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s:fi KNOWLEDGE

Swiss Finance Institute Roundups

Climate-Related Risks— A Focus on Banks and Credit Risk

Editorial

Financial institutions are reshaping their business models to address the challenge of sustainability. In this roundup, scholars and practitioners explore the progress made and the obstacles that remain. Banks and investors are increasingly incorporating climate risks into their decision-making processes. Yet today, these risks are not always correctly priced in financial markets. Greater coordination between public and private initiatives could help ensure sufficient capital flows toward sustainable investments to meet global targets. The insights shared by the experts shed light on the part that sustainable finance can play in enabling the shift to a sustainable economy.

We wish you an enjoyable read.

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Managing Director

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Setting the Scene for Sustainable Finance

There is a general lack of unanimity on what the term "sustainable finance" covers. How do you define it?

Steven Ongena: I see sustainable finance as the allocation of financial capital in ways that seek to reduce the environmental and social costs of economic activity, among other goals. It encompasses all types of financial assets, such as stocks, bonds, loans, and real estate. It takes into account strategic, tactical, and operational considerations. Providing a perfect definition is difficult, due to the trade-off between precision and length and, hence, usefulness, but consensus is essential to minimize misunderstandings.

Tadas Zukas: I use the definition provided by the European Sustainable Finance Action Plan of 2018, which highlights the key characteristics of modern sustainable finance: "'Sustainable finance' generally refers to the process of taking due account of environmental and social considerations in investment decision-making, leading to increased investments in longer-term and sustainable activities." As to the role of governance, the Action Plan further explains that governance "is a tool to integrate environmental and social objectives in public and private investment decisions." It is important to emphasize that the definition not only covers the Environmental, Social, and Governance aspects of ESG, but also has a functional focus as, in the end, investments should flow toward sustainable projects and be aimed at the long run. When implementing the Action Plan, the Sustainable Finance Disclosure Regulation (SFDR) makes clear that investments can only be called sustainable if they support an economic activity that contributes to an E or S objective, they do no significant harm to any of those objectives, and the investee companies follow good governance practices. The defining feature of modern sustainable finance is its focus on generating positive outcomes for the planet and society. This concept assumes the integration of sustainability risks, which are defined as financial risks.

Zacharias Sautner: In my view, sustainable finance involves integrating ESG factors into investment and lending processes. This effort can be driven by motives reflecting *value*, that is, centered on financial returns and risks, or by motives reflecting *values*, encompassing philanthropic and moral considerations. There may be some overlap between these two types of motive: Investors focusing on *value* may also create positive outcomes from a *values* perspective.

What are the different types of sustainable finance?

Erwan Morellec: There are various approaches to sustainable finance, providing exposure through different financial instruments. Active equity strategies involve investors engaging with a company's management and its board to encourage them to adopt more sustainable practices. Passive strategies involve excluding certain investments and favoring others, while aiming to change the relative costs of capital and to reduce support for unsustainable companies. Debt-based strategies include solutions such as green debt, where investors fund specific green projects, and sustainability-linked debt, where the cost of debt is linked to a firm's ability to meet predetermined sustainability goals.

Zacharias Sautner: The investment landscape offers a wide range of approaches, including impact investing and ESG investing. Impact investing prioritizes ethical *values* and focuses on achieving specific environmental or social outcomes, even if it means receiving lower returns than market rates. ESG investing centers on the *value* dimension and typically involves using ESG risk filters. Within ESG investing, there's a distinction between impact alignment and impact generation (which should not be confused with impact investing). Impact alignment refers to investing in companies that already "do well" from an ESG risk perspective, while impact generation involves investing in companies with the potential to improve their ESG risk profiles and actively engaging with them to achieve better risk outcomes.

Alexandra Lau: Sustainable finance is about integrating ESG criteria into financial decision-making to promote long-term, ethical investments that contribute to sustainable development. The spectrum ranges from avoiding harm to actively pursuing positive impacts. While the specifics can vary, sustainable finance generally seeks to support projects and companies that align with sustainable development goals, mitigate climate change, and foster social equity. This approach requires a holistic view, considering not just financial returns, but also the broader impacts of an investment on society and the environment. It also entails transparency and accountability in reporting ESG performance, ensuring that stakeholders can track progress and hold companies accountable for their commitment to sustainability. A few years ago, banks had a strong focus on sustainable investing only. More and more, banks now take the full range of financial services into account in the context of sustainable finance.

What are the differences between sustainable investing and sustainable financing?

Alexandra Lau: Sustainable investing involves making decisions based on ESG factors, while sustainable financing means integrating ESG factors into lending decisions or financing for projects and initiatives with sustainable objectives.

Erwan Morellec: Sustainable investing usually involves equity-based strategies, aiming to drive companies toward environmental objectives through either passive or active methods, while sustainable financing generally involves debt financing.

Tadas Zukas: Sustainable investing is a subcategory of sustainable finance. There's a lot of confusion around the label "sustainable" and what it really means for consumers and investors. Last year, the UK Financial Conduct Authority released its Sustainability Disclosure Requirements (SDR) and Investment Labels, which, among other things, defined labels to help consumers understand and trust ESG funds. This new labeling regime took a more nuanced approach to the matter. It did not use the word "sustainable" in any of its labels, but instead used the word "sustainability," always in combination with a second, clarifying word. The idea behind this change is to make sure that investors understand that investing in labeled products does not always mean that their investment will go into assets that are already sustainable, but may also, for example, go into those assets that aim to improve their sustainability profile over time (labeled "Sustainability Improvers"). The EU framework for sustainable finance also seems to leave room for such nuances, which are important to better enable transition finance.

Milestones and Warnings of Unsustainability

In 1798, English economist Thomas Malthus predicted that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man." Although Malthus was essentially wrong during the 19th and 20th centuries, do you believe he is on the brink of finally being proved correct?

Steven Ongena: It is crucial to give more serious consideration to Malthusian theory at this point in our economic development. However, discussions about demographics are often avoided, due to the sensitive nature of the topic. Population growth has significant effects on carbon emissions, biodiversity loss, and overall environmental health. While technology has been impressive in many ways, relying solely on technology to address climate change and biodiversity loss may be a risky gamble for our planet. The task of effectively removing large amounts of CO_2 from the atmosphere, which amounts to billions of tons, and cleaning up all the plastic from the ocean seems to be extremely challenging. Additionally, some people believe that fossil fuel companies have too much influence in promoting technology-based solutions, and that the reality may not always match the claims being made.

In 1972, "The Limits to Growth" was published by the Club of Rome, highlighting the impact of carbon emissions, chemicals, and radioactive waste on the environment. It warned that these disturbances could not be sustained and predicted that the earth's resources might not support economic and population growth beyond 2100. How influential has this book been in shaping discussions about sustainability?

Zacharias Sautner: "Limits to Growth" presents important arguments about how certain types of economic development can harm the environment. It highlights the risk of negative side effects, such as climate change and loss of biodiversity, on our economy and society. However, some people became skeptical when the Club of Rome's doomsday predictions did not immediately come true. This skepticism has undermined some of the current debate on ESG issues. Some critics misleadingly refer to the Club of Rome's report to claim that things are not as bad as portrayed by, for example, climate scientists. This misdirection can lead to unfortunate procrastination on climate action.

Tadas Zukas: Though not directly related to the work of the Club of Rome, concepts addressing the limits of growth in a qualitative sense are formally part of the modern European framework for sustainable finance. This development is best illustrated by the formal inclusion of the concept of "planetary boundaries" into the new European Corporate Sustainability Reporting Directive's (CSRD) framework, which has emerged as part of the Sustainable Finance Action Plan. The European Sustainability Reporting Standards (ESRS) define planetary boundaries as a concept that allows us "to estimate a safe operating space for humanity with respect to the functioning of the Earth," adding that "the boundary level for each key Earth System process that should not be transgressed, if we are to avoid unacceptable global environmental change, is quantified."

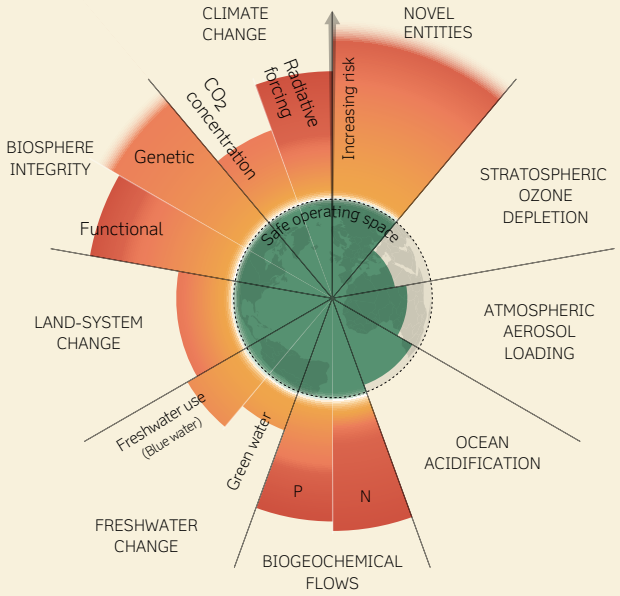
In 1987, the United Nations published "Our Common Future" (also known as the Brundtland report), calling for action based on the fact that the number of humans and their activities come with unintended consequences upon our planet and that the rate of change of our society outstrips the ability of scientific disciplines to understand them, as well as our current capabilities to assess and advise. Have we been able to break out of past patterns during the past 35+ years?

Alexandra Lau: I do not believe that the rate of change surpasses science's ability to analyze risks in their full complexity and to provide relevant advice. The technological progress we are witnessing is incredible, and researchers have a very clear view of the facts about a wide range of risks, as well as about the factors that lead to their increase or reduction. Solutions exist to decrease the environmental and social risks we are facing. However, it seems that society is not able to make the necessary political decisions to implement these solutions in time and at the required scale.

In 2015, the United Nations' 17 Sustainable Development Goals (SDGs) were published, with 169 different social and environmental targets. Is it beneficial to have so many targets?

Tadas Zukas: The United Nations' SDGs are a complex framework, but they offer a comprehensive list of the societal and environmental challenges that we currently face. The SDGs are primarily addressed to the states. It's up to voters, consumers, regulators, and investors to prioritize which challenges they want to address and to determine how they can contribute to creating positive change. The new European regulatory framework for sustainable finance is an illustration of how to take the SDGs seriously. If you take a careful look, you will notice that not only the Sustainable Finance Action Plan itself, but also its key regulations, such as the Taxonomy Regulation, SFDR, and MiFID II, all refer to the SDGs in their introductions. It should not be forgotten that, in the end, the new European regulatory framework for sustainable finance aims to enable and empower the financial industry to better contribute to the achievement of both the Paris Agreement goals and the SDGs.

Planetary Boundaries in 2023



Note: This figure shows that as of 2023, six of the nine boundaries are transgressed. In addition, ocean acidification is approaching its planetary boundary. The upper edges of the wedges for the novel entities and the genetic diversity component of the biosphere integrity boundaries are blurred either because the upper end of the zone of increasing risk has not yet been quantitatively defined (novel entities) or because the current value is known only with great uncertainty (loss of genetic diversity). Both, however, are well outside of the safe operating space. Transgression of these boundaries reflects unprecedented human disruption of the earth's system but is associated with large scientific uncertainties. Biogeochemical flows N and P refer to nitrogen and phosphorus.

Source: Azote for Stockholm Resilience Centre and based on Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., Von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D., . . . Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, *9*(37). https://doi.org/10.1126/sciadv.adh2458

In 2016, the Paris Agreement was signed, with its long-term goal of keeping the rise in average global temperature below 2.0°C and, if at all possible, limiting it to 1.5°C. At our current emission rate, it is estimated that we will have depleted our CO_2 budget for the 1.5°C threshold within the next five years and for the 2.0°C threshold in a little over 20 years. Do the goals of the Paris Agreement seem realistic?

Erwan Morellec: The Paris Agreement outlines specific actions and political commitments. However, these commitments can be complex and are susceptible to changes in political leadership. In the US, for example, Obama supported the agreement, but Trump withdrew from it, and later Biden rejoined it. Since Nordhaus's research in the 1970s, it has been evident that carbon taxation is the key to addressing climate change, but implementing it at the appropriate level is challenging. Therefore, sustainable finance plays a crucial role in facilitating the transition to environmentally friendly practices and in sharing the financial responsibility between the financial sector and society. However, all of these efforts need to be conducted in a coherent and consistent manner.

Steven Ongena: Climate change is a complex and non-linear process, which can be difficult for humans to understand, especially considering our tendency to think linearly and to focus on the short term. As a concerned citizen, I am primarily worried about our society's ability to make and implement the right decisions in response to climate change. I believe that we are facing significant challenges ahead.

Zacharias Sautner: Research suggests that investors are taking climate-related risks more seriously in their investment decisions since the Paris Agreement was signed. This shift has driven companies to reduce their carbon emissions. However, it seems increasingly unlikely that we will be able to stay within the 1.5°C threshold of the Paris Agreement. Despite this fact, it remains crucial to make significant efforts to reduce carbon emissions and to move toward a net-zero carbon emissions world as soon as possible. It's important to note that, similar to climate change, we are also facing significant challenges through loss of biodiversity, and investors increasingly worry about the negative impact of some companies. There is new evidence that the announcement of the Kunming-Montreal Global Biodiversity Framework in 2022 negatively impacted the financial valuations of companies that significantly harm biodiversity. This effect is similar to what we have seen around the 2016 Paris Agreement for companies with large carbon footprints.

Navigating the Waters of Sustainability-Related Risks

Do you agree that for sustainable finance to succeed, it needs to be more successful than standard finance?

Alexandra Lau: It all comes down to how you define success. Traditional finance is successful in the sense that it efficiently directs financial resources to where they are needed in the economy. If we define success as resilience, then it's clear that sustainable finance is more resilient to external shocks than standard finance. Sustainable finance is taking a more comprehensive set of information and, hence, risk factors, into account, such as natural, societal, and governmental risks. Information plays a crucial role in financial decisions, such as when buying a house or investing in specific asset classes. Including sustainability-based data when pricing the value of an asset inevitably leads to better decision-making, compared to not including such data. Therefore, I firmly believe that, in the long run, sustainable finance will prove to be more effective than standard finance.

Risk has always been at the core of investing. Is sustainable finance simply based on a more complete and accurate definition of risk?

Erwan Morellec: Finance is based on two key metrics: risk and return. The greater the risk for the investor, the higher the expected return. The traditional view is that risk can be divided into five broad categories: market risk, liquidity risk, credit risk, business risk, and investment risk. ESG-related factors impact all of these categories. Failing to include ESG risks in the overall definition of risk provides a biased perspective and fails to account for current and future events. Whether someone cares about the environment or not, not properly measuring risk can lead to financial loss.

Alexandra Lau: I agree that sustainable finance involves considering a broader set of risk factors that, within the current political and legal setting, traditional financing does not consider to the full extent. So, in theory, sustainable finance is more effective from a holistic point of view. However, there are still several practical challenges to address. Progress needs to be made in getting access to relevant data, before we can accurately manage ESG criteria: Better data is the key when generating scenarios to identify and take potential future risks into account. Additionally, new risks, such as biodiversity risk, are gaining in importance; this development also needs to be taken into consideration.

Tadas Zukas: Modern sustainable finance defines sustainability risks, especially climate-related financial risks, as financial risks. Mainstreaming sustainability in risk management is one of the European Action Plan's three key goals. In the long run, I believe this development will lead to integrating sustainability risks into standard finance, because these risks are a major aspect of risk management. Players who fail to acknowledge the existence of climate-related risks will eventually harm themselves, as this failure increases the chance they will invest funds in assets that may become stranded. Addressing material financial risks, including those related to sustainability, is part of the fiduciary duty.

What are the different types of climate-related risks?

Erwan Morellec: The concept of climate risk encompasses two main components: physical risk and transition risk. Physical risks are related to events such as floods, heat waves, droughts, and sea-level rise. These risks are mostly objective and can be easily measured. Transition risks cover the challenges that our society and economy encounter while transitioning to a green, low-carbon future. They encompass policy and regulatory risks, technological risks, and others. Each company is affected differently by physical and transition risks, and this difference should be taken into account when assessing their credit risk and determining lending rates.

How does physical risk impact credit risk?

Steven Ongena: Banks are starting to realize the impact of climate-related risks and are facing losses in their loan portfolios. Even in Europe's mild climate, there have been noticeable increases over the last decade in the severity of floods in Western and Central Europe, as well as forest fires in Southern Europe. These disasters affect businesses, putting bank loans in jeopardy and ultimately impacting the banks themselves. Recent research shows that US and European banks are now increasingly considering physical risks when setting their prices.

Alexandra Lau: Natural disasters such as floods and droughts typically affect buildings and agriculture, with further indirect effects on businesses and banks. For a bank with a large mortgage portfolio, the risk to the underlying building inventory can be especially important. From a banker's perspective, we need to consider how much damage the

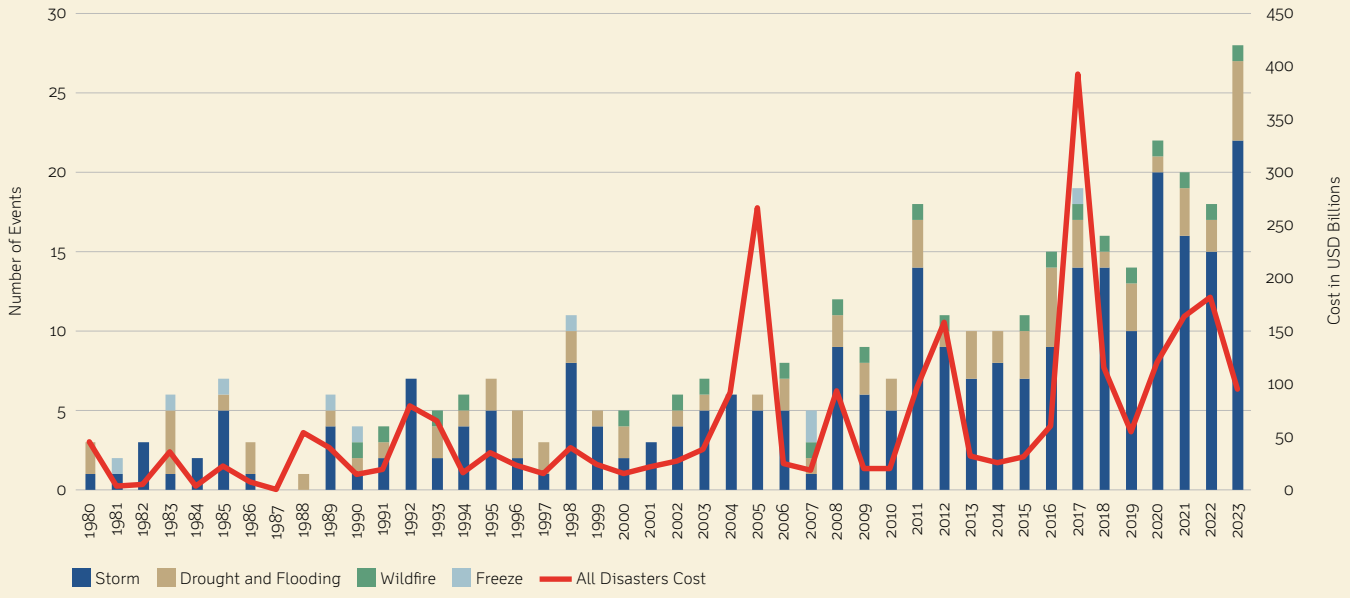
buildings we are financing would sustain in the event of a natural disaster. Based on comprehensive risk scenario modeling done within my bank, we believe that the risk for the next ten years will not be significant, due to geographical risk exposure, insurance coverage, and homeowner equity in our region. Nevertheless, it's important to acknowledge that our methods of risk valuation are currently limited, affecting the informative value of any risk analysis.

How does transition risk impact credit risk?

Steven Ongena: Transition risk can be broken down into two components: technological and regulatory. Research suggests that banks are indeed taking technological transition risk into account, but their approach may seem unexpected. Since a firm's assets serve as collateral for bank-issued loans, banks are motivated to slow down the pace of technological change in order to prevent a rapid devaluation of this collateral. Regulatory risk, which relates to how quickly society should transition to a low-carbon future, is ultimately a political decision. This dichotomy allows banks and corporations to influence lawmakers through lobbying efforts. The significant amount of money lent by banks for oil and gas exploration underscores the importance of this issue. Since banking is a global enterprise, differing regulations and opportunities across countries also create significant possibilities for arbitrage. Consequently, there is an urgent need for global governance and regulation in the banking sector.

Tadas Zukas: In terms of climate-related risks, transition risks are clearly on the financial markets' supervisory authorities' radar. FINMA, the Swiss Financial Market Supervisory Authority, started to publicly address the topic of transition risks in its Risk Monitor publications as early as 2019. After explaining that transition risks "arise as a result of action taken on climate policy or disruptive technological breakthroughs," FINMA emphasizes that such developments "could trigger rapid price adjustments of assets that have not yet been adequately anticipated by markets," listing highly carbon-intensive sectors

United States Billion-Dollar Disaster Events 1980-2023 (CPI-Adjusted)



Note: This figure tracks the annual number of disaster events with losses exceeding USD 1 billion each that affected the United States (CPI-adjusted) for each year between 1980 and 2023, as well as their consolidated cost. Storm includes severe storms, tropical cyclones, and winter storms.

Source: NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2024). https://www.ncei.noaa.gov/access/billions/, DOI: 10.25921/stkw-7w73

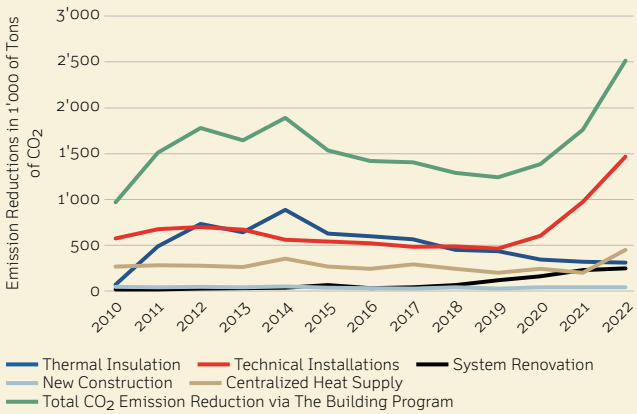
such as energy, manufacturing, or transportation as examples. FINMA further emphasizes that "the more countries delay in taking effective measures to achieve climate targets, the more invasive such measures are likely to be" and that there is a possibility that "the markets will not price in the corresponding risks until a late stage, but will then do so aggressively." Not properly integrating such risks into risk management can lead to losses on investments and, thus, to credit risk. We can expect to see increasing litigation around the interplay between transition risk and credit risk.

What are the various channels available to direct capital toward sustainable initiatives?

Erwan Morellec: It depends on whether investors want to make an impact with equity, which is generally a riskier type of investment, or with bonds, which are generally less risky. Initially, the focus in ESG was mainly on equity, but bonds are becoming increasingly important. This change has been driven by the development of the green bond market, which allows firms to finance projects that improve their carbon footprint. Green bonds are financial instruments where the use of proceeds is restricted to green investments. Other instruments, such as sustainability-linked bonds, have also emerged. These are instruments where some financial characteristics, typically the coupon, are linked to the sustainability performance of the issuer or to a specific objective. These objectives are generally assessed once over the life of the bond. Many of these bonds will reach their assessment date in the next few months. It will be interesting to see if the companies have fulfilled their agreements and how the market rewards or penalizes them.

Alexandra Lau: Bank lending and the capital markets are pivotal when directing capital toward sustainable initiatives, but incentives through taxation and subsidies also play a crucial role. In the real estate market, for instance, the combination of taxing CO_2 emissions, offering tax incentives for sustainability-related renovations, and providing targeted subsidies through government-supported programs such as Switzerland's *Das Gebäudeprogramm (The Building Program)* helps channel individual private financial investments toward energy-efficient initiatives. This type of program, in turn, leads to significant reductions in greenhouse gas emissions.

CO_2 Emission Reductions Achieved per Year in Switzerland, via *The Building Program* and by Area of Measure, Calculated Over the Lifetime of the Measure



Source: Das Gebäudeprogramm.

Does the length of the investment chain dilute its impact on sustainability?

Zacharias Sautner: Investors who use passive index-based investment strategies face limitations in expressing their views through voting or selling the stock of companies that don't meet their sustainability standards. This problem is often amplified by long investment chains. But this issue can be addressed in practice. Moreover, research indicates that higher ownership by major asset managers like Blackrock, State Street, or Vanguard is linked to greater shareholder engagement and to reduced corporate carbon emissions. This finding implies that an engagement approach, suitable for both active and passive investment strategies, can be effective even in long investment chains.

Tadas Zukas: The length of the investment chain is a major challenge. While the market has witnessed significant inflows into ESG products, only a limited portion of those investments actually create impact or are aligned with impact creation. An important debate is taking place in modern sustainable finance as to whether investing in listed equity and public markets can qualify as impact investing at all. While the expert views on the topic diverge, both the European and UK supervisory authorities seem to indicate that it is possible, if investments fulfill certain conditions. In this context, the European Securities and Markets Authority (ESMA) differentiates between the concepts of "buying impact" and "creating impact."

Theory predicts that firms that better assess risk, including sustainability-related risks, should get a discount. In contrast, investors who finance riskier firms should get a premium, and the combination of these two factors should lead to a better allocation of capital throughout the financial market and across firms. Do things indeed occur this way?

Alexandra Lau: Investors and regulators are increasingly aware of the significance of sustainability factors, and overall market trends are becoming more apparent. However, challenges like data availability, measurement methodologies, and inconsistent disclosure practices hinder the accurate assessment and pricing of sustainability risks. Additionally, behavioral biases and short-term incentives in financial markets lead to the mispricing of risk. Some investors overlook sustainability considerations or prioritize short-term gains over long-term outcomes.

The Role of (Dis-)Information, News, and Politics

How widespread and how successful is corporate climate lobbying?

Zacharias Sautner: There is a growing concern among NGOs and the public that governments are not taking sufficiently strict action to combat climate change. I agree. One reason for their inaction is the influence of corporate lobbyists. In fact, research has found that corporate lobbying has successfully influenced the votes on several climate-related bills in the US. In a recent paper, my coauthors and I quantify corporate climate lobbying in the US and show that large anti-climate lobbyists have more carbon-intensive business models and are more likely to face climate-related incidents in the future. In contrast, companies that invest more in green innovations tend to lobby more for pro-climate regulation. From a financial perspective, anti-climate lobbying is emerging as an investment risk. We show that companies that spend more on anti-climate lobbying have to earn higher returns for their investors, likely due to a risk premium effect. The reason seems to be that such companies face risks to their reputation, as well as transition risks.

Tadas Zukas: Due to its successes in the past, lobbying is placed high on the European legislative sustainable finance agenda. As part of the "Governance"-related reporting under the new Corporate Sustainability Reporting Directive, a company will be required to report on "activities and commitments" that are "related to exerting its political influence, including its lobbying activities." It is the regulator's expectation that this lobbying-related transparency will help the sustainable finance effort, as it will make it easier to scrutinize the consistency of companies' sustainability-related actions and communications and to challenge them in case of discrepancies. In the years to come, this lobbying-related corporate reporting may lead to some interesting developments and thus deserves close monitoring.

How are key stakeholders' views on firms' climate change exposure reflected by the market?

Zacharias Sautner: In my recent work, I used machine learning methods to create measures of climate change exposure, based on the attention given to climate topics by market participants in earnings calls. The data shows that a company's exposure to these issues has significant financial and environmental impacts. It seems that the financial market responds to both opportunities and risks related to climate change, as seen in the discussions in earnings calls. These discussions can also help predict real outcomes related to the transition to a net-zero carbon emissions world, such as the creation of jobs in innovative green technologies. From a broader perspective, generating alternative ESG data like ours provides a much-needed substitute to traditional ESG data from commercial data vendors. Our data is updated quarterly, covers 10'000+ companies, and is available free of charge. It is designed to help academics and practitioners improve their assessment of the ESG profiles of these companies.

What have been the latest developments in investor activism?

Erwan Morellec: If you want to have a say, the best way is probably to buy shares in a company. Being a shareholder allows you to vote, propose changes, and possibly appoint board members who share your values. In the US, Engine No. 1, which held only 0.02% of ExxonMobil's shares, successfully appointed three environmentally conscious board members during the 2021 shareholder meeting. In Europe, Follow This, a Dutch-based investor with just a handful of employees and less than a million EUR in shares, takes a similar "Trojan horse" approach by filing annual general meeting resolutions focusing on climate action. During the 2023 Shell annual meeting, 20% of the shareholders supported the Follow This climate resolution, urging Europe's largest oil company to align its emissions reduction targets with those of the Paris Climate Agreement. While the environmental impact of these initiatives still needs to be proven, these actions demonstrate that shareholder activism can be effective even with a small number of shares.

How successful have investors been in ensuring that banks also do their share of the work regarding the green transition?

Steven Ongena: The exact composition of a bank's portfolio is usually kept confidential, and we can expect that information to remain confidential for the near future. A bank's success largely depends on its unique ability to interpret and use information, so any attempt to gain insight into a bank's financial records will definitely face resistance from some of its shareholders. However, due to political pressure on their owners, state-owned banks might be the first to disclose such information.

Zacharias Sautner: Banks are under pressure from institutional investors to manage ESG risks more effectively. While many banks have been focusing on managing ESG risks on the equity side, more effort needs to be made on the debt side. This effort is crucial, because many of the world's largest carbon emitters are private or state-owned companies, which limits the impact of shareholder engagement on the equity side. However, there is a significant role for banks on the debt side, as many of these "dirty" companies are actively issuing debt instruments. Although it is challenging to implement this effort globally, banks and institutional investors should consider how the debt side can encourage companies to reduce their ESG risk, for example, by reducing their carbon or biodiversity footprint. The economic rationale is clear: Failing to do so could lead to significant financial losses in the future.

How does uncertainty about climate policies affect carbon-intense firms?

Zacharias Sautner: Research indicates that uncertainty about climate policies is factored into financial markets. For option markets, which operate as a form of insurance market, investors are willing to pay a price to protect themselves against the impact of impending climate-related regulations on the stock prices of carbon-intensive companies. The evidence illustrates that when public concerns about climate change increase, for example, after natural disasters, the cost of this protection also increases. Conversely, events that diminish the likelihood of climate-related regulations, such as the 2016 Donald Trump presidential election, lead to a decrease in the cost of insurance.

Financing Rates and Credit Risk

According to the principles of sustainable financing, firms with large carbon footprints should be charged higher interest rates, while those with smaller carbon footprints should be charged lower rates. Do we see banks doing this?

Zacharias Sautner: The short answer is no. Banks should indeed consider it, and some research finds mild evidence that some type of carbon-based pricing is happening. However, the reality is that interest rates are influenced by multiple factors simultaneously, such as central bank policy rates, inflation, regulation, and economic expectations, making it difficult to isolate individual factors. Interestingly, China has recently begun incorporating a green factor into its capital requirements for banks. One argument is that green borrowers are less risky, because they are better prepared for the green transition.

Alexandra Lau: In Switzerland, the Federal Council has issued a new ordinance on climate reporting, which requires companies, including banks, to identify and manage climate-related risks. In response, many banks are in the process of integrating climate risk into their risk management and decision-making processes and are defining pricing strategies, similarly to how they handle other types of risk. Besides managing their own risk, it's also crucial for banks to focus on their customers and to assist them in reducing their climate risk exposure by offering relevant services, providing sound advice, and connecting their clients with experts. Given the limitations of data availability and quality, especially for non-listed companies, banks are currently focusing on raising awareness and on supporting their clients, rather than on setting interest rates based on their clients' current environmental footprints.

Has the recent trend toward restrictive monetary policies impacted firms with low carbon emissions differently than those with high emissions?

Steven Ongena: It can be challenging to provide a definitive answer to this question, as there are many factors to consider. However, when interest rates are low, banks are usually more willing to finance riskier projects. These projects often involve innovative firms seeking technology-based solutions for the green transition.

Erwan Morellec: The increase in policy rates has led to a rise in interest rates. As a result, the importance of the future has diminished, due to the higher discount rate, causing investors to shift their focus away from climate change. This shift in attention is making the future consequences of inaction less noticeable and is likely to impact companies that have already made investments in transitioning to green practices.

How should banks price the risk of stranded fossil fuel reserves?

Steven Ongena: According to the data, banks have raised interest rates on loans for fossil fuel companies since the Paris Agreement, taking climate policy and regulatory risks into account. However, a closer look shows that the increase was small—only about two basis points. In addition, the practice of charging higher rates to carbon-intensive companies has decreased in recent years. Even a 25 basis points penalty would seem insignificant, especially since these companies' interest payments are tax deductible. When we look at the sovereign bond market, we can see that the difference between the French and Italian 10-year government bond yields is 75+ basis points. This difference suggests that banks may not be fully assessing the risks associated with the oil and gas industry, which could potentially lead to the creation of a carbon bubble.

What metrics should banks rely upon to assess their sustainability and climate risk exposure?

Erwan Morellec: ESG ratings are generally based on the concept of single materiality, which measures how well a company manages the ESG risks that impact its own bottom line. However, some ESG ratings are based on the idea of double materiality, which also takes into account a company's impact on climate change. In addition to this key difference, ESG ratings can vary among data providers for three main reasons: measurement, scope, and weight divergences. Measurement divergence occurs when the same attribute is measured using different indicators. Scope divergence arises when different attributes are considered. Weight divergence happens when rating agencies assign different weights to a result, due to their differing perspectives. Empirical data shows that measurement divergence is the primary cause of rating discrepancies. An alternative to unclear ESG ratings, which I prefer, is to assess the true financial impact of compensating for Scope 1 emissions, the direct emissions related to what a company burns, by utilizing carbon pricing.

Zacharias Sautner: Many banks and investors depend on ESG data from external vendors. Smaller banks and investors usually rely on only one or two data providers. While having some data is better than having none, regulators are becoming increasingly concerned that users of ESG data are not questioning it enough. Therefore, it's crucial for decision-makers to understand the limitations of ESG ratings. I also see an opportunity to merge standard ESG data with investors' internal data and methods to identify companies with strong and weak ESG characteristics early on.

What sources of information are available to assess banks' exposure to climate-related risks?

Alexandra Lau: In-depth analysis relies on consistent and comprehensive data. While large corporations are making strides in reporting on sustainability and climate data, many small and medium-sized enterprises, which account for much of my bank's corporate client portfolio, are not yet capable of collecting and, hence, fully disclosing such data. As a result, the existing data on banks' exposure to climate risk is often based on estimates, utilizing sector-specific emission factors and risk indicators, rather than on precise reporting.

How do banks include and manage climate-related risks in their portfolio?

Steven Ongena: The banking industry, especially in Europe, is giving top priority to this issue. Banks have set up teams to assess physical risks using environmental data and are also working to predict how quickly regulations will be put in place. They acknowledge the enduring nature of climate change and grasp the significance of incorporating these risks into their business strategies.

How do firms react to climate-related losses?

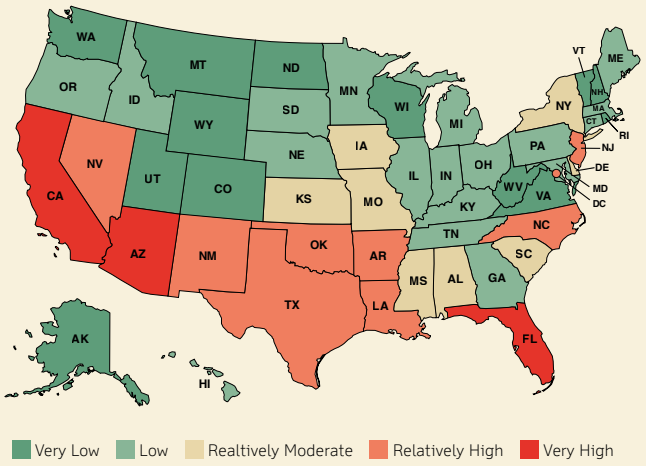
Alexandra Lau: Our portfolio has not experienced any notable climate-related losses as of the present time, given that the firms we finance have not yet been exposed to such losses on a broad scale. Furthermore, our risk assessments do not suggest an increased likelihood of encountering significant losses in the coming years. Our clients are increasingly aware of the vulnerability of their supply chain and production processes, in the face of external factors like geopolitical tensions and climate change.

Steven Ongena: It is worth noting that climate-related losses are not entirely negative. Studies indicate that companies that incur losses as a result of extreme weather events are more likely to implement measures to reduce their environmental impact. Such losses make companies more conscious of the risks associated with climate change. Additionally, it is worth noting that banks have been identified as the primary source of external financing for companies affected by severe weather-related losses.

How does climate risk impact the cost of mortgages?

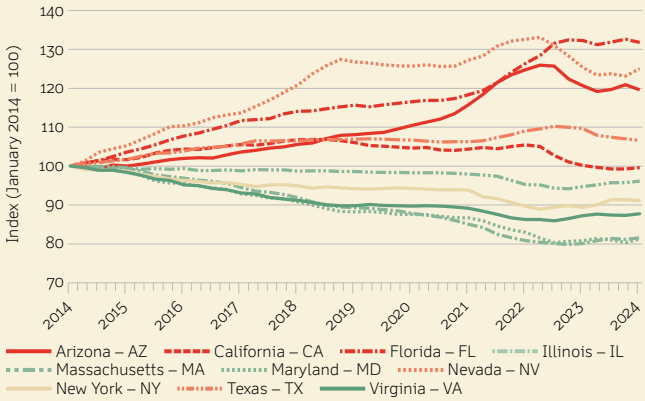
Zacharias Sautner: Recent data shows a big difference between the mortgage and insurance industries when it comes to the impact of climate risk. In the US, insurance companies are increasingly stopping the sale of new home insurance policies in areas prone to natural disasters. For example, State Farm, California's largest home insurer, has stopped selling new home insurance policies in California because of the risk of wildfires. In other cases, insurance premiums have gone up by more than 200%. However, mortgage rates have stayed relatively steady. Although it's hard to say exactly why there's such a difference, it's important to note that the insurance market relies heavily on the reinsurance market, which has much higher market concentration and less competition than the banking sector.

Weather and Climate Hazard Risk



Note: This map reflects the weather and climate combined risk for the following disasters: drought, flooding, freeze, severe storm, tropical storm, wildfire, and winter storm. Very low is a weather and climate combined risk index below 10; relatively low is between 10 and 13; relatively moderate is between 13 and 16; relatively high is between 16 and 19; and very high is above 19.

All-Transactions House Prices For Selected States Relative to the Entire United States



Note: This figure shows the relative all-transaction house price index for selected states relative to the entire United States based on the weather and climate combined risks and respective colors defined above.

Source: U.S. Federal Housing Finance Agency and NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2024). https://www.ncei.noaa.gov/access/billions/, DOI: 10.25921/stkw-7w73

Steven Ongena: The brief answer is no, not fully. Real estate prices and mortgage rates in coastal areas, for instance, do not fully reflect the true level of risk. This lack of accurate pricing could be due to the short-term focus of market players and their inability to properly assess long-term risks. Coastal cities are particularly vulnerable to climate change-related dangers, such as rising sea levels and more frequent and more severe hurricanes. Additionally, many coastal cities are experiencing sinking, due to the extraction of groundwater and oil and gas. Despite these significant risks, real estate prices in coastal areas like Florida, New York City, and Jakarta have not yet significantly declined.

What's Next?

The annual SDG funding gap was estimated at USD 4 trillion in 2023, up from USD 2.5 trillion in 2015. Does this mean that sustainable investments are not a priority? What needs to be done to prioritize sustainable lending?

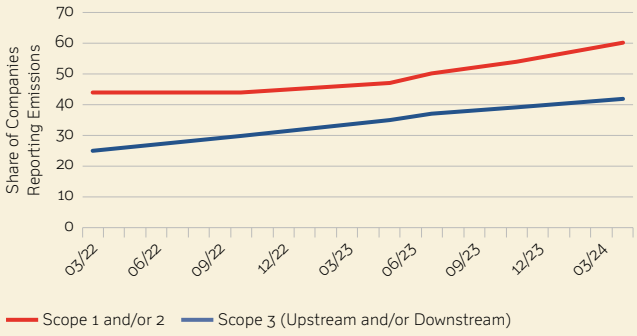
Alexandra Lau: To facilitate the movement of significant amounts of capital, it is essential to establish conducive policies, favorable political conditions, and strong governmental commitments. Even assuming that capital markets work efficiently, depending on the efforts of individual entities alone will not suffice to ensure that the required capital flows toward sustainable investments in the appropriate quantity and at the opportune time. This underscores the crucial role of cohesive strategies and collective action in mobilizing capital for sustainable investment endeavors.

What are the next steps for improving the distribution of information?

Tadas Zukas: Over the past five years, the regulatory focus in Europe has been on financial product-related sustainability disclosures. Starting around 2023, that focus has broadened to include corporate reporting, which—in parallel with technical complexity—brings a conceptual shift away from qualifying corporate sustainability information as "non-financial." We can see that the concept of double materiality is making clear progress, not only in corporate sustainability reporting, but also in financial product-related thinking and market practices. As for what to expect in the next few years, I anticipate a stronger focus on improving the available ESG data flows and on enhancing the quality and consistency of ESG data. The European Union has an ambitious project of creating an open-access centralized database, curated by ESMA, which will contain all publicly available regulatory sustainability-related information on both corporate and financial product levels. This European single access point is due to be launched in 2027 and can be expected to become a game changer. In the context of these developments, it is vital to invest in enhancing clients' understanding of sustainable finance. This understanding will be essential for navigating the complexities of the increasingly sophisticated ESG market.

Zacharias Sautner: Risks related to sustainability carry significant weight, just like other financial risks. Therefore, the quality and quantity of data play a crucial role in reducing information gaps, improving market efficiency, and increasing liquidity. It is equally important to ensure that mandatory reporting is effective, without getting into a debate about financial *value* versus ethical *values*. Research shows that requiring ESG disclosure has a positive impact on the capital market, especially when these requirements are enforced by governments. Additional studies suggest that companies that report their carbon emissions face increased pressure to subsequently reduce these emissions.

Greenhouse Gas Emissions Reporting—Globally Listed Companies



Note: Scope 1, 2, and 3 emissions, respectively, reflect the direct emissions related to what a company burns, the indirect emissions related to the energy bought, and everything beyond that, whether on the upstream or downstream side.

Source: MSCI ESG Research.

Do banks adequately price climate-related risks?

Erwan Morellec: I believe we should focus not only on banks, but also on sustainable or green finance in general. Evidence shows that green finance plays a role in helping companies and economies move toward more sustainable practices. Some estimates suggest that the effect of impact investing is comparable to that of the various carbon reduction schemes implemented so far. While carbon pricing is a highly effective tool for guiding society toward a more environmentally friendly state, it is often unpopular, due to its perceived high cost to the public. If finance contributes to this effort, the carbon tax does not need to be as high, making it more likely the public will accept it. One way to encourage this shift could be to incentivize companies and bank clients to make green investments by offering interest rates that reflect the long-term value and risk of sustainable investments.

Price of a Futures Contract to Emit One Ton of CO_2 on the Intercontinental Exchange—Expiration December 2024

Source: Bloomberg.

Is the banking system ready for a climate-related stress test?

Steven Ongena: The banking industry is getting ready to address the risks related to climate change. However, I am worried that our actions may be "too little, too late," and we could face some tough challenges in the process. I am particularly concerned about how oil-based economies, such as Nigeria, Russia, and Saudi Arabia, will adapt. Not only do these nations depend heavily on oil and gas, they make significant contributions to the world economy. It's likely that these oil-dependent states will continue to prioritize oil extraction until the very end, leading to increased lobbying and "noise" in the transition to a net-zero carbon emissions economy.

Where do you anticipate further developments in the field of sustainability-related risks?

Zacharias Sautner: The risk of biodiversity loss is now considered to be the second most important risk to humankind after climate change. The European Central Bank has even suggested that it should be classified as a systemic risk. Investors and regulators have learned a lot from dealing with climate change, so they are expected to address biodiversity risk much faster. Shareholder engagement on this issue is already starting to change, and there is now systematic collection of data on biodiversity risk.

Erwan Morellec: Numerous initiatives, with varying degrees of financial support, have been aimed at making our planet and society more sustainable. It is important to assess what we have observed and learned over the past few decades and to quickly make effective decisions for the future. Climate change and biodiversity loss are among the most significant threats to humankind, and risks related to sustainability must be addressed practically. I firmly believe that we also need to help the most polluting firms transition toward more sustainable practices and technologies. A recent study has shown that among S&P500 firms, brown firms (i.e., firms in the top decile in terms of emissions) have approximately 260 times as much environmental impact as similarly-sized green firms. So, it is clear that these firms need to change, and this change can only happen through investor activism or by using financing instruments, such as transition bonds, that will incentivize them to change. The current strategy of divesting from brown firms not only leads these firms to be held by investors who care less about the environment, but also potentially leads them to invest in more brown projects, which generally deliver relatively more front-loaded cash flows. In that sense, some of the commonly adopted sustainable investment strategies may be counter-productive. Investors need to realize that they play a key role here and need to help highly polluting firms transition toward greener technologies.

Swiss Finance Institute

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