially relevant for long term investors.

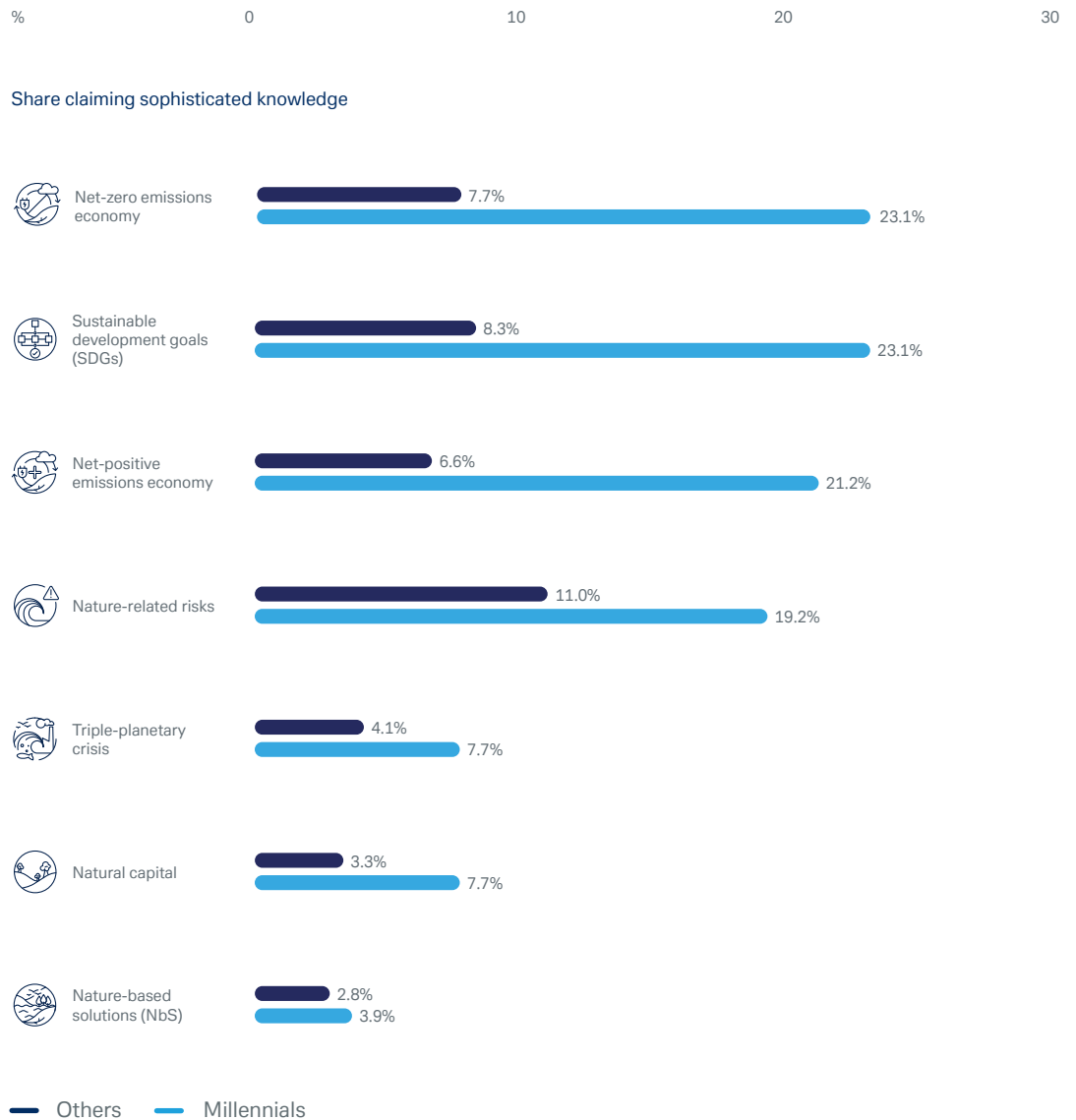
Nevertheless, not all our respondent groups share the same level of awareness around these topics. Millennials seem more concerned with climate-related challenges. They are also possibly better informed about associated concepts such as the net-zero emissions economy or the net-positive emissions economy. 23% of Millennials say that they have sophisticated knowledge of the concept of net-zero emissions economy. 21% say the same for net-positive emissions economy. Only 7.6% and 6.6% of the respondents from different age groups say likewise. This also applies to the concept of nature-related risks. (19% of Millennials vs. 10% for other respondents).



In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

Figure 9: Millennials' enhanced awareness of environmental concepts

Source: Deutsche Bank AG. Data as of October 2022.



Millennials are also more optimistic about innovation. 17% of millennials strongly agree that the pathway to a net-zero economy is a driver for innovation. However, only just under 6% of respondents above 40 years of age say the same. Millennials are also more optimistic that innovative companies will thrive in the pathway to a net-zero economy as 17% of the millennials strongly agree to this statement as well, vs. under 5% of other respondents.

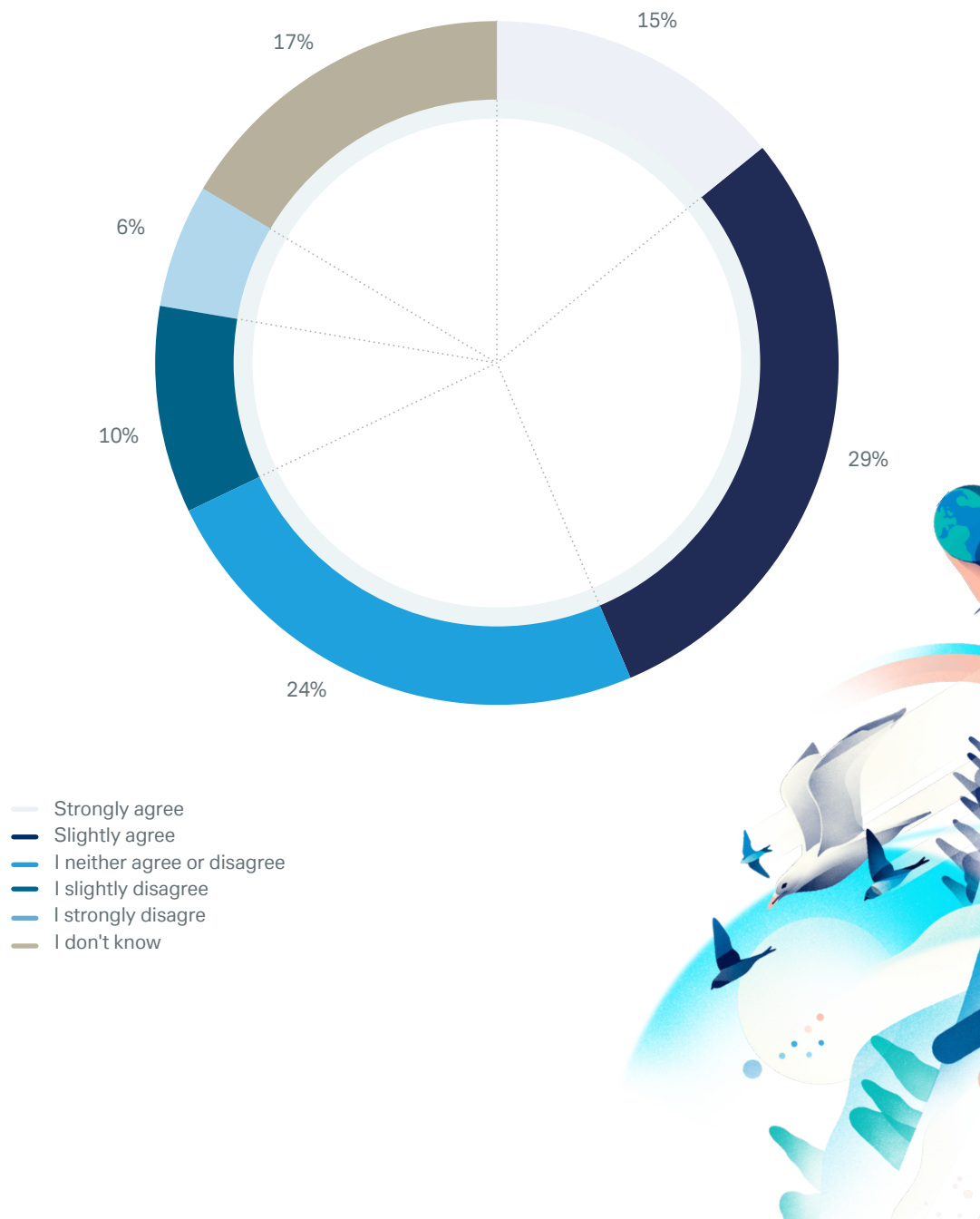
In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

The debate around ESG and performance

The [debate around ESG and performance is a well-established one](#). Many argue that a commitment to ESG policies can have a positive correlation with a company’s financial performance¹⁴ but any conclusions here are likely to be heavily dependent on the assets under consideration, time periods surveyed and other factors – there is no simple link. We do think, however, that it is worth exploring a rather different issue, that of investors choosing to make higher ESG-rated investments, even if the potential financial return is lower. Interestingly, the survey suggested some willingness to do this: [42% of investors would pick a company with a AAA ESG Rating with 4% expected annual return, rather than a CCC company with 8% expected return](#).

Figure 10: Can investing based on ESG factors can help manage risk in a portfolio?

Source: Deutsche Bank AG. Data as of October 2022.



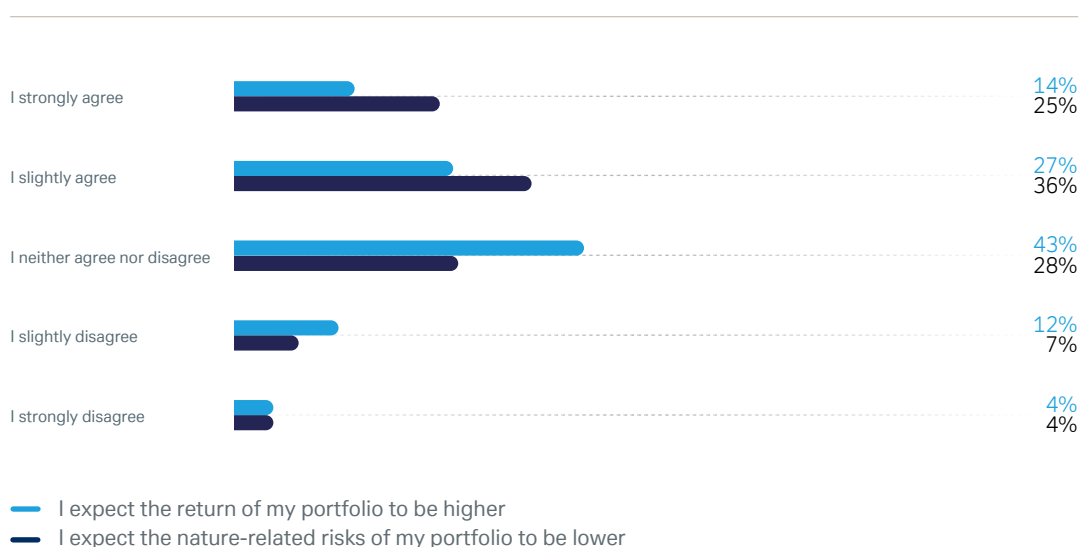
In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

The issue of ESG and risk is also an important one, where investor beliefs may change. At the broad level, 44% of investors agree or strongly agree that investing based on ESG factors could help manage risk in a portfolio (Figure 10). This measure of confidence was slightly down from last year's result (51% in 2021) and 16% of investors disagreed with the statement. As mentioned, this could have been expected given recent global developments and the impact they have had on some ESG strategies (e.g. from the Russia/Ukraine war). It is clear that we need better understanding of the precise links between investment returns and risks, and of the different types of risk. Getting a clearer view here may depend on differentiating risks involved in the economic transition (physical, transition, liability and contagion risk) and financial risks (credit, market, business and liquidity), inter alia.

We also asked specific questions around the impact of biodiversity considerations on portfolio risks and returns. Around 41% of investors agree or slightly agree that portfolio returns are likely to be higher, if biodiversity considerations are taken into investment decision making (Figure 11). Rather more, 61% expect the nature-related risks of their portfolio to be lower when doing so. But note that overall investor conviction is not high on the performance question: 43% neither agreed nor disagreed with this proposition.

Figure 11: Impact of taking biodiversity considerations into investment decisions

Source: Deutsche Bank AG. Data as of October 2022.



"Around 41% of investors agree or slightly agree that portfolio returns are likely to be higher, if biodiversity considerations are taken into investment decision making"

Box 3

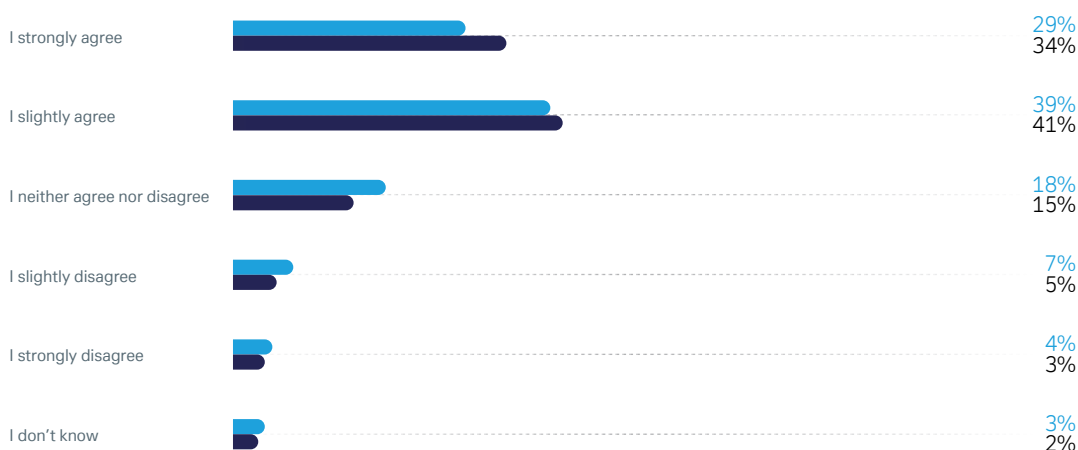
Sectoral winners and losers

A useful complement to measuring perceptions around ESG’s impact on portfolio risks and returns is to look for views on sectoral winners and losers. So we asked our respondents **which sectors would be most exposed to nature related risks**. Unsurprisingly, energy (21%), materials (14%) and industrials (11%) are considered to be the sectors most exposed to nature-related risks. Looking at the problem from the other side, survey respondents saw utilities (17%), IT and Healthcare (14% each) as the **sectors with the highest growth potential** within the pathway to a net zero economy.

Given this uncertainty around risks, **investors want financial institutions to provide expertise**. 68% of investors expect their financial institution to be able to accurately measure and manage nature-related risks, 75% expect their financial institution to be able to appropriately protect their portfolio from nature-related risks. (Derived from Figure 12 below.)

Figure 12: Investor expectations of financial institutions’ abilities regarding nature-related risks

Source: Deutsche Bank AG. Data as of October 2022.



- I expect financial institutions to be able to accurately measure and manage nature-related risks
- I expect my financial institution to be able to appropriately protect my portfolio from nature-related risks

But can such expectations on financial institutions be met? **Some 46% of our clients agree or slightly agree that “my financial institution is able to provide the relevant expertise and solutions for me to manage the pathway to a net-zero economy”**. But we also asked investors whether financial institutions are already capable of accurately measuring and managing specifically nature-related risks. The results are more ambivalent (Figure 13). 26% of investors neither agreed or disagreed that financial institutions could do this – and the proportions of respondents slightly agreeing or disagreeing that this was true were evenly balanced (25% vs. 22%). **The implication is that there is a desire for financial institutions to understand and manage nature-related risks – but not yet confidence that they can do so.**

In Europe, Middle East and Africa as well as in Asia Pacific this material is considered marketing material, but this is not the case in the U.S. No assurance can be given that any forecast or target can be achieved. Forecasts are based on assumptions, estimates, opinions and hypothetical models which may prove to be incorrect. Past performance is not indicative of future returns. Performance refers to a nominal value based on price gains/losses and does not take into account inflation. Inflation will have a negative impact on the purchasing power of this nominal monetary value. Depending on the current level of inflation, this may lead to a real loss in value, even if the nominal performance of the investment is positive. Investments come with risk. The value of an investment can fall as well as rise and you might not get back the amount originally invested at any point in time. Your capital may be at risk.

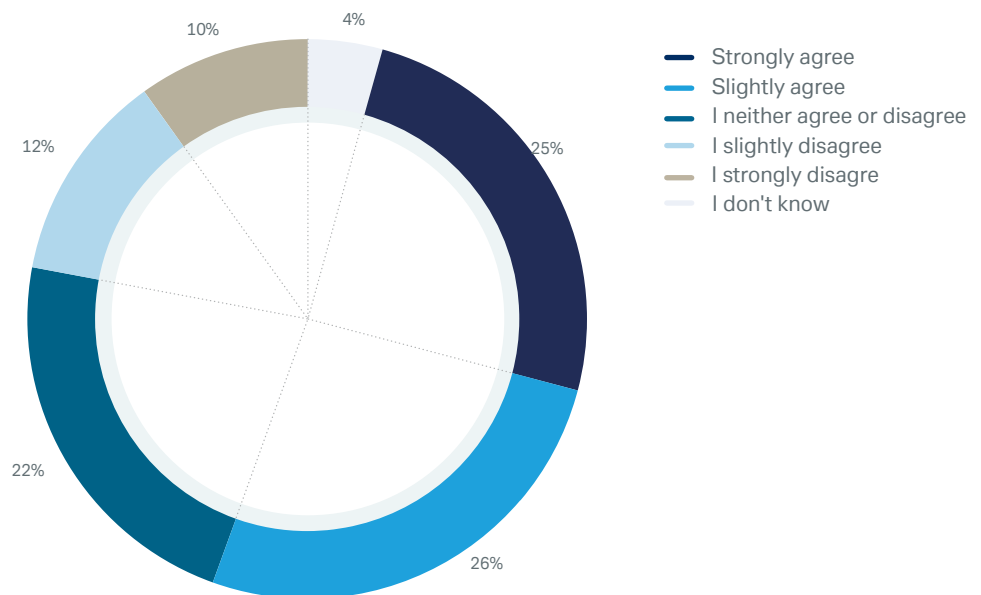
The role of financial institutions

Such assessments are important as there is far reaching consensus among international organisations which focus on nature-related risks that **financial institutions will have to play a major role in redirecting capital towards sustainability**.^{14,15,16,17} Investors may see financial intermediaries as being at the beginning of a transformation process: discussions within such institutions, and between them and their clients, are getting deeper and more intensive. **On this basis, confidence around the capability of financial institutions in managing nature-related risks may grow in the following years.** Yet, we should not forget that the transformation towards sustainability will require a reshaping of how we live for our society at large. While banks retain an essential role as transmitters of capital, public institutions, other private enterprises and the general public will all have to work towards this common goal.

What is interesting is that there is already greater consensus amongst investors that financial institutions are able to provide the relevant expertise and solutions in managing the pathway to a net-zero economy. 46% either strongly or slightly agree that they do. So, there is some greater confidence about financial institutions' capabilities in specific fields.

Figure 13: Are financial institutions currently able to deal with nature-related risks to portfolios?

Source: Deutsche Bank AG. Data as of October 2022.



Financial institutions may therefore face a twin challenge. They have to demonstrate their importance and ability to align “all financial flows in support of the conservation and sustainable use of biodiversity” (as agreed by the Convention of Biological Diversity in 2021). But they also need to develop further expertise and capabilities to measure and manage risks within individual portfolios. Current client belief that they can do this needs to be supported by progress on creating a thorough and practical analytical framework and using it (in ways supported by central banks and supervisory bodies) to develop more comprehensive risk assessment and management. This will be a difficult task during a time of rapid economic and investment change – but it is an essential one.



04

Conclusion

The effects of global warming are now obvious around the world in the form of droughts, severe storms, floods, and fluctuating temperatures.

This rise in awareness of environmental dangers has been accompanied by continued growth in ESG investment. Such investment will remain an essential component of our response to this human-driven crisis. But it makes sense to continually question how ESG investment should best be done, what investors expect from their ESG investment and what it can realistically deliver.

This year's survey confirms that [investors continue to want their investments to have a positive impact](#). Climate change is the most important environmental problem for them and concerns about its economic impact remain high. There is some investor optimism that we can effectively manage climate change and biodiversity loss.

The implicit question remains, however, to what extent and how effectively this concern can be translated into investment decision-making. [The survey reveals a continued belief that ESG-based investment can reduce nature-related risks in portfolios and many investors think also believe that it can increase returns – but investors will need help in achieving these two objectives.](#)

Financial institutions will have to demonstrate they can provide this help. The survey reveals that investors already have confidence that financial institutions can provide expertise and solutions to help their clients to manage the pathway to a net-zero economy. But there is greater scepticism about whether financial institutions can accurately measure and manage nature-related risks. Such scepticism needs to be overcome through deeper knowledge and discussion. [Financial institutions need to demonstrate that they can lead ESG investment in ways that can benefit both their investors and the planet.](#)



Bibliography

1. Deutsche Bank CIO Special [ESG and investment performance: challenges ahead?](#), July 2022. Retrieved October 2022.
2. Morningstar [Global Sustainable Fund Flows Report Q2 2022](#), July 2022. Retrieved October 2022.
3. Forbes: [A Critique Of Tariq Fancy's Critique Of ESG Investing: An Interview With Clara Miller](#), October 2021. Retrieved October 2022.
4. The Economist: [ESG should be boiled down to one simple measure: emissions](#), July 2022. Retrieved October 2022.
5. WEF [Global Risk Report 2022](#), January 2022. Retrieved October 2022.
6. WEF: [How hard could climate change hit the global economy, and where would suffer most?](#) April 2022. Retrieved October 2022.
7. WEF: [How the UN's Global Biodiversity Framework could become the 'Paris Agreement for nature'](#), October 2022. Retrieved October 2022.
8. Alphabet: [Google Trends](#), September 2022. Retrieved October 2022.
9. WEF: [Half of World's GDP Moderately or Highly Dependent on Nature, Says New Report](#). January 2020. Retrieved October 2022.
10. Paulson Institute, The Nature Conservancy, Cornell Atkinson Center for Sustainability: [Financing Nature: Closing the Global Biodiversity Financing Gap](#). Full Report. September 2022. Retrieved October 2022
11. Global Canopy: [The Little Book of Investing in Nature. A simple guide to financing life on Earth](#). January 2021. Retrieved October 2022.
12. Global Carbon Project: [Data supplement to the Global Carbon Budget 2021](#), April 2022. Retrieved October 2022.
13. Gunnar Friede, Timo Busch & Alexander Bassen (2015) ESG and financial performance: aggregated evidence from more than 2000 empirical studies, Journal of Sustainable Finance & Investment, 5:4, 210-233, DOI: 10.1080/20430795.2015.1118917. Retrieved October 2022.
14. UNEP: [UN-convened Net-Zero Asset Owner Alliance](#). Retrieved October 2022.
15. European Commission: [Biodiversity financing](#). Retrieved October 2022.
16. Green Finance Platform: [Finance for Biodiversity Initiative](#). Retrieved October 2022.
17. World Resource Institute: [Shifting and Mobilizing Finance for Sustainability](#). Retrieved October 2022.

Glossary

Artificial intelligence (AI) refers to the intelligence demonstrated by machines.

Biodiversity means variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.

Ecosystems are created by the interaction of plants, animals, weather and landscape.

CISL stands for the University of Cambridge Institute for Sustainability Leadership.

ESG stands for Environment, Social, Governance, and is the acronym most commonly used for sustainable investments. They measure the sustainability and societal impact of an investment in a company or business.

Ethical investing refers to the practice of using one's ethical principles as the primary filter for selections made in securities investing.

Exchange-traded funds (ETFs) are a type of investment fund and exchange-traded product, i.e. they are traded on stock exchanges.

The **Global Commission on Adaptation** was launched in 2018 to accelerate climate change adaptation; its mandate came to an end in 2020.

Governance (corporate governance) involves the processes of governing – whether undertaken by the government, firm, market, network – over a social system and whether through the laws, norms, power or language of an organized society.

Greenhouse gases (GHG) are gases that trap heat in the atmosphere; carbon dioxide is the primary contributor to GHG emissions.

Gross domestic product (GDP) is the monetary value of all the finished goods and services produced within a country's borders in a specific time period.

Impact investing refers to investments made into companies, organizations and funds with the intention to generate a measurable, beneficial social or environmental impact alongside a financial return.

The **International Union for Conservation of Nature (IUCN)** was established in 1948 and is composed of both governments and civil society organizations.

Millennials, also known as Generation Y, are the demographic cohort born between 1981 and 1996, following Generation X and preceding Generation Z.

National Capital Accounting and Valuation of Ecosystem Services (NCAVES) is a project launched in 2017, funded by the European Union and focused on pilot testing ecosystem accounting.

Natural capital refers to the elements of the natural environment including assets like forests, water, fish stocks, minerals, biodiversity and land.

Non-governmental organisations (NGOs) are independent of government involvement and can be seen as a subgroup of founded organisations by citizens.

The **OECD (Organisation for Economic Co-operation and Development)** is an intergovernmental economic organisation with 37 member countries, founded in 1961 to stimulate economic progress and world trade.

Glossary

Stranded assets are those assets experiencing redundancy or loss of value due to environmental challenges, changing resource landscapes, new government regulations and evolving social norms.

The **System of Environmental Economic Accounting (SEEA)** is a framework that tries to integrate economic and environmental data.

The **Taskforce on Nature-related Financial Disclosures (TNFD)** provides a framework for corporates and financial institutions to assess, manage and report on their dependencies and impacts on nature, aiding in the appraisal of nature-related risk and the redirection of global financial flows away from nature-negative outcomes and towards nature-positive outcomes.

UN Sustainable Development Goals (SDGs) were set in 2015 by the United Nations General Assembly and are intended to be achieved by the year 2030, it is a collection of 17 interlinked global goals designed to be a blueprint to achieve a better and more sustainable future for all.



Important Information

General

This document may not be distributed in Canada or Japan. This document is intended for retail or professional clients only.

This document is being circulated in good faith by Deutsche Bank Aktiengesellschaft, its branches (as permitted in any relevant jurisdiction), affiliated companies and its officers and employees (collectively, "Deutsche Bank").

This material is for your information only and is not intended as an offer, or recommendation or solicitation of an offer to buy or sell any investment, security, financial instrument or other specific product, to conclude a transaction, or to provide any investment service or investment advice, or to provide any research, investment research or investment recommendation, in any jurisdiction. All materials in this communication are meant to be reviewed in their entirety.

If a court of competent jurisdiction deems any provision of this disclaimer unenforceable, the remaining provisions will remain in full force and effect. This document has been prepared as a general market commentary without consideration of the investment needs, objectives or financial circumstances of any investor. Investments are subject to generic market risks which derive from the instrument or are specific to the instrument or attached to the particular issuer. Should such risks materialise, investors may incur losses, including (without limitation) a total loss of the invested capital. The value of investments can fall as well as rise and you may not recover the amount originally invested at any point in time. This document does not identify all the risks (direct or indirect) or other considerations which may be material to an investor when making an investment decision.

This document and all information included herein are provided "as is", "as available" and no representation or warranty of any kind, express, implied or statutory, is made by Deutsche Bank regarding any statement or information contained herein or in conjunction with this document. To the extent permissible under applicable laws and regulations, please note that we are making no representation as to the profitability of any financial instrument or economic measure. All opinions, market prices, estimates, forward looking statements, hypothetical statements, forecast returns or other opinions leading to financial conclusions contained herein reflect Deutsche Bank's subjective judgment on the date of this document. Without limitation, Deutsche Bank does not warrant the accuracy, adequacy, completeness, reliability, timeliness or availability of this communication or any information in this document and expressly disclaims liability for errors or omissions herein. Forward looking statements involve significant elements of subjective judgments and analyses and changes thereto and/or consideration of different or additional factors could have a material impact on the results indicated. Therefore, actual results may vary, perhaps materially, from the results contained herein. Deutsche Bank does not assume any obligation to either update the information contained in this document or inform investors about available updated information. The information contained in this document is subject to change without notice and based on a number of assumptions which may not prove valid and may be different from conclusions expressed by other departments within Deutsche Bank. Although the information contained in this document has been diligently compiled by Deutsche Bank and derived from sources that Deutsche Bank considers trustworthy and reliable, Deutsche Bank does not guarantee or cannot make any guarantee about the completeness, fairness, or accuracy of the information and it should not be relied upon as such. This document may provide, for your convenience, references to websites and other external sources. Deutsche Bank takes no responsibility for their content and their content does not form any part of this document. Accessing such external sources is at your own risk.

To the extent permissible under applicable laws and regulations, this document is for discussion purposes only and is not intended to create any legally binding obligations on Deutsche Bank and/or its affiliates ("Affiliates"), and Deutsche Bank is not acting as your financial advisor or in a fiduciary capacity unless otherwise expressly agreed by Deutsche Bank in writing. Before making an investment decision, investors need to consider, with or without the assistance of an investment adviser, whether any investments and strategies described or provided by Deutsche Bank, are appropriate, in light of their particular investment needs, objectives, financial circumstances, the possible risks and benefits of such investment decision and instrument specifics. When making an investment decision, potential investors should not rely on this document but only on what is contained in the final offering documents relating to the investment. As a global financial services provider, Deutsche Bank from time to time faces actual and potential conflicts of interest. Deutsche Bank's policy is to take all appropriate steps to maintain and operate effective organisational and administrative arrangements to identify and manage such conflicts. Senior management within Deutsche Bank are responsible for ensuring that Deutsche Bank's systems, controls and procedures are adequate to identify and manage conflicts of interest. Deutsche Bank does not give tax or legal advice, including in this document and nothing in this document should be interpreted as Deutsche Bank providing any person with any investment advice. Investors should seek advice from their own tax experts, lawyers, and investment advisers in considering investments and strategies described by Deutsche Bank. Unless notified to the contrary in a particular case, investment instruments are not insured by any governmental entity, not subject to deposit protection schemes and not guaranteed, including by Deutsche Bank. This document may not be reproduced or circulated without Deutsche Bank's express written authorisation. Deutsche Bank expressly prohibits the distribution and transfer of this material to third parties. Deutsche Bank accepts no liability whatsoever arising from the use or distribution of this material or for any action taken or decision made in respect of investments mentioned in this document the investor may have entered into or may enter in future.

The manner of circulation and distribution of this document may be restricted by law or regulation in certain countries, including, without limitation, the United States. This document is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country, or other jurisdiction, where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Deutsche Bank to any registration or licensing requirement within such jurisdiction not currently met. Persons into whose possession this document may come are required to inform themselves of, and to observe, such restrictions. Past performance is no guarantee of future results; nothing contained herein shall constitute any representation, warranty, or prediction as to future performance. Further information is available upon investor's request.

Important Information

Deutsche Bank Aktiengesellschaft ("Deutsche Bank AG") is authorized to conduct banking business and to provide financial services as set forth in the German Banking Act ("Kreditwesengesetz"). Deutsche Bank AG is subject to comprehensive supervision by the European Central Bank ("ECB"), by the German Federal Financial Supervisory Authority (BaFin) and by the Deutsche Bundesbank ("Bundesbank"), Germany's central bank.

Kingdom of Bahrain

For Residents of the Kingdom of Bahrain: This document does not constitute an offer for sale of, or participation in, securities, derivatives or funds marketed in Bahrain within the meaning of Bahrain Monetary Agency Regulations. All applications for investment should be received and any allotments should be made, in each case from outside of Bahrain. This document has been prepared for private information purposes of intended investors only who will be institutions. No invitation shall be made to the public in the Kingdom of Bahrain and this document will not be issued, passed to, or made available to the public generally. The Central Bank (CBB) has not reviewed, nor has it approved, this document or the marketing of such securities, derivatives, or funds in the Kingdom of Bahrain. Accordingly, the securities, derivatives or funds may not be offered or sold in Bahrain or to residents thereof except as permitted by Bahrain law. The CBB is not responsible for performance of the securities, derivatives, or funds.

State of Kuwait

This document has been sent to you at your own request. This presentation is not for general circulation to the public in Kuwait. The Interests have not been licensed for offering in Kuwait by the Kuwait Capital Markets Authority or any other relevant Kuwaiti government agency. The offering of the Interests in Kuwait on the basis a private placement or public offering is, therefore, restricted in accordance with Decree Law No. 31 of 1990 and the implementing regulations thereto (as amended) and Law No. 7 of 2010 and the bylaws thereto (as amended). No private or public offering of the Interests is being made in Kuwait, and no agreement relating to the sale of the Interests will be concluded in Kuwait. No marketing or solicitation or inducement activities are being used to offer or market the Interests in Kuwait.

United Arab Emirates

Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated by the Dubai Financial Services Authority. Deutsche Bank AG -DIFC Branch may only undertake the financial services activities that fall within the scope of its existing DFSA license. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

State of Qatar

Deutsche Bank AG in the Qatar Financial Centre (registered no. 00032) is regulated by the Qatar Financial Centre Regulatory Authority. Deutsche Bank AG -QFC Branch may only undertake the financial services activities that fall within the scope of its existing QFCRA license. Principal place of business in the QFC: Qatar Financial Centre, Tower, West Bay, Level 5, PO Box 14928, Doha, Qatar. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Kingdom of Belgium

This document has been distributed in Belgium by Deutsche Bank AG acting through its Brussels Branch. Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany and licensed to carry on banking business and to provide financial services subject to the supervision and control of the European Central Bank ("ECB") and the German Federal Financial Supervisory Authority ("Bundesanstalt für Finanzdienstleistungsaufsicht" or "BaFin"). Deutsche Bank AG, Brussels Branch has its registered address at Marnixlaan 13-15, B-1000 Brussels, registered at the RPM Brussels, under the number VAT BE 0418.371.094. Further details are available on request or can be found at www.deutschebank.be.

Kingdom of Saudi Arabia

Deutsche Securities Saudi Arabia (DSSA) is authorized by the Capital Market Authority of the Kingdom of Saudi Arabia (CMA) with a license number (No. 37-07073). Deutsche Securities Saudi Arabia may only undertake the financial services activities that fall within the scope of its existing CMA license. DSSA registered office is at Faisaliah Tower, 17th floor, King Fahad Road, Al Olaya District Riyadh, Kingdom of Saudi Arabia P.O. Box 301806.

United Kingdom

This document is a financial promotion and is communicated by Deutsche Bank Wealth Management. Deutsche Bank Wealth Management is a trading name of DB UK Bank Limited. Registered in England & Wales No. 315841. Registered Office: 23 Great Winchester Street, London, EC2P 2AX. DB UK Bank Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. Financial Services Registration Number 140848. DB UK Bank is a member of the Deutsche Bank Group.

Hong Kong

Deutsche Bank Aktiengesellschaft is incorporated in the Federal Republic of Germany and its members' liability is limited. This material is intended for: Professional Investors in Hong Kong. Furthermore, this material is provided to addressee only, further distribution of this material is strictly prohibited.

Important Information

This document and its contents are provided for information only. Nothing in this document is intended to be an offer of any investment or a solicitation or recommendation to buy or to sell an investment and should not be interpreted or construed as an offer, solicitation, or recommendation. The contents of this document have not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the investments contained herein (if any). If you are in any doubt about any of the contents of this document, you should obtain independent professional advice.

This document has not been approved by the Securities and Futures Commission in Hong Kong (the "SFC") nor has a copy of this document been registered by the Registrar of Companies in Hong Kong, unless specified otherwise. The investments contained herein may or may not be authorised by the SFC. The investments may not be offered or sold in Hong Kong, by means of any document, other than (i) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) ("SFO") and any rules made under the SFO, or (ii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong)(the "C(WUMP)O") or which do not constitute an offer to the public within the meaning of the C(WUMP)O. No person shall issue or possess for the purposes of issue, whether in Hong Kong or elsewhere, any advertisement, invitation or document relating to the investments, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to investments which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made under the SFO.

Singapore

This material is intended for: Accredited Investors / Institutional Investors in Singapore. Furthermore, this material is provided to addressee only, further distribution of this material is strictly prohibited.

United States

In the United States, brokerage services are offered through Deutsche Bank Securities Inc., a broker-dealer and registered investment adviser, which conducts securities activities in the United States. Deutsche Bank Securities Inc. is a member of FINRA, NYSE and SIPC. Banking and lending services are offered through Deutsche Bank Trust Company Americas, member FDIC, and other members of the Deutsche Bank Group. In respect of the United States, see earlier statements made in this document. Deutsche Bank makes no representations or warranties that the information contained herein is appropriate or available for use in countries outside of the United States, or that services discussed in this document are available or appropriate for sale or use in all jurisdictions, or by all counterparties. Unless registered, licensed as otherwise may be permissible in accordance with applicable law, none of Deutsche Bank or its affiliates is offering any services in the United States or that are designed to attract US persons (as such term is defined under Regulation S of the United States Securities Act of 1933, as amended). This United States-specific disclaimer will be governed by and construed in accordance with the laws of the State of Delaware, without regard to any conflicts of law provisions that would mandate the application of the law of another jurisdiction.

Germany

This information is advertising. The texts do not meet all legal requirements to ensure the impartiality of investment and investment strategy recommendations or financial analyses. There is no prohibition for the compiler or for the company responsible for the compilation to trade with the respective financial instruments before or after the publication of these documents. The information contained in this document does not constitute an investment recommendation, investment advice or a recommendation to act, but is intended solely for information purposes. The information does not replace advice tailored to the individual circumstances of the investor. General information on financial instruments is contained in the brochures "Basic Information on Securities and Other Investments", "Basic Information on Financial Derivatives", "Basic Information on Forward Transactions" and the information sheet "Risks in Forward Transactions", which the customer can request from the Bank free of charge. Forecasts are based on assumptions, estimates, opinions and hypothetical models or analyses. Although, from the Bank's point of view, they are based on adequate information, it may turn out in the future that they are not accurate or correct. Past performance or simulated performance is not a reliable indicator of future performance. Unless otherwise indicated in this document, all statements of opinion reflect the current assessment of Deutsche Bank, which may change at any time. Deutsche Bank assumes no obligation to update the information contained in this document or to notify investors of any available updated information. Deutsche Bank AG is a stock corporation ("Aktiengesellschaft") incorporated under the laws of the Federal Republic of Germany with principal office in Frankfurt am Main. It is registered with the district court ("Amtsgericht") in Frankfurt am Main under No HRB 30 000 and licensed to carry on banking business and to provide financial services. Supervisory authorities: The European Central Bank ("ECB"), Sonnemannstrasse 22, 60314 Frankfurt am Main, Germany and the German Federal Financial Supervisory Authority ("Bundesanstalt für Finanzdienstleistungsaufsicht" or "BaFin"), Graurheindorfer Strasse 108, 53117 Bonn and Marie-Curie-Strasse 24-28, 60439 Frankfurt am Main, Germany.

Important Information

India

The investments mentioned in this document are not being offered to the Indian public for sale or subscription. This document is not registered and/or approved by the Securities and Exchange Board of India, the Reserve Bank of India, or any other governmental/ regulatory authority in India. This document is not and should not be deemed to be a "prospectus" as defined under the provisions of the Companies Act, 2013 (18 of 2013) and the same shall not be filed with any regulatory authority in India. Pursuant to the Foreign Exchange Management Act, 1999 and the regulations issued there under, any investor resident in India may be required to obtain prior special permission of the Reserve Bank of India before making investments outside of India including any investments mentioned in this document.

Italy

This report is distributed in Italy by Deutsche Bank S.p.A., a bank incorporated and registered under Italian law subject to the supervision and control of Banca d'Italia and CONSOB.

Luxembourg

This report is distributed in Luxembourg by Deutsche Bank Luxembourg S.A., a bank incorporated and registered under Luxembourg law subject to the supervision and control of the Commission de Surveillance du Secteur Financier.

Spain

Deutsche Bank, Sociedad Anónima Española is a credit institution regulated by the Bank of Spain and the CNMV and registered in their respective Official Registries under the Code 019. Deutsche Bank, Sociedad Anónima Española may only undertake the financial services and banking activities that fall within the scope of its existing license. The principal place of business in Spain is located in Paseo de la Castellana number 18, 28046 - Madrid. Registered in the Mercantile Registry of Madrid, volume 28100, book 0. Folio 1. Section 8. Sheet M506294. Registration 2. NIF: A08000614. This information has been distributed by Deutsche Bank, Sociedad Anónima Española.

Portugal

Deutsche Bank AG, Portugal Branch is a credit institution regulated by the Bank of Portugal and the Portuguese Securities Commission ("CMVM"), registered with numbers 43 and 349, respectively and with commercial registry number 980459079. Deutsche Bank AG, Portugal Branch may only undertake the financial services and banking activities that fall within the scope of its existing license. The registered address is Rua Castilho, 20, 1250-069 Lisbon, Portugal. This information has been distributed by Deutsche Bank AG, Portugal Branch.

Austria

This document is distributed by Deutsche Bank AG Vienna Branch, registered in the commercial register of the Vienna Commercial Court under number FN 140266z. Deutsche Bank AG is a public company incorporated under German law and authorized to conduct banking business and provide financial services. It is supervised by the European Central Bank (ECB), Sonnemannstraße 22, 60314 Frankfurt am Main, Germany and by the Federal Financial Supervisory Authority (BaFin), Graurheindorfer Straße 108, 53117 Bonn, Germany and Marie-Curie-Strasse 24-28, 60439 Frankfurt am Main, Germany. The Vienna branch is also supervised by the Austrian Financial Market Authority (FMA), Otto-Wagner Platz 5, 1090 Vienna. This document has neither been submitted to nor approved by the aforementioned supervisory authorities. Prospectuses may have been published for certain of the investments mentioned in this document. In such a case, investment decisions should be made solely on the basis of the published prospectuses, including any annexes. Only these documents are binding. This document constitutes marketing material for informational and promotional purposes only and is not the result of any financial analysis or research.

The Netherlands

This document is distributed by Deutsche Bank AG, Amsterdam Branch, with registered address at De entree 195 (1101 HE) in Amsterdam, the Netherlands, and registered in the Netherlands trade register under number 33304583 and in the register within the meaning of Section 1:107 of the Netherlands Financial Supervision Act (Wet op het financieel toezicht). This register can be consulted through www.dnb.nl.

© Deutsche Bank AG 2022

052115 110722