International practices in climate transition plan reporting

Lost in translation?

by A. Bankar, S. Campbell, S. Gandotra, M. Gayen, P.J.M. Klumpes*, D. Matteucci, N. Meyer, K. Mok, B.J. Walshe, S. Worsley.

Presented to the Institute & Faculty of Actuaries

5 June 2025

International Practices in Climate Transition Plan Reporting: Lost in Translation?

Abstract

Disclosing transition plans to meet future net zero climate targets requires organisations to fundamentally move beyond traditional historical-oriented stewardship reporting towards forward-looking accountability to meet their obligations to their future shareholders and stakeholders. However, despite a range of varying requirements concerning disclosure of climate-related targets to meet the Paris Agreement, confusion remains over the appropriate form, content and standard of transition plan disclosure that are required to implement these targets. The former UK based Transition Plan Taskforce (TPT) set out globally leading requirements for transition plan reporting in 2023, however the extent to which these recommendations have since been implemented has not yet been comprehensively analysed. This paper summarises the key differences between UK, European and International guidelines for transition plans and then discusses the results of an analysis of variations in transition plan reporting practices by a sample of globally large financial and industrial organisations. It is predicted that a combination of both firm-level climate risk and country-level institutional factors are associated with the propensity to produce public transition plans. The empirical results are largely supportive of these predictions. Firms with greater levels of engagement with climate risk (as proxied by the CDP score), and UK and-or EU based firms, are more likely to produce climate transition plans. The empirical results are corroborated by qualitative analysis which compares examples of good practice transition plan reporting by a sub-sample of firms within each industry sector. It is concluded that the resulting lack of clarity by regulatory authorities, and diversity in transition plan reporting practices by globally large financial and industrial firms, may potentially result in confusion and a lack of informed decision-making by their stakeholders and policymakers concerning climate-related resilience and risk mitigation actions.

Keywords: Climate transition plans, climate risk, reporting.

Data and data sources: Data used in empirical analysis is based on a combination of (1) hand collected data from primary research sources (i.e. Principles for Responsible Investment (PRI) reports and company financial reports) and (2) a range of secondary research sources, summarised in table 2. The dataset is available upon request.

Correspondence details

*Correspondence to: Paul Klumpes, E-mail Professional.Communities@actuaries.org.uk

EXECUTIVE SUMMARY

Purpose: This paper analyses the propensity of a sample of globally large financial and industrial organisations to implement credible climate transition plans, in accordance with the Paris Agreement targets and relevant GFANZ and TPT frameworks. Instances of particularly good and-or poor practices are also identified and discussed.

Design/methodology/approach: A mixed method research approach is used based on a stratified samples of 72 globally large financial institutions (banks, insurance companies and asset management companies) and a control sample of 78 globally large industrial organisations based in those industry sectors which have been identified by the TPT as being particularly prone to significant CO_2 emissions (retail and food processing, utilities, mining and oil and gas). The credibility of the climate transition plan was then evaluated in terms of the alignment with GFANZ and TPT frameworks. A range of institutional, stakeholder and legitimacy theory explanations were developed concerning the drivers of the propensity of firms to produce credible transition plans. A statistical analysis of cross-sectional variations of these were then examined against number of organisational-level, country-level and institutional-level explanatory variables. Further qualitative case study analysis was then used to identify particularly good or bad transition planning practices by firms within each of these industry sectors, as well as pension funds.

Findings: There is evidence of a degree of greenhushing across the financial sector firms, and a significantly higher propensity to produce climate transition plans by firms based in the EU and-or UK. The empirical findings are equivocal. There is a positive association between the propensity of financial institutions to produce credible transition plans and their environmental reputation, as proxied by the CDP score, which is consistent with the prediction of legitimacy theory; however, this is not the case for the sample industrial firms. Supporting an alternative institutional theory explanation, there is a strong and positive association between the propensity to produce credible transition plans and whether the firm is based in the EU and-or the UK. However, we do not find a significant association with country-level factors associated with institutional

development. The qualitative case study analysis provided corroborative evidence that in general, UK firms tend to produce higher quality credible transition plans, although there are significant variations across sectors.

Originality: This is the first comprehensive study to explicitly examine what organisational, country-level and institutional level factors might explain the propensity of firms to voluntarily produce credible climate transition plans. We also identify instances of good and-or bad practices and highlight how both global and national variations play an important role in understanding these incentives.

Research limitations/implications: This paper refines previous research by expanding the analysis of climate change reporting practices beyond stewardship-based past focused accountability, to address broader inter-generational accountability debates concerning how they plan to deal with forward-looking climate transition commitments made in line with the Paris Agreement net zero targets.

Practical implications: The UK actuarial profession has an important public interest role to ensure that globally powerful financial institutions produce credible and high-quality climate transition plans, which embed actuarial skills and knowledge expertise related to scenario planning, risk management and provide advice to help firms deal with climate-related sustainability issues generally. Further standardisation of climate transition plans is needed to assure investors, stakeholders and society generally about these important issues.

1. Introduction

In recent years, a growing number of investors have been taking more serious account of climate change in their investment decision-making, while companies have been responding by making bold net zero commitments (Babcock et al., 2022). Moreover, globally large financial and industrial firms play a crucial role in facilitating the management and mitigation of physical, transition and liability risk through the investments they make and the funding they provide to support the transition to a greener economy. However, in practice this requires definitive commitments to managing key climate-related risks be made by these organisations by means of producing publicly disclosed “climate transition plans”.

The promulgation of the Paris Agreement concerning setting net zero targets to help achieve the 1.5°C goal aspirations and the subsequent Kunming-Montreal Global Biodiversity Framework 2022 mission to halt and reverse biodiversity loss by 2050 has resulted in a variety of commitments made by financial organisations to both achieve net zero emissions and be nature positive. However, there remain several challenges associated with the relevant underlying principles (ex-ante) versus in-practice application (ex-post) of these dictums, through the implementation of transition plan reporting. In 2022, the Glasgow Financial Alliance for Net Zero (GFANZ) identified the importance of both investor organisations such as pension funds, insurers, asset managers and banks to set “transition plan” targets, i.e. to go beyond stewardship reporting of climate change financial risks and develop active transition plans to fully implement their commitments towards “net zero” targets for reduction or elimination of climate emissions.

The UK has been a leading player in this space, with the promulgation of detailed transition plan reporting by the Transition Plan Taskforce (TPT). However, there remain some important regulatory gaps and overlaps in this area, particularly as regards to the equivalent EU and international reporting requirements. In addition, all large UK companies are required to disclose their scopes 1 and 2 carbon emissions in compliance with the Streamlined Energy and Carbon Reporting requirements, by providing a narrative concerning their emissions and energy usage and actions taken to reduce these globally. By contrast, no large UK pension fund provides a transition plan in compliance with the TPT recommendations.

The purpose of this paper is to summarise the key institutional developments, related to the development of transition plan reporting, with reference to both financial and industrial organisations. The paper then develops predictions concerning both firm-level and country-level as well as international public policy variations in

affecting the incentives facing firms to voluntarily produce “credible” transition plans, i.e. those which align with either the relevant (generic) GFANZ and-or (more specific industry-level) TPT frameworks. Our empirical results are consistent with the prediction that a combination of climate risk engagement, country-level cultural factors and public policy imperatives are important. However, our findings are subject to significant international and geographical variations both in terms of the nature, scope and manner of transition plan reporting guidelines and their application in practice.

Our research fills a major gap in the existing literature related to how financial institutions engage with corporate social responsibility (CSR) generally, and climate change, specifically. First, it adds to the existing evidence as to how CSR practices influence the incentives faced by financial institutions to provide transparency to their stakeholders about their commitments to climate change. However, in contrast to the relatively more established ESG oriented literature concerning such entities (e.g., Liang and Renneborg, 2020; Gibson et al., 2022), relatively little is known about whether organisations engage more specifically with climate change issues that have become increasingly subject to public and political scrutiny in recent years. There is relatively little prior evidence on the uptake of climate reporting by organisations world-wide. The CDP (formerly the Carbon Disclosure Project) tracks the level of climate transition plan disclosures among the global set of companies disclosing via their questionnaire on an annual basis, which indicated a significant increase in recent years. In 2023, it found that over 5,900 companies reported through CDP that they have a 1.5°C-aligned climate transition plan in place — an increase of 44% from 2022 – with an additional 8,600 companies reporting their intention to develop a climate transition plan in the next two years (CDP, 2024).

Furthermore, whether globally large organisations implement their stated climate commitments by “walking the talk” is an important and material issue (e.g. Raghunandan and Rajgopal, 2022; Kim and Yoon, 2023; Klumpes and Gandotra, 2024), which is an empirical issue that this study seeks to address. Finally, it updates and extends the recent paper by Dey et al (2024) which provides a broader overview of the existing regulatory landscape related to climate change disclosures, by updating the latest regulatory developments to the end of 2024, specifically in relation to new national, multinational, and global frameworks related to climate transition plan reporting. Moreover, we extend the prior research by focusing on examining publicly reported voluntary climate related commitments made by organizations which involve future generational-societal level moral accountability in line with UN sponsored aspirational targets related to net-zero (“trusteeship, fiduciary duty”),

rather than being restricted to a past, stakeholder ("stewardship") and legal-oriented accountability (Klumpes et al., 2024).

Our empirical findings are mostly consistent with predictions that a combination of both organisational-level degree of engagement with climate risk and institutional factors associated with whether or not the firm is based in the EU and-or the UK explain the propensity of the firm to voluntarily produce climate transition plans. However, we do not find that country-level variables related to the degree of institutional development. Furthermore, our empirical results are conditioned by further qualitative analysis of a sample of firms based in these sectors, which suggests significant country and sectoral variations.

The rest of this paper is organised as follows. Section 2 provides the institutional background. Section 3 discusses various organisational, country-level and multinational incentives facing firms to produce climate transition plans. Section 4 overviews the research methods used. Section 5 discusses the empirical results. Section 6 provides qualitative case study analysis of transition plan reporting within each major industry sector. Section 7 provides a conclusion. Appendix 1 sets out TPT's recommendations. Appendix 2 provides a list of abbreviations used in this paper.

2. Institutional Background

This section briefly overviews the key features of transition plan reporting requirements. Section 2.1. overviews the main reporting obligations at the international, EU and UK level. Section 2.2. provides more detailed comparison of UK versus international guidance. Section 2.3. summarises the sectoral guidance to the financial sector. Table 1 overviews the relevant national, multinational and global frameworks that are briefly outlined in this section. By way of limitations, it should be noted that:

- In line with the objectives and terms of reference of our research project, the scope of the overview is restricted only to climate transition plan reporting guidelines, frameworks and regulations in the context of corporate entity level general purpose climate risk financial reporting, and not more generic climate risk disclosure frameworks as outlined in Dey et al. (2024), to which the interested reader is referred.

- The overview only relates to regulatory developments that are in the public domain before the end of **31 December 2024**.
- Unlike the more generic and multiple specific "climate risk disclosure" standards, rules or regulations, which have specified implementation dates and may involve regulatory enforcement procedures, several of the relevant regulatory guidance and-or frameworks do not specifically state an effective date for implementation. They are therefore considered to be generic recommendation- best practice guidance frameworks rather than those which require organisations to be adopted within a specified time frame. The major international frameworks have been established by GFANZ and the former UK based TPT. In addition, the European Financial Reporting Advisory Group (EFRAG) and the European Commission have developed more specific standards related to climate transition planning for companies based in the EU. Finally, the International Sustainability Standards Accounting Board (ISSB), under the auspices of the International Financial Reporting Foundation (IFRS), has promulgated two standards (IFRS S1 and S2), which have less stringent requirements.
- Our analysis of the relevant frameworks, guidance etc. related to this topic is not fully comprehensive, as we do not seek to analyse more generally the guidelines that are related to transition plans within the broader risk management and business planning context, e.g. their accountability for operational resilience, that are issued by global industry standard- based organisations such as the International Actuarial Association (IAA), International Standards Organisation (ISO) and Organisation of Economic Cooperation and Development (OECD).[1]
- While pension funds are often some of the largest asset owners in many countries, they are usually subject to different regulatory and disclosure requirements compared to other financial institutions. Unlike other entities, pension funds are not included in the Fortune Global 500 globally largest firms as many of these are organised in the form of private trusts and therefore do not issue share capital. Furthermore, in contrast to firms based in all other industry sectors analysed in this paper, the quality of their climate risk management is not evaluated by the CDP. We have therefore excluded them from our empirical analysis, although they are included in the qualitative case study review.

[1] For further information about business planning requirements, within broader operational resilience regulations please see Chanon et al. (2025).

Table 1

Overview of Regulatory Frameworks - Transition Plan Reporting

Type of regulation	Authority	Rules / guideline	Overview	Effective date
National (UK)	Transition Planning Taskforce	Transition Plan Framework (2023)	A sector neutral Disclosure Framework for best-practice transition plan disclosures, alongside implementation guidance and sector guidance.	Not specified
Multinational (EU)	European Union	EU Directive - Directive EU 2022/2464 (CSRD) (2022)	EU firms required to produce financial and investment plans that meet Paris Agreement goals	Between 2024 and 2026 [2]
		EU Directive ((EU) 2024/1760 (Due diligence) (CSDDD) (2024)	EU companies are required to adopt a transition plan for climate change mitigation aligned with the 2050 climate neutrality objective of the Paris Agreement as well as intermediate targets under the European Climate	Transpose to national law by July 2026 [2]
	EFRAG	*ESRS E1 Climate Change (2023)*	EU reporting entities are required to disclose their transition plan for climate change mitigation.	Not specified
International	IFRS Foundation ISSB	IFRS S2 IFRS *Climate-Related Disclosures*	par. 14(a) states that an entity shall disclose information about "any climate-related transition plan [it] has"	January 2024
	GFANZ	*Financial Institution Net-Zero Transition Plans: Fundamentals, Recommendation*	A set of globally applicable, pan-sector recommendations and guidance for transition planning by financial institutions, including the definition of key components of a credible net-zero	Not specified

[2] In April 2025 the EU announced the postponement of some of the reporting requirements in the CSRD and CSDDD by one to two years, via the European Commission's "Omnibus" simplification package to reduce administrative requirement of companies. As of publication date, the outcome is still unknown.

		s, and Guidance (2022)	transition plan. It has also separately provided an equivalent framework for real economy firms.	

2.1. Transition Planning - Overarching Principles

Firstly, it should be noted that there are no specific country-level requirements that currently mandate companies to publicly produce climate transition plans. GFANZ (2022) initially developed globally applicable, recommendations and guidance for transition planning by financial institutions (and separately for "real economy" firms) and define the key components of a credible net-zero transition plan, based on five major aspects (see discussion below).

Soon thereafter, the TPT was established by the UK government to provide more granular, "gold standard" recommendations at an industry level. It produced an overall disclosure framework in 2023, and subsequently issued several industry specific guidance during 2024. These set out the five key elements of a good practice transition plan that draw on and are consistent with the more generic GFANZ framework, i.e.: (1) Foundations; (2) Implementation Strategy; (3) Engagement Strategy; (4) Metrics and Targets and (5) Governance. A summary of the five key elements of a good practice transition plan under the TPT (2023) Framework is reproduced in Appendix A. By design, the TPT framework is consistent with, and builds on, International Sustainability Standards Board (IFRS) S2 "Climate-related Disclosure" issued by the International Sustainability Standards Board (ISSB), and provides a set of Disclosure Recommendations that an entity can use as guidance on how to report more effectively on the transition plan-related aspects of IFRS S2 (see discussion below).

The TPT officially concluded its mandate in October 2024, when it is issued its final report (TPT, 2024i), and its guidelines were adopted by the IFRS Foundation with the stated purpose *"in global efforts to harmonise transition plan disclosures"*. [3]

Moreover, there are conflicting "in principle" requirements for transition plan reporting at European Union level and the global level. However, it should be noted that neither the TPT or GFANZ frameworks specified an effective date for implementation, and neither framework is currently required to be adopted under UK law or regulations related to climate disclosure generally.[4]

By contrast, under the Corporate Sustainability Reporting Directive (Directive EU 2022/2464) (CSRD), effective 5 January 2023, the EU requires that large and listed companies in the EU market to produce *"...financial and investment plans to ensure that its business model and strategy are compatible with the transition to a sustainable economy and with the limiting of global warming to 1.5°C ... and the objective of achieving climate neutrality by 2050".* [5] Companies subject to the CSRD must report according to European Sustainability Reporting Standards (ESRS) developed by the European Financial Reporting Advisory Group (EFRAG). The ESRS include a standard ESRS E1 "Climate Change" (EFRAG, 2023), which embeds a "double materiality" perspective and require companies to report both on their impacts on people and the environment and how social and environmental issues create financial risks and opportunities for the company and were adopted into law by the European Commission on 31 July 2023.[6]

The ESRS E1 and the first two standards of the ISSB (S1 and S2), which were published in June 2022, were developed in parallel. Companies that are required to report in accordance with ESRS on climate change will

[3] It is not clear from the IFRS Foundation website what the term "taken over" means. As of the date of publication of this paper, there are currently no resources or projects specifically allocated within the IFRS Foundation to either update, monitor compliance with or otherwise amend the framework originally developed by the TPT. It should also be noted that this is also the case with respect to the TCFD, which also closed in 2024.

[4] See Dey et al. (2024) for an overview of the generic UK climate disclosure requirements. The UK Labour Party's manifesto (Labour Party, 2024) included a pledge that large UK companies and UK-regulated financial firms would be required to produce "credible transition plans".

[5] Subsequently, the EU issued a further directive which "*sets out an obligation for large companies to adopt and put into effect, through best efforts, a transition plan for climate change mitigation aligned with the 2050 climate neutrality objective of the Paris Agreement as well as intermediate targets under the European Climate Law*" (EU, 2024).

[6] As noted in table 1, there is no "effective date" for implementation of ESRS standards. Instead, they depend on being transposed into national legislation by various EU states. Furthermore, the EU Website refers to the implementation of various ESRS standards being postponed indefinitely.

therefore, to a very large extent, report identical information as companies that instead follow the ISSB standard on climate-related disclosures. The very high degree of alignment between ESRS and the two ISSB standards aims to prevent companies required to report in accordance with ESRS and that wish to also comply with ISSB standards, would have to report separately under ISSB standards.

For example, both IFRS S2 and ESRS E1 define a "climate-related transition" plan as "*An aspect of an entity's overall strategy that lays out the entity's targets, actions or resources for its transition towards a lower-carbon economy, including actions such as reducing its greenhouse gas emissions*".

However, there are also some minor but important differences between these standards which are summarised briefly below.

- The definition of "transition plan for climate change mitigation" in ESRS E1 and in the relevant definitions annex of the EU Delegated Act 2023 are slightly different from that in IFRS S2, with relevant differences highlighted below: *"An aspect of an undertaking's overall strategy that lays out the undertaking's targets, actions and resources for its transition towards a lower-carbon economy, including actions such as reducing its GHG emissions* ***with regard to the objective of limiting global warming to 1.5°C and climate neutrality****."* Hence the former, but not the latter, explicitly acknowledges the targets associated with the implementation of the 2015 Paris Agreement.
- At a more general level, IFRS S2, while recognising that companies may produce transition plans, does not specifically require them to be produced, but instead refers to the need to provide "information about its climate-related transition plan" for reporting periods beginning on or after 1 January 2024 (paragraph 9c). By contrast, ESRS E1 specifies that an undertaking shall *"disclose its transition plan for climate change mitigation"* (ESRS E1 Delegated-act-2023-5303-annex-1 paragraph 14). Clause 16(i) also refers to "*whether the transition plan is approved by the administrative, management and supervisory bodies*". Furthermore, it contains detailed information as to the disclosure, including GHG Emission reduction targets, climate change mitigation actions and an explanation of how the transition plan is embedded in and aligned with the overall business strategy, and an explanation of the progress in implementing the transition plan.

- ESRS E1-3 additionally includes obligations for the reporting entity to *"disclose its climate change mitigation and adaptation actions and the resources allocated for their implementation"* (paragraph 26).

The International Transition Plan Network (ITPN) was launched at COP29 in November 2024 to *"support the development of global norms for transition plans by the private sector and to support climate policy that makes best use of transition plans"* (https://itpn.global/about/). Regulating authorities and standard issuers may revisit issues such as those highlighted above and agree a harmonised plan going forward.

2.2. Transition Planning - Detailed Guidance

It should be noted that the TPT recommendations define "transition plans" identical to that of IFRS S2, without reference to the 1.5°C reduction target as specified in the ESRS E1 standard. It also states that "*the Disclosure Framework draws on the components identified by GFANZ of a good transition plan, ensuring the outputs of both initiatives lock together to form an integrated approach to transition planning*" (TPT, 2023, p. 13).

There are subtle but important differences between the TPT recommendations and the disclosure recommendations of GFANZ's "Financial Institution Net Zero Transition Plans - Fundamentals, Recommendations and Guidance" (GFANZ, 2022). The following key differences are noted of TPT relative to each of the equivalent five GFANZ disclosure framework components:[7]

- *"Foundations*" incorporates a "business model and value chain" but does not explicitly include the objectives to reach net zero by 2050 or sooner, in line with science-based pathways to limit warming to 1.5°C.
- *"Implementation*" includes a requirement for the entity to disclose the effects of its transition plan on its business operations, financial position, performance and cash flows, whereas the GFANZ framework additionally requires a statement of how the net-zero objectives and priorities are incorporated into its core evaluation and decision-making tools and processes.

[7] The GFANZ (2022) includes actionable five-step recommendations as well as disclosures, whereas the TPT (2023) disclosure framework is specifically on disclosures only, with a separate transition planning cycle setting out a four-step recommendation to build an actionable plan.

- *"Engagement Strategy"* could usefully encourage the provision of feedback and support to clients and portfolio companies to encourage net zero-aligned transition strategies and plans; and engagement with government and other sectors does not mention support to an orderly transition to net zero.
- *"Metrics and Targets"*. TPT provides substantially more granular requirements than GFANZ. However, it could require more specifically the establishment of a suite of metrics and targets to drive execution of the net-zero transition plan, and metrics and targets focused on aligning financial activity in support of the real-economy net-zero transition.
- *"Governance"* does not require roles for the board and senior management to ensure they have ownership, oversight and responsibility for net-zero targets; whereas the GFANZ framework additionally requires the implementation of a change management programme and open communications to embed a net-zero transition plan into the organisation's culture and practices.

2.3. Sector-specific guidance

The TPT also provides more granular guidance for the preparation of transition plans to several industry sectors, including the financial sector, with separate guidance provided for different classes of financial institutions, such as asset owners (TPT, 2024a) and asset managers (TPT, 2024c).[8] The key differences between TPT and GFANZ frameworks are briefly summarised below:[9]

- *Foundations* - additional disclosures relating to strategic ambition, including objectives and priorities related to manage climate-related risks and opportunities through its investment activities, and references to the International Investors Group on Climate Change (IIGCC) (2022) and Worldwide Fund for Nature (WWF) (2020) guidances.
- *Implementation Strategy* - more granular guidance concerning short-, medium- and long-term actions taken in its investment process to achieve the transition plan's strategic ambition, and how it is

[8] While the investment activities of the insurance sector are covered by the TPT (2024a), the TPT (2024c) has additionally provided some very high-level additional guidance to the insurance sector, in connection with claims management, policies and conditions, and certain targets, such as "net premium written related to energy efficiency and low carbon technology". It has also provided guidance to the banking sector (TPT, 2024d) but this is excluded from this paper due to scoping reasons. Additionally, it provides sector guidance to the metals and mining (TPT, 2024e), oil and gas (TPT, 2024f), electric utilities and power (TPT, 2024g) and food and beverage (TPT 2024h) industry sectors.

[9] For the purposes of this section, reference is made to the TPT relevant guidance as it more granular than GFANZ (2022).

responding to beneficiaries (asset owners) / asset owners (asset managers). Reference is made to the CDP (2023), which also provides additional guidance for asset managers and asset owners.

- *Engagement Strategy* - engagement activities and methods, including escalation processes or criteria, and engagement with both external and internal asset managers, with reference made to the Net Zero Asset Owners Alliance (NZAOA) (2023a) guidance. Broader policy, regulatory or wider stakeholder engagement activities undertaken are also outlined. Reference is also made to the NZAOA's (2023b) policy engagement guidelines.
- *Governance* – no specific industry guidelines provided.
- *Metrics and Targets* - delineating which of its targets are required to meet by law or regulation and the proportion of its assets under management to which each of its financial metrics and targets apply.

3. Incentives facing firms to produce climate transition reports

This section develops predictions concerning various firm-level risk, country-level culture and public policy level incentives facing both financial and industrial organisations to voluntarily produce climate transition reports.[10]

Our first hypothesis concerns explanations for whether organisation-specific risk-related characteristics explain the propensity of the organisation to provide publicly available information concerning their degree of engagement with climate transition plan reporting. In the corporate setting, there is a large body of empirical studies that find that consistent with this normative aspect prediction, firms with higher risk are more likely to disclose risk (e.g., Abraham and Shrives (2014)). Elshandidy et al. (2014) find that voluntary and mandatory risk reporting both within and across Germany, the UK and the USA are positively associated with firm risk levels, as proxied by market risk measures. However, it should be noted that the extant literature only studies "generic risks" and not those specifically related to climate change, which may further involve issues such as transition risk, liability risk, physical risk, and the consequent implications for "stranded assets."

[10] As noted above, the EU's CSRD (2022) biodiversity standard already compels financial institutions to produce transition reports related to how they deal with biodiversity loss issues.

As noted by Klumpes et al. (2019), another explanatory motive underlying transition plan reporting can be the enhancement of an organisation's reputation and risk management (Bebbington et al., 2008). Outstanding corporate reputation is often related to higher brand value and may contribute to increasing business success (e.g. Fombrun, 1996). Reputation may further be enhanced by reporting about successful engagement in non-market matters, i.e. in social and environmental projects that are not considered to be part of core business activities.

Reporting climate risk information may also help reduce information asymmetry between a company and its stakeholders concerning its engagement with such issues (Schiemann and Sakhel, 2019. It signals a willingness to communicate about and deal with societal issues, and may serve to secure a continuing good relationship with the company's stakeholders. Companies that are perceived as being simultaneously high performers both in the market and for society may face less friction and problems in their business relationships with suppliers, traders, public authorities and other stakeholders.

This suggests that the desire for firms to enhance their reputation in the quality of climate change management can be a primary firm-level driver of transition plan reporting. This leads to our first hypothesis:

H1: Ceteris paribus, there is a positive association between the degree of engagement with credible transition plan reporting by financial and /industrial organisations and the quality of their climate risk engagement.

The country-level institutional-cultural and national level framework and political stability also significantly impact engagement with credible transition plan reporting by financial and industrial organisations. In line with this reasoning, Judge et al. (2008) argue that the stronger the laws within a nation and the more the national culture emphasises competitiveness, the greater the perceived legitimacy of its governance. Consequently, institutional characteristics might influence asset owners and asset managers' behaviour towards revealing risk information to improve their legitimacy.

National culture is another institutional, country-based factor that potentially influences both firm managers' (preparers') choices and stakeholder (users') preferences regarding financial reporting (e.g., Hope, 2003).

However, prior empirical research does not consistently support the influence of national culture on accountability. Jaggi and Low (2000) argue that a country's cultural factors indirectly impact financial disclosures through its legal system, based on prior research on the effect of legal systems on accounting practices. Dong and Stettler (2011) find significant impacts of the legal system and cultural values (except for uncertainty avoidance) on aggregated disclosure.

Klumpes et al. (2019) investigated the incentives facing a small sample of large UK-based insurance firms and pension funds to engage with climate risk Task Force on Climate-related Financial Disclosures (TCFD) reporting. They find some evidence in support of an institutional theory-based explanation, related to the size and risk characteristics of the sample of UK pension funds and insurance companies. However, their research is based on a single country analysis covering only the first year since the issuance of voluntary TCFD recommendations. We therefore predict that there will be country-based institutional factors associated with national culture.

Our second hypothesis, therefore, predicts that:

H2. Country-level institutional-cultural characteristics have explanatory power over the observed international variations in climate change transition reporting engagement by financial and industrial organisations.

Beyond both firm-level and country-level influences over the propensity of firms to produce internationally credible transition plans, there may also be cross-sectional international-level variations in the public policy approaches towards climate risk transition reporting. The EU also has supra-national rules, guidelines, and regulations which either support or mandate transition plan reporting. By contrast, there is a lack of any public policy initiatives at the company level, although the UK government has indicated its intention to mandate UK-regulated financial institutions and large companies to *"develop and implement credible transition plans that align with the 1.*5°C *goal of the Paris Agreement"* (Labour Party, 2024). By contrast, the Japanese government

has initiated a globally leading "whole of government" approach to national transition planning.[11] This leads to a third hypothesis:

H3. International variations in public policy that encourage or require transition plan reporting have explanatory power over the observed international variations in climate change transition reporting engagement by financial and industrial organisations.

4. Research Method

This section overviews the sample selection and data collection procedures, then outlines the empirical model specification used to test the hypotheses concerning the incentives facing globally large asset managers and asset owners, as well as a control sample of industrial firms, to voluntarily produce transition planning reports in the public domain.

4.1. Sample selection procedures

The sample of firms used for empirical analysis is primarily based on three data sources: (1) the Fortune Global 500 globally largest firms by sales in USD (2) AM Best's list of globally largest insurance companies and (3) the Thinking Ahead Institute list of the 30 largest global asset owners in terms of assets under management in 2019 (TAI, 2019a, 2019b, respectively). We define three major types of large financial institution: banks, insurance companies, and asset managers. These are identified by the CFA Institute (2007) as comprising the world's largest institutional investors.[12]

TCFD (2017) argues that *"large asset owners and asset managers sit at the top of the investment chain and, therefore, have an important role to play in influencing the organisations in which they invest to provide better climate-related financial disclosures*" (TCFD, 2017).

[11] The PRI (2023) proposed the introduction of "whole of government" or national transition planning across the globe and identified Japan as a leading country.
[12] Pension funds and sovereign wealth funds are also globally large types of asset owners but are not included in the empirical analysis due to the lack of comparability and their unique, often opaque organisational form. A small sample of these are included in the qualitative analysis reported in section 6.

Likewise, PRI comments on the power of asset owners regarding directing funds to sustainable investments that *Asset owners set the direction of markets: the mandates they award to managers determine the objectives that the world's biggest pools of money are put to. To fulfil their duties to beneficiaries in the 2020s and beyond, asset owners will need robust approaches to investment that acknowledge the effects their investments have on the real economy and the societies in which their beneficiaries live* (PRI 2023, p.15).

To be eligible for inclusion in our final sample, the asset owner or asset manager must additionally have a publicly available website and be in continuous existence over the study period of at least the latest two years.[13]

Table 2 provides an overview of the final sample, classified in terms of both industry and geographical region. This sampling criteria results in a final sample of 150 publicly listed firms, comprising 72 financial firms and 78 industrial firms. Financial firms were based in 3 sectors: asset management firms (9), banks (36), and insurance companies (27). Industrial firms were taken from the four industries identified by the TPT (2024e, 2024f, 2024g and 2024h) industry sectoral guidance as those prone to significant CO_2 emissions: food processing and retail (26), mining and minerals (11), oil and gas (25) and utilities and power (17).

Table 2

Sample overview by country and industry type

	UK	**USA**	**Europe**	**Other**	**Total**
Asset management	3	5	0	1	9
Banks	2	6	7	21	36
Insurance	3	7	7	10	27
Total financial firms	**8**	**18**	**14**	**33**	**72**
Food processing and retail	3	11	5	7	26
Mining and minerals	2	1	3	5	11
Oil and gas	2	5	6	11	25
Utilities and power	1	3	7	6	17
Total industrial firms	**8**	**20**	**21**	**29**	**78**
Total sample firms	**16**	**38**	**35**	**62**	**150**

[13] Unlike other industry sectors (e.g., classified according to SIC Codes, GICS), there is no universally consistent acceptable method of classifying various types of asset owners and asset managers. For the purposes of analysis, we combined sovereign wealth funds and foundations and endowment funds in a single category due to their similar opaqueness.

A stratified sampling procedure is used by adding a few of the largest UK listed companies that are listed on the London Stock Exchange in each of these industry sectors, but which were not included in the Fortune Global 500 companies list. The above procedures result in a total of 16 UK companies (comprising 8 financial institutions and 8 industrial companies), which is just over 10% of the total sample companies. Of the non-UK companies included in the final sample, 38 were based in the US, 35 were based in non-UK European countries, and the remaining 62 were based in other countries.

4.2. Data and data sources

Data of the samples of globally large financial and industrial firms is collected from a mix of both primary and secondary research sources. Primary research sources were obtained annual reports, sustainability reports, and TCFD reports, where separately reported. Secondary data sources were obtained from seven external data sources:

(1) The PRI (www.unpri.org) includes information such as (i) the list of PRI signatories as of September 2024 by type and country and (ii) their climate risk transparency report for the latest (2023) reporting years.

(2) The CDP (www.cdp.net) provides climate reports reported to the CDP. It should be noted that these lists only showed the names of the entities which had voluntarily signed up to these commitments as at the date of retrieval (30 July 2024), and do not show the date on which the signatory joined the organisation or provided a climate risk report.

(3) Google Finance (www.google.com/finance) reports the CDP climate score (which provides a snapshot of environmental disclosure and performance for entities that disclose through the CDP) and relevant financial information for each company, such as total market capitalisation.

(4) Financial Times website (www.ft.com) reports on the monthly beta of the stock of the relevant company for the previous five years.

(5) S&P ratings (www.spglobal.com) contains the latest available credit rating grades for the sample firms, where relevant (not all firms were rated).

(6) World Bank Worldwide Governance Indicators (https://www.worldbank.org) provide a ranking of countries based on six dimensions of governance, including Political Stability and Absence of Violence/Terrorism, Government Effectiveness and Control of Corruption.

(7) OECD international development statistics (www. Oecd-ilibrary.org/development) includes data concerning the degree of stock market capitalisation as a proportion of total country GDP.

(8) LSEGWorkspace database includes relevant and comparable sample firm level data for the latest reporting year, both financial (e.g. beta) and accounting return measures (e.g. ATO, ROE), as well as ESG scores and changes in CO_2 emissions.

4.3. Econometric model specification

The empirical model is based on the standard ordinary least square (OLS) regression model.

4.4. Definition of Variables

Variables are defined briefly in the following section and are summarised in Table 3.

Table 3
Definition of variables

Name	Label	Definition	Source
Transition Plan	*TP*	A categorical variable indicating whether the firm has publicly produced a credible transition plan (=2), a non-credible transition plan (=1) zero otherwise.	Authors' calculation
CDP Climate score (H1)	*CDP*	Climate rating provided by CDP, Converted to categorical scale 10 to 1, equivalently.	Authors' calculation
Tobin's Q	*Tobins Q*	Total market capitalisation of firm divided by total assets	Authors' calculation
Investment risk	*Invrisk*	The beta of the stock, calculated monthly over five years	Refinitiv Workspace
Size log	*Lnsize*	The financial reporting year-end total sales (industrial firms) or total assets (financial firms) defined in USD billions	Authors' calculation
Return on assets ratio	*ROA*	The total net income as a percentage of total assets	Authors' calculation
Asset turnover ratio	*ATO*	Total sales for the year divided by total assets	Authors' calculation
Institutional development (H2)	*ID*	An average of six indicators measuring the degree of institutional development (Kaufman et al., 2010)	WBDGI
Stock market development	*SMD*	Total stock market capitalisation as a percentage of national GDP. An indicator of the maturity of the system and the importance of equity investments relative to the size of the economy.	OECD

Transition Plan Public Policy (H3)	*TPPP*	A dummy variable indicating whether (=1) a firm that is based in a jurisdiction (Either EU or UK) where a regulator either encourages and/or mandates transition plans	Authors' calculation
ESG score	*ESG*	The total environment, social and governance score for the latest available reporting period	LSEG Refinitiv Workspace
Change in absolute CO_2 emissions	*ΔCo2A*	The change in absolute Co2 emissions (scope 1 and 2) in the latest available reporting periods	LSEG Refinitiv Workspace

The main dependent variable is the dummy variable *Transition Plan (TP)*, indicating whether (=1) or not (=0) the sample asset manager, asset owner and/or control-group industrial firm produced a publicly available transition report.

In order to test hypothesis H1, the categorical variable *CDP* is used. CDP assigns scoring to each of the relevant financial and-or industrial firm concerning the quality of its climate risk reporting to the CDP, ranging from F (failure to provide sufficient information to be evaluated), D-/D (Disclosure made), C-/C (awareness - knowledge of impacts of business on the environment, and vice versa), B-/B (management - taking coordinated action on environmental issues), to A-/A (leadership - indicating best-practice transparency and performance). These scores are converted to categorical numerical values rating from 2(=F) to 10 (=A), with 1 assigned to organisations which did not disclose with CDP.

We additionally include five standard firm-level control variables. The first is firm size, measured in terms of assets under management for financial firms and total sales for industrial firms. These were then converted to logs to facilitate econometric testing (*LnSize*). We also include Tobin's Q (*TobinsQ*), an indicator of whether a firm is overvalued or undervalued in terms of its total market value (proxied by its market capitalisation) relative to its replacement value (proxied by total assets). We also include a measure of firm-based investment risk (*Invrisk*) i.e. the beta of the firm's stock price. The fourth and fifth control variables are based around the value-added performance of the firm and proxied by both the ratio of the return on assets (*ROA*), i.e. the profit after tax divided by the total assets and asset turnover (*ATO*), the ratio of total sales to total assets. Additionally, we include the firm-level ESG score (*ESG*) and changes in CO_2 emissions (*ΔCo2A*). We also control cross-country

level dimensions, by incorporating the OECD database stock market development indicator (*ID*), which calculates the relation of total national stock market capitalisation to GDP.

Country-level cultural factors associated with hypothesis H2 are based primarily on the well-known Kaufmann (2023) index of institutional development, which is constructed based on a multivariate statistical analysis of six different institutional level factors associated with “Voice and Accountability”, “Regulatory Quality”, “Control of Corruption” and other factors. As a control, we also include the stock market development index (SMD) developed by the OECD.

To test hypothesis H3 we use multinational variations in public policy *TPPP* that encourages and-or mandates transition plan reporting, by indicating whether the sample organisation is based in the EU and-or UK (=1) or not (=0).

Table 4 reports on the descriptive statistic (averages) of the main independent variables as in this section. These are shown separately for the total sample (Panel A), averages by country (Panel B) and averages for both financial and industrial sectors (Panel C).

Table 4
Descriptive Statistics of independent variables

Panel A: Summary (total sample n = 150)

Variable	Average	St Dev	Min	Max
CDP	5.260	2.690	1	9
TobinsQ	0.530	1.066	0.004	8.509
LNSize	10.986	1.689	7.225	16.160
Invrisk	1,027	0.426	0.110	2.560
ROE	15.143	17.880	-11.900	58.860
ATO	0.759	1.071	0.001	7.150
ESG	52.158	13.601	21.520	82,560
∆Co2A	0.128	37.985	64.550	400.000
SMD	134.510	60.276	27.165	345.353
ID	0.927	0.616	-0.557	1.702

Panel B: By country/global region averages

Variable	UK	Europe	USA	ROW
CDP	6.800	6.657	3.513	5.129
TobinsQ	0.357	0.287	1.147	0.315
LNSize	10.243	12.409	11.461	12.490
Invrisk	1.204	1.043	1.096	0.930
ROE	19.183	14.077	17.893	13.106
ATO	0.417	0.794	1.185	0.520
ESG	57,745	55.891	44.710	53.439
∆Co2A	-10.039	-7.159	0.311	7.997
SMD	115.670	101.932	194.889	122.878
ID	1.263	1.242	0.993	0.635

Panel C: By firm sector (averages)

Variable	Financials	Industrials
CDP	4.708	5.769
TobinsQ	0.284	0.757
LNSize	13.222	11.199
Invrisk	1.062	0.994
ROE	11.532	18.562
ATO	0.113	1.371
ESG	53.218	51.166
ΔCo2A	2.579	-2.194
SMD	136.075	133.065
ID	0.859	0.990

Most of the main variables of interest are fairly consistent across the entire sample in terms of averages and standard deviation. However, there are some considerable country level variations in some variables of interest. For example, the *ESG* scores are on average higher for EU and UK firms than US firms. Furthermore, whereas the average change in CO_2 emissions has decreased for EU and UK firms, it has increased for both US and rest of world firms. Furthermore, while the *ESG* scores are fairly similar for financial sub-sample firms compared to the control sub-sample of industrial firms, their change in CO_2 emissions is much higher.

4.5. OLS Regression Econometric model

In the absence of any theoretical guidance as to the predicted form of relationship between the propensity of a firm to produce credible climate transition reports and various organisational, country, and institutional level factors, we assume that they are linearly related, and then tests for departures from this assumption. We therefore use a standard ordinary least squares (OLS) regression model to examine the firm-specific, country-based, and international public policy determinants of the general degree of engagement with producing internationally credible transition plans. Specifically, the model takes the following form:

$$Y_i = \alpha_i + B_1 x_{1i} + B_2 x_{2i} + B_3 x_{3i} + B_4 x_{4i} + B_5 x_{5i} + B_6 x_{6i} + B_7 x_{7i} + B_8 x_{8i} + B_9 x_{9i} + B_{10} x_{10i} + \varepsilon_i$$

Where the variable Y_i is the dependent variable (i.e. a categorical variable that proxies the propensity of firm i to produce a credible transition plan), α_i is the intercept,, variables x_{1i} to x_{10i} are a set of the 10 explanatory variables as defined in table 3 which are thought to influence Y_i, and the coefficient estimates $B_1, B_2, \ldots B_{10}$ are

the parameters which quantify the effect of each of these explanatory variables on Y_i. The variable ε_i is the error term.

5. Empirical results

This section reports the results of empirical analysis of the sample. We first report graphical analysis, which highlights the major differences in transition plan reporting by the sample firms in terms of both industry sector and geographic region. We then provide a brief outline of the main logistic multivariate econometric analysis used to test the main hypotheses.

5.1. Graphical Analysis of overall trends

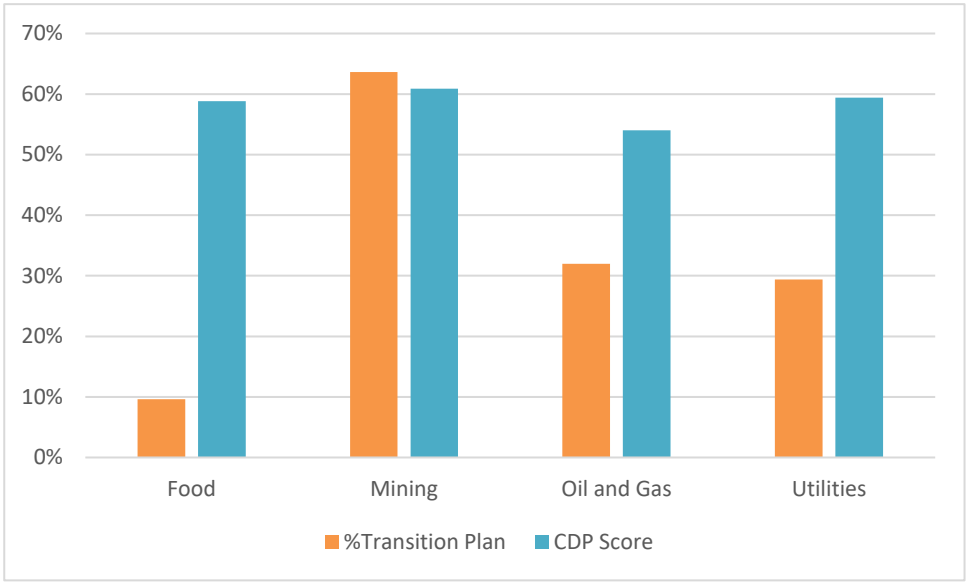
Figure 1 shows the variations in the percentage of both financial (Panel A) and industrial (Panel B) firms producing publicly available transition plans. To gauge the degree of "greenwashing" practices, the comparative CDP climate risk rating score (rescaled by a factor of 10 to provide comparable statistics) is also shown. A significantly higher (lower) CDP climate rating score relative to the % implementation of transition plans indicates a potential greenhushing (greenwashing) practice.

Figure 1

Percentage of sample with Transition plans and CDP score

Panel A: Financial firm subsample (n =72)

Panel B: Industrial firm subsample (n = 78)



For the financial institutions sub-sample (Panel A), asset managers produce the highest percentage of transition plans (32%), while banks produce the lowest (21%). However, the CDP scores for all sample firms are significantly higher than the incidence of producing transition plans.

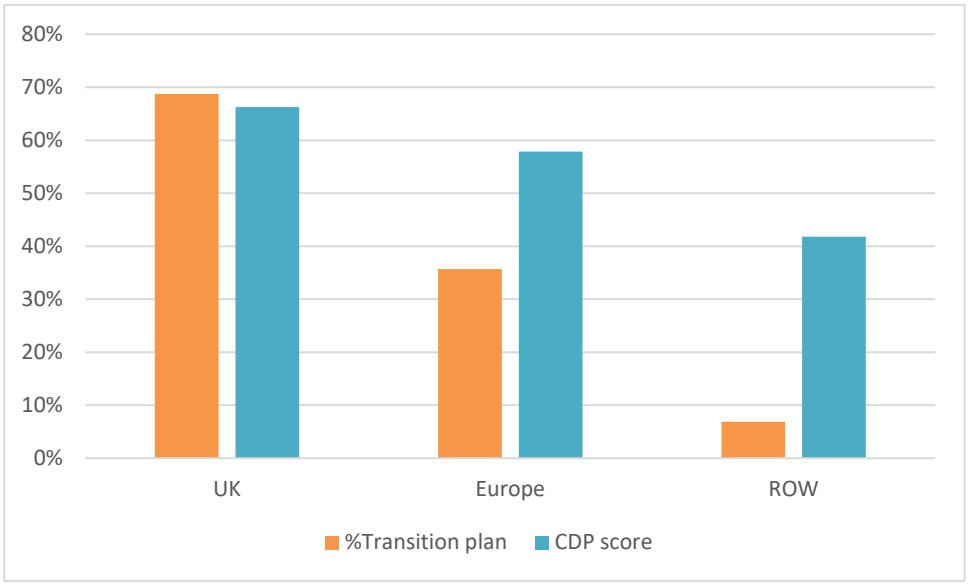
By contrast, there is more variability across the control sub-sample of industrial firms (Panel B). Mining firms provide the highest incidence of transition plans (63%), substantially higher than financial institutions, whereas food firms produce a lower percentage of transition plans than financial institutions. Whilst overall the industrial firms have higher CDP scores than the financial institutions, the difference is not as substantial.

Figure 2 reports the major differences in the percentage of firms with transition plans and equivalent CDP scores, by geographical region.

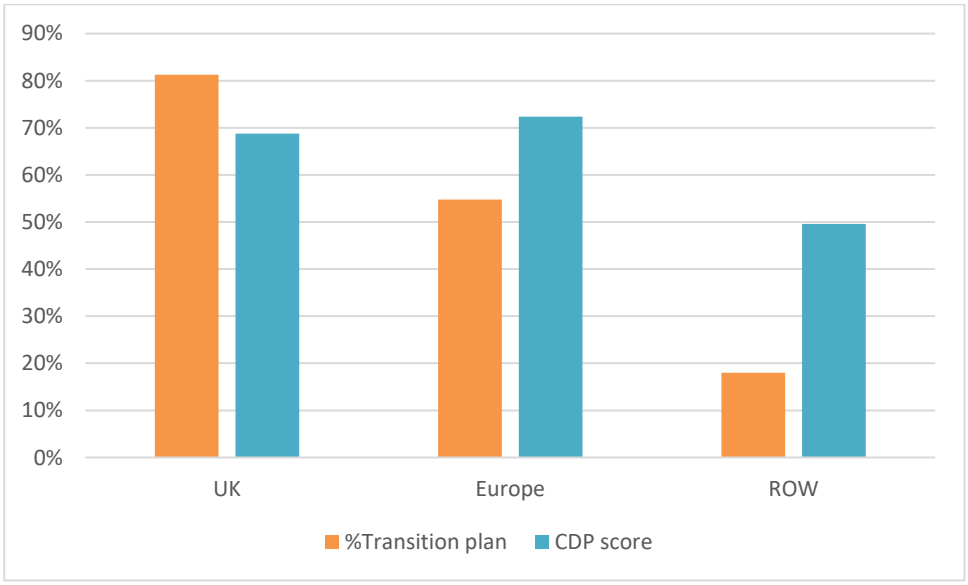
Figure 2

Percentage of firms with transition plans and CDP Score - by country

Panel A: Financial firms (n=72)



Panel B: Industrial firms (n=78)



For the financial institutions sub-sample (Panel A), UK firms are significantly more likely to produce transition plans than non-UK firms, although EU firms still produce a significantly higher proportion of transition plans than those based in the rest of the world. Furthermore, for UK firms, the relative CDP score is not significantly different from the propensity to produce transition plans. By contrast, transition plans are lower for European and rest of the world firms than CDP scores. Panel B shows contrasting results for the control sub-sample of

industrial firms. European and UK firms are more likely to produce transition plans than firms based in other countries.

5.2. OLS Multivariate Regression Tests

To undertake multivariate OLS statistical tests of the hypotheses, to ensure that the independent variables have incremental explanatory power, Pearson rank correlation tests are performed. These are reported in table 5, which shows that none of the variables are highly correlated with each other, thereby satisfying the econometric specification requirements of multivariate OLS regression tests.

Table 5

Pearson Bi-variate Correlation tests of explanatory variables This table reports the Pearson bivariate test for linear correlations each of the 10 main explanatory variables as defined in table 3. Except for the relatively high 60% positive correlation of *TobinsQ* and *ATO*, none of the explanatory variables are significantly correlated above 0.5. Thus, the OLS model assumptions are not violated.

Variable	*CDP*	*ESG*	*ΔCo2A*	*Invrisk*	*LnSize*	*TobinQ*	*ROE*	*ATO*	*SMD*	*ID*
CDP	1.000									
ESG	0.216*	1.000								
ΔCo2A	-0.157	-0.077	1.000							
Invrisk	-0.108	0.164	-0.132	1.000						
LnSize	-0.215	-0.063	0.081	-0.064	1.000					
TobinsQ	-0.089	-0.196	0.025	-0.021	-0.358	1.000				
ROE	-0.073	-0.097	-0.057	0.024	-0.076	0.149	1.000			
ATO	0.094	-0.169	0.066	0.015	-0.421	0.593	0.200	1.000		
SMD	-0.280	-0.250	0.063	0.076	-0.025	0.325	0.130	0.221	1.000	
ID	0.326	0.008	-0.151	0.156	-0.156	0.052	0.011	0.066	0.380	1.000

Table 6 shows the results of the multivariate OLS regression model used to test hypotheses. These are reported for the entire sample, and also separately for the sub-samples of financial firms and control sub-sample industrial firms.

Table 6

Multivariate Ordinary least squares (OLS) Baseline Regression Tests

Propensity to produce credible transition plans.

This table reports results of multivariate OLS regression tests of the main predictions. The dependent variable is the propensity to publicly report credible transition plans, defined as a categorical variable, being either credible (=2), non-credible (=1) or not publicly published (=0). For each of the independent variables, the model regression coefficient and the standard error is shown below the coefficient in brackets. Significance levels at the 1% (***), 5% (**) and 10% (*) level of statistical significance are also reported. OLS regression test results are reported for the full sample of firms, then separately for the financial sub-sample firms and industrial firms. Separate OLS regression tests are reported with the dummy variable *TPPP* defined as (a) both EU and UK firms (=1), zero otherwise, and (b) UK firms (=1), zero otherwise. Variables are defined in table 3.

Variable	(a) TPPP = 1 for Combined EU and UK firms			(b) TPPP= 1 for UK firms only		
	Full sample (n= 150)	Financial firms (72)	Industrial firms (78)	Full sample (n = 150)	Financial firms (72)	Industrial firms 78)
CDP score	0.073*** (0.024)	0.107*** (0.030)	0.023 (0.040)	0.073*** (0.024)	0.099*** (0.030)	0.072 (0.042)
ESG score	-0.011*** (0.004)	-0.013** (0.006)	-0.010* (0.006)	-0.010*** (0.004)	-0.010* (0.006)	-0.010 (0.006)
⊿Co2A	0.001 (0.001)	0.001 (0.001)	-0.004 (0.003)	0.001 (0.001)	0.001 (0.001)	-0.009* (0.005)
Invrisk	0.316*** (0.127)	0.067 (0.194)	0.537*** (0.185)	0.307*** (0.128)	0.165 (0.185)	0.515*** (0.194)
LnSize	-0.003 (0.035)	-0.017 (0.055)	0.018 (0.081)	0.012 (0.035)	0.038 (0.056)	0.046 (0.083)
TobinsQ	0.047 (0.064)	0.216 (0.329)	0.081 (0.078)	0.056 (0.065)	0.117 (0.330)	0.103 (0.082)
ROE	0.005 (0.003)	-0.008 (0.008)	0.004 (0.003)	0.005* (0.003)	0.002 (0.008)	0.002 (0.003)
ATO	-0.077 (0.054)	-0.403 (0.445)	-0.116* (0.068)	-0.078 (0.055)	-0.202 (0.449)	-0.105 (0.072)
SMD	-0.001 (0.001)	-0.001 (0.002)	-0.001 (0.002)	-0.003 (0.001)	-0.002 (0.002)	-0.003** (0.002)
ID	0.078 (0.125)	0.003 (0.183)	0.125 (0.175)	0.307*** (0.125)	0.218 (0.161)	0.329* (0.169)
TPPP	0.791*** (0.142)	0.725*** (1.057)	0.856** (0.209)	0.791*** (0.111)	0.868*** (0.257)	0.811*** (0.257)
Constant	0.152 (0.585)	0.788 (1.057)	-0.128 (1.014)	0.205 (0.593)	-0.225 (1.054)	-0.067 (1.063)
Model F statistic	9.53	4.69	6.06	8.90	4.75	5.02
Adjusted R-squared	0.400	0.370	0.439	0.381	0.374	0.384

The overall OLS Model F statistic is statistically significant at the 1% model, while the adjusted R-squared goodness of fit statistic ranges from 0.37 (entire sample) to 0.44 (industrial firms), suggesting that there is a goodness of fit of each of the OLS regression models to the underlying data.

Overall, the baseline empirical results (Table 6, columns 2 to 4) provide only equivocal support to the hypothesised relations concerning incentives facing both sample organisations to produce transition plans. For the full sample and sub-sample of financial firms, *CDP* is both positive and statistically significant at the 1% and 5% level, supporting the prediction of hypothesis H1. This finding is consistent with a reputation theory-based explanation for why firms produce transition plans. However, this prediction is not supported by the control sub-sample of industrial firms.

We do not find empirical support for the predictions of country-level, hypothesis H2. There is limited evidence suggestive of the Institutional Development (*ID*) variable for the overall sample of firms at the 10% level of statistical significance.

By contrast, the empirical results unequivocally support the third hypothesised relation concerning greater incentives facing EU and-or UK firms to produce credible transition plans for the full sample and control industrial firm sub-sample, thus supporting the prediction of hypothesis H3. The *TPPP* dummy variable is statistically significant at the 1% level.

As for the firm-level control variables, *ESG* is negatively associated with the propensity of firms to produce transition plans, while *InvRisk* is positively associated (but not for the financial firm sub-sample). This suggests that firm-based investment risk and ESG reputational factors are also associated with the propensity of these firms to produce transition plans.

5.3. Robustness checks

We undertake three additional robustness checks to validate our overall findings. Firstly, we repeated the OLS regression tests reported in table 6 (columns 2 to 4), but substituting the UK dummy variable for the TPPP variable (table 6, columns 5 to 7). The empirical results are largely consistent with those reported in the previous section for the full sample of firms,

As a further robustness check, for the full sample of firms, we replace the total, combined ESG score with one of two alternative, more specific measures of firm's ESG performance, based on the LSEG Refinitiv database: (1) environmental ESG score; and (2) controversies score. The results are reported in Table 7 where the public policy hypothesis H3 is tested with *TPPP* as combined EU and UK firms, or UK firms only, separately [14].

[14] Two of the total original sample of firms did not have relevant ESG data available, so were excluded from this additional analysis.

Table 7

Multivariate Ordinary least squares (OLS) Robustness Check Regression Tests

Propensity to produce credible transition plans.

This table reports results of a robustness check of the multivariate OLS regression tests of the baseline predictions reported in table 6. The dependent variable is the propensity to publicly report credible transition plans, defined as a categorical variable, being either credible (=2), non-credible (=1) or not publicly published (=0). For each of the independent variables, the model regression coefficient and the standard error is shown below the coefficient in brackets. Significance levels at the 1% (***), 5% (**) and 10% (*) level of statistical significance are also reported. OLS regression test results are reported for the full sample of firms, then separately for the financial sub-sample firms and industrial firms. Separate OLS regression tests are reported with the dummy variable TPPP defined as (a) both EU and UK firms (=1), zero otherwise, or (b) only UK firms (=1), zero otherwise. Variables are defined in table 3.

Variable	(a) TPPP = 1 for Combined EU and UK firms			(b) TPPP= 1 for UK firms only		
	Full sample (n= 150)	Financial firms (72)	Industrial firms (78)	Full sample (n = 150)	Financial firms (72)	Industrial firms /8)
CDP score	0.063*** (0.025)	0.101*** (0.032)	0.007 (0.042)	0.061** (0.026)	0.095** (0.031)	0.010 (0.046)
ESG environment score	-0.002 (0.004)	-0.003 (0.005)	0.001 (0.006)	-0.001 (0.004)	-0.002 (0.005)	0.003 (0.006)
ESG controversies score	-0.003*** (0.001)	-0.005** (0.002)	-0.004** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.004* (0.002)
∆ Co2A Emissions (intensity)	0.001 (0.001)	0.001 (0.001)	-0.003 (0.003)	0.001 (0.001)	0.001 (0.001)	-0.004 (0.004)
Invrisk	0.291*** (0.128)	-0.005 (0.201)	0.553*** (0.188)	0.282** (0.130)	0.065 (0.195)	0.511*** (0.201)
LnSize	0.006 (0.036)	-0.037 (0.061)	0.015 (0.080)	0.015 (0.036)	0.006 (0.061)	0.054 (0.085)
TobinsQ	0.056 (0.064)	0.158 (0.334)	0.085 (0.080)	0.059 (0.064)	0.081 (0.334)	0.104 (0.085)
ROE	0.005 (0.003)	-0.004 (0.008)	0.004 (0.003)	0.005* (0.003)	0.004 (0.008)	0.003 (0.003)
ATO	-0.057 (0.064)	-0.329 (0.452)	-0.094* (0.070)	-0.053 (0.056)	-0.172 (0.344)	-0.103 (0.074)
SMD	-0.001 (0.001)	-0.002 (0.002)	-0.001 (0.002)	-0.003*** (0.001)	-0.003 (0.002)	-0.004** (0.002)
ID	0.075 (0.127)	0.019 (0.187)	0.158 (0.180)	0.277** (0.125)	0.196 (0.168)	0.418* (0.173)
TPPP	0.791*** (0.142)	0.676*** (0.021)	0.859*** (0.208)	0.760*** (0.174)	0.843*** (0.255)	0.735*** (0.264)
Constant	-0.059 (0.559)	0.788 (1.057)	-0.482 (0.099)	0.016 (0.564)	0.305 (1.112)	-0.585 (1.055)
Model F statistic	8.76	4.34	5.60	8.36	4.43	4.33
Adjusted R-squared	0.398	0.371	0.434	0.385	0.377	0.357

In the case where the *TPPP* dummy variable is used to approximate public policy engagement for EU and UK firms, (Table 7, columns 2 to 4), and the environmental ESG score is used instead of the overall ESG score, the hypotheses H1 and H3 are supported, but not H2. By contrast, when the alternatively controversies ESG score is used, all three hypotheses are supported. This finding is largely consistent with the baseline findings.

However, in the case where the UK dummy variable is used as a proxy for public policy engagement (Table 7, columns 5 to 7), substituting the environmental ESG score for the overall ESG score provides support for hypothesis H3 only. By contrast, substituting the controversies ESG score for the overall ESG score provides support for hypotheses H2 and H3, but not for hypothesis H1. Therefore, there is some evidence that the scope and nature of the ESG score used to proxy the sample firms' overall ESG rating affects the overall association between the credibility of their transition plans and firm, country, and public policy level factors. Moreover, whereas the Environment ESG score is not statistically associated with the propensity to produce credible transition plans, the controversies ESG score is, which suggests that firms' exposure to public controversies have an important role to play in their decisions to implement credible transition plans.

In summary, the overall baseline results are not significantly impacted by substituting different measures of ESG rating scores, to our baseline findings is that firms' overall propensity to develop credible transition plans is also impacted by the degree of their exposure to ESG-related controversies, supporting a legitimacy argument.

6. Sectoral qualitative analysis

The purpose of this section is to provide further industry sector level analysis to the overall high-level econometric analysis undertaken to test the hypotheses as reported in the previous section. It provides a short sector qualitative case study-based overview for each of the financial firms (section 6.1) and industrial firms (section 6.2), comprising a summary of the overall sector fundings, and presentation of a short case study analysis comparing the transition reports of two sample firms within that sector. Although not part of the econometric analysis, we have included some qualitative finding on pension funds in this section. Additionally,

Appendix 2 provides some further insight based on a further analysis into both the nature and quality of transition planning reports provided by the largest UK-based pension plans.

6.1. Financial firms

A total of 25 transition plans were produced by the 72 financial sector sample firms, however these differed significantly in terms of both quality and quantity across each of the three financial sub-sectors. It should be noted that unlike industrial firms, globally large financial firms are subject to relatively greater political and regulatory scrutiny due to their systemic importance to the global financial system (e.g. too big to fail). Therefore, their incentives to publicly produce transition plan reports differs depending on the exact regulatory oversight but is subject to higher public visibility.

6.1.1. Pension funds

Sector overview: Pension funds are a type of asset owner which is subject to special “asset owner” sector guidance provided by the TPT (TPT, 2024a). The TPT (2024a) claims that asset owners “have a crucial role in mobilising finance for the transition due to the scale of assets they control”. Unlike other types of organisations, pension funds are often legally formed as private trusts where the trustees have a fiduciary duty to provide benefits required under the trust for their beneficiaries, as well as comply with responsibilities and duties imposed by financial regulators. However, in many countries, pension funds are not legally required to publicly report their transition plans or produce annual TCFD reports. This imposes a moral, rather than societal obligation to provide transition plans.

Case study analysis: Pension fund 1 is one of the largest Australian pension funds by assets under management (USD176 billion, TAI (2019)). They did not produce a transition report as a PDF document, but instead is available only as on-screen text via their website. There was no formal transition plan report provided.

Pension fund two is based in a Scandinavian country and has a significant amount of total assets under management. Its climate transition report is relatively short given both its size and by comparison to all other case study firms examined, as it is just 13 pages in length and is confined to describing how they lobby their

investee companies to mitigate, adapt and deal with climate change. It does not provide a blueprint for climate action or transition planning. There is no reported emissions data.

Summary sector findings: A sample of 14 pension funds were selected from the Thinking Ahead Institute (TAI) (2024) list of globally largest 300 pension funds as at the end of 2023. The sample selection criteria were based on three attributes: (1) the pension fund had to be of a sufficient size to be comparable to other types of financial institutions based in the Fortune 500 list (i.e. with assets under management of at least USD100 billion), (2) relevant financial and annual reporting information is publicly available and (3) the pension fund was continually listed as being a top 300 pension fund for at least 3 consecutive years (i.e. 2021 to 2023). This resulted in a final sample of 14 pension funds, which were approximately equally distributed between the USA, Europe, and other countries.

This sector is the worst performing of all 8 industry sectors, with only five out of the total sample of pension funds produced publicly available transition plans. Furthermore, these plans are generally of poor quality and were not aligned with either TPT or GFANZ guidelines.

Overall evaluation: Compared to other financial sectors, the sample pension funds produced relatively poor-quality transition plan reports, which did not align with either TPT or GFANZ guideline frameworks. This may be due to the private trust structures of many types of pension funds, which results in a relatively more obscure legal fiduciary relationship with their beneficiaries than that of publicly listed corporations and their shareholders, which are instead subject to corporate law and stock exchange membership listing requirements. Moreover, neither of the pension plans included in the case study analysis had a nominated "chief sustainability officer" or similarly titled senior management person as part of their governance structure. Furthermore, neither organisation explicitly incorporate climate risk into their publicly disclosed strategy, risk management and-or performance metrics and targets.

6.1.2 Insurance sector

Sector overview:

Similarly to pension funds, the insurance industry is unique in that it faces climate-related risk on both sides of the balance sheet.

On the asset side, this risk is relatively more significant for the life insurance sector due to its long-term investments; as a sector they also have more assets under management compared with non-life. As asset owners, insurers must consider the financed emissions arising from their investment activities. The TPT notes that "*through their direct investment decisions, selection of external Asset Managers, the mandates they provide to Asset Managers and their stewardship activities, Asset Owners can have a substantive role in the transition to a low-GHG, climate-resilient economy."* (TPT, 2024a)

On the liability side, the non-life sector must manage climate-related risk in their underwriting portfolios, particularly in property and casualty lines. Transition plans should consider insurance-associated emissions, which is "*the share of an insured's absolute emissions that is associated with the (re)insurer's underwriting portfolio*" (TPT, 2024c). Globally, non-life insurers are estimated to have earned over US$21bn in premiums from insuring the fossil fuel industry in 2022, an increase of 6% from the previous year (Insure Our Future, 2023). And yet this sector could play an important role in the green transition by underwriting innovative clean energy technologies and helping projects to secure financing.

It is worth highlighting that climate change will differentially affect various types of insurance companies, depending on their focus and business orientation. As for other financial services firms, operations and supply chains need reviewing and investment portfolios require reshaping to drive reduction in real economy company emissions. Addressing this is arguably significantly easier than addressing the risks to the other side of the balance sheet, which is impacted by the difficult-to-measure emissions produced by a range of actors, sovereigns, companies, and individuals, as well as the physical, litigation and transition impacts on the insurance liabilities.

Case study analysis – Life Insurance:

Given the long-term investment and contractual horizon of life insurance firms, we would expect a relatively greater level of investment in producing credible transition plans than general insurance firms. Our findings are consistent with this intra-industry sector expectation. We examined the quality of the sustainability and climate-related publications produced by the three largest UK life insurance firms in addressing climate transition plans. While all three produced climate transition plans, only two of them published a comprehensive, credible transition plan that complied with all the GFANZ and-or TPT frameworks. Of those that did not publish a credible transition plan, net zero targets tended to be mentioned in their sustainability reports, with most

including interim goals on the path to 2050. Most of these reports however included little detail with respect to TPT's five pillars. Furthermore, only one life insurance company has a specified “Climate Change Director” or similarly titled senior management officer. One of the firms failed to update their climate transition plan from 2021, so is therefore not classified as being capable of producing a “publicly credible” transition plan.

Case study analysis - Lloyds of London and underwriting syndicates

The Lloyds Sustainability Report 2023 refers to transition planning only in general terms, related to their sustainability objective:

“Sustainability involves us developing plans and products that reduce our impact on the planet and support the global transition to investing in a lower carbon economy. We do this through the tools we have available, such as reducing our operational emissions, supporting our market to develop new insurance products, forming strategic partnerships and leveraging our investments to create impact.”

It also mentions the need to ensure a just transition, and sets out the follow goals:

“*Insuring the transition for Lloyd’s means developing plans and enabling the market to create products that help our customers reduce their impact on the planet and supports the transition to a lower carbon economy*”

However, despite providing extensive disclosures as to its compliance with the TCFD guidelines, no specific reference is made to transition planning and to disclose various performance related targets and metrics.

The Lloyd's Corporation has developed a roadmap for 2024 to 2026. While stating that it is up to each business to decide the pace and structure that works for them, it sets high-level expectations for management agents to manage both the risks and opportunities of the climate transition. However, Lloyd's does not currently prescribe any public disclosure around transition planning, and only a limited number of syndicates have published any detail around transition plans to date. Moreover, while Lloyd’s has a “Sustainability Committee”, there is no nominated sustainability officer, either at board or senior management level.

As would be expected, syndicates with parents that are listed are more likely to have engaged with this topic. Considering specifically the syndicates with parents listed in the UK, one firm (which manages seven syndicates) plans to publish a transition plan in 2024. While one firm (with three syndicates) has not published a full transition plan, their website sets out ambitions in respect of emission reductions.

When considering general insurance, it is important to reflect on the Lloyd's market as it is a cornerstone of the global general insurance industry. It is a specialist marketplace focusing on commercial insurance and reinsurance, with limited exposure to customer-facing business such as personal lines and life insurance. The market consists of approximately 80 syndicates that are managed by over 50 managing agents and backed by different types of capital providers, from private equity to large, listed insurance groups.

A case study analysis is conducted based on two Lloyd's based specialist underwriting firms.

Lloyds underwriting firm 1: The firm's Sustainability Report 2023 provides an overarching outline of a transition plan: "*Our climate ambition is to become a Net Zero business across all scopes by 2050"* which then highlights the three generic areas which broadly align with the TPT recommendations (i.e. "plan and implement", "engage and influence" and "govern and manage*"*.

Firm 1 reported relatively more detail on the fact that this insurer had clear, measurable goals that they tracked against, which potentially puts them ahead of many other insurers. However, there is a misalignment between the qualitative climate change strategy statement (which is to protect their business from the impact of climate change) and the targets that they are tracking against, because they are tackling the "easier" things first. The targets are all focused on the emissions of their operations and their investments, as they have significant assets under management.

However, their sustainability report does not mention how they will change their business strategy to meet the challenges of climate change. Their business is primarily motor insurance, and they also insure personal property and small businesses. They are therefore quite exposed to changes in climate, e.g. through floods, hailstorms, cold spells that cause pipes and boilers to freeze, etc. They are also exposed to transition risk, i.e. as the public switches to green technologies such as electric vehicles, solar panels, etc. We did not see anything in their sustainability report about how they are pivoting their strategy to make sure that they business is able to respond to these changes in their risk profile and how they will take advantage of any opportunities that come with it. There is only a mention of strategic management actions around "electric vehicles, supply chain, flood resilience and underwriting footprint".

It is possible that they are doing a lot in this space and just do not want to disclose it for competitive reasons, but, like other insurers, they have struggled to articulate a clear vision around this. This is also a common theme in the UK insurance industry generally.

Lloyd's underwriter 2: One of the two largest syndicates of Lloyds, it annually produces a "climate wise" report. The latest 2023 Climate Wise report does not specifically mention transition plans, but does provide a strategic priority to "*Setting a net zero 2050 target and agreeing key sustainability and climate change*"

Case study analysis: General insurers

In addition to Lloyd's specialist underwriters, we also examined another two general insurers who mainly offered car insurance policies. There are some noticeable variations in transition plan practices between them, which are briefly outlined below.

General Insurance Firm 1: This firm has developed a climate transition plan, which is disclosed briefly on its website. However, it is not aligned with either the TCFD or TPT – GFANZ frameworks. The firm has outlined several actions as well as near-term priorities, in accordance with the Science-Based Targets initiative (SBTi) [15] near-term criteria standard for financial institutions. There is also a commitment made to "build out" their climate transition plan.

General Insurance Firm 2: Unlike firm 1, it does not publicly disclose a climate transition plan, although its 2023 Sustainability Report refers to the fact that it is "further developing" a net zero transition plan. By contrast, reference is made to a recently appointed "group head of sustainability". This suggests that the firm is still at an early phase.

Summary sector findings:

In summary, the life insurance companies generally produce a climate transition report and-or provide definitive commitments to meet net zero targets.

By contrast, Lloyds, underwriting syndicates and general insurance firms are relatively underdeveloped in terms of the degree to which they have publicly invested in climate transition planning processes. This is a somewhat surprising finding, given that the general insurance industry has relatively greater direct liability risks associated with climate change than life insurance firms. This suggests that there may be a certain degree of

[15] The SBTI is a joint initiative of a few international organisations, including the CDP, the United Nations Global Compact, WWF (SBTi, 2022). The SBTi defines and promotes best practice in science-based target setting and has issued a Financial Institutions Net Zero standard (SBTI, 2024a) and has also issued a draft Financial Institutions Near-term criteria in relation to GHG emissions (SBTi, 2024b).

“greenhushing” associated with this sector, which is consistent with the results of the empirical analysis of the broader global sample of firms, as reported in section 5.

We consider that some of the personal lines insurers may not want to disclose too much of their strategy to their competitors if this involves targeting a specific product. Furthermore, as there is currently no UK regulatory requirement to have a robust transition plan, many general insurers may not be willing to invest time and money into it, and may wait for other insurers or the industry to lead the way so that they can "copy and paste" rather than having to develop a plan from scratch. This connects to the more generic finding in sustainability reporting practice may be driven by a combination of (i) lack of coercive mechanisms (regulation/market forces); (ii) normative mechanisms (shared values/norms/codes of practice) and (iii) mimetic mechanisms (imitation of successful peer organisations) (Herzig and Schaltegger, 2014).

Finally, compared to the longer-term horizon of life insurance firms, it may be that general insurance firms have a more myopic perspective towards engaging with climate risk, i.e. the short-term nature of the business means that it's not that important to have a very long-term plan. I.e. it would be relatively easy to pivot things like pricing models to respond to changes in risk.

6.1.3. Asset management

Sector overview:

The TPT Asset Manager sectorial guidance notes that an estimated US$194 trillion of global investment is needed between now and 2050 to deliver on net-zero and to meet the goals of the Paris Agreement (TPT, 2024b). Asset managers will therefore play a vital role in channelling investment into the net zero transition and holding investee firms accountable against their respective net-zero transition plans and decarbonisation strategies. It is important to note the distinction between asset managers and asset owners. Asset owners, such as pension funds and insurers (as outlined above) have legal ownership of the assets and typically make asset allocation decisions based on their investment objectives (which may include environmental or sustainability driven criteria); they may choose to manage investments themselves or use the services of an asset manager. Asset managers on the other hand act on behalf of the asset owners and will make investment decisions according to their pre-defined investment mandates. A key responsibility for asset managers is acting as an investment fiduciary to clients, which typically encompasses risk management, maximising risk-adjusted returns and ultimately acting in their clients’ best interests.

Case study analysis:

Firm 1: Firm 1 is one of the world's largest asset managers. Although they have committed to achieving carbon neutrality across their global operations, there is no such commitment in respect of the investment portfolios they manage. Around 80% of its assets under management (AUM) are passively invested through index funds. This perhaps explains Firm 1's reluctance to engage with net zero initiatives and to fully commit to achieving net zero across the investments they manage.

Firm 2: Firm 2 is a globally large asset manager, and like firm 1, has most of its AUM invested passively in index funds. They are a member of the Net Zero Asset Managers initiative (NZAM), so by default have committed to having their AUM net zero by 2050. However, they have published little detail on how they expect to achieve this. A 2030 net zero statement published on their website notes that Firm 2's *"role in the transition is as a fiduciary to our clients… not to engineer a specific decarbonization outcome in the real economy*" and their engagement strategy outlined in their 2023 TCFD report suggests that their focus is on encouraging investees to issue TCFD-aligned disclosures rather than influencing decision making.

Firm 3. Firm 3 is one of the UK's largest asset managers, with £774bn in AUM as at June 2024. They are one of the better examples seen in this study, having committed to achieving not just net-zero across their business operations, but crucially across the investments they manage on behalf of their clients. In 2021 they issued a detailed 30-page transition plan outlining their net zero strategy which included their active engagement strategy around climate issues. Firm 3 are involved with several climate initiatives and are members of the NZAM and the SBTi. The firm also has a nominated "Global Head of Sustainable Investment" and updated their initial 2021 climate transition plan with a further 2023 climate report, although this was aligned only with the TCFD stewardship-based reporting framework, instead of the TPT and-or GFANZ frameworks.

Summary sector findings:

The extent and quality of net zero disclosures was mixed throughout the sector. Most asset managers in the study have some form of climate or sustainability disclosure (typically a TCFD aligned report), but only around half have issued a net zero transition plan or decarbonisation strategy. Most asset managers have committed to achieving net zero across their business operations by 2050.

Overall evaluation:

As highlighted above, the quality and extent of net zero disclosures are mixed across the asset manager space, even though most asset managers considered in this study are signatories of NZAM. Although only a limited number of asset managers were studied, there does also appear to be a distinction between passive and active fund managers in terms of the extent of net zero commitments and disclosure of decarbonisation strategies. Moreover, only the UK based asset management firm appeared to make a substantive commitment to climate change issues, whereas the US based asset managers appeared to be rowing back from their initial enthusiasm, perhaps due to domestic political pressures associated with the Trump administration.

6.1.4. Banking firms

This sector was only covered briefly with two case studies as the focus of the study is primary focused on other types of financial institutions: i.e. asset owners and asset managers. As noted in the relevant TPT (2024d) banking sector guidance, "*As financial intermediaries that finance every sector of the economy, Banks have a critical role to play in this transition. Achieving net zero requires a whole economy transition across the globe - encompassing nations, entities, individuals - all of whom are reliant on Banks. Banks are a unique and essential enabler in the global system to accelerate a just transition, build a low-GHG emission and climate-resilient global economy, and achieve the goals outlined in the Paris Agreement* (TPT, 2024d).

Case study analysis:

Firm 1: This UK based banking company produced a very comprehensive climate transition plan report, it includes references to both just and inclusive transition and very detailed at the sectoral level. It has "taken into consideration the guidance available" including GFANZ and the 2022 draft TPT framework without full alignment.

Firm 2: At 36 pages length it is comprehensive, and partially aligned with GFANZ. It sets out Scope 1, 2 and 3 by sector but with confusing presentation. Compared to the UK bank, it has a relatively more balanced mix of both concrete statistical and narrative discourse in the discussion, although with a noticeable absence of performance-based information provided to back up the various claims made.

Summary findings and evaluation:

Overall, the quality of transition plan reporting is more comprehensive and credible than for other types of financial sector sample case study firms. However, neither case study bank has a nominated “sustainability officer” either at the board or senior management level.

6.2. Industrial firms

The sample of industrial firms in this study are based on the four major industries identified by the TPT as requiring detailed industry sector guidance, given each sector’s greenhouse gas emissions (i.e. metals and mining, oil and gas, power and utilities and retail and food). The sample of 78 industrial firms examined in this paper produced a total of 29 transition plans, which is 3% more than those produced by the equivalent sample of financial sector firms (25 transition plans out of a total of 72 financial sample firms). Overall, these were generally of a higher quality than those produced by the financial firms and were more likely to align with either the TPT and-or GFANZ guidance frameworks. This is not a surprising finding, given that these types of firms will have a significantly greater level of first order impact from climate change on their financial business planning strategies than their institutional equity investors i.e. financial organisations.

6.2.1. Metals and Mining firms

Sector overview:

The TPT (2024e) sectoral guidance notes that “*raw material extraction and processing contributes significantly to global emissions. In 2022, extraction and processing of metals and non-metallic minerals accounted for 17% of global GHG emissions. The sector is also involved in coal activities, contributing to the further 18% of global GHG emissions in 2022 from fossil fuel extraction and processing*” (TPT, 2024e).

Case study analysis:

This sector was only covered briefly with two case studies. The case study firms have both produced relatively high quality and credible transition plans.

Firm 1 (UK): Its 2023 climate report is comprehensive in size. Whilst not aligned to either TPT or GFANZ, it covers most aspects except governance, includes reference to just transition and nature-based solutions, and

sets out its roadmap to 2030 and 2050 under the headings of scopes 1, 2 and 3 emissions and discusses abatement programmes to focus on decarbonisation challenges across product groups. It includes an attestation report provided by an accountancy firm.

Firm 2 (Australia): The firm's 2024 report, at 70 pages, is mostly aligned with TPT, and TPT areas not addressed are explicitly stated in the report. It also includes an attestation report provided by an accountancy firm.

6.2.2. Oil and Gas firms

Sector overview:

The oil and gas industry are a major contributor to global greenhouse gas (GHG) emissions. The TPT sectoral guidance (TPT, 2024f) notes that operations from these industries "*generate nearly 15% of total energy-related emissions, and the use of its products contributes a further 40%. These companies therefore have a crucial role to play in reducing GHG emissions and leveraging their resources to advance the development and adoption of low-carbon and carbon-neutral energy solutions*" (TPT, 2024f). During COP28 in Dubai, Oil and Gas Decarbonization Charter (OGDC) was launched to align around net zero by or before 2050, zero-out methane emissions, eliminate routine flaring by 2030 and to continue working towards industry best practices in emission reduction. However, the stated goals do not affect oil and gas production or emissions from consumption.

Case study analysis:

We studied the disclosures of six oil and gas firms, three domiciled in Europe and three in Asia-Pacific, although their operations are typically global in nature. Many of these firms have issued some form of forward-looking transition plan, many of which go into detail around the technologies required to aid the net zero transition, namely renewables, hydrogen, carbon capture and storage (CCS) and supporting the electrification of personal transport. Most of these firms are part of OGDC and have committed to net zero by 2050, the outliers being two Indian firms who have ambitiously issued net zero targets of 2035.

Firm 1: Firm 1 has issued a detailed 60-page “Energy Transition Strategy” for 2024, outlining the steps that they are taking to help achieve net zero by 2050 on emissions. It includes a variety of disclosures concerning its emissions, energy demand by region and energy type, and the growth of renewables.

Firm 2: Firm 2 have stated a net zero target date of 2035 in their Business Responsibility and Sustainability Report (BRSR), which is a required disclosure under the Securities and Exchange Board of India. However, no formal transition plan was issued, and little detail is given in their BRSR around how exactly they plan to achieve net zero.

Firm 3. Firm 3 is an Indian national oil firm which is the largest government-owned oil and gas explorer and producer in India. The firm has set out an ambitious plan to achieve (Scope 1 & 2) net zero by 2035 In their more detailed “Decarbonisation Roadmap” document, the company strategy is to employ combination of renewable energy capacity, zero routine flaring operations, Carbon capture utilization and storage, hydrogen & biogas usage to achieve net zero targets on emissions.

Summary findings and overall evaluation:

As with other sectors, the quality of transition plan disclosures for oil and gas companies is mixed. Net zero disclosures are especially challenging for these firms; oil and gas demand has always had an element of unpredictability due to the linkage to global economic activity, and on top of this there is now the factoring in of potential future government climate policies and changing consumer demands around sustainable energy. However, the better net zero disclosures we saw at least attempt to illustrate demand patterns by energy type, rather than merely elaborating on firm initiatives and the types of technologies being adopted.

6.2.3. Power and Utility firms

Sector overview:

TPT’s sectoral guidance (TPT, 2024g) notes that “*Electrification is key for decarbonising sectors across transport, buildings and industry, and therefore the Power & Utilities sector needs to be among the first sectors to decarbonise, to enable the decarbonisation of other sectors. This sector is currently a substantial source of GHG emissions, accounting for over one-third of global energy-related CO2 emissions in 2021*” (TPT, 2024g).

Effective transition planning can therefore help this sector to meet these challenges at the speed and scale required. Well-designed transition plans will also improve ecosystem functioning and can increase the efficiency and resilience of electricity infrastructure.

.

Case study analysis:

Two power and utility firms were analysed as case studies, firm 1 is a UK firm (primarily focussed on UK & Ireland operations), while firm 2 is a German firm. They have both produced relatively highly credible transition plans.

Firm 1: It aims to achieve scopes 1 and 2 emissions targets and to achieve net zero emissions by 2040 and scope 3 net zero by 2050. It has published detailed transition plan providing explicit references to TPT guidance. The firm is also actively involved in developing TPT guidance and is part of TPT's 3 separate workgroups: Utilities & Power; Adaption; and Just Transition. Firm 1 published world's first "Just Transition Strategy" in 2020 and updated it in 2024 consisting of 20 base principles the company intends to follow.

Firm 2: In line with company's purpose of "One energy for Sustainable Life", firm 2 has set ambitious target of achieving scopes 1, 2 and 3 emissions and achieve net zero emissions by 2040. Firm 2 is actively working with Science Based Targets Network (SBTN) and Taskforce on Nature-related Financial Disclosures (TNFD) to help in setting industry wide standards. It also participated in a Dutch government sponsored "Black Blade" study to protect against collision of birds with wind turbine blades.

Summary sector findings:

Of the nineteen sample firms analysed, only nine firms published some form of transition plan. Majority of these firms intend to reach net Zero target by 2050 with the help of phasing out coal-based power generation, increasing renewable energy generation capacity, eventually exiting oil & natural gas value chain and using carbon sequestration or carbon credits.

Overall evaluation:

Only a few firms are at the forefront of climate transitioning while others are lagging in planning their phase-out of coal, oil & natural gas-based power generations. However, there is high dependence on supply chain providers to enable the industry to decarbonise faster using electricity sourced from clean & green sources.

6.2.4. *Retail and Food firms*

Sector overview:

The TPT's food and beverage sector guidance TPT, 2024h) identified this sector as being particularly exposed for physical climate risks and as having an "*outsized impact on the natural environment, being responsible for 60% of global diversity loss and using 70% of the world's accessible water*" (TPT, 2024g, p11). It is also contributing to global deforestation, putting at risk indigenous populations.

Case study analysis:

Two globally large food processing firms were examined in this case study, firm 1 is based in the UK, and firm 2 is based in Switzerland. They produce a mixed quality of credible transition plans.

Firm 1 (UK) produced a very detailed 53-page transition plan which includes 4 separate technical appendices. The report contents are broadly aligned with each of the five disclosure elements of the TPT (2024g) industry sector guidance, although it lacks analysis of emissions (maybe produced elsewhere).

Firm 2 By contrast, the Swiss firm produced only a very broad brush 47 pages, which lacked any connection to the various disclosure elements or sub-elements of either TPT or GFANZ guidance but provided detailed discussion of implementation and engagement strategy in key aspects.

Summary sector findings:

Of the total of 23 firms based in this sector, only 4 (less than 20%) produced publicly available transition plans, which is the lowest of all industrial sample sectors examined in this study.

Overall evaluation:

The UK firm has made a significantly greater effort to produce a publicly credible transition plan than the Swiss firm. It therefore appears to be more publicly credible, as it aligns with the relevant TPT guidance, possibly due

to its being based in the UK. By contrast, the Swiss report is largely confined to a detailed analysis of the scopes 1, 2 and 3 emissions and fails to address the other four GFANZ or TPT area recommendations.

6.3 Summary of overall findings – qualitative analysis

Table 8 provides a summary of the outcome of the qualitative analysis of the quality of transition plan reporting practices by the sample firms. It shows that the oil and gas sector firms have provided the relatively most credible transition plans, whilst the retail and food sectors provide the most basic. Within the financial sector, only the two banks provided relatively consistently high-quality credible transition plans.

Table 8

Overall Summary – Quality of Transition Plan Reporting by Sample Case Study Firms

Sector	Sub-sector	Firm analysis	Overall assessment
Financials	Pension Funds	Low quality	Lack of engagement
	Insurance companies	Mixed quality – life insurers provide higher quality than non-life	Mixed level of engagement
	Asset managers	Mixed quality – active managers provide higher quality than indexed managers	Mixed level of engagement
	Banks	High quality – generally align with TPT-GFANZ frameworks	High level of engagement
Industrials	Metals and Mining	High quality – generally align with TPT-GFANZ frameworks	High level of engagement
	Oil and gas	Mixed quality – emerging market firms have varied quality of reporting	Mixed level of engagement
	Power and utility	High quality – generally align with TPT-GFANZ frameworks	High level of engagement
	Retail and food	Mixed quality- UK firm produces relatively more credible plan	Mixed level of engagement

7. Conclusion

The publication of credible climate transition plans is increasingly seen as being an important signal by corporations to both their stakeholders and broader society about their commitments made to address the challenges posed by climate change. However, by contrast with TCFD reports, which are now mandatory in many countries, climate transition plans are still emerging as a voluntary reporting practice. This study provides evidence of the incidence, nature, and quality of transition plan reporting by both internationally large financial and control industrial firms. The study is based on a sample of publicly listed financial and industrial firms that are based on the Fortune Global 500 list, as well as qualitative analysis of globally large pension funds.

We find evidence to support the following predictions:

- The propensity of firms to voluntarily produce transition plans is strongly associated with their reputation-level quality of engagement with climate risk issues, as proxied by the CDP climate score, although this prediction is not supported for the control sample of industrial firms.
- We do not find any consistent evidence in support of national-cultural level influences related to institutional development over the propensity to produce transition plans, except for industrial firms.

- Fo both the full sample and sub-sample of financial firms, and even after controlling for both firm level and country level variables, a combination of EU and-or UK-based firms are significantly more likely to produce transition plans than non-UK and EU firms. However, this result is not supported by the control sub-sample of industrial firms.

Our findings lead to the following policy recommendations:

- UK and international regulatory authorities should oblige globally large and politically visible firms to publicly produce credible transition plans in compliance with the GFANZ and/or TPT frameworks. We note that the ITPN, which was launched at COP 29, is a step towards this goal.
- There remain significant inconsistencies between the general principles based on the GFANZ framework and more specific TPT guidance. Therefore, the required form and content of the transition plans should be standardised to remove these differences and be made consistent across both national, inter-national and global standards. We note that the IFRS, by adopting both the TPT and the TCFD disclosure recommendations, is a step towards this goal.
- The UK corporate governance code should be amended so that UK firms are obliged to recognise climate risks and their actions taken to address these as part of their “principle risks” statement in compliance with the FRC guidance, and also indicate whether or not they have prioritised this issue through the appointment of a “Chief Sustainability Officer”, and-or other specifically responsible senior management role with a clear and definitive line of accountability to a relevant and nominated committee that oversees such issues as part of the broader organisational structure.
- There is a need to broaden the concept of “transition plans” to go beyond just climate-specific related issues to more broadly address aspects related to nature and “just transition” issues. There are

currently ongoing developments within the international space, including both the TNFD and recently established Task force on Inequality and Social-related Financial Disclosures (TISFD) to address these issues, which have not been addressed in this paper. However, we also note that there have been recent geo-political developments, which appear to either hinder, prohibit, or otherwise discourage globally powerful financial institutions and industrial organisations to address these issues. This is therefore an important limitation of our research findings.

Further research could extend our study in a number of ways. Firstly, our research has been limited in scope to examining globally large firms that are publicly listed stock exchanges. Second, our analysis is limited to studying only climate-related transition plans and does not address the emerging regulatory developments related to extending transition planning beyond climate to incorporate issues related to the “just transition” and nature / biodiversity loss considerations.

List of References

Abraham and P. Shrives (2014). Improving the Relevance of Risk Disclosure in Corporate Annual Reports. *British Accounting Review* 46(1): 91-107.

Babcock, A, A. He and V. Ramani (2022). Building Investor Trust in Net Zero. Journal of Applied Corporate Finance.34:2. 1-15.

Bebbington, A. Larrinaga and J. Moneva (2008). Corporate social reporting and reputation risk management Accounting, Auditing & Accountability Journal Vol. 21 No. 3, 2008 pp. 337-361

CDP (2023). *CDP Technical Note: Financial Services Transition Plans and Net Zero Commitments.*

---- (2024) The state of play: 2023 climate transition plan disclosure.

CFA Institute (2007). The seven kinds of asset owners. Boston: CFA Institute.

Chanon, R., L. Hababheh, P. Klumpes and S. Mann (2025). Operational Resilience: Practical Guidance. British Actuarial Journal. (Forthcoming).

D. Dey, L. Richards, M. Arora, E. Boyle, R. Bryson, S. Jackman, V. Patel and C. Shirazi (2024). Overview of climate disclosures Current disclosure frameworks and regulations. British Actuarial Journal (2024), Vol. 28, e13, pp. 1–17.

Dong, M., and A. Stettler (2011). Estimating Firm-Level and Country-Level Effects in Cross-Sectional Analyses: An Application of Hierarchical Modeling in Corporate Disclosure Studies. *International Journal of Accounting* 46(3) 271-303.

European Commission (2022). Directive (EU) 2022/2464 "*Corporate Sustainability Reporting Directive*" Brussels: EU.

----- (2024). Directive ((EU) 2024/1760 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859-Brussels: EU.

EFRAG (2022). European Sustainability Reporting Standard (ESRS) *E1 Climate Change*. Brussels: EFRAG.

------ (2022b)-. European Sustainability Reporting Standard (ESRS) *E4 Biodiversity and Ecosystems*. Brussels: EFRAG.

Fombrun, C. (1996). *Reputation: Realizing Value from the Corporate Image*. Boston; Harvard Business Press.

Gibson, R., S. Glossner, P. Krueger, P. Matos, and T. Steffen. 2022. Do responsible investors invest responsibly? *Review of Finance* 26 (6): 1585–1633.

Glasgow Financial Alliance for Net Zero (GFANZ). (2022). *Financial Institution Net-Zero Transition Plans: Fundamentals, Recommendations, and Guidance*. Glasgow: GFANZ.

Global Resilience Index Initiative (GRII) (2023). Aligning Finance with Adaptation and Resilience Goals - Targets and Metrics for Financial Institutions: Technical Note.

Herzig, S. and S. Schaltegger (2014). Corporate Sustainability Reporting, in Godemann, J. and Michelsen, G. (Eds) (2011): Sustainability Communication: Interdisciplinary Perspectives and Theoretical Foundations, Springer, Dordrecht.

House of Commons Environmental Audit Committee (UK) (2018). *Greening Finance: Embedding Sustainability in Financial Decision Making*. London: House of Commons.

Hope, O.K. (2003). Firm-level Disclosures and the Relative Roles of Culture and Legal Origin. *Journal of International Financial Management and Accounting* 14(3): 218-248.

Institutional Investors Group on Climate Change (IIGCC) (2022). Working Towards a Climate Resilience Investment Framework: A Discussion Paper.

IFRS Sustainability. (2022). IFRS Sustainability Disclosure Standard *IFRS S2 Climate-Related Disclosures*. London: IFRS.

Jaggi, B., and P. Low (2000). Impact of Culture, Market Forces and Legal System on Financial Disclosures, *International Journal of Accounting* 35(4): 495-519.

Judge, W. T. Douglas and A. Kutan (2008). *Institutional Antecedents of Corporate Governance Legitimacy Journal of Management* 34: 765-785.

Just Transition Centre (2017). *Just Transition: A Report for the OECD*.

Kaufmann, D. and A. Kraay (2023). Worldwide Governance Indicators, 2023 Update (www.govindicators.org), Accessed on 10/19/2023.

Kim, S., and A. Yoon. 2023. Analysing active fund managers' commitment to ESG: Evidence from the United Nations Principles for Responsible Investment. *Management Science* 69 (2): 741-758.

Klumpes, P.J.M. and S. Gandotra (2024). Are We Walking the Talk? *The Actuary*. May.

--------, M. Acharyya, G. Kakar and E. Sturgess (2019). Climate risk reporting practices by UK insurance companies and pension schemes, *British Actuarial Journal* 24-30: 1-32.

-------., **K. Eleftheriou and J.L. Christensen** (2024). *Climate change transparency by European pension funds: A trusteeship theory explanation*. Working Paper.

Labour Party (UK) (2024). Manifesto.

Liang, H. and Renneboog, L., 2020. The global sustainability footprint of sovereign wealth funds. *Oxford Review of Economic Policy*, 36(2), pp.380-426.

OECD (2017*). Investing In Climate, Investing in Growth*. Paris: OECD.

Net-Zero Asset Owner Alliance (NZAOA) (2023a). *Elevating Asset Manager Net Zero Engagement Strategies: A Foundation for Asset Owner Expectations of Asset Managers.*

----- (2023b). *Policy Engagement Guidelines.*

Principles for Responsible Investment (2023). Investing for Economic Transition: The Case for Whole of Government Policy Reform: White Paper.

Raghunandan, A. and S. Rajgopal. 2022. Do ESG funds make stakeholder-friendly investments? *Review of Accounting Studies* 27 (3): 822-863.

Science Based Targets. (SBTI) (2022). *Financial Sector Science-Based Targets Guidance. Version 1.1.*

---- (2024a)- Financial Institutions' near-term criteria Version 2.0

------ (2024b) Draft Financial Institutions Net Zero *(FINZ) Standard Consultation Draft 1.0

Schieman, F. and A. Sakhel. (2019). Carbon Disclosure, Contextual Factors, and Information Asymmetry: The Case of Physical Risk Reporting *European Accounting Review,* 28(4), 791-818.

Task Force on Climate-Related Financial Disclosures (TCFD) (2017). *Recommendations of the Task Force on Climate-related Financial Disclosures.* London: TCFD.

Taskforce on Nature-Related Financial Disclosures (2023a). *Executive Summary of the Recommendations of the TNFD*.

------ (2023b). *Additional Guidance for Financial Institutions.*

Task force on Inequality and Social-related Financial Disclosures (TISFD) (2024). TISFD An Introduction. London: TISFD.

Thinking Ahead Institute (2019a). *World's Largest Asset Owners.*

----- (2019b). Wor*ld's Largest Asset Managers.*

Thurley, D. (2021) *Pension scheme investments and climate change*, House of Commons Library, 7 October 2021.

Transition Planning Taskforce (2023). Disclosure Framework. London: TPT

------. (2024a). *Asset Owners Sector Guidance*. London: TPT.

------. (2024b). *Asset Managers Sector Guidance*. London: TPT.

------. (2024c). *Sector Summary*. London: TPT.

------. (2024d). *Banks Sector Guidance*. London: TPT

------. (2024e). Metals and Mining Sector Guidance. London: TPT.

------. (2024f). Oil and Gas Sector Guidance. London: TPT.

------. (2024g). Electric Utilities and Power Sector Guidance. London: TPT.

------. (2024h). Food & Beverage Sector Guidance. London: TPT.

--------. (2024i). Final Report. London: TPT.

United Nations (2015). *Paris Agreement*.

------. (2022). *Kunming-Montreal Global Biodiversity Framework*.

WWF-UK. (2020). *Climate Adaptation Guidance for Asset Owners: Risk Mitigation and Opportunity Realization.* London: WWF-UK.

------. (2023). *Nature in Transition Plans: Why and How?* London: WWF-UK.

APPENDIX A

OVERVIEW OF TRANSITION PLAN TASKFORCE RECOMMENDATIONS

SUMMARY OF THE TPT DISCLOSURE FRAMEWORK (TPT, 2023, p. 21)

“Building on the definition and principles set out, the TPT has drawn on the transition plan components identified by GFANZ to set out the five key Elements of a good practice transition plan.

1. Foundations: An entity shall disclose the Strategic Ambition of its plan. This shall comprise the entity's objectives and priorities for responding and contributing to the transition towards a low GHG emissions, climate-resilient economy, and set out whether and how the entity is pursuing these objectives and priorities in a manner that captures opportunities, avoids adverse impacts for stakeholders and society, and safeguards the natural environment. Under this element, an entity should also disclose the high-level implications that this transition plan will have on its business model and value chain, as well as the key assumptions and external factors on which the plan depends.

2. Implementation Strategy: An entity shall disclose the actions it is taking within its business operations, products and services, and policies and conditions to achieve its Strategic Ambition, as well as the resulting implications for its financial position, financial performance, and cash flows.

3. Engagement Strategy: An entity shall disclose how it is engaging with its value chain, industry peers, government, public sector, communities, and civil society to achieve its Strategic Ambition.

4. Metrics & Targets: An entity shall disclose the metrics and targets that it is using to drive and monitor progress towards its Strategic Ambition.

5. Governance: An entity shall disclose how it is embedding its transition plan within its governance structures and organisational arrangements to achieve the Strategic Ambition of its transition plan.”

The TPT (2023) also recommends that entities follow three guiding principles – Ambition, Action and Accountability – in designing their climate transition plan. A transition plan should clearly articulate an entity’s Strategic Ambition, comprising its objectives and priorities for responding and contributing to the transition towards a low-GHG emissions, climate-resilient economy.

In setting its Strategic Ambition, the TPT recommends that an entity take a strategic and rounded approach, considering three inter-related channels:

1. Decarbonising the entity by reducing its GHG emissions in its own operations and in its value chain.

2. Responding to the entity’s climate-related risks and opportunities, including its ambitions and actions to enhance its resilience to the changing climate and responding to climate-related risks and opportunities.

3. Contributing to an economy-wide transition, for example by providing products and services needed to embed and accelerate a transition to a low-GHG emissions and climate-resilient economy.

APPENDIX B

List of abbreviations

Below is a list of abbreviations used within this report.

Abbreviation	Explanation
AUM	Assets under management
BRSR	Business Responsibility and Sustainability Report
CCS	Carbon capture and storage
CDP	*formerly* the Carbon Disclosure Project
CSDDD	Corporate Sustainability Due Diligence Directive
CSR	Corporate Social Responsibility
CSRD	Corporate Sustainability Reporting Directive
EFRAG	European Financial Reporting Advisory Group
ESRS	European Sustainability Reporting Standards
GFANZ	Glasgow Financial Alliance for Net Zero
IFRS	International Financial Reporting Foundation
ISSB	International Sustainability Standards Board
OECD	Organisation of Economic Cooperation and Development
OGDC	Oil and Gas Decarbonization Charter
OLS	Ordinary Least Square
NZAM	Net Zero Asset Managers initiative
PRI	Principles for Responsible Investment
SBTi	Science-Based Targets initiative
SBTN	Science Based Targets Network
TCFD	Taskforce on Climate-related Financial Disclosures
TISFD	Task force on Inequality and Social-related Financial Disclosures
TNFD	Taskforce on Nature-related Financial Disclosures
TPT	Transition Planning Taskforce

APPENDIX C

Analysis of Transition Plan reporting by Largest UK Pension Plans

The public legality of the UK pension plans to provide transition plans has been subject to political debate and remains an unresolved public policy issue. Thurley (2021) documents the previous unsuccessful political efforts to require UK pension funds to provide transition plans, as noted below.

"*Jonathan Reynolds moved an amendment that would enable regulations to: mandate occupational pension schemes to develop a strategy for ensuring that their investments and stewardship activities are aligning with the Paris agreement goals and include an objective of achieving net-zero greenhouse gas emissions by 2050 or sooner. He said this would not "enforce or mandate pension funds to be net zero" but rather "ensure that they have an investment strategy, including a stewardship strategy, that is consistent with those objectives." The amendment had been developed and backed by a whole host of organisations across the public and private sectors. Responding, Mr Opperman said it was the wrong way forward. It would "direct investment, breach fiduciary duties and lead to divestment and negative outcomes." The Opposition amendment was defeated on division by 356 to 256 votes.*

Subsequently, the UK labor party, as part of its political manifesto, committed a future labor government to impose "credible transition plans" (UK Labour Party Manifesto, Autumn 2024).

In order to provide some evidence on the incidence and quality of climate transition plan reporting by UK pension plans, an analysis was undertaken of the original 25 largest UK pension plans as identified by the House of Commons Green Financing report in 2018, which obliged their trustees to provide a public disclosure as to the nature and extent of their engagement with climate reporting. Pension funds were ranked from "less engaged", through to "engaged" or "more engaged".

We further analysed how the 25 largest UK pension funds engage with "net zero" and transition plan reporting.

The analysis first eliminated 7 of these pension schemes which had either subsequently merged with other pension schemes, or for which no publicly available information was provided. Of the remaining 18 pension schemes, only three provided statements concerning how their management planned to specifically address climate change. None of these statements followed the relevant TPT recommendations. We estimate that only 20% of the GBP 462 billion in total assets under management of the largest UK pension funds involve a ny form of transition plan. Less than two-thirds of the largest UK pension funds committed to a net zero plan by 2050.

Institute
and Faculty
of Actuaries

London

1-3 Staple Inn Hall · High Holborn · London · WC1V 7QJ
Tel: +44 (0) 20 7632 2100 · Fax: +44 (0) 20 7632 2111

Edinburgh

Space · 1 Lochrin Square · 92-94 Fountainbridge · Edinburgh · EH3 9QA

Tel: +44 (0) 20 7632 2100

Oxford

1st Floor · Park Central · 40/41 Park End Street · Oxford · OX1 1JD
Tel: +44 (0) 1865 268 200 · Fax: +44 (0) 1865 268 211

Beijing

Level 14 · China World Office · No.1 Jianguomenwai Avenue · Chaoyang District · Beijing, China 100004
Tel: + +86 (10) 6535 0248

Hong Kong

1803 Tower One · Lippo Centre · 89 Queensway · Hong Kong
Tel: +11 (0) 852 2147 9418

Singapore

5 Shenton Way · UIC Building · #10-01 · Singapore · 068808
Tel: +65 8778 1784

www.actuaries.org.uk