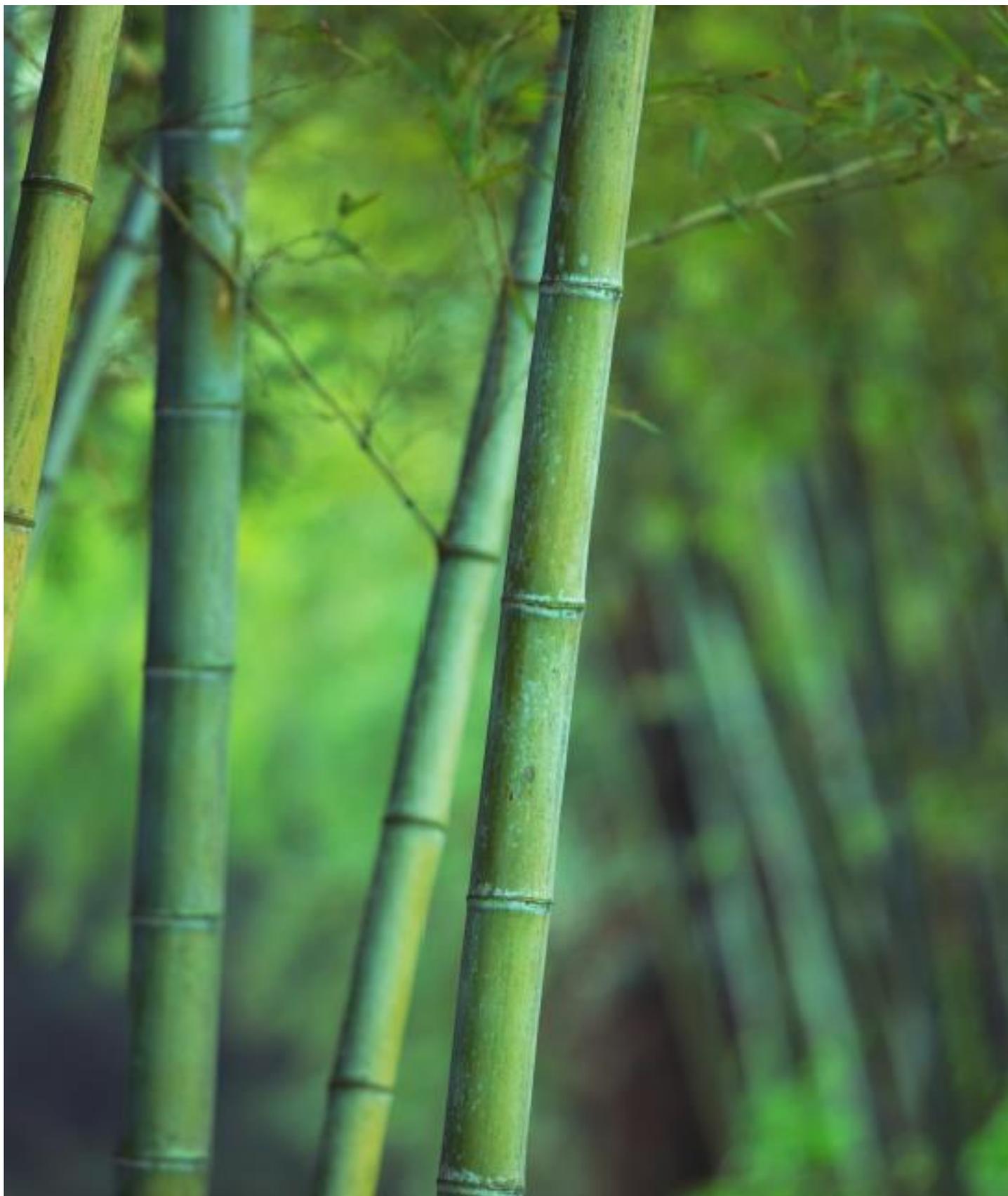


The Green Bond: Your insight into sustainable finance



In this issue

Floods, Fires and the IPCC: the Climate Crisis Gets Real

- 1 Letter to the reader**
With the IPCC heating up the urgency and the Global investor society tightening their demand on disclosure and Governance – alongside all the expertise and systematization that has been built over the few last years – we have perfect conditions for starting the repricing of cash flows and valuations.
- 2 Transition update: Is it time to panic?**
Over the summer, the climate crisis reality is starting to bite. The cost of extreme weather events is rising, and soaring LNG prices illustrate the risk if you turn off the old energy supply before the new one is ready. A credible transition will obviously require more capital, but how much? We estimate that at least USD 4tn annually or 5% of world GDP is needed. This is a huge, but not insurmountable sum for global markets.
- 8 Sustainable Debt Market Update**
Sustainable debt issuance continued in July and August with new records set compared to previous years with USD 87bn and USD 43bn in transactions, respectively. However, growth in issuances has declined over the summer with August 2021 seeing only an 11% increase over August 2020. Even when accounting for this, we expect total sustainable debt issuances to achieve or exceed USD 1.5tn in 2021.
- 16 “Code Red for Humanity”: The IPCC report and its implications for business and finance**
On 9 August, the Intergovernmental Panel on Climate Change (IPCC) issued the first part of its Sixth Assessment Report (AR6). There are three main takeaways from the IPCC report that are of particular interest for finance and business: 1. Climate change has impacts here and now 2. Current emission reduction efforts need to improve drastically 3. Future warming calls for urgent adaptation.
- 20 Munich Re: How (re-)insurance can help manage the risks from climate change**
Extreme temperatures in North America, winter storm and damages in Europe, floods in China’s Henan province, flash floods in Germany, Belgium, the Netherlands, and France, wild fires in Greece, Italy, Turkey, and California, hurricane Ida – those are just some of the natural catastrophes we have seen over the first three quarters in 2021. The link between such severe weather events and climate change is obvious.
- 23 E3G: The importance of finance at COP26 and the wider role of Development Finance Institutions**
At the end of October, the long-awaited COP26 UN Climate Summit will begin in Glasgow. Finance will be a critical issue at this summit. This article looks at what to expect from COP26 and the specific role Development Finance Institutions, particularly Multilateral Development Banks, can play in supporting climate finance targets and the wider finance mobilization needed to enable a global green recovery.

Letter to the reader

Turbulent Times – and Time for Action

With the IPCC heating up the urgency and the global investor community tightening its demands on disclosure and governance – alongside all the expertise and systematization that has been built over the last few years – we have perfect conditions for starting the repricing of cash flows and valuations due to consumer preferences, taxations and a gradual change in supporting infrastructure (towards low carbon). And with G20 looking into Biodiversity and Adaptation, there will soon be new drivers to accelerate the repricing. For corporates, this means that a solid green or transition platform, supported by a strong governance protocol, alongside a lean and clear communication, will be essential for the access to and cost of capital. We have a big internal debate on the capital structure of firms and the need to raise new risk capital for accelerating the transition, as well as on how to manage the dilution this will mean for current shareholders. What this will mean for longer term corporate bond issuance as well as corporate leverage is certainly a topic that will gain attention over the next 12-24 month.

Apart from this, we see that water management is becoming a prevalent theme. We are having ongoing discussions on this topic, and are constantly seeing new stakeholders joining this conversation to understand where we are heading. In short, water management is about water quantity (too little AND too much) and water quality (too little and rapidly moving in the wrong direction).

The consequences this will have on legislation, taxation, migration and geopolitical stability cannot be overstated. We are already seeing the physical effects of change in rain patterns, melting glaciers, as well as polluted or oxygen drained lakes and oceans – and we expect to soon see the financial market begin to price assets in accordance with strong strategies and good governance in this area. Just like in climate mitigation, it only takes a well-structured approach to understand the various elements and start raising questions.

However, being who I am – I can't help being positive. I believe that it is up to us to identify the fiduciary (long term) elements which will enforce the re-allocation towards stakeholders who embrace a long term solid and stable performance – and we can and will do so!

As always we have the privilege of having some excellent external contributions – in this edition provided by our friends at Munich Re, who will reflect on physical risk, and E3G reflecting on COP26. We also have a contribution from Professor Richard Klein, one of the authors of the IPCC assessment report, who worked with my colleague Gregor to provide some reflections on the implications of the IPCC analysis for finance.

Enjoy your reading and lets go and hunt some arbitrage :)

Christopher Flensburg

Head of Climate and Sustainable Finance

christopher.flensburg@seb.se

Transition update

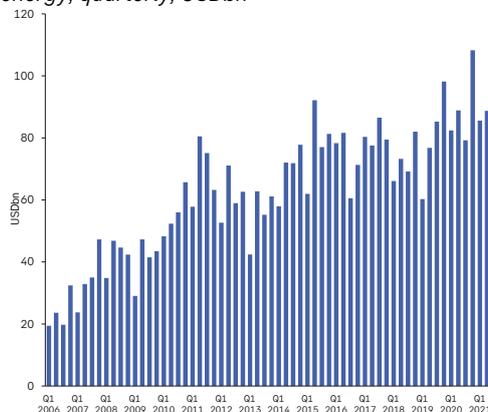
Is it time to panic?

Over the summer, a series of events have highlighted how our strategy in the fight against the climate crisis appears to be failing. The IPCC has just issued its sternest warning yet, but renewable energy investment remains unchanged from a decade ago. Now reality is starting to bite as the cost of extreme weather events is rising both in terms of property and human lives. Meanwhile, soaring European LNG prices illustrate the risk if you turn off the old energy supply before the new supply is ready. The result could be shortages and higher energy costs that hamper transition investment. So, is it time to panic? If panic means a radical change of direction in the face of extreme danger, then it probably is.

Reality bites 1: climate crisis costs materialize

This summer, the IPCC (Intergovernmental Panel on Climate Change) released the first part of its sixth assessment report with the strongest warnings yet on climate risks. According to the scientists, it is now indisputable that humans are responsible for the increase in global temperatures and contribute to the rising frequency of extreme weather events.

Figure 1: Global new investments in renewable energy, quarterly, USDbn



Source: BNEF, SEB Climate & Sustainable Finance Research

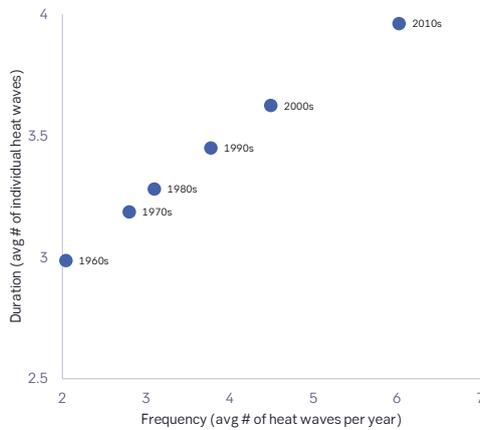
The IPCC's predictions are not different from their earlier reports, even if they have higher conviction. The risks have been known for years and yet we have not taken sufficient steps to stop emissions from rising. Total renewable energy investment in H1 2021 was an improvement from the pandemic-constrained period a year before (H1 2020), but it was 7% lower than in H2 2020 and not much higher than the average for the past decade. At the current pace of transition, we are heading for more than a 2°C rise in temperatures in the next two-three decades and anywhere between 3-6°C by the end of the century if we do not change the current emission trajectory.

This is likely to change as the real costs of the climate crisis are starting to emerge in the shape of extreme weather events like floods, fires, storms, droughts and other disruptions. According to the IPCC, the evidence on extreme weather effects of the climate crisis is still not conclusive. It is almost certain, however, that we will see more extreme heatwaves and more extreme rainfall events as well as droughts, and likely that some parts of the world will see more severe storms. The evidence on floods is inconclusive, but rising sea levels suggest that other water-related problems will emerge.

The floods in continental Europe this summer made the potential cost clear; not only were the economic damages huge but the more serious problem was the public safety issue as more than 300 people died. China also suffered severe flooding and Lower Manhattan was submerged. Forest fires have threatened major cities on several occasions, while temperatures have reached health-threatening levels in new parts of the world.

Preventing more costly shocks in the future will require investment in adaptation measures and this is also likely to boost popular and political support for faster investment in decarbonization.

Figure 2: Heat Wave Characteristics in US



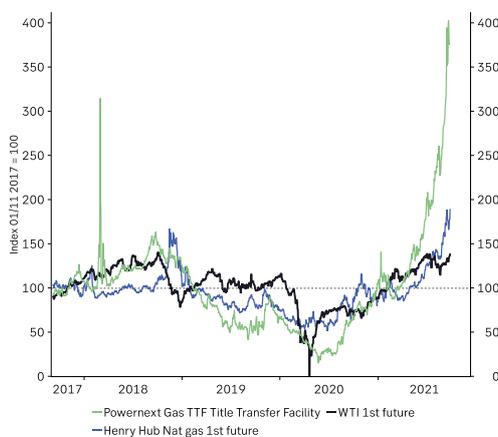
Source: EPA, SEB Climate & Sustainable Finance Research

As a result, we think the most likely path forward is that there will be a surge in climate-related investment in the coming years which will to some extent be facilitated by a higher tolerance for inflation and overheating risks from central banks and governments

Reality bites 2: supply shortages

At the same time, another energy-related shock that exposes the failure of the current transition strategy is hitting Europe in the shape of soaring natural gas prices and potential shortages as we head into the winter season. Production of North Sea oil and gas has been falling in both the UK and Denmark in recent decades, partly due to an ambition to reduce CO₂ emissions. This leaves Europe dependent on gas supplies from Russia, but Russia also has other buyers.

Figure 3: Price of different fossil fuel types

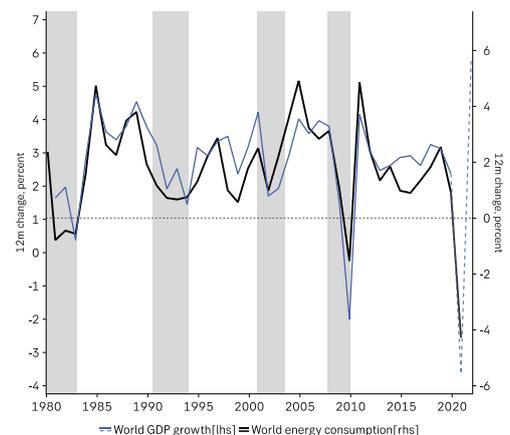


Source: Macrobond, SEB Climate & Sustainable Finance Research

The result this autumn has been a supply squeeze that has driven LNG prices up by almost 300%. This highlights the risks if you try to reduce energy supply without a commensurate decline in energy consumption.

The problem appears to be that we have focused too much on reducing energy consumption, which is unlikely to take us even remotely close to zero, and not enough on delivering an alternative energy supply. Energy use is hardwired into the deep economic infrastructure; the energy intensity of GDP is slowly declining over time but cannot be changed fast. Energy-saving strategies like circular economics are an important part of the decarbonization strategy, but they are incremental, not disruptive. If we assume that GDP per capita will be higher than today and the population rises by another 2bn as current forecasts imply, then it will be a big challenge just to keep global energy consumption unchanged.

Figure 4: World GDP and energy consumption



Source: Macrobond, BP, IMF, SEB C&SF Research

The IEA, BNEF and IRENA studies of realistic pathways to zero emissions, that are referenced below, all assume that total primary energy consumption will be largely unchanged by 2050 and focus on ways to replace fossil fuels.

Once you understand that total energy use is practically fixed, the nature of the problem changes. This means fossil fuel consumption is essentially just a residual between total energy demand and the supply of zero-emission energy. You can only reduce fossil consumption by increasing the supply of cheaper and cleaner alternatives. If you take out the existing supply before the new supply is ready, then you just drive the price of energy up and GDP down.

It will cost USD 4tn/yr to replace carbon

According to the IPCC analysis, it is still possible to prevent the temperature from rising above the 1.2-1.8% range if we end all GHG emissions by 2050, and several recent studies from the IEA, IRENA and NBEF suggest this is a realistic objective, but that it will require a very substantial increase in investment levels.

It is realistic because renewable energy has all the hallmarks of a classic technology revolution, most notably the learning-curve effect: prices are likely to continue declining as we use more of them. However, at the current investment pace it would take too long to complete it. So how much more do we need to do?

We start with a stylized calculation based on the historical relationship between investment in and output of renewable energy, based on the learning curve pattern we have observed so far.

Global investment in renewable energy has been largely stable at around USD 300bn per year for the past decade, according to BNEF, and this has according to BP's Energy Yearbook resulted in annual supply increases of around 80 million tons of oil equivalent (MTOE).

Global renewable energy production is now 800 MTOE, while total energy consumption amounts

to 14,000 MTOE per year and is (optimistically) expected to be unchanged by 2050 as energy efficiency gains offset the increase in GDOP and population.

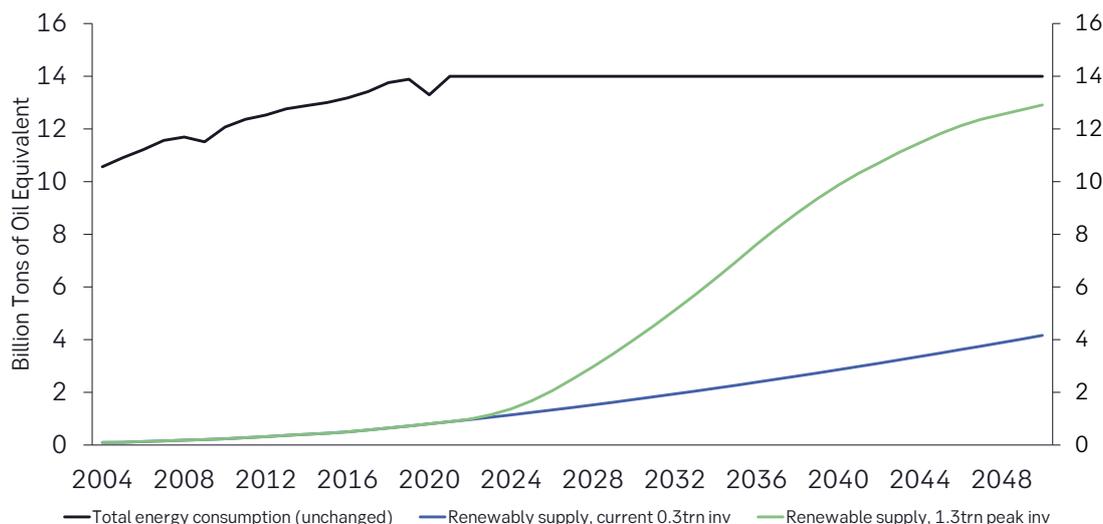
Even if we assume that the cost of one additional unit of renewable energy supply goes down by 20% every time the overall supply doubles, in line with the historical pattern, the current investment level would only take renewable energy to 40% in 2050.

To get close to 100% of total energy consumption, investment in renewable energy would have to jump to USD 1.3tn and stay there for 10-15 years.

That is roughly 1% of world GDP, but the supplementary investment in transmission and storage of electricity combined with the corporate investment needed for accelerated electrification of processes currently requiring fossil fuel input are likely to be on a similar scale.

Adaptation costs could end up even larger as extreme weather events continue to rise in severity and sea levels start rising. Even if we factor in lower investment in new fossil energy production, this is investment on a scale not seen in decades.

Figure 5: Total energy consumption and renewable energy supply scenarios



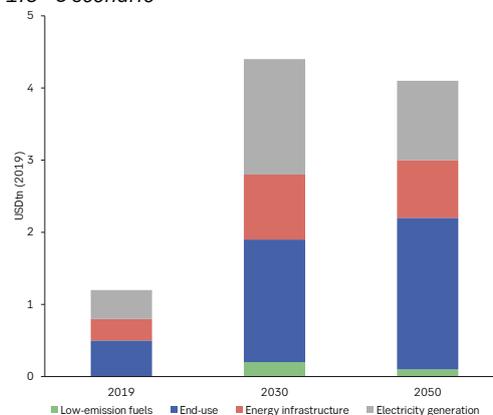
Source: Macrobond, BP, IMF, SEB C&SF Research

This is a useful starting point, but in order to assess the full costs of transition we need to supplement it with a comprehensive multi-sector analysis. Fortunately, as noted above, several important new studies provide such detailed estimates of the total investment required for a complete transition to a zero-emission economy by 2050. The most influential is probably the seminal IEA study, [Net Zero By 2050](#), which provides a detailed analysis of realistic pathways to the objective, the cost and distribution of the required investment as well as the broader economic and social implications.

According to the IEA study, total annual clean energy-related investment will have to increase from USD 1.2tn in 2019 to USD 4.4tn in 2030 before slowly declining towards 2050 if we are to reach the zero-emission target. In line with the simple illustration above, around USD 1.2tn of the total 3.2tn increase will go to the generation of electricity, 0.6tn is for energy infrastructure while another 1.2tn of investment is needed from energy users in construction and industry.

Another recent comprehensive study, [IRENA's World Energy Transitions Outlook](#), finds roughly similar investment requirements. In IRENA's zero-emission scenario, annual investment in energy production and for end-users must increase from an average of USD 824bn in 2017-2019 to USD 3841bn in 2021-2050 with the highest investment level in the first decade of the period.

Figure 6: Clean energy investment needed for IEA 1.5°C scenario

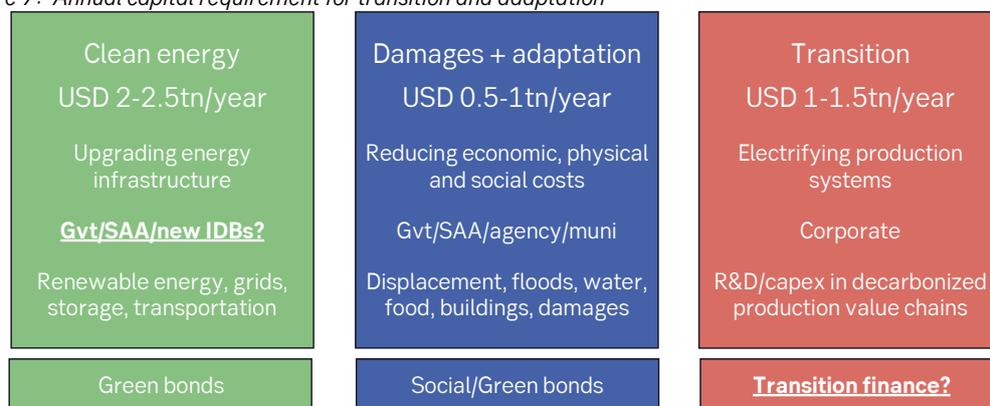


Source: IEA, SEB Climate & Sustainable Finance Research

The [BNEF's New Energy Outlook](#) also includes a detailed assessment of the energy-production related investments that will be needed to achieve their 'green scenario'. The BNEF estimate, which does not include investment on the end-user side in things like electric vehicles, industrial machinery, and heat pumps, is that energy investment must be USD 2.7-4tn higher on average in the 2021-2050 period.

A conservative estimate of the increase in annual transition investment required would thus appear to be at least USD 3.5-4tn, with a bit more than half in energy production and infrastructure and the rest in the end-use of energy for heating, production and transportation. Reduced investment in fossil energy production will offset a small part, so we use USD 3tn as a ballpark estimate.

Figure 7: Annual capital requirement for transition and adaptation



Source: SEB Climate & Sustainable Finance Research

At the same time, the other costs of the climate crisis will continue rising. The total cost of the climate crisis that must be financed includes the direct cost of climate-related shocks like floods, droughts or heatwaves. This also includes the social cost of displacement due to temperature changes and rising sea levels as well as the potential disruption of food and water supplies.

To reduce the costs caused by climate impacts, one can also invest in measures to protect the population against such shocks like dikes and sewage systems, as well as protecting against disruption.

The last component is generally referred to as adaptation, which the IPCC defines as 'the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities, in human systems'.

Big engineering projects to protect from heavy rain and rising sea levels are expensive, and increased migration forced by falling food production and high temperatures can threaten social stability if the responsibility is not shared globally.

There is a surprisingly limited academic literature on the adaptation e costs, but they are likely to be substantial. According to the IMF, 'there is a growing realization that the risks and economic costs of climate change have been underestimated. If unchecked, climate change could displace hundreds of millions of people'.

The direct costs are also likely to grow over time. A [2021 study from Swiss Re/Oxfam](#) suggested that world GDP could be 11-14% lower by 2050 if the global temperature rises by 2°C.

Our ballpark estimate is that the combined direct (caused by climate related impacts) and indirect (adapt to climate impacts) costs of the climate crisis cost will rise to around USD 1tn annually by the second half of the decade even in a successful transition, because the damage is already done for the next 10-20 years even if we accelerate the transition and the reduction of CO₂ emissions now.

If we add it all up, a conservative estimate of the costs for transition investment, adaptation and damages will amount to around USD 4tn (5% of

current world GDP) in annual investment and costs that will need to be financed to give us a chance of reaching the target. And this is cheap, both if you compare with the alternative of doing nothing and in terms of the efficiency and welfare gains it will provide us with.

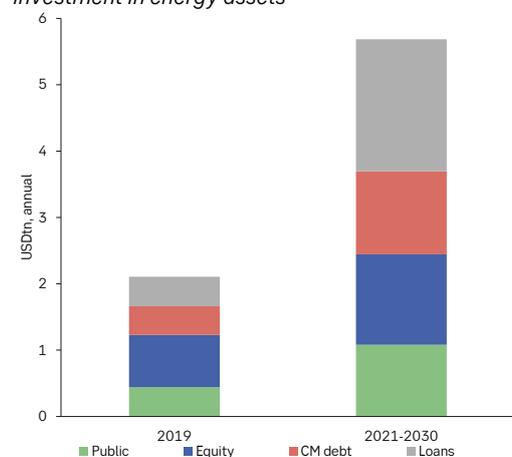
How can we fund the investment?

5% of GDP is not an insurmountable requirement from a global macro perspective, but who will come up with the capital? Governments normally lead in solving the chicken-and-egg problem that all parts of the value chain must move together, but somebody must make the first move.

Aggressive investment in the supply of clean electricity will give energy users confidence to plan their switch and this kind of infrastructure investment typically requires public investment to work as a catalyst.

Governments have a problem: most of them already have very high debt as well as lingering costs from the fight against the pandemic. In emerging markets, the ability to pay is even more constrained as national income is lower and new debt comes with a substantially higher yield. Two things suggest that they are starting to realize they will have to spend anyway. The first is that over the past year we have started to see adverse effects like extreme heat, flooding and forest fires on a scale that threatens both personal and economic safety for larger population groups. The second, that the pandemic taught them that rules can be broken if the danger is serious.

Figure 8: Annual capital requirement for investment in energy assets



Source: SEB Climate & Sustainable Finance Research

Even if governments have changed their attitude to deficit spending, they are unlikely to be able to carry the massive cost of the transition on their balance sheets. The funding of major infrastructure investments could be shifted partly to private investors, given suitable government guarantees, and companies are also likely to have to raise capital directly for transition investments.

[IRENA's World Energy Transitions Outlook](#) also offers an estimate of the likely funding sources for increased energy investment. According to the study, the capital requirement for investment in energy assets will increase from USD 2.1tn in 2019 to an average of USD 5.7tn in the years from 2021-2030. Direct public investment is likely to increase from 0.4tn to 1.0tn, but the main role is to facilitate the financing of the bulk of the investment with private capital by assuming part of the investment risk. Both bond and loan financing are expected to at least triple.

Do we need a transition finance market?

If this assessment is correct, governments will shift most of their investment off the balance sheet, which means private capital must carry the bulk of the increase.

At first glance, this might look problematic. Raising this much capital could ultimately crowd out other important investment by pushing up real yields. However, the collapse in real yields over the past decades suggest that there is a chronic saving-investment balance that could be absorbed if investment starts rising.

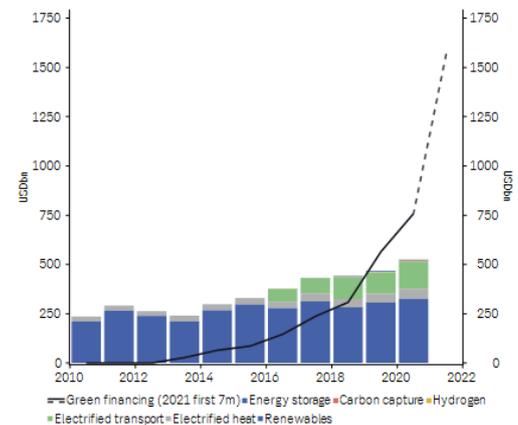
With a combination of government guarantees to reduce the risk and central banks that are willing to experiment with low real rates in a strong economy, it is in our possible to finance the transition without significantly affecting other parts of the economy.

Furthermore, the surge in sustainable investment products in recent years suggests there is a large and rising supply of investor capital that is earmarked for supporting the transition to a sustainable economy.

In 2021 along, we expect more than USD1.5tn to be raised in sustainable finance debt instruments. Furthermore, according to Morningstar, close to USD 2tn is now invested in funds that are labelled sustainable, up from around USD 1tn at the start

of 2020. The number of pension funds and other institutional investors that have signed up for PRI and other statements of intention keeps going up.

Figure 9: Climate investment and sustainable financing



Source: BNEF, SEB Climate & Sustainable Finance Research

However, the link from sustainable financial investment to investment that reduces CO₂ emissions is not strong today. Sustainable debt issuance has for instance gone from zero to 1.5tn in a decade, but total transition investment is only 0.5tn and has only increased by a fraction of this amount.

There is nothing surprising about this, as it was more or less embedded in the latest generation of sustainable finance products. If the focus is on making sure you fund ESG-compliant companies or governments or you just want a low average CO₂ emission, then the link to actual investment in the real world is going to be indirect at best.

As the cost of extreme weather disasters, adaptation investment and transition investment start to soar, we believe that investors will demand a stronger additionality (or marginal impact) from their sustainable financial investment.

This suggests to us that there may be a need for a second strand in sustainable financial investment alongside ESG with a more direct focus on financing transition investment and a more pragmatic approach to the reputational risks of calling something green or sustainable. The challenge for the financial sector is to continue to innovate and develop funding tools that strengthen such a link from savings to real world action.

Sustainable Debt Market Update

Sustainable debt on the way towards USD 1.5tn of total issuances in 2021

Note on data: Due to improvements to our data collection and analysis process, the numbers shown in this report differ slightly from those in previous reports.

If you subscribe to The Green Bond, please note that you also receive the sister publication "Sustainable Finance Snapshot", which offers a monthly summary of developments in the sustainable debt market.

Summer 2021 update

Growth in sustainable debt continued in July and August with new records set compared to previous years with USD 87bn and USD 43bn in transactions, respectively. This brings the total volume of sustainable bonds and loans to USD 983bn, already 28% above last year's total.

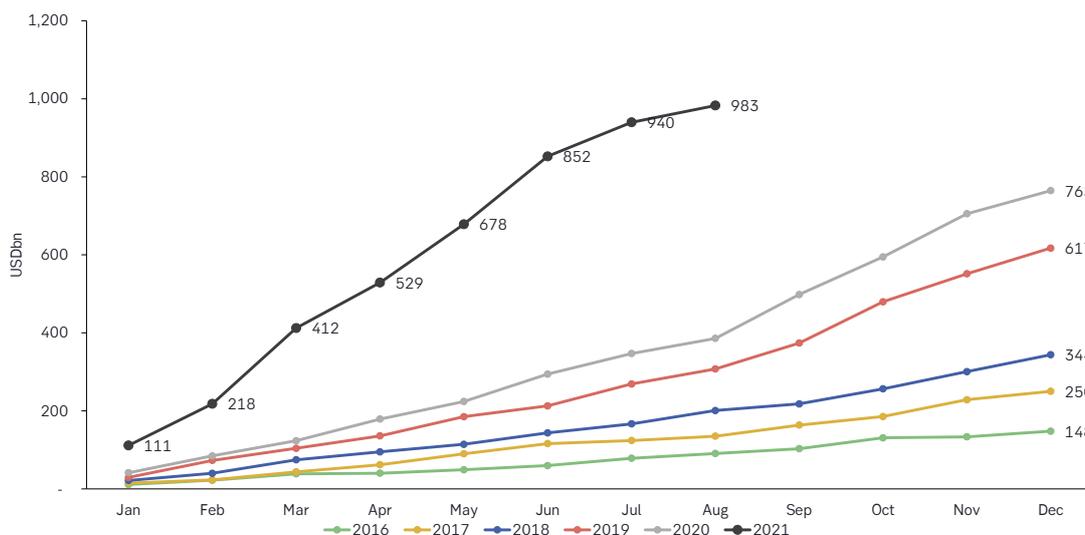
However, growth in issuances has declined over the summer with August 2021 seeing only an 11% increase over August 2020. Please note that we use the term issuance to describe both bond and loan transactions.

Growth this summer was driven by labelled bonds which grew more than 65% compared to July and August 2020 with issuances worth USD 104.8bn.

The loan side of the market, however, showed a 10% decline in transactions compared to last summer. The drop in sustainable loans was due to green loans which saw a drop of more than 73%.

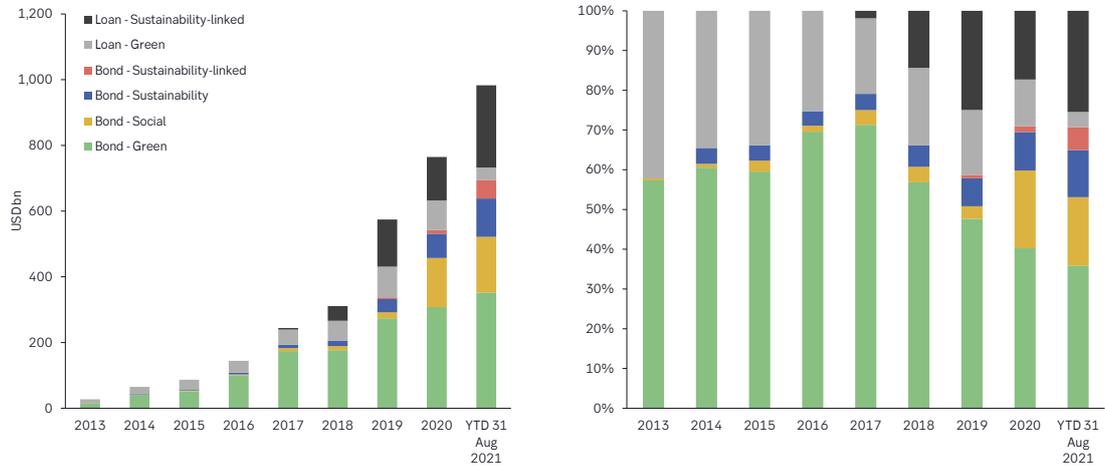
Based on previous years, September will likely see an acceleration in both bond and loan transactions. This would put a doubling of annual issuances well within the realm of possibility. Even when accounting for the observed decline in growth this summer, we expect total sustainable debt issuances to achieve or exceed USD 1.5tn in 2021.

Figure 10: Cumulative annual sustainable debt financing



Sources: BNEF

Figure 11: Sustainable debt market growth by product type



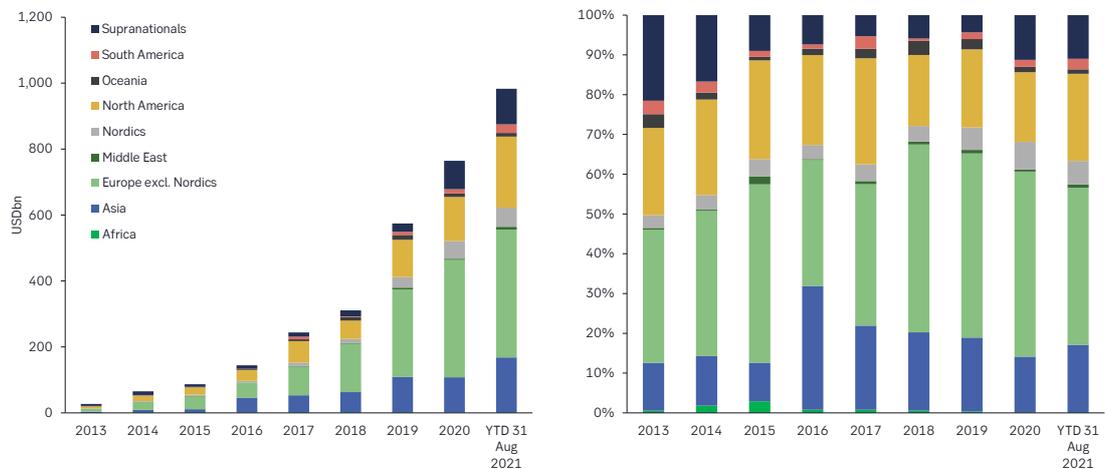
Sources: BNEF

Regional update

In July and August, most sustainable debt transactions were recorded in Europe including the Nordics with combined USD 42.5bn of new labelled bonds and loans (USD 446bn YTD). However, growth in these two markets has stagnated with transactions in the Nordics being 22% lower than in summer 2020. North America was the second largest market for sustainable debt in July and August this year, with a total of USD 40.2bn in transactions, 64% more than in the same period last year.

Notably, the strongest growth globally in sustainable debt in the last two months has been in emerging markets with South America recording USD 8bn and Middle East recording USD 2bn of transactions, up more than eight and six times compared to summer last year. Africa also recorded 0.9bn sustainable debt in July and August with no transaction over the same period last year. Transactions in Asia and by Supranational Financial Institutions also continued to grow year-over-year with 56% to USD 29bn and with 149% to USD 6.75bn, respectively.

Figure 12: Sustainable debt market growth by region



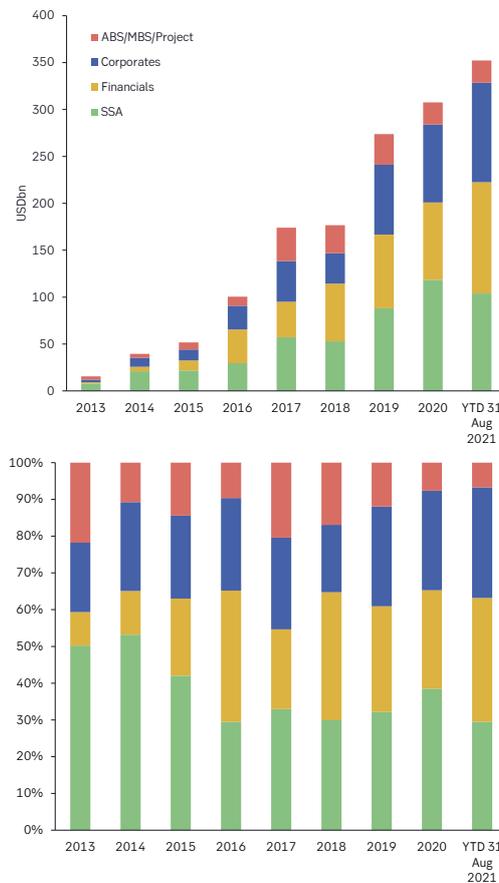
Sources: BNEF

Use of proceeds

Green Bonds

Growth in the flagship sustainable debt product continued this summer. A total USD 55.9bn of green bonds were issued in July and August. This is up 30% from the record set last summer and the highest volume of green bond issuance ever record in July and August combined. Year to date more than USD 352bn of green bonds have been issued, up from USD 163.7bn in the same period.

Figure 13: Green bond market growth by sector



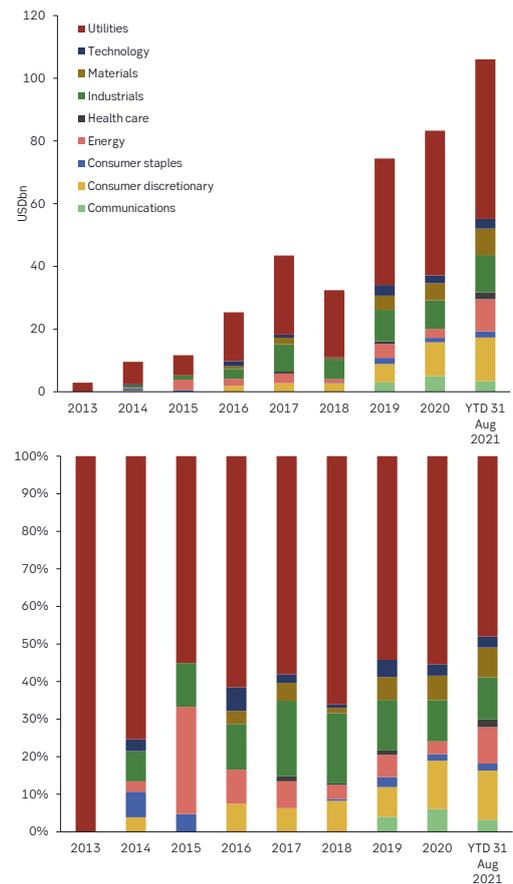
Sources: BNEF and Bloomberg Terminal

The geographical distribution of green bond issuances, however, suggests that market growth is not uniform. Indeed, issuances in Europe have been stagnant over the summer and the Nordics recording a 65% decline in transactions. One possible explanation for this temporary drop in growth could be that many market participants have been waiting for publication of the EU’s proposal for a [Green Bond Standard](#).

Instead, growth in the green bond market in July and August was driven by Asia, Supranationals and North America with USD 16bn (+89% YOY), USD 0.7bn (+43% YOY) and USD 18.5bn (+37% YOY), respectively.

Looking at the different types of issuers, financial institutions stand out as the largest issuer of green bonds with total issuances of USD 21bn in July in August this year. This is up 43% from the same period last year. The three largest issuances in this part of market came from JpMorgan Chase (USD 1.25bn), LeasePlan Corp (USD 1.18bn) and Munich Re (USD 1.18bn).

Figure 14: Corporate green bond market growth by industry



Sources: BNEF and Bloomberg Terminal

Growth of green bonds was even stronger in the corporate sectors with total issuances exceeding USD 19.3bn between July and August and USD 106bn since the beginning of 2021.

This equates to a year-on-year growth rate of 122% compared to summer last year. Notable deals include a USD 1.2bn issuance from engineering construction company Interchile S.A., a USD 1bn green bond by utility company Berkshire Hathaway and a USD 0.6 bn inaugural green hybrid bond by chemical company Evonik.

Looking at the growth in the corporate green bond market by industry, data suggests that there has been a trend towards greater diversification. While historically most issuances came from utilities and industrial companies, energy companies, companies in consumer discretionary, communications and materials make up an increasing share of the green bond market.

Green bond issuances from sovereigns and supranational agencies grew to a total of USD 12.9bn in July and August which is 33% below the same period last year. Noteworthy transactions included a USD 0.1bn sovereign green bond by Hungary which is a follow-up on the countries inaugural sovereign green bond in April this year as well as a USD 0.16bn issuance by state-owned Korea South-East Power.

Finally, the market for asset or mortgage-backed green bonds and project bonds continued to decline with total issuances of USD 2.75bn in July and August which was 13% lower.

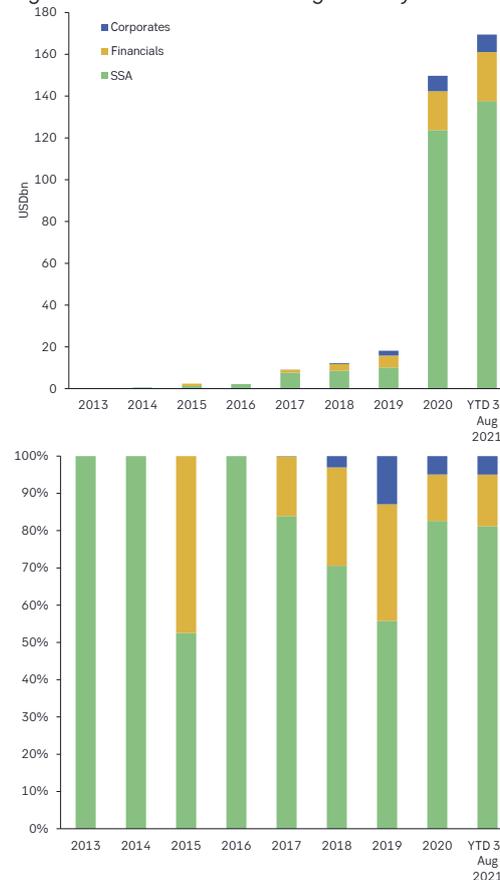
Social Bonds

The market for social bonds continued its Covid-19 powered growth path this summer with USD 18.9bn in issuances, up 115% YOY. Total issuances in 2021 now stand at USD 169.5bn, already beyond the USD 149.7bn worth of social bonds issued last year.

Sovereigns and Supranationals continued to be largest issuer of social bonds with a combined deal volume of USD 12.3bn in July and August this year (USD 137bn YTD). Notably, the growth in social bonds was not driven by the European Union this summer which made no new issuances.

Instead, the largest issuers of social bonds in the public sector this summer was the Government of Chile with two issuances of USD 2.25bn and USD 1.18bn and the Republic of Korea with seven issuances worth a combined USD 1.92bn.

Figure 15: Social bond market growth by sector



Sources: BNEF and Bloomberg Terminal

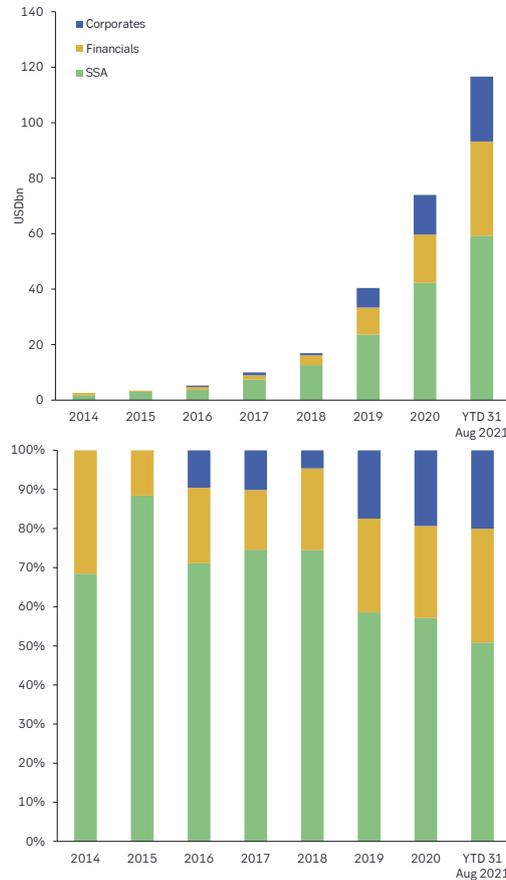
A closer look at individual issuances also reveals that housing and real estate is starting to reassume its leadership role in the social bond space. The largest issuances by financial institutions came from Credit Agricole (USD 1.18bn) to finance social housing loans.

Sustainability Bonds

Sustainability bonds have seen the fastest growth this year among use-of-proceeds bonds. This trend continued this summer with USD 19bn in transactions, up 72% compared to July and August last year. This year's total volume of sustainability bonds now stands at USD 116.6bn compared to USD 74bn in total in 2020.

Corporates were the largest class of issuers of sustainability bonds, with Pfizer issuing USD 1bn to fund capex for its Covid-19 vaccine and R&D. The market of corporate sustainability bonds, however, shrank by 62% YOY.

Figure 16: Sustainability bond market growth by sector



Sources: BNEF and Bloomberg Terminal

Growth was driven by an almost 3.5 times increase in sustainable bond issuances from Sovereigns and Supranationals compared to July and August last year. The largest public issuances of social bonds came from the World Bank with USD 2.37bn and USD 1.38bn and the Government of Mexico with USD 1.48bn.

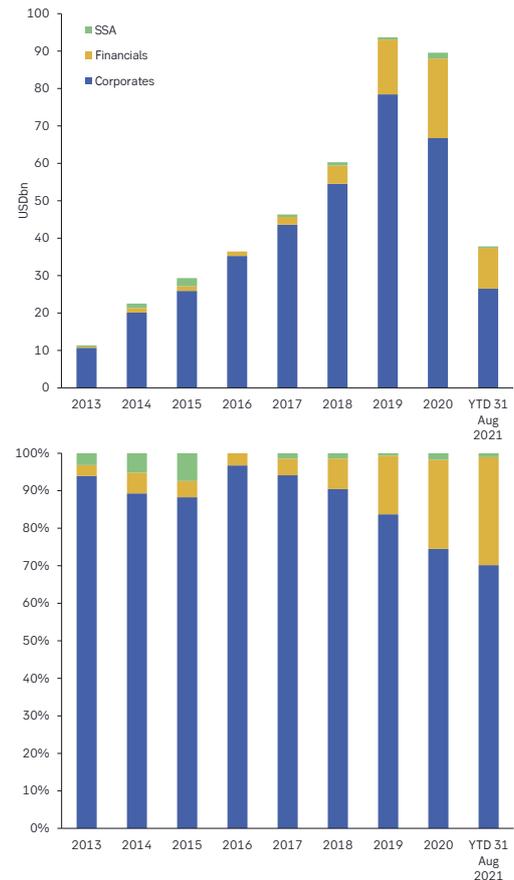
Green Loans

Note on data: The green loan market is a private market with limited access to information. We use the loans listed in the Bloomberg Terminal and Bloomberg New Energy Finance (BNEF) which we think provides a good reflection of the overall market.

As already mentioned, the market for green loans has seen a remarkable drop of almost three-quarters this summer compared to July and August 2020. The decline affected all types of borrowers, with corporates down 76% and financials down 60% YOY YTD.

Reduction in corporate green loans can be largely attributed to energy and utility companies reducing their borrowing by 22% and 65%, respectively compared to summer 2020. Both sectors account for more than 85% of total green loans ever.

Figure 17: Green loan market growth by sector



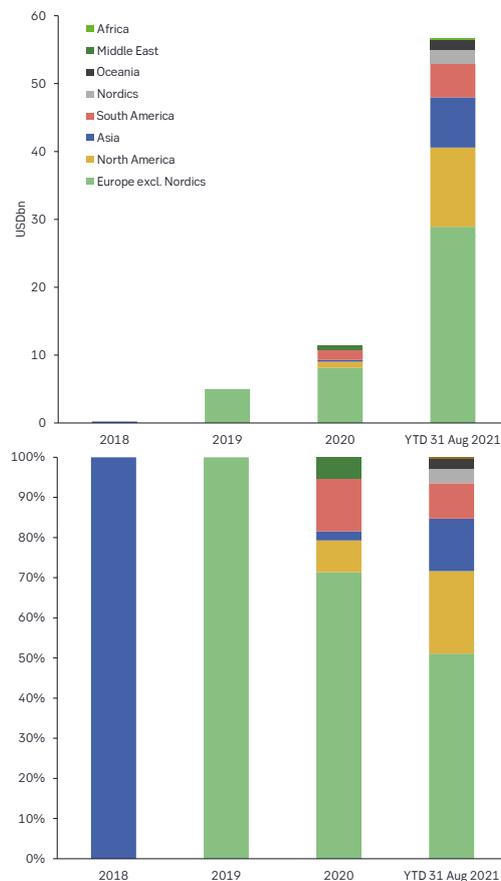
Sources: BNEF and Bloomberg Terminal

One possible explanation for the drop in corporate green loans is borrowers in carbon-intensive sectors are increasingly turning to sustainability-linked loans. One example is Enel which since 2019 only recorded four green loans but twenty performance-based loans.

Performance-based Sustainability-linked bonds (SLB)

Total issuances of sustainability-linked bonds passed USD 56.6bn this summer, already more than five times the amount issued in all of 2020. A total of 22 performance-based bonds were issued in July and August, with four transaction coming from sustainability-linked bond pioneer Enel worth USD 4bn.

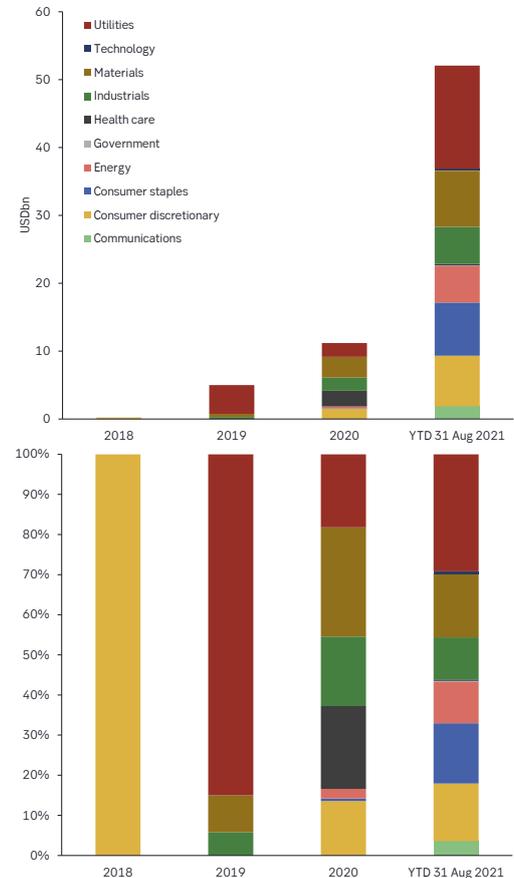
Figure 18: Sustainability-linked bond market by region



Sources: BNEF and Bloomberg Terminal

The market for sustainability-linked bonds is dominated by corporates accounting for 92% of all issuances ever, with the remainder coming from financial institutions. Utilities were responsible for almost 70% of issuances in July and August, followed by companies doing business in the consumer discretionary sector that accounted for 20% of issuances this summer.

Figure 19: Corporate sustainability-linked bond market by industry



Sources: BNEF and Bloomberg Terminal

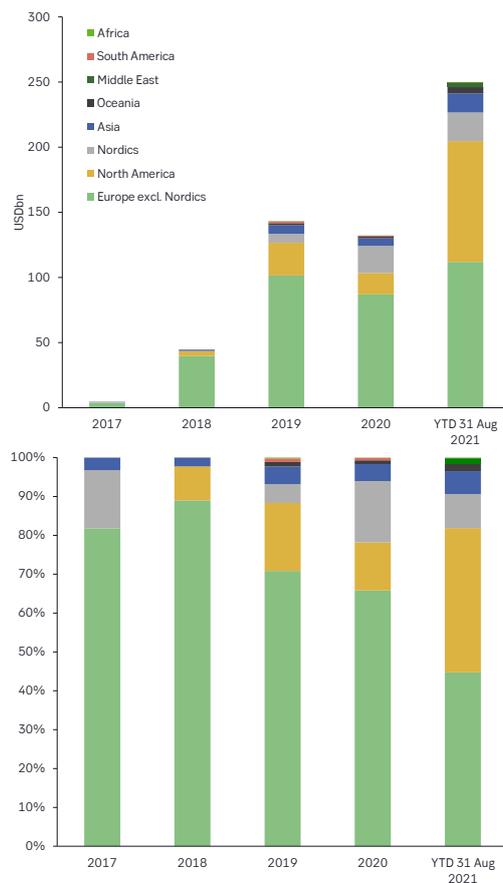
Looking at YTD numbers, the utility sector is responsible for 29% of all corporate issuances of sustainability-linked bonds, followed by materials, 16%, consumer staples, 15%, consumer discretionary, 14%, industrials, 10.5%, and energy, 10%, with the remainder coming from communications, technology and healthcare.

Sustainability-linked loans (SLL)

Note on data: The sustainability-linked loan market, whereby the loan margin is typically linked to a set of targets or an ESG score, is a private market with limited access to information. We use the loans listed in Bloomberg New Energy Finance (BNEF) which we think provides a good reflection of the overall market.

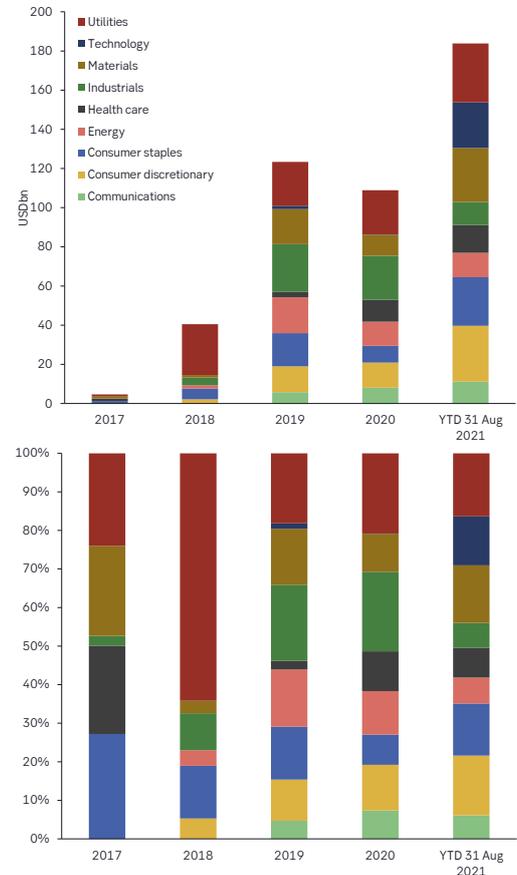
July and August this year saw a 35% increase in sustainability-linked loans compared to the same period last year. YTD performance-based loans have exceeded USD 250bn and it is likely that market for sustainability-linked loans will increase by 2.5 times in 2021 compared to 2020. The region with the fastest growth is North America which has seen USD 92.8bn in transactions YTD which is 466% more than last year's total.

Figure 20: Sustainability-linked loan market growth by region



Sources: BNEF and Bloomberg Terminal

Figure 21: Corporate sustainability-linked loan market growth by industry



Sources: BNEF and Bloomberg Terminal

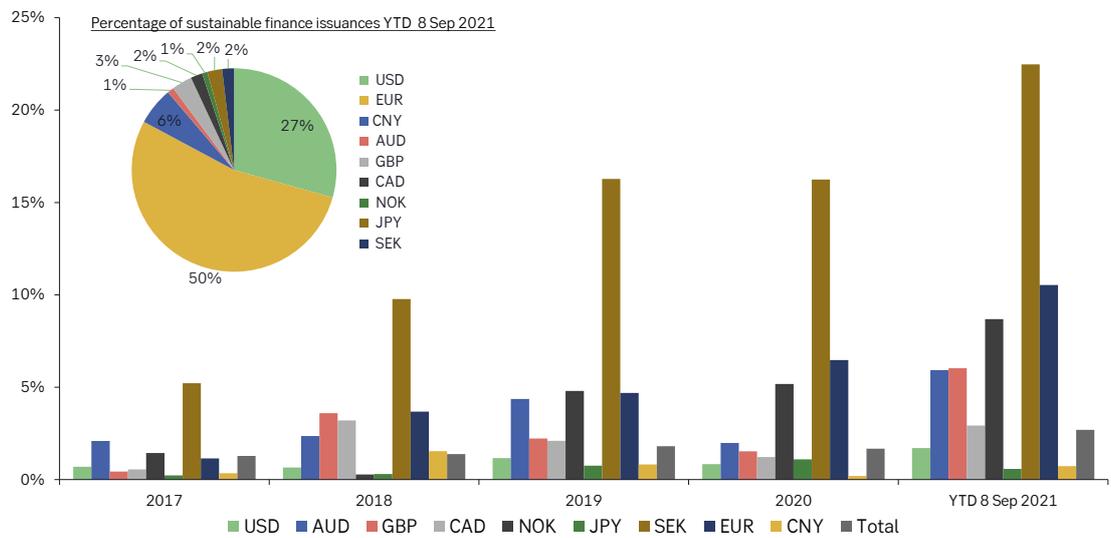
Corporates account for more than 73% of the total worth of sustainability-linked loan transactions this year. Compared to the sustainability-link bonds, the share of different industries is much more evenly distributed. Of the USD 183bn of loans this year, 16% was by energy companies, 15.5% by companies in consumer discretionary, 15% by companies in materials, 13.5% by companies in consumer staples and 12.6% by technology companies.

Currency analysis

Labeled bonds across all currencies stands for 2.7% of the entire market YTD, up from 1.7% in 2020. For bonds issued in SEK 22.5% of all bonds issued so far 2021 carry a green, social, sustainability or sustainability-linked label, compared to 16.2% in 2020.

Share of sustainability-themed bonds of the total EUR dominated bond market also grew from 6.5% in 2020 to 10.5% until early September this year. The share of labelled bonds in the EUR market is likely to increase significantly in the near-term future as the EU readies to issue the first of EUR 250bn in green bonds in October. The EU published its [green bond framework](#) in early September in preparation of its first green bond.

Figure 22: Green, social, sustainability and sustainability-linked issuances as a percentage of total bond issuance



Sources: Bloomberg New Energy Finance and Bloomberg Terminal

“Code Red for Humanity”: The IPCC report and its implications for business and finance



Prof. Dr. Richard J.T. Klein
Team Lead: International Climate Risk and Adaptation
Senior Research Fellow
richard.klein@sei.org

Gregor Vulturius, PhD
Advisor Climate & Sustainable Finance
gregor.vulturius@seb.se

On 9 August, the Intergovernmental Panel on Climate Change (IPCC) issued the first part of its Sixth Assessment Report (AR6). The second part of AR6 - on climate change impacts, adaptation and vulnerability - and the third part - on mitigation of climate change - will be published in February and March 2022, respectively.

This first part focuses on the physical science of climate change and provides a synthesis of the most up-to-date scientific findings on observed and potential future changes of the climate. According to the report, global average surface temperatures have already increased by 1.1 °C since 1850.

The timing of the IPCC report is no coincidence. It is published just ahead of COP26 in November, which will scrutinize countries' new or updated nationally determined contributions to the Paris Agreement. The findings of the IPCC will underpin the first 'global stock take' of countries' progress towards achieving the global goals of the Paris Agreement, which will be in 2023.

Compared to previous IPCC reports¹, the pathways through which climate change is impacting business and finance are much better known today. Following the inception of the Task Force for Climate-Related Disclosure in 2016², markets now

better understand that climate-related physical and transition risks have an impact on corporates' financial position, asset managers' holdings and the stability of the financial system as a whole³.

The latest IPCC report also improves market participants' understanding of these risks and how best to manage them.

Key findings of the IPCC

The IPCC has become even more confident that increases in greenhouse gas emissions caused by human activities are the driving force behind climate change. The scientists state that “[it] is unequivocal that human influence has warmed the atmosphere, ocean and land.” Like in previous reports, the IPCC concluded that climate change is human-made, based on careful examination of other factors such as natural variability, solar fluctuation, and volcanic activity.

There are three main areas of the IPCC report that are of particular interest for finance and business:

1. Climate change has impacts here and now
2. Current emission reduction efforts need to improve drastically
3. Future warming calls for urgent adaptation

¹ Previous assessment reports of the IPCC were published in 1990, 1996, 2001, 2007 and 2013/14.

² [FINAL-2017-TCFD-Report-11052018.pdf \(bbhub.io\)](#)

³ [The green swan - Central banking and financial stability in the age of climate change \(bis.org\)](#)

1. Climate change has impacts here and now

First, recent advances in climate science have made it possible to verify the link between climate change and extreme events. Petteri Taalas, secretary-general of the World Meteorological Organization, said during the official launch of the IPCC report that it is indisputable that human activities are causing climate change and making extreme weather events more frequent and severe. The report states that human-induced climate change is already affecting every inhabited region across the globe and contributing to climate extremes.

This summer has seen several record-breaking extreme events that can be attributed to climate change. One example was heavy rainfall leading to severe flooding in Central Europe. In Germany alone, flooding caused up to EUR 5.5bn in insured damages. Climate scientists determined that the floods had become up to nine times more likely due to climate change⁴.

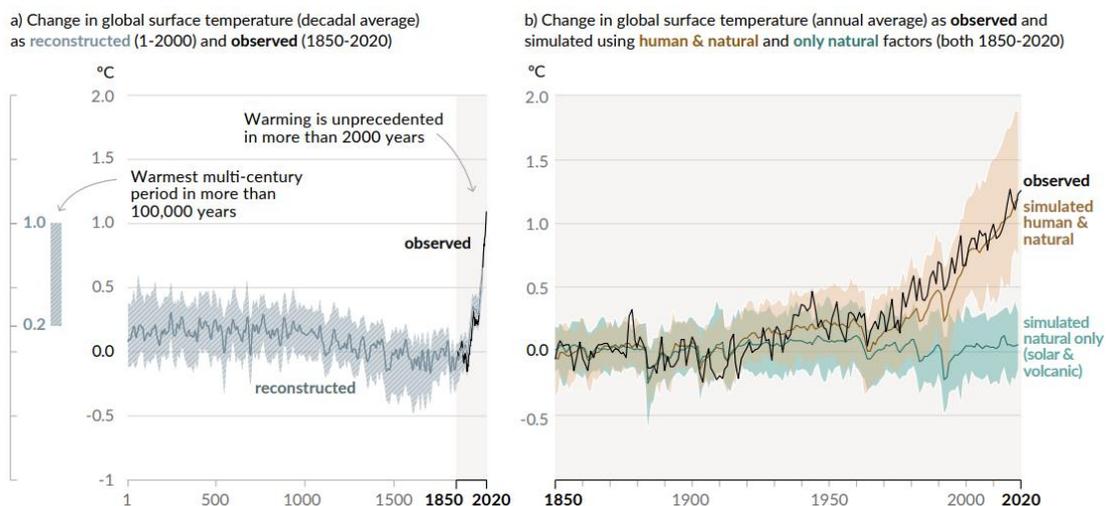
The floods in Central Europe show that climate change is no longer a concern only for the future or for developing countries - it has real consequences everywhere, right now.

The past summer has also shown how vulnerable even high-developed countries are to climate change.

Furthermore, extreme events have direct financial impacts on equity markets. A recent study by the International Monetary Fund (IMF) showed that over the past 50 years, large disasters generally had modest impacts on equity markets, bank stocks, and non-life insurance stock⁵. However, the IMF also found that current equity valuations do not reflect the predicted future changes in physical risk. This suggests that investors are still not paying sufficient attention to climate change.

The IMF also concluded that insurance penetration has helped dampen the adverse effects of large disasters on equity markets and financial institutions. This might change in the future. Research suggests that climate change could make flood insurance two to three times less affordable in Europe in the coming decades as insurers have to increase premiums to counter increasing risks⁶.

Figure 23: Changes in global surface temperature relative to 1850-1900



Sources: IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (p 7)

⁴ [Heavy rainfall which led to severe flooding in Western Europe made more likely by climate change – World Weather Attribution](#)

⁵ <https://www.imf.org/-/media/Files/Publications/GFSR/2020/April/English/ch5.ashx>

⁶ [\(5\) \(PDF\) Regional Inequalities in Flood Insurance Affordability and Uptake under Climate Change \(researchgate.net\)](#)

2. Current emission reduction efforts need to improve drastically

How much warming - and thus how much climate impact - the world will suffer depends critically on the success of efforts to curb carbon emissions in the near term. The IPCC predicts that unless deep reductions in CO₂ and other greenhouse gas emissions occur in the coming decades, global warming of 1.5°C and 2°C will already be exceeded in the coming 20-30 years. If policy ambition, low-carbon technology deployment and investment follow current trends, 2.7°C of warming by the end of this century is likely⁷.

Thus, more ambitious, rapid, and sustained reductions in emissions are urgently needed to avert the worst impacts of climate change. The IPCC report provides an estimate on the remaining 'carbon budget' - the cumulative CO₂ emissions allowed to remain within temperature thresholds such as 1.5°C and 2°C. The world could emit 400-1,150bn metric tons of CO₂ cumulatively from 2020 to stand a 67% chance of limiting global warming to 1.5-2°C above pre-industrial levels.

Due to the Covid-19 pandemic, 2020 saw a 6.4% drop in global greenhouse gas emissions⁸. The challenge in the coming months will be to limit the rebound in emissions as economies open again. Going forward, emissions need to half by 2030 compared to 2010 to limit global warming to 1.5°C⁹.

To achieve this target, companies need to decarbonize their business activity in line with science. This means halving emissions by 2030 or reducing annual emissions by 7.6% every year this decade¹⁰. Setting a science-based target of 1.5°C will also be perceived as most credible by market participants¹¹.

For investors, limiting global warming to 2°C or even 1.5°C offers considerable opportunities. According to the International Energy Agency (IEA) annual investment in electricity generation needs to

increase from about USD 0.5tn today to USD 1.6tn in 2030, including USD 1.3tn in renewables.

The IPCC sounding the alarm bell also means increasing scrutiny by regulators. This is because IPCC's results will inform plans by supervisory agencies to regulate the rapid growth in ESG investing. Particularly, the focus of regulators in Europe and the United States will be on what they view as inaccurate disclosures and climate-related claims by asset managers¹². The case against DWS by the U.S. Security and Exchange Commission over how the asset manager used sustainable criteria in its investment decisions could be a forecast of what is to come¹³.

3. Future warming calls for urgent adaptation

Third, the IPCC highlights that future impacts of climate change become more severe with every increment of global warming. Changes include increases in the frequency and intensity of hot extremes, marine heatwaves, and heavy precipitation and droughts. For example, maximum temperatures that used to occur once in 10 years in a climate without human influence are expected to occur four times more often and be 2°C higher in a world that is 1.5°C warmer, and nine times more often and 5°C higher in a 4°C warmer world.

Changes in frequency and intensity of extreme weather events is having severe impacts on societies and economies already now. A recent study by renowned think tank Chatham House determined that if emissions do not come down drastically before 2030, the average proportion of global cropland affected by severe drought will likely rise to 3% annually, more than three times the historic average¹⁴. By the 2030s, 400m people globally each year are likely to be exposed to temperatures exceeding the workability threshold¹⁵.

⁷ [Climate change risk assessment 2021 | Chatham House – International Affairs Think Tank](#)

⁸ [COVID curbed carbon emissions in 2020 — but not by much \(nature.com\)](#)

⁹ [Summary for Policymakers — Global Warming of 1.5 °C \(ipcc.ch\)](#)

¹⁰ [Cut global emissions by 7.6% every year for next decade to meet 1.5°C Paris target - UN report \(unep.org\)](#)

¹¹ [Climate Transition Finance Handbook \(icmagroup.org\)](#)

¹² [SEC.gov | SEC Announces Enforcement Task Force Focused on Climate and ESG Issues](#)

¹³ [Fund Managers Feel Heat in SEC Crackdown on Overblown ESG Labels - Bloomberg](#)

¹⁴ [Climate change risk assessment 2021 | Chatham House – International Affairs Think Tank](#)

¹⁵ The monthly mean of daily maximum wet-bulb globe temperature exceeds 34°C.

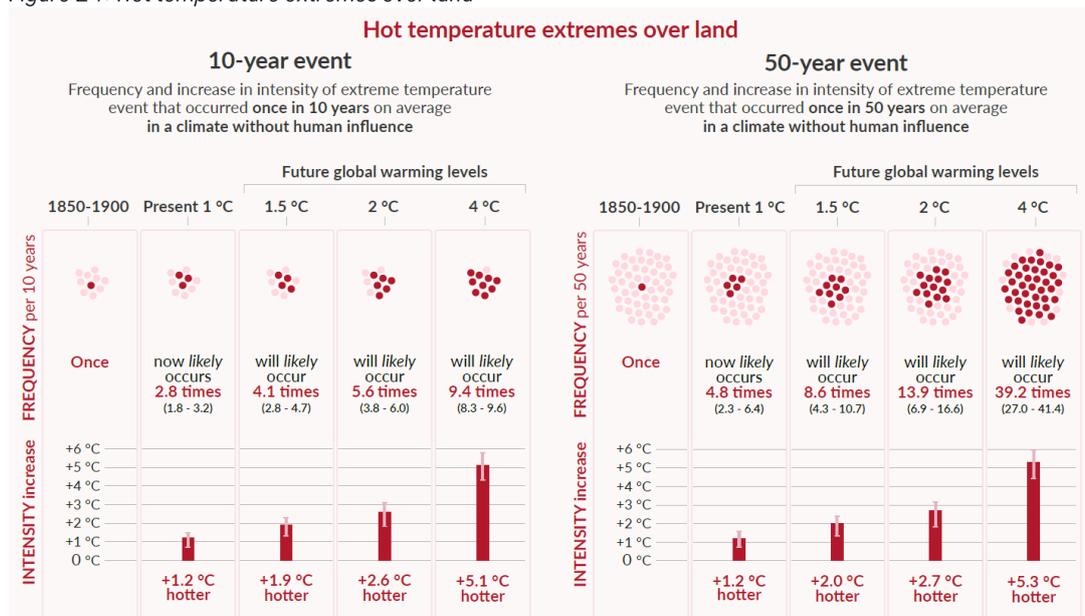
Businesses and financial institutions in Europe also need to prepare for the increasing impacts of global warming. According to the European Central Bank (ECB), in the absence of further climate policies to limit emissions, the impact of extreme climate-related events on companies' probability of default will rise to 13–23% over the next 30 years¹⁶.

Moreover, the ECB also found that around 30% of credit exposure to non-financial corporations within the Euro-area banking system is to firms subject to high or increasing risk due to climatic change. The ECB and central banks are now moving quickly to reach a deal on mandatory climate-risk disclosure¹⁷. However, greater disclosure alone is insufficient to remedy future climate impacts.

Instead, actions to adjust to future climate change by reducing societies' exposure and vulnerability to physical risks - i.e. adaptation - must be taken already now. But cutting emissions also remains crucial: the less is spent on that, the higher the costs of adaptation, and of climate-related extreme events.

Brinkmanship - assuming that adaptation can replace rapid emission reductions - is a dangerous strategy: there are social and economic limits to adaptation, creating the real risk of permanent loss and irreparable damage caused by climate change¹⁸.

Figure 24: Hot temperature extremes over land



Sources: IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (p 23)

¹⁶ [Climate-related risks to financial stability \(europa.eu\)](https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210901_1.en.html)

¹⁷ [Deal near on forcing companies to disclose climate risks, says central bank chief | Financial Times \(ft.com\)](https://www.ft.com/content/2021/09/23/central-bank-chief-disclosure-climate-risks)

¹⁸ [Defining loss and damage \(sei.org\)](https://www.sei.org/loss-and-damage/)

Munich Re: How (re-)insurance can help manage the risks from climate change



Alexander Dietrich
Senior Economist, Climate
adietrich@munichre.com

Sabine Schlüter-Mayr
Project Manager, Climate Change Solutions
sschlueter-mayr@munichre.com

Ernst Rauch
Chief Climate and Geo Scientist
erauch@munichre.com

The extreme temperatures in North America (cold spell and heat wave), winter storm and damages in Europe, floods in China's Henan province, flash floods in Germany, Belgium, the Netherlands, and France, wild fires in Greece, Italy, Turkey, and California, hurricane Ida – those are just some of the most prominent natural catastrophes we have seen over the course of the first three quarters in 2021.

In Germany, the stationary low-pressure system Bernd led to rapidly rising water, flash floods and mud flows. In Rhineland-Palatinate's Ahr valley alone, more than one hundred people were killed. The flash flood was also devastating in terms of economic losses. According to recent estimates by the German Insurance Association (GDV) and the Federal Institute for Financial Services Supervision (BaFin), the event was by far the costliest natural catastrophe ever in German history with insured losses totaling between EUR 7bn (August GDV estimate) up to 8.2bn (BaFin survey).

Total economic losses, including those which were not insured, are still much higher than this figure as every second German homeowner does not have coverage against damages from heavy rainfall and flooding.

The protection gap for natural catastrophes is still high, this applies to the world as a whole (see Figure 25). The German government has set up a

EUR 30bn reconstruction fund, which only partially pays for the uninsured costs of private households and enterprises. This includes EUR 2bn required to fix broken public infrastructure such as federal motorways and railway lines.

The link between such severe weather events and climate change is quite obvious. A warmer atmosphere can absorb more moisture that evaporates from warmer oceans. As a consequence, more water can be released during heavy rain events. There are also findings suggesting that stationary weather patterns occur more often as the Arctic is heating up even more than the earth on average. Low-pressure systems such as Bernd are then hovering above a relatively small region.

Figure 25 Protection gap: Difference between overall loss and insured loss

Year / Date	Region	Overall loss (US\$ bn)	Insured loss (US\$ bn)	Uninsured (share)
2020	Worldwide	210	82	~60%
2019	Worldwide	166	57	~66%
2020	Europe	12	3.6	70%
2019	Europe	10.6	3.1	71%
2020	US	95	67	30%
2019	US	51	26	49%
2020	Asia	67	3	95%
2019	Asia	77	18	77%

© Munich Re

Source: Munich Re NatCatSERVICE – further info [@Munich Re Website](https://www.munichre.com)

As the IPCC's recent sixth assessment report on the physical risks associated with global warming has made clear once again: Very dry and very wet events will generally occur more frequently as the planet warms. Heavy precipitation events and flash floods will also become more likely. Evidence from so-called rapid attribution studies about the German floods suggests that both a higher frequency and increased severity of such events have been made more probable by climate change. As long as global emissions have not reached net zero, this trend is set to continue.

Urgency to act

The above-mentioned developments and the findings of the IPCC show that climate change makes decisive action imperative – at the political level, in the private economy and in society. Otherwise, the goal of the Paris Agreement, to which the global community committed under the umbrella of the United Nations in 2015, cannot be achieved. In order to limit the temperature to well below 2°C compared to pre-industrial global temperature levels, action over the next ten years is crucial.

For the transition to a low-carbon economy to be successful, renewable energies and promising new technologies must be developed further and deployed at a large scale. This concerns sectors such as energy, mobility and industry, but also the often neglected agricultural sector. We assume that the removal of CO₂ from the atmosphere through nature-based (such as afforestation) and technological solutions (such as direct air carbon capture and storage) will be necessary to reach these goals.

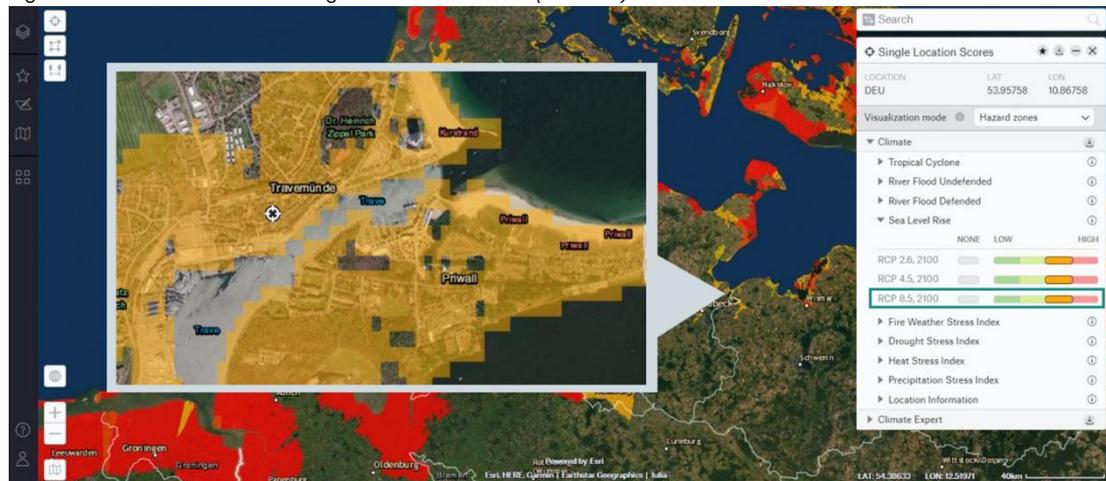
The insurance industry is part of the solution

Understanding, measuring and managing risks is the core competence of the (re-)insurance industry, this also applies to the risks emanating from climate change. As Munich Re, we have been dealing with the consequences of climate change intensively for nearly five decades and – just like climate science does – already see the

effects of climate change. The development of losses from severe weather events (after taking socioeconomic factors like population changes and wealth increase into account) provides indication that climate change is likely already one of the driving factors. Humankind needs to adapt to the impacts of changing weather patterns and extreme events. Insurance can play a key role here and strengthen the financial resilience against natural hazards and therefore protects economic progress.

Asset managers, pension funds and banks are working through the process of understanding, measuring and managing physical climate risk and are at varying stages. Granular exposure analysis of the portfolios for both current climate risks and the expected increase in risk due to climate change is the start. Financial impact on both cashflow and asset valuation from physical climate risk is the next step. Once the quantum of the risk is known, traditional approaches to risk management can then be applied to either accept, avoid, adapt or transfer the risk. Business practices will be adapted to manage the risk. In order to facilitate adaptation, we are driving forward initiatives for loss reduction and prevention, develop digital services for risk assessment as well as innovative solutions for risk transfer. The Location Risk Intelligence Platform for example supports companies in assessing risks from natural hazards or climate change around the world – from individual locations to entire portfolios – and helps to accelerate business processes and improve both portfolio and claims management.

Figure 26: Sea level rise in the high emission scenario (RCP8.5) in the Baltic Sea in 2100



Source: Munich Re Location Risk Intelligence Platform – Climate Change Edition

As a company, we are firmly committed to and actively support the Paris Agreement, for example as a member of the UN-convened Net-Zero Asset Owner Alliance, the newly formed Net-Zero Insurance Alliance, but also with our own Climate Ambition. Our strategy lays out a clear roadmap on how we will achieve net zero emissions attributable to our business activities by 2050 – in our asset portfolio, in our insurance business and in our own operations. By 2040, for instance, we will have completely phased out thermal coal – both on the investment and on the insurance side of our balance sheet. In the nearer future until 2025, emissions from thermal coal will already be reduced by 35% on both the liability and on the asset side of our balance sheet.

We have been known for years to be an enabler driving the transition towards a low-carbon economy by shouldering the risks involved in the development and adoption of new sustainable technologies. Performance guarantees and warranty insurances for example encourage financiers to invest in various technological areas such as solar, wind, hydrogen, stationary and electric vehicle batteries and are a basis for circular economy initiatives and many other green business models.

We also enable manufacturers to insure their guarantees for their sustainable technology (e.g. solar panel makers) which instills confidence in their clients, especially when the guarantees last for a long period of time. For the investors and owners of solar parks such a PV Warranty Insurance ensures the profitability of their investment over more than two decades. Following the successful example of the photovoltaics industry, the energy storage industry is also offering long-term warranties against defects and performance degradation. With a view to tomorrow we partner with universities, start-ups and technology drivers to anticipate new trends and technologies, assess possible risks involved and develop tailored risk transfer solutions.

The scientific results from the IPCC and the recent natural catastrophes seen so far this year show the urgent need to adapt to a changing climate and to mitigate emissions. The Paris Agreement provides the framework under which everybody is asked to act. We hope that the upcoming climate conference in Glasgow (COP26) in November will set a further necessary step forward. The insurance industry is ready to support this transition.

E3G: The importance of finance at COP26 and the wider role of Development Finance Institutions



Website: [E3G - A safe climate for all](#)

At the end of next month, the long-awaited COP26 UN Climate Summit will begin in Glasgow.

Finance will be a critical issue at this summit. This article will look at what to expect from COP26 and the specific role Development Finance Institutions, particularly Multilateral Development Banks, can play in supporting climate finance targets and in supporting the wider finance mobilization needed to enable a global green recovery.

In many economies, the Covid-19 pandemic has reduced countries' fiscal space while at the same time increasing financing costs. Advanced economies were [able to spend](#) around 16% of GDP on fiscal stimulus, demonstrating their ability to respond, at scale, to a crisis.

However, emerging markets and lower income countries were only able to spend around 5% and 2% of GDP respectively. This disparity illustrates the role that advanced economies will have to play in supporting countries in responding to climate change and the continuing Covid-19 impacts.

The summit provides an opportunity for political decisions to define a robust path for restructuring economies at the pace and scale that climate science requires by integrating climate action

into the economic recovery. The energy transition alone in emerging and developing economies requires annual investment to rise to USD 1tn by 2030, a 7-fold increase from current levels. The sheer scale of the transition offers both challenges and opportunities for investors.

The COP26 UN Climate Summit

COP26 stands for the 26th annual summit of the 'Conference of the Parties'. These summits happen once a year (delayed in 2020). At COP21 in Paris, [countries agreed](#) to limit global warming to well below 2°C and aim for 1.5°C. At COP26, countries are expected to update their plans for reducing emissions.

The UK Presidency of COP26 has described the Glasgow Summit in many ways. It is 'the COP that consigns coal to history', the place to 'pick the planet' and the moment to 'Keep 1.5°C alive'.

To those outside the small bubble of climate diplomats and international environmental campaigners, these slogans might paint a muddled picture of what COP26 is trying to achieve. What is clear however, is [the latest science](#) now shows the window to achieve 1.5°C is closing. Securing emission reductions in this decade has reached a new level of urgency.

Broadly speaking, COP26 is about landing new policies and political agreements to close the gaps in three areas of the Paris Agreement goals. Together, these would constitute an ambitious, balanced and comprehensive package of outcomes at Glasgow:

1. **A route to keeping the 1.5°C goal in reach.** This requires enhanced 2030 and long-term climate targets before COP26. It also includes an acceleration pathway to raise targets out of COP26 in the early 2020s to ensure the emissions gap is closed in this critical decade of action. One of the main mechanisms for this are known as [Nationally Determined Contributions](#) (NDCs). These contain the efforts by each country to reduce national emissions. The aggregate of these will provide an indication of the global emissions pathway we are on.
2. **A series of deals that will send transformative market signals across key sectors,** such as fossil fuel phase out, ending deforestation and accelerating the uptake of zero-emission vehicles. For example on coal, the COP needs to build on recent announcements such as the [No New Coal agreement](#) and China [stating](#) it will “not build new coal-fired power projects abroad”.
3. **A package of outcomes on finance, adaptation and loss & damage** to address climate impacts and enhance resilience to them. With devastating climate impacts already occurring, money must be mobilized for communities to adapt to climate risks and prepare for unavoidable loss & damage beyond adaptive capacity. The following section will focus on the overall role of finance at the summit.

To deliver this ‘Glasgow Package’, finance will be critical.

Finance is a cross-cutting top-tier issue on the agenda at COP26 and vital to unlocking all three areas of action.

A core deliverable at COP26 is meeting the commitment of USD 100bn in annual climate finance from developed to developing countries, from 2020 onwards. COP26 is also set to initiate

discussions on what the next climate finance goal for 2025 onwards should be.

The USD 100bn target was meant to be delivered last year but is widely expected to have fallen short. [OECD figures](#) for 2019, released in 2021, suggest a climate finance gap of USD 20bn. Multilateral public finance has become an increasingly important component of overall climate finance delivered.

Closing this gap is essential to re-establish trust between developed and developing countries, whilst also ensuring that developing countries receive the technical and financial support to accelerate clean and low-carbon development pathways.

It is also critical for global ambition – because without delivering on the USD 100bn as a floor for moving beyond 2021, it is easier for big emitters in emerging economies – particularly China and India – to be less ambitious in their own climate efforts.

To address this issue, Germany and Canada are co-chairing a taskforce for delivering the USD 100bn. To succeed, [the plan needs to](#) be released well ahead of COP26 and bring confidence that the USD 100bn will be met immediately, along with a clear post-2021 pathway.

However, estimates for the total investment necessary for a transition to limit global warming to 1.5°C significantly exceed the USD 100bn goal. Development finance institutions can act as a public lever to help mobilize larger private finance. Therefore, it is imperative that developed countries deliver on their public finance commitments.

The pivotal role of Development Finance Institutions (DFIs) in scaling up green finance

DFIs have historically played a central role in supporting countries develop their national energy systems and other large infrastructure, particularly for those projects which are capital intensive.

This role will be essential for the low carbon transition. As mentioned, the IEA [reckons](#) that annual investment in the energy transition of emerging and developing countries would have to increase 7-fold to USD 1tn a year by 2030. It has also [highlighted](#) that low carbon energy

systems will require higher upfront capital requirements but have lower operating expenditures. Therefore, keeping financial costs low is critical for the transition.

Furthermore, MDBs in particular, are influential conveners. They work closely with recipient governments and both public and private financial institutions, meaning they can complement direct project finance with technical assistance and long-term planning.

[Experts estimate](#) that alongside MDBs, national and regional development banks have mobilized USD 1.5tn alone in middle income countries since 2018, enabling projects that would not have taken off otherwise. This demonstrates the enormous potential of the DFI system.

Proposed policies for increasing the magnitude of finance

A new paper written by E3G proposes policies that will help unlock new financial firepower by better harnessing private capital and the existing ecosystem of DFIs.

Risk management approaches

Changing the institutional risk management approaches in these institutions is one step that can be taken. This includes capital adequacy rules, an increased use of investment risk mitigation tools such as guarantees and the relaxation of capital offset requirements. The increasing cost-effectiveness of clean technology means this does not threaten the AAA rating of these institutions but is rather due to improved risk management. Our paper shows that an increased use of de-risking tools, combined with more risk-tolerant capital offsetting, would allow MDBs to more than double the amounts invested in renewables.

Country specific platforms

In order for the de-risking to unleash maximum impact, E3G's suggestion is for MDBs and DFIs to design country-specific platforms, in close coordination with local capital markets and national development banks.

These platforms would provide credit guarantees from donors and facilitate a match-making space for sovereign issuers, investors and project developers. This would help build the origination and pipeline of projects, streamline operating procedures and deal-structuring to massively scale up the green and sustainability bond market. Local capital markets could be further strengthened if raised in the country's currency.

MDBs have been long at the forefront of issuing green bonds, piloting a new model of collaboration among investors, banks, and multilateral and national development institutions. The sustainable bond market hit an all-time high in 2020, as companies and governments turned to the debt market to fund green or social objectives. USD 700bn of green, social and sustainability bonds [were issued](#) in 2020 — almost double the 2019 figure but remaining shallow in several regions of the global economy.

Scaling-up of innovative risk-sharing and blended finance solutions

Our analysis suggests that low emission investments in developing countries not only face more risk than 'business as usual' investments on a purely financial basis, equally important is the policy environment reflecting perceived or actual political, institutional, technical, or regulatory risk. Without covering these "base" risks, green projects with participation of the private sector actors will not materialize. The targeted deployment of de-risking instruments by DFIs will be crucial to address information asymmetries and market imperfections, as well as financial viability gaps.

Public support can improve the risk-return profile and thus attract commercial financing, but it is important these do not imply excessive future risk for the DFIs or the government, via contingent liabilities. Blended finance instruments include grants, equity, and debt instruments as well as guarantees or insurance.

There are several examples for the successful use of guarantees, such as the International Finance Corporation's (IFC) model of partial guarantees, that can help countries to raise money on global markets to finance a low-carbon transition. Such models have an additional benefit, as they bind much less MDB capital in their balance sheets in contrast to direct lending. For instance, the IFC issued a partial guarantee of just 20% of the face value of an Indonesian issued green bond, resulting in a potential leverage factor of five.

Of similar importance is the challenge is to move from a "retail" approach in guarantees where transactions are processed one-by-one, to a wholesale approach in which a "line of guarantees" or "umbrella guarantee" instrument is on offer to a category of investments. An example is if the Multilateral Investment Guarantee Agency (MIGA) offered to provide

political risk guarantees to any investment in a country that was based on the policy commitments made by that government in its Nationally Determined Contributions (or similar strategy document).

Tackling the most important shared global problems

The outcome of COP26 can help shape perceptions of the multilateral system's ability to

effectively tackle shared global problems and can provide a step toward a new cooperation between DFIs and private capital. Though the wider geopolitical context remains fragile and volatile, credible action at COP26 can provide a powerful signal on the willingness to address the climate crisis and broader recovery. DFIs need to move from project financiers toward market makers, supporting emerging and developing green capital markets through de-risking.

The Green Bond Editorial Team

Thomas Thygesen

Head of Strategy, Head of Research
Climate & Sustainable Finance
thomas.thygesen@seb.dk

Elizabeth Mathiesen

Senior Strategist
Equity Strategy Research
elizabeth.mathiesen@seb.dk

Gregor Vulturius, PhD

Advisor
Climate & Sustainable Finance
gregor.vulturius@seb.se

Tine Vist

Quantitative Strategist
Equity Strategy Research
tine.vist@seb.dk

Lina Apsheva

Analyst
Climate & Sustainable Finance
lina.apsheva@seb.se

Lene Boe Nielsen

Quantitative Strategist
Equity Strategy Research
lene.boe@seb.dk

Contacts at SEB

Hans Beyer

Head Sustainable Banking

hans.beyer@seb.se**Christopher Flensburg**

Head Climate & Sustainable Finance

christopher.flensburg@seb.se**The Climate & Sustainable Finance Team**greenbonds@seb.se**SEB Norway:****Ben Powell**

Head Climate & Sustainable Finance in Norway

benjamin.powell@seb.no**SEB Finland:****Anssi Kiviniemi**

Head of Sustainability in Finland

anssi.kiviniemi@seb.fi**SEB Germany:****Alexandra Themistocli**

Head of Sustainable Banking in Germany

alexandra.themistocli@seb.de**SEB UK:****Renato Beltran**

Client Executive, LC&FI

renato.beltran@seb.co.uk**SEB Hong Kong:****Carol Au-Yeung**

Client Executive, Financial Institutions Coverage

carol.au.yeung@seb.se**SEB Singapore:****Eng Kiat Ong**

Financial Institution Coverage Singapore

eng-kiat.ong@seb.se**SEB Denmark:****Lars Eibeholm**

Head of Sustainable Banking in Denmark

lars.eibeholm@seb.dk**SEB USA:****John Arne Wang**

General Manager

john.wang@sebnyc.com**SEB Baltics:****Aušra Šamšonienė**

Sustainability Officer, Baltics

ausra.samsoniene@seb.lt**Viktors Toropovs**

Sustainability Officer in Latvia

viktors.toropovs@seb.lv**Audrius Rutkauskas**

Sustainability Officer in Lithuania

audrius.rutkauskas@seb.lt**Evelin Allas**

Sustainability Officer in Estonia

evelin.allas@seb.ee

“The Green Bond” is SEB’s research publication that strives to bring you the latest insight into the world of sustainable finance – one theme at a time. Even though the publication covers all kinds of products and developments in the sustainable finance market, we decided to keep its historic name – “The Green Bond” – as tribute to our role as a pioneer in the Green Bond market.

You may be wondering why a Scandinavian bank chose a picture of bamboo for the cover. There is a reason for that too! Bamboo is one of the fastest growing plants on the planet, which makes it an efficient mechanism of carbon sequestration. Moreover, once grown, bamboo can not only be used for food, but also used as an ecological alternative to many building materials and even fabrics. Its great environmental potential makes bamboo a perfect illustration of our work and aspirations.

This report was published on 30 September 2021.

Cut-off date for calculations was 31 August 2021, unless otherwise stated.

Subscribe/Unsubscribe to The Green Bond by sending an e-mail to:
greenbonds@seb.se

Important. Your attention is drawn to the statement at the end of this report which affects your rights. Securities transactions in the United States conducted by SEB Securities, Inc., Member FINRA/SIPC. This communication is intended for institutional investors only and not intended for retail investors in any jurisdiction.

This statement affects your rights

This report is a marketing communication produced by the Climate and Sustainable Finance team, a unit within Large Corporates & Financial Institutions, within Skandinaviska Enskilda Banken AB (publ) ("SEB") to provide background information only. It does not constitute investment research or a solicitation offer. It is confidential to the recipient and any dissemination, distribution, copying, or other use of this document is strictly prohibited.

Good faith & limitations

Opinions, projections and estimates contained in this report represent the author's present opinion and are subject to change without notice. Although information contained in this report has been compiled in good faith from sources believed to be reliable, no representation or warranty, expressed or implied, is made with respect to its correctness, completeness or accuracy of the contents, and the information is not to be relied upon as authoritative. To the extent permitted by law, SEB accepts no liability whatsoever for any direct or consequential loss arising from use of this document or its contents.

Disclosures

The analysis and valuations, projections and forecasts contained in this report are based on a number of assumptions and estimates and are subject to contingencies and uncertainties; different assumptions could result in materially different results. The inclusion of any such valuations, projections and forecasts in this report should not be regarded as a representation or warranty by or on behalf of SEB or any person or entity within SEB that such valuations, projections and forecasts or their underlying assumptions and estimates will be met or realized. Past performance is not a reliable indicator of future performance. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related investment mentioned in this report. Anyone considering taking actions based upon the content of this document is urged to base investment decisions upon such further investigations as they deem necessary. This document does not constitute an offer or an invitation to make an offer, or solicitation of, any offer to subscribe for any securities or other financial instruments.

Conflicts of Interest

This report is marketing communication. It does not constitute independent objective investment research, and therefore is not protected by the arrangements which SEB has put in place designed to prevent conflicts of interest from affecting the independence of its investment research. Furthermore, it is also not subject to any prohibition on dealing ahead of the dissemination of

investment research, SEB or its affiliates, officers, directors, employees or shareholders of such members (a) may be represented on the board of directors or similar supervisory entity of the companies mentioned herein (b) may, to the extent permitted by law, have a position in the securities of (or options, warrants or rights with respect to, or interest in the securities of the companies mentioned herein or may make a market or act as principal in any transactions in such securities (c) may, acting as principal or as agent, deal in investments in or with companies mentioned herein, and (d) may from time to time provide investment banking, underwriting or other services to, or solicit investment banking, underwriting or other business from the companies mentioned herein.

Recipients

In the UK, this report is directed at and is for distribution only to (i) persons who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (The "Order") or (ii) high net worth entities falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons". This report must not be acted on or relied upon by persons in the UK who are not relevant persons. In the US, this report is distributed solely to persons who qualify as "major U.S. institutional investors" as defined in Rule 15a-6 under the Securities Exchange Act. U.S. persons wishing to effect transactions in any security discussed herein should do so by contacting SEB Securities Inc. (SEBSI). The distribution of this document may be restricted in certain jurisdictions by law, and persons into whose possession this document comes should inform themselves about, and observe, any such restrictions.

The SEB Group: members, memberships and regulators

Skandinaviska Enskilda Banken AB (publ) is incorporated in Sweden, as a Limited Liability Company. It is regulated by Finansinspektionen, and by the local financial regulators in each of the jurisdictions in which it has branches or subsidiaries, including in the UK, by the Prudential Regulation Authority and Financial Conduct Authority (details about the extent of our regulation is available on request); Denmark by Finanstilsynet; Finland by Finanssivalvonta; Norway by Finanstilsynet and Germany by Bundesanstalt für Finanzdienstleistungsaufsicht. In the US, SEBSI is a U.S. broker-dealer, registered with the Financial Industry Regulatory Authority (FINRA). SEBSI is a direct subsidiary of SEB.