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International Center for
Sustainable and Just Transformation
Universität Witten/Herdecke

[tra:ce] Working Paper Series
WP No. 6

October 2025

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ABSTRACT

European financial institutions face mixed signals on how to account for climate-related and environmental risks that could prevent a disorderly stranding of assets. The literature has emphasised the financial industry's inability to cope with the fundamental uncertainty inherent to climate change, but still lacks an analysis of its strategic behaviour in relation to stranded asset risks. Based on the analysis of 38 semi-structured interviews with financial institutions, foremost institutional investors and banks, we address this lacuna. We argue that financial actors primarily employ three strategy clusters to address stranded asset risks: (1) risk taking, (2) risk shaping, and (3) risk shifting. These strategies entail different financial practices and narratives that either imply marginal financially material action, that challenge the scope of stranded assets, or hedge against stranded asset risks. We argue that drawing on these strategies enables financial institutions to keep stranded assets afloat rather than orchestrating a collective phase-out.

KEYWORDS: Climate-related and environmental risks, stranded assets, sustainable finance, derisking

Funding

The research was funded by the German Research Foundation (DFG) under the Heisenberg Professorship Programme, reference WU 780/2-1, and the German Federal Ministry of Research, Technology and Space (BMFTR) under the programme “Climate Protection & Finance (KlimFi)”, reference 01LA2207A

Acknowledgments

The authors would like to thank the editors of this special issue, Valentina Ausserladscheider, Phillipp Golka, and Timur Ergen, participants from the workshop Socio-Economics of Loss and Decline in the Climate Crisis, especially Sylvain Maechler, and participants at the Finance & Society conference 2025 for valuable feedback and comments. We would also like to thank all our interviewees for the time and effort they have taken to talk to us and share their expertise.

Suggested citation

Urban, Janina/ Schairer, Simon/ Haufe, Paula/ Baioni, Riccardo/ Fichtner, Jan/ Aguila, Nicolás/ Wullweber, Joscha (2025): Climate-related risk taking, shaping and shifting: How private financial actors keep stranded assets afloat. *[tra:ce] Working Paper* No. 6, Available at SSRN.

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Introduction

About two decades after climate change was termed the 'greatest market failure the world has seen' (Stern, 2006: viii), the role of private finance in handling the risk of *stranded assets* is receiving growing public attention: Triggered by fears that the financial sector may fail to anticipate massive losses in asset value caused by climate change and climate policies (Carney, 2015), Europe has been at the forefront in developing policies addressing these issues (Smoleńska & van't Klooster, 2022; Mertens & van der Zwan, 2025). Besides preventing a disorderly stranding of assets through the proper integration of climate-related and environmental (C&E) risks, European policymakers envisioned that the private financial sector could drive the transition of the productive economy towards net-zero greenhouse gas emissions (GHG) by 2050 (Baioni et al., 2025) – an approach Gabor and Braun (2024) have termed a 'weak de-risking regime'.

However, despite substantial regulatory efforts in Europe and internationally (van't Klooster & Prodani, 2025), the financial industry continues to receive *mixed signals* on the extent to which C&E risk considerations should drive its investment decisions. On the one hand, the EU is considering rolling back key elements of its sustainable finance regulation (Vandeloise & Van Wynsberghe, 2025), and global investment in fossil fuels is resurging (RAN et al., 2025), suggesting a slowing momentum for greening finance. On the other hand, recurring natural disasters render the materialisation of climate-related physical risks 'no longer a tragedy of the horizon' (Mauderer, 2025), and EU supervisory authorities are intensifying their scrutiny over carbon-intensive financial exposures (Urban et al., 2025). These developments illustrate the contradictory pressures shaping financial practices in relation to stranded asset risks.

This raises the question of why financial institutions (FIs) still invest in carbon-intensive assets, and in particular, what strategies they employ to address stranded assets risks. As an investor in both assets that are negatively affected by climate change and those that drive it (Colgan et al., 2021), the financial industry may have an interest in both considering and disregarding C&E risks to anticipate asset stranding. Beyond assuming that such climate-related asset *materiality* drives investors' behaviour (Ausserladscheider, 2024), scholars argue that the representation of climate change as a financial risk rarely reduces the gap to the fundamental uncertainty underlying these phenomena (Christophers, 2017; Chenet et al., 2021). Crucially, some authors suggest that current investment practices are structured in a way that prevents long-term considerations from entering financial industry decision-making (Silver, 2017; Christophers, 2019). When confronted with the prospect of terminating the financing or operation of carbon-intensive industries, private actors draw upon future-oriented methodologies that currently face little legal scrutiny. While policymakers may be concerned about the destabilizing effects of stranded assets, Aitken (2023: 276-277) argues that it remains a contested category among the private industry: 'Although an emergent category increasingly relevant to climate change science and policy, stranded assets has been challenged by efforts of all sorts to render the assets it threatens pliable again'.

However, we still lack a clear understanding of what constitutes these 'efforts of all sorts' (Aitken, 2023: 277) that may *keep stranded assets afloat.* We suggest that the strategies financial actors employ to address stranded asset risks are crucial to this. While other contributions have focused chiefly on structural drivers of the (lack of) anticipation of stranded assets, our analysis examines FIs' *strategic behaviour*, foremost institutional investors and banks, which are involved in the daily management of the bulk of global assets. Based on the analysis of 38 semi-structured interviews with practitioners from

European financial institutions and small US sample, we argue that financial institutions employ three primary strategy clusters, i.e., similar but not identical, recurring strategies, to address the fundamental uncertainty related to stranded asset risks: (1) risk taking, (2) risk shaping, and (3) risk shifting. These strategy clusters relate to different narratives and financial practices that either imply marginal financially material action, that challenge the scope of action, or hedge against the risks associated with asset stranding. We contend that drawing on these strategies enables financial institutions to keep stranded assets afloat rather than orchestrating a collective phase-out.

The article is structured as follows. Section two reviews the relevant literature on how financial actors address C&E risks and presents the paper's analytical framework, i.e., an actor-centred perspective on stranded asset risks. Section three details our methodological framework and data approach. Section four outlines the three strategies, and section five presents the three key narratives, based on our analysis of the interview material. Section six discusses our findings and implications for FIs anticipating asset stranding. In the conclusion, we highlight the paper's contribution to the literature.

The political economy of asset stranding and an actor-centred approach to stranded asset risks

Stranded assets are broadly defined as assets that 'suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities' that can be 'caused by a range of environment-related risks' (Ansar et al., 2013: 9). Following Carney (2015), C&E risks are defined as (1) physical risks, when sudden and long-term effects of climate change materialise, (2) transition risks, when policies, technologies, or consumer preferences shift, or (3) litigation risks, when firms are sued for climate-related corporate misconduct. The literature argues that considering C&E risks enables financial actors and supervisors to anticipate the evolution of asset prices alongside the decarbonisation pathway, thereby potentially reducing the size of stranded assets (Bolton et al., 2020; Caldecott et al., 2021; Campiglio et al., 2022). Large-scale asset stranding in the context of the climate crisis can undermine the viability of FIs exposed to carbon-intensive industries, including banks and institutional investors, as well as threaten overall financial stability (Monasterolo, 2020; van der Ploeg & Rezai, 2020; Semieniuk et al., 2022).

Most contributions converge on their assessment that the financial sector currently tends to underprice C&E risks (Goldstein et al., 2019; Campiglio et al., 2022). This is due to at least three reasons. First, the risk-based governance established in financial markets is conceived as incompatible with addressing the fundamental uncertainty associated with climate change and the green transition (Christophers, 2017; Chenet et al., 2021). Second, because markets are structured around risk and return, and most green investments have less attractive risk-return profiles than carbon-intensive ones, C&E risk integration is unlikely to substantially alter incentives to shift financial flows to sustainable investments (Christophers, 2024; Aguila et al., 2025). This is particularly the case in Europe, where the lack of strong financial incentives to alter risk-return profiles has been characterised as a 'weak de-risking regime' (Gabor & Braun, 2024). Third, the under-pricing of C&E risks has been attributed to a mismatch between aggregated risk assessments on the one hand and investment practices on the other (Silver, 2017; Christophers, 2019; Aitken, 2023). Aitken (2023) points out that private actors address climate uncertainty through *proxy carbon pricing* — the incremental increase in notional GHG prices that renders certain business activities economically unviable over time — and rarely through the concept of stranded

assets, as the latter 'has been challenged by efforts of all sorts to render the assets it threatens pliable again' (Aitken, 2023: 277).

We suggest that, in the European context of climate-related financial regulation, stranded assets have become the object of a political struggle between the European weak derisking regime and the private financial industry. While other contributions have focused chiefly on structural drivers of the (lack of) anticipation of stranded assets, our analysis examines the *strategic behaviour* of financial institutions, foremost institutional investors and banks, which are involved in the daily management of the bulk of global assets. In analysing which strategies financial actors employ to address stranded asset risks, we suggest that under a weak derisking regime, European policymakers will continue to face difficulties to internalise ecological externalities and to decarbonise in a timely manner.

Behind conceptualising climate change as a financial risk lies a prevailing risk rationale that enables actors to deal with the limits of knowledge, rendering the unknowable somewhat knowable (Beckert & Bronk, 2018). A key point of reference is Frank Knight's (1964: 233, in Best, 2008) distinction between *risks* as 'measurable uncertainty' and fundamental uncertainty as something that cannot be measured. Best (2008: 360) points out that risks are more contemporarily understood as 'a means of defining the world in calculable terms' that also 'constitute the objects of their analysis'. This puts under analysis not only how the representation captures the represented, but also how the represented is affected through its representation as a risk, i.e., the performativity of risk conceptions (Esposito, 2013). This process of riskification (Hardie & Maguire, 2016) has advanced considerably in the context of climate change in the form of C&E risk integration (van't Klooster & Prodani, 2025).

We are interested in how financial actors construct stranded asset risks and how their constructions, in turn, shape these risks (Wullweber, 2016). To this end, we conceive of financial actors as investors in both assets that are negatively affected by, and those that aggravate, climate change and environmental degradation (Colgan et al., 2023). Given this position, they may have an interest in considering C&E risks to anticipate a loss in asset value resulting from climate change, or they may disregard C&E risks because they are invested in assets that contribute to climate change. We add two qualifications to this actor conceptualisation. First, we follow Ausserladscheider (2024) in suggesting that actors do not simply derive their decisions based on an asset's materiality but rather interpret its value by imagining the future (Beckert, 2016) or by acting strategically (McGoey, 2012) in light of the limits of knowledge. Second, we contend that because the integration of C&E risks is an ongoing and politically contentious process, the climate-related materiality of an asset may not be the primary driver of financial actors' decisions. Instead, investment decisions may still follow established risk-return logics (Christophers, 2024; Aguila et al., 2025), widely excluding sustainability considerations.

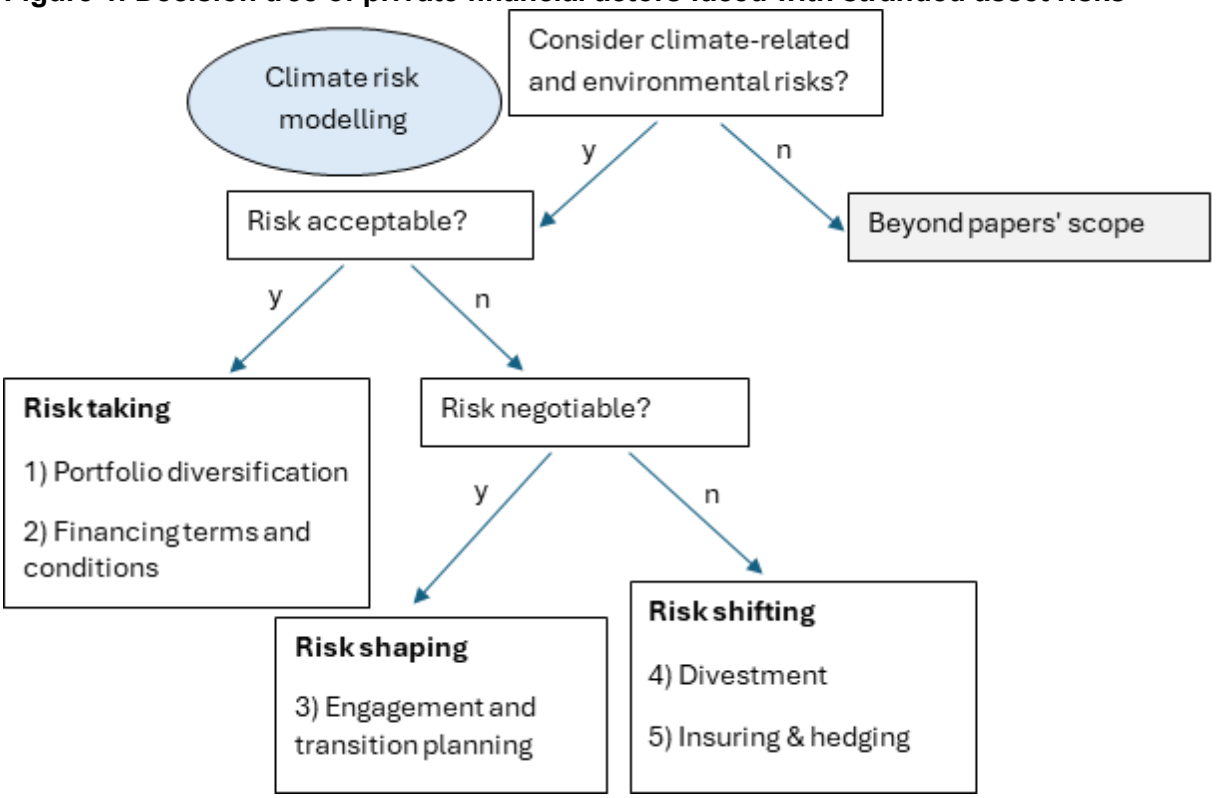
Our two main actor types — institutional investors and commercial banks — relate differently to stranded assets risks. Institutional investors, in particular pension funds, sovereign wealth funds, and (re-)insurance companies and their corresponding asset managers, invest their capital primarily in equity and fixed-income instruments such as bonds. As long-term investors, they are concerned with a firm's profitability, ensuring capital gains or receiving coupon payments and dividends. Asset managers, too, mainly focus on maximising assets under management to increase fee earnings and are a highly concentrated sector (Fichtner et al., 2017). A key distinction can be made between actively and passively managed funds, where the latter invest by tracking benchmark indices

compiled by financial service providers. Where institutional investors have been considered as, in principle, interested in internalising environmental externalities (Fichtner & Heemskerk, 2020; Braun, 2021), Silver (2017: 111-112) argues that 'risk is defined in relation to historic short-term volatility and divergence from a benchmark index. A forward-looking external risk, such as stranded assets, ... does not therefore fit into an institution's risk perception'.

Commercial banks, in turn, lend to firms or projects if clients are expected to repay on time at the agreed-upon interest rate. Since current EU legislation requires banks to integrate C&E risks into their management and strategy (Smoleńska & van't Klooster, 2022), banks that continue financing carbon-intensive sectors are obliged to account for concomitant transition risks (ECB, 2024). Furthermore, physical risks can also affect banks by weakening their counterparties' debt-servicing capacity (Campiglio et al., 2022). However, since banks continue to have considerable structural power (i.e., being 'too-big-to-fail'), governments may bail them out during a financial crisis (Culpepper & Reinke, 2014). This moral hazard may disincentivise particularly large systemically relevant banks from properly considering C&E risks.

To integrate these perspectives, we suggest inserting the logic of risk-return into the process of making uncertainty calculable (see figure 1). Since we focus on financial actors who evaluate how C&E risks affect them, a preparatory step involves climate risk modelling. Based on this, they decide whether the risk level is *acceptable*, by weighing the expected profit against the expected risk, including a view towards C&E risks. Subsequently, they decide whether a risk is *negotiable*, based on the potential to reduce the level of C&E risk. We connect five financial practices to these decisions as discussed in the literature.

Figure 1. Decision tree of private financial actors faced with stranded asset risks



Source: authors' own elaboration.

We argue that it is possible to identify three different strategy clusters, in which financial actors address stranded asset risks: (1) risk taking, (2) risk shaping, and (3) risk shifting. First, FIs may decide to *take on* C&E risks, i.e., keep them on-balance sheet, and manage the ensuing risk exposure if the stranded asset risk is deemed acceptable for the institutions' risk appetite. This may be achieved through risk management techniques such as portfolio diversification or by adjusting the terms and conditions of financing. Second, FIs may find that the risk of asset stranding is unacceptable but negotiable, *shaping* the risk by challenging the scope of what constitutes a stranded asset. This may be achieved by engaging with clients in order to redefine the corresponding assets as transition financing rather than potentially stranded assets. Third, FIs may decide to *shift* C&E risks off-balance sheet if the uncertainty about potential asset stranding is deemed unacceptable and unnegotiable for the institutions' risk appetite. This ultima ratio measure may be achieved via divestment and exclusion policies as well as hedging and insuring against C&E risks. We posit that these categories are fluid and may be employed simultaneously for the same asset class.

Methodology

To analyse the strategies FIs employ to address stranded asset risks, we draw on a qualitative research methodology. We conducted 38 semi-structured in-person and online interviews with staff from banks, institutional investors such as (re-)insurance companies and asset managers, and financial service providers with some specialization in sustainable finance and C&E risks between 2023 and 2024. The list of interviews can be found in the Annex. In compiling this sample group, we aimed to cover a significant share of actors from the overall financial industry. We focused on the European financial hubs, with FIs based in Frankfurt (DE), London (GB), Zurich (CH), Paris (FR), and Amsterdam (NL). We also interviewed a small sample of financial experts in New York (US), as a comparative case for a jurisdiction with more lenient climate-related financial regulation. We gained access to interviewees through personal referrals and subsequent snowball sampling, as well as through sampling without personal referral. Since this sampling strategy may still contain some selection bias, we ensured a relatively large sample size compared to similar studies.

For each interview, we employed semi-structured questionnaires with three broad sections: First, open questions about sustainable finance, its impact mechanisms, and system logics. Second, questions regarding obstacles to redirecting financial flows from carbon-intensive to green sectors. Third, questions regarding the relevance of C&E risks to the interviewee's institution. The semi-structured character of the interviews allowed for adapting the conversation to each interviewee's individual field of expertise and for letting them develop their own narratives on the interview's topic.

After completing the interviews, we transcribed them using an AI-based transcription software (Amberscript) and cleaned them of filler words, repetitions, grammatical mistakes, and other minor errors, preserving the meaning and, as much as possible, the original formulation. Following Rubin (2021), we subsequently analysed the transcripts in two steps using the qualitative social science coding software MAXQDA. First, we manually coded for the five financial practices, deducted from the literature, and portrayed in figure 1. Second, we identified narratives inductively and coded them in the transcripts. A cross-coder liability check was performed.

Strategies of climate-related uncertainty management

In the following sections, we analyse how financial institutions address stranded asset risks. We argue that they draw on various practices that can be grouped into three strategy clusters, i.e. similar, recurring strategies: Risk taking, risk shaping, and risk shifting.

European financial institutions typically begin assessing their C&E risk exposures through a climate risk modelling exercise. Institutional investors use climate-adjusted benchmarks that calculate the reduction of expected cash-flows due to rising CO_2 prices, which is also called proxy carbon pricing (Aitken, 2023):

> CO_2 times the CO_2 price - that gives you annual damage being done or reduction ... And we express all of that as a percentage of sales ... [Companies] like Vestas, a windmill maker, would be plus 100%. Oil companies would be more like -20% or so ... The most of them are here in the middle, and it's like 40, 50, 10% or so. (Interview 29)

Banks similarly assess their exposures to C&E risks on the portfolio level (interviews 8, 10, 15, 16, 22, 23): 'It's almost like a heat map of which clients are contributing most to those financed emissions' (interview 23). Some actors add verification to the assessment — through so-called science-based targets or by demanding transition plans with intermediate targets — ensuring that counterparties may keep their decarbonisation commitments (interviews 16, 21, 22, 23, 30). Unlike earlier approaches to sustainability as a governance issue, FIs now take a *portfolio perspective* rather than focusing on individual companies only (interviews 2, 3, 5, 12, 16, 21). Based on this assessment, we suggest financial actors decide whether the financial risk is acceptable and negotiable.

Climate risk taking by continuing business-as-usual

One of the central tenets of financial actors' risk management practices is portfolio diversification. In relation to integrating C&E risks and anticipating stranded assets, we find that diversification often leads FIs to remain invested in assets considered prone to stranding, i.e., carbon-intensive assets. Institutional investors compare the climate-adjusted benchmark against the market benchmark and find it has greater volatility, since the sustainability criteria move the portfolio away from the greatest possible diversification (interviews 13, 21, 29, 32, see also Silver, 2017; Christophers, 2019). One of our interviewees from a public asset owner company reflects upon such an instance:

> We kicked the tires on the Paris climate-adjusted benchmark ... But at the end of the day, it was a non-starter simply because the fund is so big that the concentration risk and the turnover implied by it, kind of just eliminated itself. Not only that, but we also concluded that what served the fund best over time is this broad global diversification. (Interview 21)

Similarly, a practitioner at an asset manager stresses that institutional investors can spend their capital on fossil fuel companies without running a greater risk of being affected by asset stranding: 'They would spend 2% of their capital on Shell. That's not an irresponsible risk. [This] can still be very nicely spread' (interview 29; see also interviews 4, 36).

Banks, which in the EU increasingly need to account for C&E risks, typically also do not perceive their lending to carbon-intensive sectors as problematic, in terms of the associated transition risk (interviews 23, 37):

> If we just take a risk-based lens ... that's going to be too late [to reach Paris alignment]. Because the risks will be distributed across different actors. So, there's

> a lot of shared impacts that don't necessarily translate to the decisions that one institution or even one business line may be making. (Interview 23)

Another factor that can keep stranded assets afloat is that geographical diversification makes the risk, especially physical risks, appear relatively small at the portfolio level. A practitioner from a reinsurance company describes the likelihood of climate disasters materialising simultaneously across the various locations of its business as very low, 'then we're out of luck' (interview 4). In addition, the companies they (re-)insure usually operate globally, reducing the perceived risk of assets stranding (interviews 13, 14, 19, 36). Thus, while viewing one's portfolio through the sustainability lens could raise the financial sector's sensitivity towards these issues, it can also result in a realization that the risk calculated is not 'as big as one would suspect' (interview 36). This can lead to reiteratively assigning C&E risk assessments less importance and to conceive diversification as a generally suitable strategy to reduce stranded asset risks.

A second practice that FIs draw on after assessing the C&E risks to their portfolio is to consider adjusting the terms and conditions of financing. We find that this can increase capital costs for carbon-intensive and climate-vulnerable assets but may also advance mechanisms that allow FIs to defer stranded asset risks. The adjustments of terms and conditions of financing relate to (1) the pricing of financial assets, (2) the duration of transactions, and (3) target-setting requirements.

First, several interviewees stress that they have increased financing and insurance costs for both carbon-intensive corporations or sectors and climate-vulnerable ones (interviews 3, 4, 6, 7, 19, 31). In relative terms, carbon-intensive counterparties face increasingly higher capital costs than green ones. As FIs seek to improve their portfolios in line with sustainability criteria, they increase the funding available for green activities while being willing to accept lower margins (interviews 3, 5, 7, 8). In absolute terms, financing and insuring assets prone to stranding, such as real estate in flood-prone areas, also becomes more expensive, since financial actors expect C&E risks to rise (interviews 3, 7, 14, 19, 23, 36). The literature similarly finds a carbon premium for some sectors (De Jonge et al., 2025), while evidence of a so-called greenium remains mixed (De Angelis & Monasterolo, 2024; Bressan et al., 2024). This means that when FIs *take on* C&E risks by adapting financing terms, they may prevent a disorderly stranding by re-evaluating assets successively.

However, interviewees also point out serious limitations, arguing that assets with increased C&E risks are unlikely to become entirely uninsurable or underfinanced in the foreseeable future (interviews 3, 19). As a practitioner from an insurance company, when asked whether fossil companies are still insured, declares, 'this remains insured, across the board, it is insured' (interview 19). Reasons include that C&E risks remain hard to quantify for these institutions (interviews 13, 32, 37). Crucially, FIs operate within broader political and economic frameworks in which market prices still rarely reflect climate risks. Consequently, if they were to price in C&E risks more strongly than competitors, they fear losing clients or market share (interviews 5, 21, 24, 32, 37).

Second, banks, institutional investors, and insurance companies indicate having shortened the lending and holding periods, and the insurance duration of assets that imply a risk of stranding. This is described as an active decision by some (interviews 5, 14) or as a general market trend by others (interviews 13, 36, 37). While this also penalises counterparties with stranded asset risks, it tends to harm C&E risk integration (interviews

11, 13, 37). As one practitioner from an insurance company admits: 'It's really hard to incorporate climate change as a risk factor, if the [investment] horizon is just not longer. Quantifying climate risk impacts in a one-year time frame [is difficult]' (interview 13). One asset manager critically comments on this tendency:

> You still have the situation of insurance companies telling themselves and the rest of the world that they don't have any serious transition risk because they're repricing every year anyway. Which is a joke, of course. The same with bank loans in five years, 'oh yeah, but we only make five-year loans'. Yeah. But you roll them over every time, right? And even a long-term transition risk can materialise within those five years. And then it can be a 50% or 100% hit on an asset. It can even be a 50% hit on your entire exposure to a sector. (Interview 29)

Finally, a third way to change the financing terms and conditions is to link the financing instruments to sustainability-related risk disclosure and targets (interviews 3, 17, 18, 33, 34). Here, the asset does not need to have low C&E risks from the outset, but financing is provided on the condition that the financed party meets certain sustainability-linked criteria. Depending on whether these criteria are met, the cost of capital will change (interviews 17, 33, 34).

Climate risk shaping via engagement and transition planning

In addition to taking on stranded asset risks on their balance sheets, FIs employ the strategy cluster of *risk-shaping,* which includes the financial practices of engagement and transition planning.

FIs employ and present engagement as a mechanism for incorporating and managing C&E risks, which often enables them to stay invested in assets that imply a risk of stranding. While *engagement* originates from shareholders exercising their voting rights in the corporation in which they hold equity, this mechanism is increasingly applied to fixed-income assets (bonds) and borrowers (loans) as well. For bonds, this means that sustainability criteria are incorporated into issuance (interviews 3, 16, 18, 19). In lending, banks engage their customers (interviews 3, 7, 10, 18, 23, 24, 35). Recent EU legislation has introduced several mechanisms to increase the sustainability impact of its capital markets (Baioni et al., 2025). For commercial banks active in the EU, 'transition planning' has become a legal requirement (Urban et al., 2025), for which we use it as a more specific term for engagement in the lending business.

According to our analysis, engagement is 'pretty well established' and 'pretty well accepted' (interview 18). A widespread tactic in the context of climate change is to concentrate on the laggards and the companies that have potential to decarbonise (interviews 13, 18, 23, 38): 'You map your clients against a trajectory. You find the population of clients that need some love and care' (interview 18) and then you 'focus the engagement in the most problematic ones' (interview 38), and the ones where 'there is potential' (interview 13).

Institutional investors portray engagement as driven by a concern about the long-term value of assets (interviews 2, 3, 14, 20, 30), as a practitioner from an asset owner summarises: Engagement 'is a way to provide a market signal, we do care, it matters. We don't want to accept just everything, because in the end it will have a ... stranded assets effect' (interview 13). Interviewees acknowledge the EU's sustainable finance regulation as an attempt to challenge the trend towards passive investment. Relying on tracking indices,

investors have little room to diverge from financing an economy that was ‘headed towards a full debris world’ (interview 27). A practitioner from an institutional investor reflects upon EU legislation enabling them to approach engagement differently, by focusing on companies that lag in meeting sustainability criteria:

> We found it [regulation] was actually quite relevant because it meant we could select the companies, based on where they stood [in terms of sustainability], and we could push the ones that maybe were a bit less advanced. (Interview 6)

A key consideration for institutional investors exploring an adaptation to their strategy is to evaluate whether sustainability is part of their fiduciary duty. European institutional investors tend to answer this question affirmatively (interviews 6, 13, 14, 20, 29) as expressed by one practitioner from an asset manager, who underlines the relevance of the regulatory context:

> If [as a regulator] you promote a company to be more transparent about its CO_2 emissions or that it has a plan to reduce CO_2 [through] a transition plan, then I would argue that [sustainability is] in the overall responsibility of the fiduciary investor, with an eye also on the other objectives of risk [and] return. (Interview 11)

However, most institutional investors still struggle to reconcile the new impetus towards sustainability with established practices of optimizing against the market benchmark (Silver, 2017). A practitioner from an asset manager summarises this dilemma: ‘The problem arises when I don't have a whole section of the market [i.e., carbon-intensive industries] in my portfolio’ (interview 11). ‘If it's not performing, then it's not a big deal,’ but ‘how do I justify that when it's performing well?’ (interview 11). As a result, there continues to be a preselection of companies that institutional investors engage with, and those selected companies tend to be active in carbon-intensive sectors, which currently offer more favourable risk-return ratios than green ones. This means that FIs often engage with companies with little actual potential to decarbonise. One practitioner from an asset management firm notes that engaging fossil fuel companies is a common practice but is becoming increasingly controversial, as ‘most of these oil and gas companies are simply unengageable’ (interview 29).

The favourable risk-return profiles of assets prone to stranding also affect the engagement of financial corporations, namely, banks. An interviewee from an institutional investor underlines that their engagement with banks failed blatantly since shareholders wanted the latter to stay invested in fossils: Shareholders’ ‘general view is, this is a profitable line of business. It's going to make you money. You should keep doing it’ (interview 30). Another interviewee conceives of European legislation as having ultimately failed to bring about a shift away from passive investment, currently leaving the status of C&E risk integration uncertain: ‘The market has decided to go to passive [again]’ (interview 6).

Transition planning has evolved into a mechanism akin to shareholder engagement, in which European commercial banks manage their client relationship. A practitioner summarises the dilemma banks face when considering C&E risks: Banks ‘need to move these [carbon-intensive] guys. But they also have to penalise them for the transition risk’ (interview 29). This is especially challenging for the relationship-oriented nature of the banking business, where banks maintain long-standing ties with clients who are often active in carbon-intensive sectors (ECB, 2024). A banking practitioner pinpoints this challenge, ‘there is the classic trade-off: customer relationship versus [climate] commitment’ (interview 9).

However, since the supervision of C&E risks has become mandatory for banks active in the EU (van't Klooster & Prodani, 2025), financial actors are finding ways to *shape* C&E risks through this newly evolving practice. An interviewee from a sustainable finance think tank argues that, in principle, banks appreciate having clear targets of where the economy should stand emission-wise in the future: 'The more we can get of that kind of approach, the better' (interview 27) (see also interviews 3, 17, 23). A banking practitioner contends that while fossil investments are currently rendering higher returns 'you have to prove [to the financial supervisor] how you are going to get out of it. That's why the best approach ... is [having] realistic transition pathways' (interview 5).

When it comes to translating banks' risk assessments into their lending practices, our analysis suggests there are at least three serious limitations. First, while many practitioners stress that transition plans are most useful when standardized (interviews 5, 8, 9, 11, 20), EU regulation currently leaves the choice of methodologies open (Urban et al., 2025). According to some, this can lead to a 'let's wait and see attitude' among banks (interview 10). Second, banks struggle to create stringency in connecting their climate-related projections to investment decisions, so that they currently 'only do adjustments before and after they apply the model' (interview 29) (see also interviews 8, 10). Third, where institutional investors' engagement typically becomes more effective through the threat of divestment, banks have comparatively few escalation tools at their disposal. This is reflected in a statement by a banking practitioner: 'You start pulling back a little bit or just helping them in certain areas ... If we participate in their revolving credit facility, maybe we do a lower amount that we participate in' (interview 23). But ultimately, banks may 'not want to ... walk away from the whole relationship' (interview 23).

Climate risk shifting via divestment, insuring and hedging

If FIs deem the risks of stranding associated with some of their assets as unacceptable and unnegotiable, they may decide to divest from them or to hedge and insure them. This strategy of *risk shifting* moves stranded asset risks off-balance sheet.

Divestment works differently for institutional investors and banks. For institutional investors, there are two types of divestments: First, actively managed funds can sell stocks of individual listed companies, and second, passive funds that replicate existing stock indices sell stocks if the respective firm is excluded from the tracked index (Petry et al., 2021). Active investment funds typically make decisions based on a mix of data and experience:

> What we do is: we pull out these companies, we use our data, we use our experience, and we say, we don't like the look of this. We want to remove it from our portfolio. We then do these so-called risk-based divestments ... For everything we sell out, we reinvest that money back into that specific market. So, we keep the short portfolio kind of country neutral. (Interview 21)

However, as most asset managers merely track benchmark indices compiled by financial service providers, divestment decisions are made not by asset managers themselves but instead by index providers (Fichtner et al., 2025). Therefore, the only possibility for passive asset managers and their corresponding institutional investors to divest from unacceptable C&E risks is to choose an index that considers C&E risks (e.g., ESG indices) and to track these instead of standard broad benchmark indices such as MSCI World (interviews 12, 29, 32, 37). As one asset manager explains:

> Pension funds, they're thinking in terms of tracking errors. So, when we develop such a [sustainability] strategy, we still have to sell it to them in terms of

> minimising tracking error, even if the person on the other side of the pension fund doesn't even believe in tracking errors as the right metric. (Interview 29)

The result of this financial practice is that the majority of supposedly 'sustainability-advancing' ESG funds are tracking benchmark indices with the tweak of excluding coal companies and slightly underweighting big oil firms (Fichtner et al., 2023). Thus, as one risk manager acknowledges, these divestment decisions 'are probably 50/50 art and science' (interview 21). This assessment is corroborated by the fact that ESG rating agencies often rely on unverified information from corporations (Mathiesen, 2018) and thus estimate the data – in some cases up to 50%, according to an industry practitioner (interview 37).

Institutional investors typically view divestment as part of an escalation strategy that follows a period of company engagement (interviews 2, 6, 11, 13, 14, 21, 30, 36). The exact point of divestment depends on the differing time horizons of institutional investors, with pension funds and insurers typically being among the more patient end of the spectrum (interview 13). In any case, divestment and the concomitant exclusion policies are seen as ultima ratio rather than a viable strategy of addressing C&E risks at scale: 'exclusion ... is something you have to do, but of course it's not what we want to do. My motto is always that an investor who doesn't invest is not an investor. So, if we exclude everything, then, of course, it won't work' (interview 14). This is also due to economic interest, as a practitioner of an insurance company states: 'The issue of achieving climate targets costs us money and profit. So, if we were only looking at profit, then we should never have pulled out of insuring new oil and gas reserves. Never!' (interview 4).

Banks, in turn, have shorter time horizons when lending than their investor counterparts. Furthermore, their portfolios exhibit greater inertia because loans are relatively illiquid, compared to equity and bonds (interview 8). Hence, divestment from existing loans is not a common practice among banks. However, in the wake of mounting reputational and regulatory pressures on banks to decarbonise, European banks in particular have decided to adopt exclusionary policies which prevent them from both rolling over funding or newly investing into sectors prone to asset stranding, e.g., coal (interviews 3, 7, 9, 10, 15, 23). This is corroborated by empirical findings showing that European banks have decreased carbon-intensive financing in Europe, albeit increasing it abroad (Reghezza et al., 2022; Rickman et al., 2024). Such decisions are often linked to disagreements between banks and clients over the disclosure of specific key performance indicators in loan covenants, pointing to banks' intention to improve C&E risk management (interviews 3, 7, 10, 16, 24, 35).

Another way that banks may rid themselves of assets that imply an unacceptable and unnegotiable level of C&E risk is to move existing loans off-balance sheet. Such 'shadow carbon financing' (Schairer et al., 2025) can occur either through securitisation, or by selling loans (or tranches thereof) to private credit funds. As one interviewee states:

> I heard of French bank who said that they had securitised and sold on some of their loans to companies in fossil fuel expansion and therefore reduced their exposure. And they said, yeah, that's part of our transition plan … If you are in liquidity management … that's an available strategy. (Interview 39)

In fact, a study by the Bank of Italy finds that securitisation of loans to carbon-intensive economic activities has grown much more rapidly than to sustainable activities, suggesting deliberate divestment from counterparties with higher C&E risks (Cusano et al. 2024).

Instead of outrightly moving assets off-balance sheet, financial actors may also insure or hedge against C&E risks to their portfolios, typically via derivative instruments. For banks, hedging credit risks is part and parcel of their daily business operations. One option is so-called 'synthetic securitisations' or significant risk transfers (SRTs) that enable banks to reduce the amount of regulatory own capital (interviews 1, 38, 39). In recent years, the market for SRT has grown to more than US$1 trillion, suggesting that regulatory pressure has increased its relevance (Wigglesworth, 2024).

Concerning C&E risks in particular, hedge funds have started to promote a novel instrument termed 'emissions-weighted risk transfers' to commercial banks (White, 2024). In line with the logic of *risk shifting*, it enables banks to move C&E credit risks off-balance to hedge funds, which might in turn repackage and sell-on financial derivatives based on the cash flow of premium payments that banks make to compensate the hedge fund for taking on the credit risk. If stranded asset risk materialises, the party holding the SRT pledges to reimburse the bank for the losses incurred. Hence, such SRT instruments enable banks to outsource C&E risks by 'cut[ting] the link between emissions and risk' (White, 2024). To critics, the application of these 'synthetic' risk management techniques to C&E risks appears little surprising, as 'that's what's in the muscle memory' (interview 39). Being asked whether their institution would engage in SRTs as a strategy to tackle C&E risks, a practitioner working at a large global bank states:

> I don't see why not. In ... a real economy context you're just moving the problem, obviously, somewhere else. But at least you get to say, 'hey, I'm not part of the problem anymore, they do the credit risk'. They already farm out vast amounts of risk to people, these kinds of securitisations. (Interview 38)

Narratives on climate-related risk management

We argue that financial actors *interpret* the role they take in relation to C&E risk-related characteristics of the assets they manage, for which we identified three primary narratives shaping these strategies: (1) Transition finance, (2) collective action problem, and (3) portfolio decarbonisation. While those three narratives support all priorly presented financial practices, there is a particularly high coincidence between 'transition finance' and 'portfolio decarbonisation' with the risk shaping strategy, and between 'collective action problem' and risk shifting (see figure 2). We present them accordingly.

Figure 2. Narratives on C&E risk management in relation to financial practices

Narratives	Diversification	Terms & conditions	Engagement	Transition planning	Divestment	Insuring & hedging	
Transition finance	26	19	66	77	54	36	278
Collective action problem	23	20	49	43	46	57	238
Portfolio decarbonisation	6	5	15	15	16	9	66
	55	44	130	135	116	102	

Source: Authors' own elaboration. Based on code overlaps in absolute numbers, total codes, N = 554 (see methodology section).

The narrative of transition finance plays a particularly important role in the European context of a weak-derisking regime, where the discourse shifted from sustainable finance as fostering green investments to a stronger focus on *financing the transition* to a net-zero

economy (interviews 3, 10, 18, 23, 28, 29). At the core of the narrative is the reckoning that 'sustainable finance isn't just about making something dark green even greener, but also about shaping critical economic activities in the direction of greater sustainability' (interview 3). The narrative was launched against the EU Taxonomy approach, which by classifying green activities effectively marked the largest share of economic activities as non-green (Fontan, 2025). However, it also helps FIs to *negotiate* the time horizon for the phase-out of carbon-intensive assets.

While there is reason to argue that transforming carbon-intensive industries into green ones is a sensible objective, the transition finance narrative often blurs the lines between what can be considered a green, a dirty, and a transition activity. A banker reflects upon the first instance, in which their company attempted to reclassify the financing of gas from a dirty to a 'light green' (interview 7) activity since gas, according to the management, helped the transition towards a sustainable economy (see also interviews 24, 27, 28). Regarding the second instance, transition finance provides a justification for remaining invested in carbon-intensive sectors: 'With oil and gas, there's at least a theoretical possibility that they develop a new business model' (interview 29). The financing of so-called hard-to-abate sectors, with a high energy demand and need for alternative technologies, mostly continues under the pretext of a transition (interviews 3, 15, 36, 38): 'Hard-to-abate industries ... may never become the most sustainable players. Nevertheless, as a bank, we must reliably accompany them on their transition pathway ... Sustainability is always a bit of a relative thing' (interview 3).

The transition narrative helps financial actors to push the time horizon for terminating financing of carbon-intensive industries into the future. A practitioner from an institutional investor summarises this sentiment: Our governments said 'net zero by 2050. Why should I, as a private company ... be stricter than the requirements set by my government?' (interview 19). One interviewee raises some doubts about where to draw the line between 'transition finance' and 'general finance', wondering 'what does not actually contribute to a transition?' (interview 10). Another interviewee from a bank implicitly pinpoints that the narrative can serve as a pretext to fend off stronger regulation: 'What we're really afraid of is ... to have capital add-ons ... We don't want to be penalised for continuing to work with these clients *if what we're working with them is towards transition*' (interview 18, emphasis added).

A second narrative targeted at the European political context but also present in our sample in the US, is the so-called portfolio decarbonisation. While the term itself could be understood as the counterpart to real economy decarbonisation, it instead denotes how FIs can decarbonise *more quickly* than the real economy, reducing their financed GHG emissions by moving them off-balance sheet:

> I think asset managers and owners that ... celebrate their sort of magical 7% decarbonisation normalised by revenue every year is a complete nonsense. But also, I think it's really damaging because it has enabled people to tell themselves they have delivered impact through [portfolio] rebalancing. (Interview 21)

The narrative's greater overlap with *risk-shaping* than *risk-shifting* suggests it may, as transition finance, help moderate policymakers' expectations about the speed at which the financial sector decarbonises. One interviewee articulates that regulators should rather support FIs' engagement with carbon-intensive clients instead of demanding a swift reduction in financed GHG emissions: 'One of the arguments against divestment is that … you have very little room to influence [sustainability] outcomes. Right?' (interview 23). As

portfolio decarbonisation threatens to increase C&E risks outside of the regulated financial sector (Schairer et al., 2025), EU financial supervisors worry about its potentially harmful effects on financial stability (Urban et al., 2025). A practitioner from a US public asset owner also tries to distance the institutions' approach from this practice:

> We're not looking for a portfolio decarbonisation. Many of them [the asset managers] said to us we can give you a net-zero portfolio. That's not what we want to do. (Interview 30)

Finally, portfolio decarbonisation is often linked to the third narrative of a collective action problem, which challenges the strategy of the weak derisking regime to use the financial industry as a lever to decarbonise the overall economy: 'Ultimately, if the global economy doesn't transition then there's no point in telling ourselves that we have a one and a half degree portfolio' (interview 21).

The narrative of the green transition as a collective action problem may serve to deflect responsibility for achieving the Paris Agreement goals to other parts of the economy and society. Core to this narrative is the statement of a banking practitioner: 'It's a misconception that we can drive the transition. We facilitate the transition, but we are not in a position to drive it' (interview 22). This narrative consists of two connected arguments. First, financial actors portray themselves as essential yet weak players in greening the economy; second, they point to economic and social inertia and international capital mobility. More than addressing concrete legislative concerns, as the two prior narratives did, this narrative enables financial actors to moderate societal expectations while portraying itself as purpose-driven.

FIs present their new role in the climate crisis as being 'transition facilitators' (interview 3), tasked with accompanying the client along the transition pathway (interviews 4, 10, 18, 22, 23). However, they make sure to delimit their responsibility, first, when it comes to meeting concrete reduction targets:

> All of these things need to shift in parallel, because ... there's some emissions profile with how we live our lives today, and you can't just pretend like you can walk away from it ... We're all part of the problem really. (Interview 23)

And second, by bracketing out their own profit motives tied to financing carbon-intensive sectors and not green ones:

> If you assumed that it is finance that has more power, then we wouldn't have the whole situation where some of the big oil firms backtrack on their targets, because from our perspective, *we want to invest in green*. (Interview 22, emphasis added)

Another argument of the collective action problem refers to the persistent global energy demand and the fungibility of capital, for which it very often coincides with the risk shifting strategy: 'This discussion about what we should no longer finance, ... it's a lose-lose situation. First, there will always be something that someone doesn't like, and then it might end up being financed by a Chinese bank' (interview 9, see also interview 36). Interviewees describe cases in which the divestment of Global North banks does not lead to the termination of fossil fuel production but to its continuation by actors from environmentally restrictive jurisdictions (interview 38). Ultimately, several interviewees point out that the responsibility for dealing with stranded assets lies with the state, not with financial actors (interviews 5, 9, 38). In this way, our interviewees underline the limitations of decarbonisation efforts under a weak derisking regime (Gabor & Braun, 2024).

Keeping stranded assets afloat

Together with discursive legitimisation, we argue that the three strategies discussed in the previous sections impinge on FI's ability to manage asset stranding (see table 1). In approaching the first strategy of stranded asset risk-taking, we find that this established way of financial risk-management has a two-fold effect on the anticipation of stranded assets. On the one hand, diversification helps FIs to perceive C&E risks in their portfolio as manageable and, relative to expected profits, acceptable. On the other hand, this realisation can decrease FI's sensitivity to C&E risks. Similarly, adjusting the terms and conditions of financing and insurance is ambiguous with respect to managing C&E risks: For one thing, it is an indirect channel through which FIs can contribute to the phase-out of carbon-intensive industries, and it can increase the private resources available to cover costs from environmental hazards, thereby reducing the risks and financial repercussions of asset stranding. However, this strategy is limited as increasing costs of finance or raising insurance premiums can negatively affect (short-term) return objectives.

Table 1. Stranded asset risk taking, shaping and shifting

	Risk taking	**Risk shaping**	**Risk shifting**
Logic	Keeping stranded asset risks on-balance sheet and managing risk exposure	Challenging the scope of what counts as stranded asset	Moving stranded asset risks off-balance-sheet
Risk type	Acceptable financial risk	Unacceptable and negotiable financial risk	Unacceptable and unnegotiable financial risk
Financial practices	• Portfolio diversification • Adjusting terms & conditions of financing	• Engagement & transition planning	• Exclusion & divestment • Insuring & hedging
Narratives	• Less importance of narratives, established risk management practices	• Transition 'everything' • 'We don't want a portfolio decarbonisation'	• Collective action problem: The financial sector is not the driver
C&E risk management an anticipation of stranded assets	Marginal financially material action	Pushing on the time horizon	Moving the problem somewhere else

Source: Authors' own elaboration.

The *risk-shaping* strategy has an impact on financial actors' ability to manage asset stranding that is difficult to determine, however, tending to push financially material action further into the future. While our analysis suggests that, driven by reputational pressures and regulation in Europe, financial actors made serious attempts to shift financial flows towards sustainable activities, these efforts have largely failed to overcome existing incentive structures and practices. For institutional investors, optimising against the market benchmark remains the business standard, since more sustainable portfolios pose diversification and profitability performance issues. For banks, transition plans tend to

provide a mechanism to delay the termination of financing carbon-intensive assets. The two narratives of transition finance and portfolio decarbonisation, often linked to this strategy, suggest that the financial sector was able to exploit some of the weaknesses of the EU's weak derisking approach, which largely fails to tweak risk-return profiles of green investments vis-à-vis carbon-intensive ones (Wullweber et al., 2025).

Lastly, *risk shifting* highlights cases in which FIs decide that a risk is unacceptable and unnegotiable, meaning it has little potential to be reduced. This often relates to reputational risks of staying invested in carbon-intensive industries or risk-based divestments driven by a counterparty's misconduct in sustainability concerns. Even though FIs themselves acknowledge that moving C&E risks off-balance sheet is a strategy of limited effectiveness regarding real-world decarbonisation and their own economic viability – essentially moving the problem somewhere else – it poses a viable strategy for those assets at highest risk of becoming stranded for the time being.

Conclusion

Motivated by the observation that European financial institutions face mixed signals on how to account for climate-related risks to prevent a disorderly stranding of assets, this paper analysed which strategies FIs employ in response. We argued that financial institutions primarily draw on three strategies of (1) *risk taking*, (2) *risk shaping*, and (3) *risk shifting* and related financial practices and narratives to address stranded asset risks. Following the literature, we conceived of financial actors as having both an interest in considering and disregarding C&E risks to anticipate asset stranding, due to their investment in assets that are negatively affected by climate change and those that drive it (Colgan et al., 2021). However, departing from such material determinism (Ausserladscheider, 2024), we conceived of stranded asset risks as actively constructed by financial agents and driven by risk-return rationales pertaining to the European 'weak derisking regime' that inherently lacks strong incentives in favour of sustainability (Gabor and Braun, 2024).

In conclusion, our actor-centred approach allowed us to identify the reasons why FIs, despite growing regulatory efforts, still invest in carbon-intensive assets by demonstrating how different strategies and concomitant financial practices keep stranded assets afloat. We thereby complement quantitative studies showing that C&E risks are underpriced (Goldstein et al., 2019; Campiglio et al., 2022), while also contributing to research highlighting the structural impediments to properly accounting for stranded asset risks (Aitken, 2023; Christophers, 2017, 2019; Chenet et al., 2021; Silver, 2017). Beyond climate policy, these findings are of utmost importance to financial regulators and supervisors to ensure an orderly transition towards a greener economy.

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Annex: List of expert interviews

No.	Classification	Date of the interview	Location of interview	Headqu artered
1	Financial service provider	Sept, 20th, 2023	DE	DE
2	Asset manager	Sept, 20th, 2023	DE	DE
3	Bank (one of EU 20 largest banks)	Nov, 7th, 2023	DE	DE
4	(Re-)insurance company	Nov, 10th, 2023	DE	DE
5	Bank (G-SIB)	Nov, 20th, 2023	FR	FR
6	(Re-)insurance company	Nov, 22nd, 2023	DE	DE
7	Bank (one of EU 20 largest banks)	Nov, 22nd, 2023	FR	FR
8	Bank (one of EU 20 largest banks)	Nov, 22nd, 2023	FR	FR
9	Bank (G-SIB)	Dec, 4th, 2023	DE	DE
10	Bank (D-SIB)	Dec, 4th, 2023	DE	DE
11	Asset manager / Financial industry association	Dec, 4th, 2023	DE	DE
12	Financial service provider	Dec, 11th, 2023	CH	CH
13	(Re-)insurance company	Dec, 12th, 2023	CH	CH
14	(Re-)insurance company	Dec, 13th, 2023	DE	DE
15	Bank	Dec, 13th, 2023	DE	DE
16	Bank (G-SIB)	Dec, 19th, 2023	online	FR
17	Bank (G-SIB)	Jan, 15th, 2024	UK	UK
18	Bank (G-SIB)	Jan, 15th, 2024	UK	UK
19	(Re-)insurance company	Jan, 16th, 2024	UK	DE
20	Asset manager	Jan, 16th, 2024	UK	UK
21	Public asset owner	Jan, 17th, 2024	UK	NO
22	Bank (G-SIB)	Jan, 17th, 2024	UK	US
23	Bank (G-SIB)	Jan, 17th, 2024	UK	UK
24	Bank (one of UK's Big Four banks)	Jan, 17th, 2024	UK	UK
25	Development bank	Jan, 18th, 2024	UK	UK
27	Finance Think Tank	Jan, 19th, 2024	UK	UK
28	Asset manager	Jan, 29th, 2024	NL	NL
29	Asset manager	Feb, 5th, 2024	NL	UK
30	Public asset owner	May, 28th, 2024	US	US
31	Finance Think Tank	May, 28th, 2024	US	US
32	Asset manager	May, 28th, 2024	US	US
33	Bank (G-SIB)	May, 30th, 2024	US	FR
34	Bank (G-SIB)	May, 30th, 2024	US	FR
35	Bank (G-SIB)	May, 31st, 2024	UK	UK
36	Asset manager	May, 31st, 2024	DE	DE
37	ESG data/index provider	Sept, 10th, 2024	UK	UK
38	Bank (G-SIB)	Sept, 10th, 2024	UK	US
39	Finance Think Thank	Sept, 18th, 2024	online	UK

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