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Private Companies: The Missing Link on The Path to Net Zero

Law Working Paper N° 635/2022
July 2022

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Abstract

Global consensus is growing on the contribution that corporations and finance must make towards the net-zero transition in line with the Paris Agreement goals. However, most efforts in legislative instruments as well as shareholder or stakeholder initiatives have ultimately focused on public companies. This article argues that such a focus falls short of providing a comprehensive approach to the problem of climate change. In doing so, it examines the contribution of private companies to climate change, the relevance of climate risks for them, as well as the phenomenon of brown-spinning (ie, the practice of public companies selling their highly polluting assets to private companies). We show that one cannot afford to ignore private companies in the net-zero transition and climate change adaptation. Yet, private companies lack several disciplining mechanisms that are available to public companies, such as institutional investor engagement, certain corporate governance arrangements, and transparency through regular disclosure obligations. At this stage, only some generic regulatory instruments such as carbon pricing and environmental regulation apply to them. The article closes with a discussion of the main policy implications. Primarily, we discuss and evaluate the recent push to extend climate-related disclosure requirements to private companies. These disclosures would not only help investors by addressing information asymmetry, but also serve a wide group of stakeholders and thus aim at promoting a transition to a greener economy.

Keywords: private companies, net-zero transition, climate-related disclosures, brown-spinning, climate change, private equity

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Alperen A. Gözlügöl* & Wolf-Georg Ringe†

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Global consensus is growing on the contribution that corporations and finance must make towards the net-zero transition in line with the Paris Agreement goals. However, most efforts in legislative instruments as well as shareholder or stakeholder initiatives have ultimately focused on *public* companies.

This article argues that such a focus falls short of providing a comprehensive approach to the problem of climate change. In doing so, it examines the contribution of *private* companies to climate change, the relevance of climate risks for them, as well as the phenomenon of brown-spinning (ie, the practice of public companies selling their highly polluting assets to private companies). We show that one cannot afford to ignore private companies in the net-zero transition and climate change adaptation. Yet, private companies lack several disciplining mechanisms that are available to public companies, such as institutional investor engagement, certain corporate governance arrangements, and transparency through regular disclosure obligations. At this stage, only some generic regulatory instruments such as carbon pricing and environmental regulation apply to them.

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I. INTRODUCTION

Climate change is currently one of the highest-ranking issues on the political and social agenda.[1] It is among the greatest existential risks facing humanity, and, even if the target of limiting global warming to an ultimate increase of 1.5°C is achieved, will still have an enormous impact on the world ecosystem.[2] Policies currently in place across the world are projected to only limit global warming to 2.7°C.[3] Accordingly, governments are increasingly introducing measures to achieve and accelerate the transition to a net-zero carbon economy in line with the Paris Agreement goals.[4]

Corporations are among the main contributors to climate change.[5] Recently, they have come under an intensifying spotlight and mounting pressure to adopt sustainable operations, most importantly by reducing their carbon footprint.[6] As well as the rising urgency expressed by the public and relevant stakeholders pushing against environmentally harmful activities, governments are contemplating and introducing various measures to put companies on a more sustainable path. Efforts in

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[1] In the EU, the European Green Deal presents an ambitious plan to be 'climate-neutral' by 2050 which includes a series of initiatives to protect the environment and boost the green economy. See https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en. In the US, the election of Joe Biden as the US president gave a new impetus to climate change adaptation and mitigation efforts. See, eg, https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.

[2] See in this regard Intergovernmental Panel on Climate Change, 'The Special Report on Global Warming of 1.5 °C' (2018) at https://www.ipcc.ch/sr15/. Scientists indicate however that few scenarios are left to limit global warming to 1.5°C. See L. Warszawski et al, 'All Options, Not Silver Bullets, Needed to Limit Global Warming To 1.5°C: A Scenario Appraisal' (2021) 16 *Environmental Research Letters* 1.

[3] See https://climateactiontracker.org/global/temperatures/.

[4] The Paris Agreement's goal is to limit global warming to well below 2°C, preferably to 1.5°C above pre-industrial levels. Currently 196 countries are parties to the Paris Agreement. See https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement#:~:text=The%20Paris%20Agreement%20is%20a,compared%20to%20pre%2Dindustrial%20levels.

[5] For example, a relatively recent report suggests that just 100 companies have been behind more than 70 per cent of the greenhouse gas emissions since 1988. See 'The Carbon Majors Database CDP Carbon Majors Report 2017', 8 at https://www.cdp.net/en/articles/media/new-report-shows-just-100-companies-are-source-of-over-70-of-emissions [hereinafter Carbon Majors Report 2017]. See also R. Heede, 'Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010' (2014) 122 *Climatic Change* 229 (tracing 63 per cent of cumulative worldwide emissions to 90 'carbon majors').

[6] For instance, very recently, Royal Dutch Shell, a carbon major, was ordered by a Dutch court to drastically deepen its reduction of carbon emissions and bring itself in line with the Paris Agreement goals. The judgement's English version is available at https://uitspraken.rechtspraak.nl/inziendocument?id=ECLI:NL:RBDHA:2021:5339&showbutton=true&keyword=2021%3a5339.

this regard range widely from transparency measures to corporate governance arrangements, and to direct regulation of business operations.

Yet, the focus of these efforts seems to be largely on public companies, meaning those whose shares are listed for trading on a public stock exchange ('listed' or 'publicly traded' companies).[7] Clearly, public companies are major operations, some of them being the locomotives of the national economies and among the largest employers and players in the relevant industry, and thus draw much attention from investors, media, and other stakeholders when they impose environmental externalities. Business law scholarship also focuses on public companies when addressing sustainability questions. Private companies, however, do not receive significant attention in the policy discourse. Moreover, as they are private, they lack the transparency provided in the context of a capital market. Yet, if the aim is to achieve a speedy transition to a net-zero carbon economy with the help of companies reducing their carbon footprint to acceptable levels, one cannot afford to ignore private companies. In most jurisdictions across the world, private companies form a major part of the economy and conduct extensive business operations.[8] The share of the largest 'private' companies is rising as potential high-growth companies abandon listing as part of their strategic planning and as some companies that are already public go private.[9] This increasing concentration of economic value in private

[7] The term 'public companies' may have a broader meaning, for example, indicating those with freely tradable shares. See J. Armour, H. Hansmann, R. Kraakman and M. Pargendler, 'What is Corporate Law?' in R. Kraakman et al (eds), *The Anatomy of Corporate Law: A Comparative and Functional Approach* (Oxford: OUP, 2017) 10–11.

[8] See, eg, J. Asker, J. Farre-Mensa and A. Ljungqvist, 'Corporate Investment and Stock Market Listing: A Puzzle?' (2015) 28 *The Review of Financial Studies* 342, 345 (finding that 'private firms form a substantial part of the U.S. economy. We estimate that in 2010, private U.S. firms accounted for 52.8% of aggregate nonresidential fixed investment, 68.7% of private-sector employment, 58.7% of sales, and 48.9% of aggregate pretax profits. Nearly all of the 5.7 million firms in the United States are private (only 0.06% are listed), and while many are of course small, private firms predominate even among the larger ones: in 2010, for example, 86.4% of firms with 500 or more employees were privately held.').

[9] See, eg, R. M. Stulz, 'Public Versus Private Equity' (2020) 36 *Oxford Review of Economic Policy* 275 (stating that there has been a sharp decline in public equity in the last 20 years or so, and presenting 'a framework that explains the forces that cause the listing propensity of firms to change over time.'); C. Doidge et al, 'Eclipse of the Public Corporation or Eclipse of the Public Markets?' (2018) 30 *Journal of Applied Corporate Finance* 8 (arguing that we are witnessing 'an eclipse […] of the public markets as the place where young firms with mostly intangible capital seek their funding.').

companies has also recently attracted notable attention in the literature from a governance perspective[10] and in the media in terms of opacity.[11]

Private companies also impose significant externalities on the environment. Some of them are industry leaders in their regions or even worldwide, operating in climate-relevant sectors. Some are smaller in size in comparison to their public counterparts, but are operating in carbon-intensive sectors and are still high emitters. Overall, private companies' contribution to climate change can be so significant that the exclusive focus on public companies is somewhat ignorant and not warranted.[12]

Furthermore, there has been a concerning recent phenomenon known as *brown-spinning* whereby public companies sell their carbon-intensive assets to players in private markets (including private equity firms and hedge funds). This helps divesting companies to reduce their *own* emissions but does not result in any overall emission reduction in the atmosphere. Granted, the buyers may (better) decarbonise these assets and re-sell them (eg through an IPO). But, having carbon-intensive assets going dark where they are not subject to the usual strict scrutiny of public markets is worrisome from the perspective of achieving climate targets.

Another reason why we need to be concerned about private companies is their exposure to climate-related (financial) risks. As two types of systematic risk, *transition* risks and *physical* risks are also major threats for private companies. It is important that private companies monitor and manage these risks for financial stability and

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[10] See, eg, R. P. Bartlett and E. Talley, 'Law and Corporate Governance' in B. E. Hermalin and M. S. Weisbach (eds), *The Handbook of The Economics of Corporate Governance* (Elsevier, 2017) 185-186 ('Th[e] increasing concentration of economic value in private companies poses something of a challenge for corporate governance scholars, both empirically and theoretically […] To the extent this trend continues, the study of governance in privately held firms is likely to become more critical to important policy debates.').

[11] See, eg, L. Barber, 'Too Big to Fail: FT Editor Lionel Barber on The Future of Financial Journalism' *Financial Times* 23 November 2018 at https://www.ft.com/content/d2a3e50e-ef07-11e8-89c8-d36339d835c0 ('private companies and markets are, by definition, much more opaque and therefore difficult to report on. Holding these private companies and markets to account will be very hard.').

[12] A strand of literature shows that public firms may still be worse sustainability performers. See in this regard, S. E. Shive and M. M. Foster, 'Corporate Governance and Pollution Externalities of Public and Private Firms' (2020) 33 *The Review of Financial Studies* 1296, 1298 (finding that 'private independent firms emit less than do comparable public firms, whereas there is no strong difference between sponsor-backed private firms and public firms.'). See also J. Li and Di (Andrew) Wu, 'Does Corporate Social Responsibility Benefit Society?' (Ross School of Business Working Paper No. 1335, February 2017) at https://deepblue.lib.umich.edu/handle/2027.42/136092. Cf R. De Haas and A. Popov, 'Finance and Carbon Emissions' (ECB Working Paper Series No. 2318, September 2019) at https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2318~44719344e8.en.pdf (finding that CO2 emissions per capita are lower in economies that are more equity-funded than in more credit-dependent economies).

broader macroeconomics concerns even if this would not considerably affect financial market participants.

Best indicating the chasm between public and private companies, sustainability disclosures so far in place have traditionally applied only to the former, with no or only limited coverage of private companies. This is inconsistent with the aim of policymakers using disclosure as a tool to promote a transition to a greener economy via utilizing transparency and stakeholder pressure. In our framework, we distinguish climate-related disclosures that are relevant for investors, and those which are for a broader group of audience (including employees, consumers, civil society etc.). In this framework, the latter type of disclosure needs to be decoupled from a securities regulation paradigm that focuses on public companies. If disclosure is to be used not only to overcome investors' information asymmetries on public markets, but also to promote a net-zero transition, then these disclosures should (also) be mandatory for (certain) private companies which must report on environmental impacts (including emissions), sustainability performance through metrics, and relevant targets and strategy. Indeed, perhaps upon realization of this inconsistency, policymakers in the UK and the EU have recently made certain steps to require a sort of climate-related disclosure from some private companies. In the US, this remains so far totally absent. Against this background, we discuss and evaluate certain benefits of sustainability disclosures from private companies that are relevant for the decarbonisation of the economy, such as providing a certain impetus to improve their environmental record as well as offering a fuller and better picture regarding the path to net-zero.

Overall, this article investigates the role of private companies within the framework of sustainability efforts, most importantly in the context of climate change. Specifically, it highlights the externalities imposed by private companies on the environment and the phenomenon of brown-spinning. **Section II** exemplifies in detail how some major private companies have large carbon footprints and demonstrates the available evidence on greenhouse gas (GHG) emissions by private companies. It explains brown-spinning in further detail and examines the question of why climate-related risks are relevant for private companies. Currently, compared to public companies, there is a lack of attention, transparency, and discipline for private companies with regards to pursuing more sustainable activities. **Section III** highlights this contrast and points to the sources and contexts from which this discrepancy emanates. Despite this divergence between public and private companies, the latter are not entirely free of constraints in their operations. **Section IV** presents current controls on the externalities imposed by private companies and examines the extent to which they can be effective. **Section V** discusses the relevant policy options for the issues discussed in the previous sections and potential ways forward. Finally, the last section concludes.

II. THE RELEVANCE OF PRIVATE COMPANIES TO CLIMATE CHANGE MITIGATION AND ADAPTATION

It would be apt to begin by exploring the relevance of private companies for climate change mitigation and adaptation. As we show in this section, private companies make a substantial contribution towards climate change that one cannot afford to disregard. Private companies also buy highly-polluting assets from public companies that increasingly divest these assets because of climate action and pressure. Private companies are also relevant to climate change adaptation when it comes to macroeconomic and financial stability concerns.

a. Contribution of private companies to environmental externalities, especially climate change

GHG emissions mainly come from energy use in industry, transport & buildings, direct industrial processes, waste, agriculture, and the use of forestry and land.[13] These emissions are generally categorised into the following three groups: (i) **scope 1 emissions** that relate to direct emissions from the company's own or controlled sources; (ii) **scope 2 emissions** that include indirect emissions from energy, heat, and steam use; and (iii) **scope 3 emissions** that encompass all other indirect emissions that occur in the value chain of a company (including its suppliers).[14] Private companies are very active in all of these sectors. To illustrate this point, the table below presents the main sectors relevant to GHG emissions and indicates examples of several prominent and large private companies from around the world operating in those sectors, with an explanation of their carbon footprint (ie how they (potentially) emit GHG directly (scope 1) or indirectly (scope 2)).[15] Many of them are included in the 2021 Fortune Global 500 list, an annual ranking of the top 500 corporations worldwide measured by global revenue.[16]

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[13] See H. Ritchie and M. Roser, 'CO_2 and Greenhouse Gas Emissions' at https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions.

[14] These definitions emanate from Greenhouse Gas Protocol which is overwhelmingly used by companies to report their emissions. For more detail, see The Greenhouse Gas Protocol, 'A Corporate Accounting and Reporting Standard', 25 at https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

[15] The table does not indicate the sources of 'scope 3' emissions.

[16] See https://fortune.com/global500/.

Sector	Companies (examples)	Emissions
Oil & Gas and Utilities	Hilcorp, Energy Capital Partners, EPH	(direct) fugitive emissions from oil & gas exploration and transportation; energy-related (indirect) emissions from fuel exploration and extraction; and direct emissions from fuel combustion
Energy & Commodity Trading	Vitol, Trafigura*, Mercuria, Gunvor	(direct) emissions from transportation of fuels and commodities through shipping, pipelines etc.; fugitive (direct) emissions from energy transportation; and emissions from refineries
Iron & Steel	Riva Group, Celsa Group, Liberty Steel, Dillinger, Moravia Steel	(direct) emissions from the production of iron & steel; and energy-related (indirect) emissions from the same source
Construction	Bechtel	energy-related (indirect) emissions from construction & (direct) emissions as a by-product of cement production
Transport	MSC Mediterranean Shipping Company, CMA CGM*	(direct) emissions because of burning of fossil fuels during maritime freight trips
Chemical Industry	Koch Industries, Ineos, Heraeus*, Boehringer Ingelheim*, Hengli*, Amer International*	energy-related (indirect) emissions from the manufacturing of fertilizers, pharmaceuticals, refrigerants, oil and gas extraction, metals, paper, and pulp etc.; and (direct) emissions as a by-product of chemical processes
Agriculture & Food	Cargill, Lactalis, Louis Dreyfus*, CHS*	energy-related (indirect) emissions from food processing (and the food system as a whole) and energy use in agriculture; (direct) emissions as a by-product of decomposition of

		organic matter and residues from animals and plants; and (direct) emissions from various practices in agriculture, land use, and forestry
Manufacturing	Bosch*, Huawei*, ZF Friedrichshafen*, IKEA	energy-related (indirect) emissions from the production of machinery, wood products, transport equipment, etc.

Table 1: Major private companies in climate-relevant sectors
* Included in the 2021 Fortune Global 500 list

A few data sources further indicate that private companies impose substantial environmental externalities that would not justify an exclusive focus on public companies on the path to net-zero. According to a report by the Carbon Disclosure Project (CDP) from 2017, nine out of 100 (9 per cent) active fossil fuel producers that are linked to 71 per cent of industrial GHG since 1988 are private companies.[17] This number increases to 11 per cent when 224 fossil fuel extraction companies are taken into account for the year of 2015.[18] Furthermore, based on an MSCI report, the carbon intensities of a private company set and a public company set in *carbon-intensive* sectors (utilities, energy, and materials) are quite close.[19]

Some private companies are relatively large and among the largest emitters in their sector/industry. For example, MSC Mediterranean Shipping Company,

[17] Carbon Majors Report 2017, n 5 above, 8. A CDP database of 100 extant fossil fuel producers ('carbon majors') include 16 privately-owned companies. *ibid*, 5.

[18] *ibid*, 10. Cf 'Global 500 Greenhouse Gases Performance 2010-2015 - 2016 Report On Trends' at https://www.aiag.org/docs/default-source/corporate-responsibility/global-500-greenhouse-gases-performance-2010-2015.pdf?sfvrsn=2422429d_0 (featuring no private company in the top 100 companies ranked in order of size of GHG footprint).

[19] See M. Shakdwipee (Head of Climate Change Research in ESG research at MSCI), 'Understanding Carbon Exposure in Private Assets' (14 October 2021) at https://www.msci.com/www/blog-posts/understanding-carbon-exposure/02796011861 (explaining and providing the methodology and data). The overall private company set has much lower carbon intensity compared to the public company set, ~172.8 of CO2e per USD million of revenue and ~249.1 CO2e per USD million revenue respectively, because of the lower exposure of the private company set to carbon-intensive sectors. See *ibid*. We calculated the carbon intensity of two different sets for *only* carbon-intensive sectors by multiplying this ratio (GHG to revenue) by the percentage of emissions and revenues incurred only in carbon-intensive sectors, resulting in the carbon intensities of ~955.3 of CO2e per USD million of revenue and ~996.4 of CO2e per USD million of revenue for the private and public company set respectively.

currently the world's largest container shipping group,[20] is a private company. According to the European Federation for Transport and Environment, however, it tops the emissions ranking among its peers in the industry, and would be sixth in the EU's top polluters in 2020.[21] In the energy & commodity trading industry that specialises in the brokerage of oil, gas, and petroleum, apart from Glencore, the largest players are all held privately, namely, Vitol, Trafigura, Gunvor, Mercuria.[22] In the agricultural industry where the top five meat and dairy companies combined emit more GHG than carbon majors such as ExxonMobil, Shell, and BP, the third- and fourth-highest emitters are privately-held: Cargill and Dairy Farmers of America, Inc.[23] One of the top 10 electric power producers in the US, Energy Capital Partners, is a private company and also among the top 10 in CO2 emissions.[24]

Some private companies may also be small in size and operations in comparison to their public counterparts, but this does not mean that they emit less GHG. For example, Hilcorp Energy Co., a *private* oil and gas company in the US, is the largest methane[25] emitter in the country, reporting almost 50 per cent more methane emissions than the largest public counterpart, ExxonMobil.[26] For the other GHG

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[20] Christian Wienberg, 'Maersk Overtaken as World's No. 1 Shipping Line by MSC' *Bloomberg* 5 January 2022 at https://www.bloomberg.com/news/articles/2022-01-05/maersk-no-longer-world-s-no-1-shipping-line-as-msc-takes-lead#xj4y7vzkg.

[21] See Transport & Environment, 'Shipping company climbs ranking of Europe's top climate polluters' (6 July 2021) at https://www.transportenvironment.org/discover/shipping-company-climbs-ranking-of-europes-top-climate-polluters/; 'Biggest polluters in the European Union in 2020' (Statista) at https://www.statista.com/statistics/1130785/biggest-polluters-european-union/. See also Harry Dempsey, 'MSC commits to net zero by 2050' *Financial Times* 15 September 2021 at https://www.ft.com/content/91a27f7e-3d3c-4161-a5f5-a67517a64c2e (reporting that the CEO of MSC declined to specify a net-zero target, calling it a 'nice thing' but then MSC also committed to net zero by 2050 like its public peers).

[22] See also D. Gordon, *No Standard Oil: Managing Abundant Petroleum in A Warming World* (Oxford: OUP, 2022) 145 (stating that '[g]lobal oil and gas commodity traders are some of the most mysterious corporations in the world […] Addressing climate change is not their stated priority, although a couple acknowledge the importance of the issue.').

[23] See Institute for Agriculture & Trade Policy and GRAIN, 'Emissions Impossible: How Big Meat and Dairy Are Heating Up the Planet' (18 July 2018), 5 and 22 at https://www.iatp.org/emissions-impossible. The top 20 meat and dairy companies combined emit more GHG than Germany, Canada, Australia, the UK, or France. *ibid*, 6 and 22. There are 9 private companies in this top 20.

[24] See C. Van Atten et al, 'Benchmarking Air Emissions: of the 100 Largest Electric Power Producers in the United States' (July 2021), 9 and 14 at https://www.ceres.org/resources/reports/benchmarking-air-emissions-100-largest-electric-power-producers-united-states-2021.

[25] Methane is one of the greenhouse gases. Although it remains in the atmosphere for a shorter time, it has a 100-year global warming potential 28-34 times that of CO2. See https://unece.org/challenge.

[26] See H. Tabuchi, 'Here Are America's Top Methane Emitters. Some Will Surprise You' *The New York Times* 2 June 2021 at https://www.nytimes.com/2021/06/02/climate/biggest-methane-

emissions, Hilcorp is only slightly edged out by ExxonMobil, with this pair taking second and first place respectively.[27] Hilcorp is not an outlier though. In the top 10 methane emitters in the US, there are in total five private companies: Hilcorp (1st), Terra Energy Partners (4th), Flywheel Energy (7th), Blackbeard Operating (8th), and Scout Energy (9th).[28] A cursory look at the website of these companies reveals that they neither report their environmental impact nor do they have any climate strategy and targets. Remaining with other GHG emissions, there are six private companies in the top 20: Hilcorp (2nd), Terra Energy Partners (12th), Bruin E&P Partners (15th), WPX Energy (17th),[29] Blackbeard Operating (18th), and Scout Energy (19th).[30]

In Europe, a recent report by the German Emissions Trading Authority shows that five of the top ten polluting power plants are owned by a private company. For example, LEAG, a private company, owns four of the highest-emitting power plants in Germany,[31] which in national terms is the highest emitter in the EU itself (these four installations are also among the highest emitters in the EU).[32] Its half-owner, EPH, a Czech private company, has been among the top three emitters under the EU emissions trading scheme since 2016.[33]

Furthermore, relatively small private companies are becoming larger by increasingly buying up high-polluting assets from public big players which come under mounting pressure to decrease their GHG emissions – a phenomenon we closely examine below.

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emitters.html. See also Clean Air Task Force and Ceres, 'Benchmarking Methane and Other GHG Emissions of Oil & Natural Gas Production in the United States' (June 2021), 23 at https://www.catf.us/resource/benchmarking-methane-emissions/ (hereinafter 'Benchmarking Methane and Other GHG Emissions Report').

[27] Benchmarking Methane and Other GHG Emissions Report, n 26 above, 23.

[28] *ibid*.

[29] Although in the reporting year this company was private, in 2021, it merged with Devon Energy, which is a public company. See https://www.devonenergy.com/news/2021/Devon-Energy-and-WPX-Energy-Complete-Merger-of-Equals-Transaction.

[30] Benchmarking Methane and Other GHG Emissions Report, n 26 above, 23.

[31] For the report, see Deutsche Emissionshandelsstelle, 'Greenhouse Gas Emissions in 2021 – Executive Summary: Stationary Installations and Aviation Subject to Emissions Trading in Germany (2021 VET report)' (May 2022), 6 at https://www.dehst.de/SharedDocs/downloads/EN/publications/2021_VET-Report_summary.pdf?__blob=publicationFile&v=2 (Lausitz Energie Kraftwerke AG (LEAG) owns the third, fourth, sixth and seventh highest emitting power plants, which is in turn owned by EPH, a Czech private utility company, and PPF Investments, a private equity firm; on the ownership, see https://www.leag.de/de/unternehmen/).

[32] See https://ember-climate.org/insights/research/top-10-emitters-in-the-eu-ets-2021/. On the EU Member States' GHG emissions, see EEA greenhouse gases – data viewer (13 April 2021) at https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer.

[33] See Carbon Market Data Press Releases on the EU ETS Company Rankings at https://carbonmarketdata.com/en/news.

b. The phenomenon of brown-spinning

Another cause of concern with regard to private companies' environmental footprint and performance is the phenomenon of brown-spinning. This refers to the trend whereby public companies divest their carbon-intensive assets by selling them to private players. This represents a convenient way of reducing GHG emissions and achieving emissions reduction targets for public companies, which are subject to increasing scrutiny from various stakeholders including investors, regulators, and the public.

Although divestment of carbon-intensive assets helps public companies to reduce emissions attributable to them, it brings no overall reduction in the GHG emissions related to these assets. This can create a false sense of security when listed carbon majors under the spotlight appear to reduce their emissions, but the divested assets operate in the same way under the ownership of private companies, including private-equity-backed firms. Increasingly, this phenomenon of brown-spinning is catching the attention of media, investors, and other stakeholders.[34] As *The Economist* put it in a recent issue: 'The first law of thermodynamics states that energy cannot be created or destroyed, just transferred from one place to another. The same seems to apply to the energy industry itself.'[35]

There are a few illustrative examples worth referring to here. ConocoPhillips, one of the carbon majors located in the US, reported a decrease of about 22 per cent in

[34] See, eg, H. Tabuchi, 'Private Equity Funds, Sensing Profit in Tumult, Are Propping Up Oil' *The New York Times* 13 October 2021 at https://www.nytimes.com/2021/10/13/climate/private-equity-funds-oil-gas-fossil-fuels.html; C. Taraporevala (Chief Executive of State Street Global Advisors), 'The Other Climate Risk Investors Need to Talk About' *Financial Times* 14 May 2021 at https://www.ft.com/content/c586e4cd-9fb7-47a3-8b43-3839e668fe3a; A. Raval, 'A $140bn Asset Sale: The Investors Cashing In On Big Oil's Push To Net Zero' *Financial Times* 6 July 2021 at https://www.ft.com/content/4dee7080-3a1b-479f-a50c-c3641c82c142; R. Adams-Heard, 'What Happens When An Oil Giant Walks Away' *Bloomberg* 15 April 2021 at https://www.bloomberg.com/graphics/2021-tracking-carbon-emissions-BP-hilcorp/; Catherine Boudreau, 'When Companies Go Green, The Planet Doesn't Always Win' *Politico* 30 March 2021 at https://www.politico.com/news/2021/03/30/companies-green-planet-doesnt-always-win-478460; V. Monga, 'One of the World's Dirtiest Oil Patches Is Pumping More than Ever' *Wall Street Journal* 13 January 2022 at https://www.wsj.com/articles/oil-sands-canada-dirty-carbon-environment-11642085980; 'Green Investors' Filthy Secret: The Truth about Dirty Assets' *The Economist* 12 February 2022 at https://www.economist.com/leaders/2022/02/12/the-truth-about-dirty-assets; Sustainable Fitch, 'Shifting Ownership Patterns of Fossil Fuel Assets and Decarbonisation' 25 May 2021 at https://www.sustainablefitch.com/insights/shifting-ownership-patterns-of-fossil-fuel-assets-decarbonisation/.

[35] See 'Who Buys the Dirty Energy Assets Public Companies No Longer Want?' *The Economist* 12 February 2022 at https://www.economist.com/finance-and-economics/who-buys-the-dirty-energy-assets-public-companies-no-longer-want/21807594.

its emissions in 2017.[36] What was largely behind this decrease was that ConocoPhillips had sold-off some of its oil and gas assets to Hilcorp Energy,[37] the private company (backed by the private equity giant, Carlyle) which is the highest methane emitter in the US.[38] Hilcorp recently also acquired Alaskan oil and gas assets from BP, a carbon major based in the UK.[39] In that year, BP also reported a substantial decrease in its GHG emissions, especially methane emissions.[40] This divestment accounted for a drop in emissions of more than five times the reduction BP achieved through operational improvements.[41] It is doubtful whether there has been any absolute reduction of emissions in the atmosphere although these divestments have clearly helped the seller companies. Statements from Hilcorp around the sale suggest that the aim is future production and development of the bought assets.[42] Hilcorp does not report on its GHG emissions in a meaningful way and does not have any net-zero target or strategy.[43]

On the other side of the Atlantic, similar deals can be observed. For example, Neo Energy, a UK private oil and gas company backed by the Norwegian private equity firm HitecVision, recently acquired some North Sea assets from public giants, ExxonMobil and TotalEnergies.[44] Neo Energy's CEO reacted as follows: 'NEO is well placed, together with its operating partners, to extract value from this and other opportunities, while at the same time focusing on improved environmental

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[36] ConocoPhillips, 'Sustainability Report' (2017), 13 at http://static.conocophillips.com/files/resources/18-0231-2017-sustainable-report.pdf

[37] 'Hilcorp Affiliate Finalizes San Juan Basin Assets Acquisition from ConocoPhillips' *Business Wire* 31 July 2017 at https://www.businesswire.com/news/home/20170731005947/en/Hilcorp-Affiliate-Finalizes-San-Juan-Basin-Assets-Acquisition-from-ConocoPhillips. ConocoPhillips' 2017 sustainability report concedes that '[a]sset dispositions had a large impact on our emissions in 2017.' See n 36 above.

[38] See notes 26–27 above and text thereto.

[39] 'BP completes sale of Alaskan oil and gas producing properties to Hilcorp Energy' *Reuters* 1 July 2020 at https://www.reuters.com/article/us-bp-divestiture-alaska-idUSKBN2426PP.

[40] BP Sustainability Report 2020, 34 at https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/sustainability/group-reports/bp-sustainability-report-2020.pdf (also conceding that that was due to the divestment of Alaskan assets).

[41] *ibid.* See also Adams-Heard, n 34 above.

[42] See n 37 above ('Hilcorp sees decades of future production and development in the basin.') and n 39 above ('We look forward to continuing to drive economic growth, create Alaskan jobs and contribute to local economies for decades to come').

[43] See https://www.hilcorp.com/esg/environmental/.

[44] See respectively, 'ExxonMobil Sells Bulk of UK North Sea Assets to Fast-Growing NEO Energy' *S&P Global* 24 February 2021 at https://www.spglobal.com/platts/en/market-insights/latest-news/oil/022421-exxonmobil-sells-bulk-of-uk-north-sea-assets-to-fast-growing-neo-energy and TotalEnergies Press Release, 'Total Closes the Sale of Non-Core UK Assets to NEO Energy' (6 August 2020) at https://totalenergies.com/media/news.

performance.'[45] Neo Energy seems to have an ESG sub-committee in place and indeed some (albeit weak) disclosure of its emissions as well as a low-key transition plan without however any rigorous climate targets and strategy.[46] Further examples include the UK-based Ineos which is a private company and the fourth-largest chemical company in the world.[47] It recently acquired Hess Corporation's oil and gas assets in Denmark.[48] Ineos also recently bought the global petrochemical business of BP.[49] Encouragingly, Ineos reports on its GHG emissions (but only scope 1 and 2) and recently also engaged with the CDP.[50] It also committed to net-zero emissions by 2050 but has no substantial interim targets yet.[51] Its net-zero strategy also depends significantly on carbon offsetting including carbon capture.[52] The credibility of climate strategy and targets is therefore a concern which is further aggravated by the lack of oversight from institutional investors as shareholders, unlike in their seller counterparts.[53]

Private – Public Transactions		Value ($)	Private-equity-backed	Year
Hilcorp Energy Co.	ConocoPhillips	3 billion	Yes	2017
Hilcorp Energy Co.	BP Plc	5.6 billion	Yes	2020
Neo Energy	ExxonMobil	1.3 billion	Yes	2021

[45] 'ExxonMobil Sells Bulk of UK North Sea Assets to Fast-Growing NEO Energy', n 44 above.

[46] See https://www.neweuropeanoffshore.com/esg/.

[47] See A. H. Tullo, 'C&EN's Global Top 50 Chemical Firms for 2021' (26 July 2021) at https://cen.acs.org/business/finance/CENs-Global-Top-50-2021/99/i27.

[48] Ineos Press Release, 'INEOS Energy completes the acquisition of all oil and gas interests from HESS Corporation in Denmark' (30 August 2021) at https://www.ineos.com/news/ineos-group/ineos-energy-completes-the-acquisition-of-all-oil-and-gas-interests-from-hess-corporation-in-denmark/.

[49] Ineos Press Release, 'INEOS completes the acquisition of BP's global Aromatics & Acetyls business' (1 January 2021) at https://www.ineos.com/news/shared-news/ineos-completes-the-acquisition-of-bps-global-aromatics—acetyls-business/.

[50] See respectively Ineos, 2021 Sustainability Report, 37 at https://www.ineos.com/sustainability/sustainability-reports/ and https://www.cdp.net/en/responses?utf8=%E2%9C%93&queries%5Bname%5D=Ineos (for the years of 2016, 2017, 2018, 2019 and 2020, Ineos did not participate in the CDP disclosure despite being called for).

[51] *ibid*, 38 (stating targets of GHG emissions reduction over 10% by 2025 and over 33% by 2030).

[52] *ibid.*

[53] See also Carbon Tracker Initiative, 'Absolute Impact 2021: Why oil and gas 'net zero' ambitions are not enough' (27 May 2021) at https://carbontracker.org/reports/absolute-impact-2021/ (stating that '[t]o drive real change, it's critical that companies have interim goals' and '[f]or company goals to be credible, they should not rely heavily on unproven technologies').

Neo Energy	TotalEnergies	635 million	Yes	2019
Ineos	Hess Corporation	150 million	No	2021
Ineos	BP Plc	5 billion	No	2021
Ineos	Ørsted A/S	1.3 billion	No	2017
Sabinal Energy LLC	Chevron Corp.	400 million	Yes	2017
Waldorf Production	Cairn Energy	460 million	Yes	2021
Siccar Point Energy	OMV	1 billion	Yes	2016
Lightstone Generation LLC	American Electric Power	2.1 billion	Yes	2017
Triton Power	Engie	270 million	Yes	2017
Onyx Strategic	Engie	Unclear	Yes	2019
Heirs Oil & Gas Limited	Shell, TotalEnergies, ENI	803 million	Yes	2021

Table 2 (notable private-public deals on carbon-intensive assets from financial press)

A recent study by the Environmental Defense Fund ('EDF') documents and confirms this troubling trend of brown-spinning, finding that '[a]ssets are flowing from public to private markets at a significant rate. Over the last five years, the number of public-to-private transfers exceeded the number of private-to-public transfers by 64%.'[54]

This phenomenon of brown-spinning is clearly driven by the backing of private equity firms, which have shown a demand and an appetite for the assets offloaded by public companies, which are still highly profitable.[55] According to a recent report, about 80 per cent of energy investments made by the top 10 private equity firms

[54] Environmental Defense Fund, 'Transferred Emissions: How Risks in Oil and Gas M&A Could Hamper the Energy Transition', 7 at https://business.edf.org/insights/transferred-emissions-risks-in-oil-gas-ma-could-hamper-the-energy-transition/ (EDF Study).

[55] See Raval, n 34 above (citing a clean energy investment banker who states that '[t]hese operational assets will mint money like you have no idea over the next three to five years. Hedge funds, private equity, companies you have never heard of, will pick these assets off.'); Sustainable Fitch, n 34 above (stating that '[p]rivate equity firms have increasingly been buying fossil fuel assets as others have looked to divest.'); 'Who Buys the Dirty Energy Assets', n 35 above (noting that '[i]n the past two years alone [private-equity firms] bought $60 bn-worth of oil, gas and coal assets, through 500 transactions – a third more than they invested in renewables.'). *Cf* D. Fickling, 'Why Private Equity Won't Be the Savior of Fossil Fuels' *Bloomberg* 5 January 2022 at https://www.bloomberg.com/opinion/articles/2022-01-05/why-private-equity-won-t-be-the-savior-of-fossil-fuels.

(including Blackstone, KKR, and Carlyle) are in oil, gas, and coal.[56] On the supply side, a recent report found that in the future '[e]nergy transition could push oil majors to sell or swap oil and gas assets of more than $100 billion.'[57] Another source reported that 'ExxonMobil and Chevron in the US and BP, Royal Dutch Shell, Total and Eni in Europe have sold $28.1bn in assets since 2018 alone' and are now targeting further disposals of more than $30bn in the coming years.[58] There is increasing pressure on the oil and gas majors to accelerate their net-zero transition and make good on their pledges, which may mean more disposals to private companies that have so far remained immune to such pressure.[59] Activist shareholders also push public companies to divest their burdensome assets for which they see no future.[60] It should be acknowledged that there can many more impetuses than climate action in carbon majors' asset sales[61] although the latter is becoming an important one.[62]

These deals between public and private parties are not *per se* harmful.[63] What is socially desirable is that GHG-intensive assets end up in the hands of the most efficient

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[56] See Private Equity Stakeholder Project, 'Private Equity Propels the Climate Crisis: The Risks of A Shadowy Industry's Massive Exposure to Oil, Gas and Goal' (October 2021), 6 at https://pestakeholder.org/report/climate-crisis/.

[57] Rystad Energy Press Release (22 September 2020) at https://www.rystadenergy.com/newsevents/news/press-releases/energy-transition-could-push-oil-majors-to-sell-or-swap-oil-and-gas-assets-of-more-than-$100-billion/. Cf Raval, n 34 above (citing another energy consultancy, Wood Mackenzie, that puts the number at more than $140bn).

[58] Raval, n 34 above (citing energy consultancy, Wood Mackenzie).

[59] See, eg, M. Levine, 'A Good Reputation Is Expensive' *Bloomberg* 20 January 2022 at https://www.bloomberg.com/opinion/articles/2022-01-20/a-good-reputation-is-expensive (noting that 'there is a lot of shareholder and political pressure on big public energy companies to divest their dirtiest assets […] If you are immune from that pressure – if you are a private firm whose investors are not very ESG-conscious […] – then you can buy those assets cheap and make a lot of money digging up dirty coal.'); Monga, n 34 above (citing the CEO of a private equity firm that invests in oil who says that 'his company has more freedom to increase production, while investing in technologies to reduce carbon emissions, because it doesn't have to answer to public shareholders.'); 'Who Buys the Dirty Energy Assets', n 35 above (stating that 'discounts imposed on "brown" assets by the stockmarket, linked to sustainability factors rather than financial ones, are causing a lot of mispricing on which private funds thrive.').

[60] See, eg, N. Hume, 'Activist Calls on Glencore to Spin Off Coal Assets' *Financial Times* 30 November 2021 at https://www.ft.com/content/6f5a8c43-76d4-4843-a15e-47bc767ec6d8.

[61] See, eg, EDF Study, n 54 above, 10 (highlighting common drivers of oil and gas asset transfer).

[62] Shell, for example, clearly states that divestments are a key part of their net-zero transition strategy, see https://reports.shell.com/sustainability-report/2021/generating-shareholder-value/divested-ventures.html and https://reports.shell.com/sustainability-report/2020/generating-shareholder-value/divesting-responsibly.html.

[63] The acquirers of these assets can also go public after a while (for example, Chrysaor, a previously private equity-backed oil & gas firm with significant asset acquisitions from listed carbon majors, reverse-merged later with Premier Oil to become listed, see https://www.harbourenergy.com/about-us/our-history/chrysaor/). Listing may provide a suitable

decarbonisers which can obviously include private companies (also backed by private equity). One thing is however certain: these high-polluting assets are subject to less or no disclosure and little or no external market discipline which can shield private owners from scrutiny and pressure.[64] Indeed, the EDF study shows that '[a]ssets are increasingly moving away from companies with environmental commitments [such as methane and flaring targets, net-zero plans and strategies]', either stalling emission reduction and net-zero transitioning, or even causing an increase in emissions in some cases.[65] A conspicuous example of this risk is the aftermath of the sale by Shell, TotalEnergies and EMI of their stake in an important Nigerian oil block to a private, local, energy company, Heirs Oil & Gas Limited – a company with no disclosure and climate targets.[66] After the sale, there was a dramatic increase in emissions as a result of skyrocketing flaring activity while before the sale, there was almost no routine flaring.[67] Relatedly, to be able to divest these assets at a profit, current owners (public

exit strategy for the private owners, but this is not necessarily the case. Indeed, in the case of Chrysaor, it is noted that this might have been a golden opportunity for Chrysaor to go public as it was able to 'avoid an initial public offering at a time when oil and gas companies are out of favour with investors.' See D. Sheppard and H. Dempsey, 'Chrysaor agrees reverse takeover of Premier Oil' *Financial Times* (6 October 2020 at https://www.ft.com/content/5289be40-7a45-4598-b16b-8357775aa6dc. See further, https://www.linkedin.com/feed/update/urn:li:activity:6883150109136224256/ (Luciano Siani Pires, Executive Vice President at Vale S.A., one of the largest public mining companies in the world, notes that private owners buying these assets may not need an exit strategy to profit), and 'Who Buys the Dirty Energy Assets', n 35 above (stating that buyout funds produce returns from the operating cash flows rather than from reselling assets).

[64] See also 'The Glasgow Financial Alliance for Net Zero: Our progress and plan towards a net-zero global economy' (November 2021), 52 at https://assets.bbhub.io/company/sites/63/2021/11/GFANZ-Progress-Report.pdf (saying that divestment of carbon-intensive assets can be ineffective, especially when it 'moves carbon-intensive assets into private ownership, where public pressure and transparency requirements are often less stringent.'). We would note that divested assets also pass to national oil companies controlled by the relevant state. These deals would pose the same problems we indicate in relation to public-private deals. See also Raval, n 34 above (covering these deals as well); N. Ferris, 'Deals Data Shows Early Signs of A Fossil Fuel Asset Exodus' *Energy Monitor* 9 December 2021 at https://www.energymonitor.ai/finance/investment-management/deals-data-shows-early-signs-of-a-fossil-fuel-asset-exodus ('[a]sset sales from oil majors risk a greater share of future oil supply being under the control of national oil companies, which […] typically do not have net-zero pledges and are based in countries with undiversified economies […]').

[65] EDF Study, n 54 above, 16-24 & 25-30 (providing cases studies on how asset sales were associated with worsening environmental performance).

[66] *ibid,* 29. See also Hiroko Tabuchi, 'Oil Giants Sell Dirty Wells to Buyers with Looser Climate Goals, Study Finds' *The New York Times* (10 May 2022) at https://www.nytimes.com/2022/05/10/climate/oilfield-sales-pollution.html.

[67] *ibid.*

companies) may leave them on a growth trajectory (for example, applying for new permissions or licenses for mining before divesting).[68]

The phenomenon of brown-spinning should also serve as a note of caution for those investors who are committed to mitigating climate change, whether for financial reasons or green preferences. Divestments by investee companies will reduce emissions at the entity level and make the fund look 'greener' but, overall, the climate impacts resulting from those assets remain the same.[69] Recent reports suggest that those investors started to adopt a nuanced approach calling on companies to abandon selling-out of fossil fuels and instead to responsibly phase out operations, or to divest to responsible parties.[70] Remarkably, in its 2022 letter to CEOs, Larry Fink of Blackrock noted that '[…] simply passing carbon-intensive assets from public markets to private markets will not get the world to net zero.'[71] Divestments of highly-polluting assets by investee companies, however, may look especially appealing for those investors

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[68] See T. Biesheuvel, 'Investors Pushed Mining Giants to Quit Coal. Now It's Backfiring' *Bloomberg* 9 November 2021 at https://www.bloomberg.com/news/articles/2021-11-09/investors-pushed-mining-giants-to-quit-coal-now-it-s-backfiring ('[w]hen […] BHP Group was struggling to sell an Australian colliery this year, the company surprised investors by applying to extend mining at the site by another two decades — an apparent attempt to sweeten its appeal to potential buyers.').

[69] Blackrock's CEO Larry Fink recently pointed out this issue in a public event. See 'Climate Change and Financial Market Regulations: Insights from BlackRock CEO Larry Fink and former SEC Chair Mary Schapiro' (2 February 2021), at https://www.brookings.edu/events/climate-change-and-financial-market-regulations-insights-from-blackrock-ceo-larry-fink-and-former-sec-chair-mary-schapiro/ ('if a corporate sells the dirtiest stuff to some private enterprise somewhere in the world and then the private enterprise is doing exactly, or even worse offenses to the environment. How do you define that? The company looks better. They're not doing greenwashing. They actually, but all of the standards, they look better, but the world is probable worse off.'). See also Biesheuvel, n 68 above ('after years of lobbying blue-chip companies to stop mining the most-polluting fuel, there's a growing unease among climate activists and some investors that the policy many of them championed could lead to more coal being produced for longer.')

[70] Biesheuvel, n 68 above (explaining changing investor approach to divestment by investee companies); N. Hume, 'Glencore Defends Coal Rundown Strategy as Right for The World' *Financial Times* 2 December 2021 at https://www.ft.com/content/81696e63-38c5-4454-8a03-8a92fdc4ca5a (noting that '[m]any big investors now think spinning off fossil fuel assets is the wrong thing to do because new owners might seek to increase production and therefore carbon emissions.'). See also J. C. Coffee, Jr., 'Climate-Risk Disclosures and "Dirty Energy" Transfers: "Progress" Through Evasion' The CLS Blue Sky Blog, 25 January 2022 at https://clsbluesky.law.columbia.edu/2022/01/25/climate-risk-disclosures-and-dirty-energy-transfers-progress-through-evasion/ (suggesting that large institutional investors should make sure that '[p]ublic companies should not sell significant emissions-creating assets unless the buyer agrees to observe a "net zero" emissions pledge roughly comparable to its seller's.').

[71] See 'Larry Fink's 2022 Letter to CEOS: The Power of Capitalism' at https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter.

who consider those assets a burden on the share price or desire to polish 'green' credentials at the fund level to attract capital flows.[72]

c. Climate-related risks and their relevance to private companies

As well as the externalities imposed by private companies, their exposure to climate-change-related (financial) risks is also important. Climate-related risks are generally grouped into two categories: (i) physical risks; and (ii) transition risks.[73] Physical risks indicate exposure to increasing extreme weather events or gradual climate shifts. Moreover, transition risks emanate from the societal response (policy action, litigation, market, reputational etc.) to transition to a low carbon economy.[74] Monitoring and managing these risks has been important for public companies, partly as a result of disclosure demands from financial markets to be able to identify and measure self-exposure.[75] Market mispricing of such risks due to the lack of sufficient information can cause capital misallocation, as well as inadequate resilience building and adaptation.[76]

Private companies are subject to the same risks, which are systematic in nature.[77] For example, according to an MSCI report, the difference between the overall carbon intensities of private and public companies in countries or regions with high emissions reduction targets is quite small, suggesting that 'both private and public companies are similarly vulnerable to regulations and policies aimed at reducing companies' direct emissions.'[78]

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[72] See, eg, Hume, n 60 above (reporting on Bluebell targeting Glencore to spin off its coal assets because '[a] clear separation between carbonized and decarbonized assets is needed to increase shareholder value.').

[73] On this classification, see Task Force on Climate-Related Financial Disclosures (TCFD), 'Recommendations of the Task Force on Climate-related Financial Disclosures' (June 2017) 5–6.

[74] *ibid.*

[75] TCFD recommendations have become industry standards for companies to monitor, manage and disclose climate risk, which an increasing number of companies have been voluntarily following. Disclosures in line with these recommendations have been also made mandatory in many countries. See 'Task Force on Climate-related Financial Disclosures 2021 Status Report' (October 2021) at https://www.fsb.org/wp-content/uploads/P141021-1.pdf (noting that in Brazil, European Union, Hong Kong, Japan, New Zealand, Singapore, Switzerland, and United Kingdom, there are TCFD-aligned official reporting requirements).

[76] See, eg, M. Condon, 'Market Myopia's Climate Bubble' (2022) *Utah Law Review* 63, 104-108.

[77] IIGCC and PRI, 'A Guide on Climate Change for Private Equity Investors' (31 May 2016) 17 at https://www.unpri.org/download?ac=274 ('[c]limate change impacts will differ according to sector and geographical location but they have the potential to impact businesses of all sizes, locations and markets.'). See also A. H. Lee (SEC Commissioner), 'Going Dark: The Growth of Private Markets and the Impact on Investors and the Economy', Remarks at The SEC Speaks in 2021 (12 October 2021) at https://www.sec.gov/news/speech/lee-sec-speaks-2021-10-12#_ftn31 (noting that the rise of opaque private markets could operate to obscure systemic risks such as those posed by climate change).

[78] Shakdwipee, n 19 above.

Financial markets should not be very concerned with private companies as they have limited or no exposure to climate risks in private companies (unless substantial spill-overs exist).[79] Still, climate-related risks are relevant for private companies, which should monitor and manage them for their own benefit.[80] More importantly, there is also a public interest in climate change adaptation by private companies. Unmitigated risk exposure and the materialisation of such risks can cause macroeconomic effects as these companies shrink, go bankrupt and suffer significant damages. Macroeconomic effects stem from less tax revenue, fewer employment opportunities and damaged infrastructure. In brief, it would be socially desirable for private companies to identify, measure, and mitigate climate-related risks despite limited interaction with financial markets where the build-up of risks can create a climate-driven Minsky moment[81] and cause adverse impacts on a macroeconomic scale. But financial stability concerns are still relevant in the case of private companies as the realisation of climate risks for private companies can affect the loan books of banks, triggering huge write-downs across many financial players and sectors.[82]

III. CONTRAST WITH PUBLIC COMPANIES

Having demonstrated how heavily private companies are presently contributing to GHG emissions, we now show how they lack most of the disciplining mechanisms available to public companies that can play an important role in reducing emissions and addressing climate-related risks.

a. Lack of institutional shareholder stewardship or activism

Recent scholarship and examples show that institutional shareholders can drive change in companies with a major carbon footprint. In particular, index funds which are subject to climate change as a systematic risk are lauded as suitable candidates to

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[79] See however L. Cahen-Fourot, 'Capital Stranding Cascades: The Impact of Decarbonisation on Productive Asset Utilisation' (2021) 103 *Energy Economics* 1 (capturing 'the propagation of stranding risks via international production networks').

[80] It may be within company directors' duty to monitor and manage these risks. See CCLI and Climate Governance Initiative, 'Primer on Climate Change: Directors' Duties and Disclosure Obligations' (June 2021) at https://www.tcfdhub.org/resource/primer-on-climate-change-directors-duties-and-disclosure-obligations.

[81] M. Carney et al, 'The Financial Sector Must Be at The Heart of Tackling Climate Change' *Guardian* 17 April 2019 at https://www.theguardian.com/commentisfree/2019/apr/17/the-financial-sector-must-be-at-the-heart-of-tackling-climate-change.

[82] See, eg, F. Lamperti et al, 'The Public Costs of Climate-Induced Financial Instability' (2019) 9 *Nature Climate Change* 829 ('[o]ur results indicate that climate change will increase the frequency of banking crises.'). Cf C.P. Skinner, 'Central Banks and Climate Change' (2021) 74 *Vanderbilt Law Review* 1301, 1317 ('it appears that banks may not presently hold sufficient concentration of carbon-intensive credit assets for physical or transition risks to threaten their solvency.').

put investee companies on a sustainable path.[83] Empirical evidence also broadly suggests that large institutional investors make some sort of positive impact to this end.[84]

In general terms, institutional investors wishing to engage with the policy choices of their investee companies make use of either the 'exit' (divestment of investment) or the 'voice' option (direct or indirect engagement with the corporate management).[85] The former option is exemplified by the recent trends in ESG investing where 'socially responsible' investors shun industries and companies where the GHG emissions remain high and the management does not put in place a plan to transition to a net-zero carbon economy.[86] Meanwhile, the use of the 'exit' option depresses the share price of divested companies, which may have a number of implications for corporate management, and attracts public attention.[87]

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[83] M. Condon, 'Externalities and the Common Owner' (2020) 95 *Washington Law Review* 1; J.C. Coffee, Jr., 'The Future of Disclosure: ESG, Common Ownership, and Systematic Risk' (2021) *Columbia Business Law Review* 602; J.N. Gordon, 'Systematic Stewardship' *Journal of Corporation Law* (2022, forthcoming). Cf A. Christie, 'The Agency Costs of Sustainable Capitalism' (2021) 55 *UC Davis Law Review* 875 (arguing that institutional investors, especially 'Big Three', suffer under 'rational reticence' and 'rational hypocrisy' in their sustainability efforts in investee companies); R. Tallarita, 'The Limits of Portfolio Primacy' *Vanderbilt Law Review* (2023, forthcoming) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3912977 (claiming that index funds internalize global climate externalities in a very limited and imperfect way.).

[84] See, eg, J. Azar et al, 'The Big Three and Corporate Carbon Emissions Around the World' (2021) 142 *Journal of Financial Economics* 674 (observing 'a strong and robust negative association between Big Three ownership and subsequent carbon emissions among MSCI index constituents'); A. Dyck et al, 'Do Institutional Investors Drive Corporate Social Responsibility? International Evidence' (2019) 131 *Journal of Financial Economics* 693 (finding that 'institutional ownership is positively associated with E&S performance with additional tests suggesting this relation is causal.'); S.L. Naaraayanan, K. Sachdeva and V. Sharma, 'The Real Effects of Environmental Activist Investing' (ECGI Finance Working Paper No. 743/2021, March 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3483692 (suggesting that 'engagements are an effective tool for long-term shareholders to address climate change risks.'); T. Barko, M. Cremers and L. Renneboog, 'Shareholder Engagement on Environmental, Social, and Governance Performance' (2021) *Journal of Business Ethics*.

[85] See also E. Broccardo, O. Hart and L. Zingales, 'Exit vs. Voice' (ECGI Finance Working Paper No. 694/2000, November 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3671918 (arguing that 'voice' is a better strategy in promoting socially desirable outcomes in companies).

[86] See A. Edmans, D. Levit and J. Schneemeier, 'Socially Responsible Divestment' (ECGI Finance Working Paper No. 823/2022, April 2022) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4093518.

[87] On 'exit' as an engagement mechanism, see A. Edmans, 'Trading as a Stewardship Mechanism' at https://alexedmans.com/wp-content/uploads/2015/03/Trading.pdf. See further A. Edmans, 'Blockholder Trading, Market Efficiency, and Managerial Myopia' (2009) 64 *The Journal of Finance* 2481; M. Rohleder, M. Wilkens and J. Zink, 'The Effects of Mutual Fund Decarbonization on Stock Prices and Carbon Emissions' (2022) 134 *Journal of Banking & Finance*.

The use of voice is widely deemed a better option,[88] and can be made possible through several means, such as: behind-the-scenes engagement with corporate management;[89] shareholder proposals including 'say on climate'[90] or 'say on pay'[91]; and proxy fights to replace board members. Notably, 'say on climate' is increasingly prevalent on the agenda of large public companies.[92]

Activist shareholders can play an important role as well. Indeed, hedge funds increasingly target companies where they believe that corporate management does not sufficiently address climate-related risks. When supported by other institutional shareholders, especially by the 'Big Three' (Blackrock, Vanguard, and State Street), they can be a formidable opponent,[93] as a recent example demonstrates. Specifically, a small activist shareholder, called Engine No. 1, with the support of large investment funds such as Blackrock, was able to oust three board members from the board of

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[88] See, eg, P. Krueger, Z. Sautner and L.T. Starks, 'The Importance of Climate Risks for Institutional Investors' (2020) 33 *The Review of Financial Studies* 1067 (stating that '[m]any of the investors […] consider risk management and engagement, rather than divestment, to be the better approach for addressing climate risks.').

[89] See, eg, J.A. McCahery, Z. Sautner and L.T. Starks, 'Behind the Scenes: The Corporate Governance Preferences of Institutional Investors' (2016) 71 *The Journal of Finance* 2905.

[90] 'Say on climate' indicates shareholder vote on the strategies of companies to deal with their greenhouse gas emissions. See C. Horn and A. Behar, 'Say On Climate: Net-Zero with Annual Shareholder Votes – A Global Movement' (16 March 2021) at https://www.proxypreview.org/2021/contributor-articles-blog/say-on-climate-net-zero-with-annual-shareholder-votes-a-global-movement; C. Keatinge, 'Say on Climate Votes: Glass Lewis Overview' (27 April 2021) at https://www.glasslewis.com/say-on-climate-votes-glass-lewis-overview/.

[91] Say on pay votes give shareholders an important influence on executive remuneration, which can then be used to incorporate sustainability performance of the company into compensation of corporate management. See R.A. Ritz, 'Climate Targets, Executive Compensation, and Corporate Strategy' (Cambridge Working Papers in Economics No. 2098, 29 October 2020) at https://www.econ.cam.ac.uk/cwpe (examining the use to date of climate-linked management incentives at the world's largest energy companies).

[92] A recent example is the significant shareholder support for various climate change related shareholder proposals at a carbon major, Chevron. These included a proposal to cut the so-called 'Scope 3' emissions (61 per cent support), a proposal to prepare a report on the impact Chevron's business would have from the net zero 2050 scenario (48 per cent support), a proposal demanding more information on Chevron's lobbying activities (48 per cent support). See 'Chevron investors back proposal for more emissions cuts' *Reuters* 26 May 2021 at https://www.reuters.com/business/energy/chevron-shareholders-approve-proposal-cut-customer-emissions-2021-05-26/.

[93] See, eg, W.-G. Ringe, 'Investor-Led Sustainability in Corporate Governance' (ECGI Law Working Paper No. 615/2021, November 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3958960.

another carbon major, ExxonMobil, and elect its own members with the experience of transitioning to a green economy.[94]

In private companies, simply because these companies are privately owned, there will be a limited disciplining effect from institutional investors as shareholders who can otherwise spur socially desirable change in public companies to some extent.[95] First, although institutional investors increasingly invest in private companies, the investments currently seem to involve a small number of companies (especially venture-capital-backed firms or unicorns).[96] Second, these privately-owned firms will usually have controlling shareholders that would mitigate any influence of institutional shareholders.[97] Furthermore, institutional investors' major networks or organizations such as Climate Action 100+ and Transition Pathway Initiative that encourage and facilitate institutional investors' (environmental) engagement currently focus entirely on public companies.[98]

Basically, this different ecosystem which private companies operate in allows them to avoid the scrutiny and pressure to decarbonize that comes in public markets. The significant differences between the two markets even prompted some public oil and gas producers to go private.[99] Ironically, it has been reported that the low valuation these players have in public markets due to (public) investors' dislike of

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[94] D. Brower, 'ExxonMobil Shareholders Hand Board Seats to Activist Nominees' *Financial Times* 26 May 2021 at https://www.ft.com/content/da6dec6a-6c58-427f-a012-9c1efb71fddf. Another example is the recent intervention of the activist fund Third Point calling for the break-up of Shell. See O. Aliaj et al, 'Activist Fund Third Point Calls for Break-Up of Shell' *Financial Times* 27 October 2021 at https://www.ft.com/content/b4fc6926-e991-43ca-9ac8-3b1478c23dd5.

[95] See also Tallarita, n 83 above, 48–49 ('if private firms represent an increasingly larger part of the economy, the sphere of influence of climate stewardship is destined to get smaller and less relevant over time.').

[96] See, eg, S. Kwon, M. Lowry and Y. Qian, 'Mutual Fund Investments in Private Firms' (2020) 136 *Journal of Financial Economics* 407 (documenting that across a sample of 14 mutual fund families, 149 mutual funds invested in 270 venture-backed private firms during 1995–2016).

[97] See, eg, S. Claessens and K. Tzioumis, 'Ownership and Financing Structures of Listed and Large Non-listed Corporations' (2006) 14 *Corporate Governance: An International Review* 266 (finding that the substantial majority of non-listed companies in 19 European countries have either a large or medium blockholder). On the institutional shareholders' stewardship in controlled companies, see A.A. Gözlügöl, 'Controlling Shareholders: Missing Link in The Sustainability Debate?' Oxford Business Law Blog, 16 July 2021 at https://www.law.ox.ac.uk/business-law-blog/blog/2021/07/controlling-shareholders-missing-link-sustainability-debate; D. Dharmapala and V.S. Khanna, 'Controlling Externalities: Ownership Structure and Cross-Firm Externalities' (ECGI Law Working Paper No. 603/2021, August 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3904316.

[98] See respectively https://www.climateaction100.org/whos-involved/companies/ and https://www.transitionpathwayinitiative.org/data-background.

[99] D. Brower and J. Jacobs, 'Oil baron's Continental bid highlights sector dislike of Wall St ESG scrutiny' *Financial Times* (15 June 2022) at https://www.ft.com/content/2ad3eca7-be60-420b-ac82-d4521ea5549a.

these assets may easily allow them to buy back their shares and eventually go private.[100]

One should note here, however, the (potential) role of private equity firms as institutional shareholders in private companies. A private equity firm as a 'general partner (GP)' invests funds of 'limited partners (LPs)' which include, among others, public/private pension funds, mutual funds, sovereign wealth funds, and high-net-worth individuals. If these ultimate investors (which are also shareholders in public companies) allocate their capital according to their sustainability preferences (which should ideally reflect those of beneficiaries) or push general partners for increased sustainability performance in the investee companies, then private equity can be quite forceful in spurring sustainability in private companies where they invest (especially if they are in the position of controlling shareholders). Yet, there is scant evidence on whether, and if so, to what extent such channel (from LPs to GPs) exists, and what impact it has on the portfolio company-level. Current evidence in this regard is on anecdotal level and remains mixed.[101]

Overall, the private equity industry has not been known for its concern for long-term sustainability in portfolio companies or their wider impact on the society.[102] In particular, as we noted above, private equity firms have not so far showed much aversion to investments inconsistent with climate goals,[103] as well as being reticent to join net-zero alliances now abundant in the financial world.[104] Furthermore, according to a recent report, currently only one out of the ten largest private equity funds (including publicly-traded ones) monitors and discloses portfolio company emissions.[105]

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[100] *ibid.*

[101] See, eg, 'Who Buys the Dirty Energy Assets', n 35 above (stating that from many limited partners involving pension funds, universities and other investors that pledged to divest fossil fuels, few are 'ready to leave juicy returns on the table' and 'in no rush to tighten the taps.'). Cf Robert G. Eccles et al, 'Private Equity Should Take the Lead in Sustainability' *Harvard Business Review* (July-August 2022) at https://hbr.org/2022/07/private-equity-should-take-the-lead-in-sustainability (reporting that 'until recently, ESG in private equity was a box-ticking exercise at best' but it 'is becoming more important to limited partners and their beneficiaries.').

[102] Eccles et al, n 101 above.

[103] See text to notes 55–56 above; and also A. Bellon, 'Does Private Equity Ownership Make Firms Cleaner? The Role of Environmental Liability Risks' (ECGI Finance Working Paper No. 799/2021, November 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3604360 (finding that being highly incentivized to maximize shareholder value, private equity leads to positive environmental outcomes only when the risk of environmental regulation and liability is high).

[104] See, eg, Greg Roumeliotis & Simon Jessop, 'U.N. climate czar Carney in new bid to get private equity onboard' *Reuters* 9 May 2022 at https://www.reuters.com/business/sustainable-business/exclusive-un-climate-czar-carney-new-bid-get-private-equity-onboard-sources-2022-05-09/.

[105] 'MSCI 2022 ESG Trends to Watch' (December 2021) 10 at https://www.msci.com/documents/10199/9d2eeece-c2db-3d86-873f-faaac8cd62ef.

On the other hand, there have been some recent signs of positive change, in terms of both investment and engagement/monitoring.[106] Alongside private initiatives like the ESG Data Convergence Project,[107] current and forthcoming regulations will force many private equity firms to make sustainability-related disclosures in relation to their portfolios to LPs (and also general public) which may help their preferences to be better reflected in portfolio choices and engagement.[108] Furthermore, some prominent private equity firms have started to commit to achieve net-zero GHG emissions by 2050 across investments which will, if implemented, trickle down to their investee companies.[109]

Lastly, one should note that when private companies tap into capital markets via bond issuance, the same institutional investors may have bought some of these bonds.[110] But, as bondholders, their willingness and ability to steward the debtor companies towards sustainability will be limited.[111]

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[106] See generally Eccles et al, n 101 above. See, in particular, Sustainable Fitch, n 34 above (noting that '[p]rivate equity energy investments have focused heavily over the past decade on fossil fuel assets […] but there are signs that this is beginning to shift'); 'MSCI 2022 ESG Trends to Watch', n 105 above ('[…] the Carlyle Group and TPG Capital have indicated that they have started to monitor their portfolio-company emissions.').

[107] See Carlyle Press Release, 'Private Equity Industry's First-Ever ESG Data Convergence Project Announces Milestone Commitment of Over 100 LPs and GPs' (28 January 2022) at https://www.carlyle.com/media-room/news-release-archive/private-equity-industrys-first-ever-esg-data-convergence-project-announces-over-100-lps-gps.

[108] See, for the UK, Financial Conduct Authority, 'PS21/24: Enhancing climate-related disclosures by asset managers, life insurers and FCA-regulated pension providers' (December 2021), https://www.fca.org.uk/publication/policy/ps21-24.pdf (requiring, for example, full-scope UK Alternative Investment Fund Managers to make disclosures (including a core set of climate-related metrics) on the firm's products and portfolios); for the EU, Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector OJ L 317 (mandating, among others, transparency of adverse sustainability impacts for alternative investment fund managers at entity and financial product level). In the US, the SEC has also recently proposed ESG disclosures for investment advisers and companies, but specifically in relation to different types of ESG funds. See https://www.sec.gov/news/press-release/2022-92.

[109] See, eg, Carlyle Press Release, 'Carlyle Sets Net Zero by 2050 and Near-Term Climate Goals for Meaningful, Immediate Action with a Focus on Real Emissions Reductions' (01 February 2022) at https://www.carlyle.com/media-room/news-release-archive/carlyle-sets-net-zero-2050-and-near-term-climate-goals. Other firms have adopted less ambitious plans, see Blackstone, 'An Integrated Approach to ESG' (November 2021) at https://www.blackstone.com/wp-content/uploads/sites/2/2021/11/2021-ESG-Update_An-Integrated-Approach-to-ESG.pdf, p. 20.

[110] On the bond issuance by private companies, see n 127 below.

[111] See generally C.K. Whitehead, 'The Evolution of Debt: Covenants, the Credit Market, and Corporate Governance' (2009) 34 *Journal of Corporation Law* 641, 651; G.G. Triantis and R.J. Daniels, 'The Role of Debt in Interactive Corporate Governance' (1995) 83 *California Law Review* 1073, 1088–89.

b. Lack of other corporate governance mechanisms

Certain corporate governance mechanisms can also play an important role in pushing companies to a more sustainable path. These mechanisms, however, are more likely to occur and be effective in public companies. For example, executive compensation tied to sustainability measures (ie the company's climate-related performance) is prevalent in most carbon majors.[112] There is no *a priori* reason why such arrangements could not be possible in private companies as well. However, in public companies, institutional investors that are growingly concerned with the transition to a net-zero carbon economy, can influence and increase such arrangements via 'say on pay' votes that are common across jurisdictions.[113]

Another factor that can be influential in overseeing and nudging companies in their transition to a net-zero carbon economy is the presence of independent directors on the board. These board members with necessary climate-related expertise can initiate needed discussions and oversee related measures to navigate companies in addressing climate-related risks. Special board-level 'sustainability' committees or 'carbon steering groups' are examples of such mechanisms.[114] Indeed, similar measures can also be adopted in private companies. However, opaque board structures and minimal application of corporate governance codes in private companies render this less likely.[115] In private companies, generally, insiders dominate the board without any input from independent board members with both the necessary expertise, and oversight and risk management responsibility.[116]

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[112] See n 91 above. See also S. Cohen et al, 'Executive Compensation Tied to ESG Performance: International Evidence' (ECGI Finance Working Paper No. 825/2022, April 2022) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4097202 ('the adoption of ESG variables in managerial performance measures is accompanied by improvements in ESG performance and meaningful changes in the compensation of executives.').

[113] See, eg, R.S. Thomas and C. Van der Elst, 'Say on Pay Around the World' (2015) 92 *Washington University Law Review* 653.

[114] See in this regard F. Otto et al, 'The Sustainability Report 2021', Harvard Law School Forum on Corporate Governance 23 November 2021 at https://corpgov.law.harvard.edu/2021/11/23/the-sustainability-board-report-2021/; International Finance Corporation (IFC), 'Focus 15: Sustainability Committees: Structures and Practices' (2021) at https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+cg/resources/focus_case+studies/focus+15+sustainability+committees.

[115] Corporate governance codes are generally applicable for listed companies or drafted for the benefit of such companies. See also H. Fleischer, 'Comparative Corporate Governance in Closely Held Corporations' in J.N. Gordon and W.-G. Ringe (eds), The Oxford Handbook of Corporate Law and Governance (Oxford: OUP, 2018) 679–80. An exemption is the recent Wates Corporate Governance Principles in the UK, see n 196 below.

[116] See, eg, J.A. McCahery and E.P.M. Vermeulen, *Corporate Governance of Non-Listed Companies* (Oxford: OUP, 2008) 205 (stating that in private family-owned firms, the board members are typically family members); Fleischer, n 115 above, 681–82 (noting that in closely-held companies, shareholders regularly play a double role as director or employee).

To be sure, private companies try to turn this into a virtue. Private firms, and in particular family-owned firms, according to a common argument, are inherently 'sustainable' and long-term-oriented by their very nature. Similarly, private firms are frequently organised in a more intimate, personal context that necessitates neither far-reaching legal intervention nor market-geared disclosure requirements. These have been some common arguments put forward by interest groups representing family firms. They intend to fend-off pressure for more interventionist legislation, picturing a more self-regulatory and private ecosystem in these firms that would make regulatory intervention redundant. While this may hold true for certain (very) small firms and family-owned firms, it certainly does not apply to the global players that we discuss in this paper.[117] Nevertheless, we shall come back to tailoring disclosure obligations to firms' size in our discussion of policy implications in Section V below.

c. Lack of transparency and disclosure

The third aspect where private and public companies differ is the transparency framework. Private companies have generally lacked comparable transparency and disclosure requirements when it comes to their contribution to climate change, or their environmental impacts more generally, their plans and strategy to address these concerns as well as climate-related risks for their businesses. Yet, as we will see, the chasm has recently been reduced and will further shrink to some extent, at least in the UK and the EU.

One should here distinguish between two main paradigms of climate-related disclosure requirements. One type of disclosure is related to the *financial* well-being of the company. These 'climate risk disclosures' aim at providing information to *investors* on how climate change and related policy and market changes may affect the company's business and performance. As mentioned above, these disclosures mainly circle around 'physical risk' and 'transition risk'. Another type of disclosure is not related to the company's financial situation, but aims at providing information about the external impact of the company on environment and other relevant aspects and how the company addresses such concerns. Such information can be relevant for investors, but is more broadly intended for a wider audience such as employees, consumers/customers, media, civil society etc (the so-called double materiality).[118] The objectives of these two types of disclosures are also different: the former fulfils

[117] See the examples that we list above in Table 1.

[118] See, eg, European Commission, *Guidelines on non-financial reporting: Supplement on reporting climate-related information* C/2019/4490, OJ C 209, 20 June 2019 (clearly adopting the double materiality approach that includes 'financial materiality' (climate change affecting the value of the company) and 'environmental & social materiality' (companies' impact on climate) and stating that the latter is "typically of most interest to citizens, consumers, employees, business partners, communities and civil society organisations."). The upcoming Corporate Sustainability Reporting Directive (see n 130 below) maintains this approach.

the need of investors for a comprehensive and standardized climate-related information while the latter provides transparency on companies' externalities, facilitates stakeholder pressure, and thus pushes companies to improve their record. To be sure, the line between these two different disclosure categories is blurry: for example, companies are generally asked to report their GHG emissions (a primary case of external impact on the environment) as a part of their transition risk disclosure; similarly, how companies address their externalities (ie their climate action, targets and plans) can be part of both types of disclosures. Yet, depending on the context, the aims and audiences are still different. In the first case, GHG emission and climate action reporting is intended for investors to assess transition risk; while in the second case, it is to inform stakeholders and to push companies improve their sustainability performance. To indicate which type of climate-related disclosure we mean, we will use the terms 'climate risk disclosure' and 'climate impact disclosure'.[119] While most voluntary initiatives such as TCFD, SASB and ISSB focus on the former and thus are investor-oriented, legal regimes, as we explain below, also cover the latter.

The regulatory framework in the leading financial centres remains patchy and incomplete, with widely varying scopes of applications. In the UK, for example, both climate risk and impact disclosure requirements are less onerous for private companies, either in terms of scope or items to disclose. Under the recently-launched Streamlined Energy and Carbon Reporting (SECR) framework, large private companies and limited liability partnerships[120] need to report as a minimum their UK energy use from electricity, gas, and transport fuel, as well as the associated GHG emissions (with at least one intensity metric).[121] This requirement is however still quite limited in comparison to listed companies which need to report annual global GHG emissions (scope 1 and 2) and at least one accompanying emissions intensity ratio as well as underlying global energy use.[122] Climate risk disclosures (in line with the TCFD requirements) are required (on a 'comply or explain' basis) by the FCA only for premium- or standard-listed companies.[123] But similar requirements have been made

[119] Another parlance is to use 'financial' and 'non-financial' disclosure.

[120] They are large if they meet at least two of the following three criteria in a reporting year: (i) a turnover of £36 million or more; a balance sheet of £18 million or more; or 250 employees or more.

[121] See The Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008, Schedule 7, Part 7A (amended by the Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013 and The Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018) at https://www.legislation.gov.uk/uksi/2008/410/schedule/7.

[122] *ibid*, Part 7.

[123] See https://www.fca.org.uk/firms/climate-change-sustainable-finance/reporting-requirements.

mandatory for all publicly traded companies with more than 500 employees and very large private companies from April 2022.[124]

In the EU, the present-day Non-Financial Reporting Directive (NFRD) (which brings together both climate risk and impact disclosures) does not normally apply to private companies.[125] The main addressees of the NFRD are 'public-interest entities', meaning firms those whose transferable securities are admitted to trading on a regulated market.[126] Unless private companies have issued tradable bonds on a regulated market in the EU, which is not a high occurrence,[127] they are not within the scope of NFRD.[128] The Accounting Directive still demands principal risk disclosures

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[124] The Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022, SI 2022/31. Under this regime, UK public interest entities and companies with more than 500 employees and a turnover of more than £500m per year will be required to report climate-related financial information in a 'sustainability information statement' (NFSI). Note that private companies within the scope are much larger than those under the SECR framework (see n 120 above).

[125] The Directive requires a non-financial statement containing information to the extent necessary for an understanding of the undertaking's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters. See Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups [2014] OJ L 330 (The Non-Financial Reporting Directive). Furthermore, the guidelines promulgated by the European Commission provide a (non-binding) framework for the disclosure of climate-related information as a supplement to the NFRD, available at https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en.

[126] Public-interest entities are defined under the Accounting Directive as those entities 'governed by the law of a Member State and whose transferable securities are admitted to trading on a regulated market of any Member State […]' as well as credit institutions and insurance undertakings. See Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC OJ L 182 (Accounting Directive), Art 2(1).

[127] See, eg, O. Darmouni and M. Papoutsi, 'The Rise of Bond Financing in Europe' (ECB Working Paper No. 2022/2663, May 2022) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4115175 (despite likely underestimating the number of private issuers in the Euro Area, they provide a sample of private firms that contains 278,030 firms, only 1,900 of which had a bond outstanding some time in 2010–2018). The cost of public debt is high for private companies due to information asymmetries. See, eg, A. Kovner and C. Wei, 'The Private Premium in Public Bonds' (Federal Reserve Bank of New York Staff Reports No. 553, March 2014) at https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr553.html; B.A. Badertscher et al, 'Private Ownership and the Cost of Public Debt: Evidence from the Bond Market' (2019) 65 *Management Science* 301.

[128] Few Member States required relevant disclosures by private companies in the implementation of the Directive. See GRI, CSR Europe and Accountancy Europe, 'Member State Implementation of Directive 2014/95/EU: A Comprehensive Overview of How Member States Are Implementing the EU Directive on Non-Financial and Diversity Information' (2017) at

from private companies in their financial reports, which may extend in certain cases to climate risks.[129] Yet, this is unclear and also obviously does not extend to climate impact disclosures.

Encouragingly, the forthcoming Corporate Sustainability Reporting Directive (CSRD)[130] will put public and private companies on an equal footing in terms of both climate risk[131] and impact disclosure.[132] Unlike the NFRD, the proposed Directive applies to all large companies and groups[133] as well as all listed companies (except micro-companies).[134] For the exact content and contours of the both groups of disclosure requirements, the second-level standards adopted by the European Financial Reporting Advisory Group (EFRAG) and the European Commission will be important.[135]

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https://www.accountancyeurope.eu/wp-content/uploads/1711-NFRpublication-GRI-CSR-Europe.pdf.

[129] In the EU, companies (whether private or public), in their management reports, need to provide a description of the principal risks and uncertainties faced by the undertaking as well as non-financial key performance indicators, including information relating to environmental matters (to the extent necessary for an understanding of the undertaking's development, performance, or position). See Accounting Directive, n 126 above, Art 19 (small and medium-sized undertakings can be exempted from certain requirements).

[130] Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting COM/2021/189 final (CSRD Proposal).

[131] *ibid*, Art 1(3) (requiring the disclosure of information necessary to understand how environmental matters affect the undertaking's development, performance, and position; in particular, regarding the resilience of the undertaking's business model and strategy to risks related to environmental matters, as well as a description of the principal risks to the undertaking related to environmental matters, and how the undertaking manages those risks).

[132] It mandates a number of disclosure requirements with respect to sustainability, requiring, among other things, the disclosure of 'the plans of the undertaking [or the group] 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 in line with the Paris Agreement', 'the principal actual or potential adverse impacts connected with the undertaking's [or the group's] value chain, including its own operations, its products and services, its business relationships and its supply chain', and 'any actions taken, and the result of such actions, to prevent, mitigate or remediate actual or potential adverse impacts'. See *ibid*, Art 1(3).

[133] 'Large' is defined according to the Accounting Directive. Large undertakings need to satisfy two of the following criteria: (a) balance sheet total: EUR 20 000 000; (b) net turnover: EUR 40 000 000; (c) average number of employees during the financial year: 250. See Accounting Directive, n 126 above, Art 3.

[134] CSRD Proposal, n 130 above, Art 1(3).

[135] According to the proposed Directive (*ibid*, Art 3(4)), the European Commission will adopt delegated acts to provide for sustainability reporting standards which shall specify the information that undertakings are to report. The Commission sought technical advice from the European Financial Reporting Advisory Group (EFRAG). EFRAG has released its first draft of proposed 'European Sustainability Reporting Standards' recently for public consultation, see https://www.efrag.org/lab3.

There are further related disclosure requirements in the Taxonomy Regulation. It requires disclosure on how and to what extent an undertaking is associated with economic activities that qualify as environmentally sustainable under this Regulation.[136] More specifically, it requires the disclosure of the proportion of the turnover derived from products or services associated with environmentally-sustainable economic activities, and of the proportion of the capital expenditure and the operating expenditure related to assets or processes associated with environmentally-sustainable economic activities.[137] However, the companies subject to this disclosure requirement are those that are required to publish non-financial information under the NFRD,[138] thus leaving (most) private companies outside. This will be remedied when it is replaced by the CSRD.

The U.S. climate-related disclosure requirements have been very limited and only applicable to the SEC registrants, ie public companies. A 2010 SEC Guidance required the disclosure of climate-related information as far as they were relevant to financial items disclosed.[139] The SEC has recently proposed new climate-related disclosure rules to enhance and standardize these disclosures for investors.[140] The proposed rules are also applicable only to public companies. Therefore, in the U.S., there is a complete lack of any (public-facing) climate-related disclosure requirement for private companies[141] that are comparable to those required by the UK or the EU.[142] We summarize climate-related disclosure regimes in the UK, EU, and U.S. in Table 2.

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[136] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 [2020] OJ L 198, Art 8.

[137] *ibid.*

[138] *ibid.*

[139] See Guidance Regarding Disclosure Related to Climate Change, Release Nos. 33-9106; 34-61469 (8 February 2010) (companies should 'focus on material information and eliminate immaterial information that does not promote understanding of registrants' financial condition, liquidity and capital resources, changes in financial condition and results of operations.'). Following a 'Statement of Review' issued by the Acting Chair Allison Herren Lee, directing the SEC staff to review climate-related disclosures in filings (see https://www.sec.gov/news/public-statement/lee-statement-review-climate-related-disclosure), the Corporate Finance division provided a sample letter companies may receive regarding climate change (non-)disclosures, reminding companies that it selectively reviews SEC filings for climate-related disclosures, see https://www.sec.gov/corpfin/sample-letter-climate-change-disclosures.

[140] The proposed rules and fact sheet are available at https://www.sec.gov/news/press-release/2022-46.

[141] These unlisted companies might become however reporting companies (in a sense, a 'public' company) if they cross the threshold of 2000 shareholders. Partly due to how the number of shareholders for the purposes of this threshold is calculated (counting shareholders of record, not beneficial owners), this is bound to be a very rare occurrence.

[142] In response to an earlier consultation by the SEC in relation to its work on climate change disclosures, some investors had asked the SEC to explore its existing regulatory authority to mandate

UK		
	Public	**Private**
Climate risk disclosure	FCA rules on TCFD-aligned reporting requirements for premium and standard listed companies. The Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022, SI 2022/31: mandating TCFD-based reporting for publicly traded companies with more than 500 employees	The Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022, SI 2022/31: mandating TCFD-based reporting for 'very large' private companies (ie. companies with more than 500 employees and a turnover of more than £500m).
Climate impact disclosure	Streamlined Energy and Carbon Reporting (SECR) framework: mandatory (with certain exceptions) greenhouse gas reporting for any listed company	Streamlined Energy and Carbon Reporting (SECR) framework: mandatory (with certain exceptions) *limited* greenhouse gas reporting for 'large' private companies.

these disclosures for private companies as well. See A. Lipton, 'Climate Change Disclosures and Private Companies' *Business Law Prof Blog*, 19 June 2021 at https://lawprofessors.typepad.com/business_law/2021/06/climate-change-disclosures-and-private-companies.html. For non-investor-oriented climate impact disclosures by private companies, this might be a job for Congress. See similarly, D.A. Katz, 'The SEC Takes Aim at the Public-Private Disclosure Gap' Harvard Law School Forum on Corporate Governance, 28 January 2022 at https://corpgov.law.harvard.edu/2022/01/28/the-sec-takes-aim-at-the-public-private-disclosure-gap/ (favouring Congressional action to establish a mandate for interagency coordination and implementation and stating that '[i]n the absence of Congressional action to provide the SEC with a mandate to require EESG disclosures for broad public purposes, the SEC is limited in its statutory authority to the protection of investors.'). See also P.G. Mahoney and J.D. Mahoney, 'The New Separation of Ownership and Control Institutional Investors and ESG' (2021) *Columbia Business Law Review* 840 ('[t]he adoption of ESG disclosure mandates in order to serve environmental or social goals is not well-aligned with the SEC's stated mission'); J.M. Karpoff et al, 'What ESG-related disclosures should the SEC mandate?' *Financial Analysts Journal* (2022, forthcoming) (the SEC's mandate does not cover 'understanding how the firm's activities affect society, including E&S-related outcomes'); A.M. Lipton, 'Not Everything Is About Investors: The Case for Mandatory Stakeholder Disclosure' (2020) 37 *Yale Journal on Regulation* 499, 566 ('[t]he SEC is not equipped to manage disclosures intended for noninvestors […]').

EU		
	Public	**Private**
Climate risk disclosure	The NFRD (and the Commission Guidance): applicable to large, listed companies with over 500 employees. Accounting Directive (art. 19) (not specific to climate-related risk) Upcoming CSRD: applicable to all listed companies on a regulated market	The NFRD (and the Commission Guidance): applicable *in very limited cases* to large private companies with over 500 employees. Accounting Directive (art. 19) (not specific to climate-related risk) Upcoming CSRD: applicable to all large private companies
Climate impact disclosure	As above (except Accounting Directive)	As above (except Accounting Directive)
U.S.		
	Public	**Private**
Climate risk disclosure	SEC Guidance 2010 The recent SEC proposal	None (except the very rare case of exceeding 2000 shareholder threshold)
Climate impact disclosure	Nothing comparable to the UK and the EU	Nothing comparable to the UK and the EU

Table 2: Climate-related disclosure regimes

Private companies can obviously divulge information voluntarily, and public pressure and media influence may push them to do so. But voluntary sustainability disclosure is not subject to the demands of rigorous mandatory disclosure requirements, which leads to a lack of consistency, accuracy, and completeness.[143] Furthermore, studies suggest that voluntary sustainability disclosure by private companies remains rare.[144] Where it happens, the firm has an obvious incentive to

[143] See, eg, J.E. Fisch, 'Making Sustainability Disclosure Sustainable' (2019) 107 *Georgetown Law Journal* 923, 947–52 (stating that in a voluntary regime, 'sustainability disclosures are fragmented, of inconsistent quality, and often unreliable.'); V.H. Ho and S.K. Park, 'ESG Disclosure in Comparative Perspective: Optimizing Private Ordering in Public Reporting' (2019) 41 *University of Pennsylvania Journal of International Law* 249, 266 (noting that 'current ESG disclosure practices do not generate the level or quality of ESG information needed for investment analysis and efficient risk pricing and capital allocation.').

[144] See, eg, D. de Waard et al, 'Transparent Carbon Disclosures: Depth in Carbon-Reporting of Dutch Listed and Non-Listed Companies' (2020) 94 *Maandblad voor Accountancy en Bedrijfseconomie* 275 (finding that '[…] on average listed companies are far more transparent than non-listed companies' in

overrepresent favourable information and to omit unappealing details. This opacity leaves us in the dark as to the impact that private companies may have on the environment and renders them less accountable as relevant stakeholders, governments, and the public remain unaware. Lack of transparency about climate risks for their operations also leaves room for doubt as to whether and to what extent private companies monitor and manage these risks which can be important from a macro perspective. Noting this discrepancy between public and private companies, some players like Blackrock, MSCI, and CDP have recently engaged in climate-related data collection and provision regarding private companies.[145] In Section V, in our discussion of policy implications, we will evaluate the current and forthcoming initiatives and ask whether climate-related disclosures should be expanded to private companies; if yes, how and to what extent.

IV. CURRENT DISCIPLINING MECHANISMS FOR PRIVATE COMPANIES

Despite the sobering account in the above section, private companies are not free from constraints in terms of the externalities they impose on the environment, and are subject to external pressure to take account of climate-related risks. In this regard, there are some indirect and direct disciplining mechanisms.

a. Carbon pricing

The primary way of reducing carbon externalities is *pricing* carbon emissions, which has been lauded as the most effective method in climate action while being politically contentious.[146] There are two main ways of pricing carbon: (i) emissions trading systems; and (ii) carbon taxes.[147] This direct regulation of externalities – a powerful arsenal – does not differentiate between public and private companies.

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terms of 'their strategies, implementation and performance regarding carbon emissions and reduction.').

[145] See 'BlackRock adds ESG risk data on thousands of private companies to eFront with RepRisk partnership' (4 February 2021) at https://www.efront.com/news-press-releases/blackrock-adds-esg-risk-data-on-thousands-of-private-companies-to-efront-with-reprisk-partnership/; 'MSCI and Burgiss launch Carbon Footprinting of Private Equity and Debt Funds to assess impact of climate change on private asset portfolios' (19 October 2021) at https://www.msci.com/documents/10199/dd786a40-dbb6-4218-da01-3d2e3d0a5907; CDP, 'Investors with US$2.3 trillion of assets demand standardized environmental data from private companies' (8 September 2021) at https://www.cdp.net/en/articles/investor/investors-with-us23-trillion-of-assets-demand-standardized-environmental-data-from-private-companies.

[146] See, eg, I. Parry, 'Putting a Price on Pollution' (2019) 56(4) *IMF Finance & Development* 16 at https://www.imf.org/external/pubs/ft/fandd/2019/12/the-case-for-carbon-taxation-and-putting-a-price-on-pollution-parry.htm.

[147] See, the World Bank, 'Pricing Carbon' at https://www.worldbank.org/en/programs/pricing-carbon.

For example, in the EU, the Emissions Trading System involves a 'cap and trade' principle.[148] A 'cap' limits the total amount of certain GHG emissions by the installations covered by the system while 'trade' allows the covered installations to exchange the emissions allowances that they bought or received within the 'cap.' Installations that cannot surrender enough allowances to cover their emissions are heavily fined. By putting a 'price' on GHG, this system leads companies to internalise the externalities caused by their emissions, and ultimately to reduce them.[149] The system currently covers certain gases and certain sectors (that correspond to around 40 per cent of the EU's GHG emissions) with an expansion of the system's scope on the horizon.[150] But, as it does not differentiate between private and public companies, it forms an important disciplining mechanism for private companies operating in the covered sectors.

The regulatory approach towards pricing carbon emissions certainly has strong appeal. However, it may not always achieve its intentions, mostly due to implementation issues. For example, as is well known, in a period of economic stagnation (such as a global recession), industrial output will drop, and emission certificates are cheap to obtain, not reflecting the full price of environmental

[148] On how this system works, see https://ec.europa.eu/clima/policies/ets_en. Member States may have a more comprehensive 'cap and trade' system than the EU ETS.

[149] See, eg, P. Bayer and M. Aklin, 'The European Union Emissions Trading System Reduced CO_2 Emissions Despite Low Prices' (2020) 117 *PNAS* 8804 (finding that the EU Emissions Trading System led to reductions of 3.8 per cent of total EU-wide emissions compared to a world without this system); A. Dechezleprêtre, D. Nachtigall and F. Venmans, 'The Joint Impact of The European Union Emissions Trading System on Carbon Emissions and Economic Performance' (OECD Economics Department Working Papers No. 1515, 14 December 2018) at https://www.oecd-ilibrary.org/economics/the-joint-impact-of-the-european-union-emissions-trading-system-on-carbon-emissions-and-economic-performance_4819b016-en (finding that 'the EU ETS has induced carbon emission reductions in the order of -10% between 2005 and 2012 […]').

[150] The system currently covers (i) carbon dioxide (CO_2) from power and heat generation; energy-intensive industry sectors including oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals; commercial aviation; (ii) nitrous oxide (N2O) from production of nitric, adipic and glyoxylic acids and glyoxal; (iii) perfluorocarbons (PFCs) from aluminium production. The Commission is currently proposing to revise and possibly expand the scope of the EU ETS. See https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12660-Climate-change-updating-the-EU-emissions-trading-system-ETS-_en.

externalities that they seek to curb.[151] Generally, estimating the social cost of carbon remains a challenge.[152]

An additional downside in any approach towards direct regulation is the potential lack of international coordination and harmonization, as well as the lack of enforcement in a global environment. As a result, legal arbitrage and carbon leakage have been persistent problems.[153] After all, the imperfectness of such direct regulation of carbon pricing is the very reason why certain regulators and legislatures are turning to explore other options as well (such as regulating the finance industry).[154]

b. Environmental duties & liabilities from miscellaneous legal fields

Apart from carbon-pricing mechanisms, companies may be subject to direct regulation in terms of imposing or reducing environmental externalities. This may stem from environmental law, human rights protections, and related fields. Similarly, they may be held liable for the environmental damage caused by their operations or be ordered to improve their environmental performance by the courts based on tort law and other provisions. There can also be some disclosure duties where companies

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[151] See, eg, J.E. Aldy and R.N. Stavins, 'The Promise and Problems of Pricing Carbon: Theory and Experience' (2012) 21(2) *Journal of Environment and Development* 152, 164 (describing how the allowance prices in the EU ETS fell to very low levels 'as the economic recession brought decreased demand for allowances due to reduced output in the energy-intensive sectors and lower energy consumption.'). See also N. Koch et al, 'Causes of the EU ETS price drop: Recession, CDM, renewable policies or a bit of everything? – new evidence' (2014) 73 *Energy Policy* 676, 677–78 (finding that 'variations in economic activity are indeed the most important abatement-related determinant' for the price dynamics of EU allowances.).

[152] See, eg, R.S. Pindyck, 'Climate Change Policy: What Do the Models Tell Us?' (2013) 51 *Journal of Economic Literature* 860.

[153] See, eg, I. Ben-David et al, 'Exporting Pollution: Where Do Multinational Firms Emit CO2?' (2021) 36 *Economic Policy* 377 (documenting that 'firms headquartered in countries with strict environmental policies perform their polluting activities abroad in countries with relatively weaker policies.'); S.M. Bartram, K. Hou and S. Kim, 'Real Effects of Climate Policy: Financial Constraints and Spillovers' (2022) 143(2) *Journal of Financial Economics* 668 (showing that under the California cap-and-trade program, 'financially constrained firms shift emissions and output from California to other states where they have similar plants that are underutilized.'). A potential response to the problem of carbon leakage is the 'carbon border adjustment mechanism'. See generally M. Condon and A. Ignaciuk, 'Border Carbon Adjustment and International Trade: A Literature Review' (OECD Trade and Environment Working Papers 2013/06, 31 October 2013) at https://www.oecd-ilibrary.org/trade/border-carbon-adjustment-and-international-trade_5k3xn25b386c-en.

[154] P. Bolton et al, 'The Green Swan: Central Banking and Financial Stability in the Age of Climate Change' (January 2020) 8 at https://www.bis.org/publ/othp31.pdf ('even if a significant increase in carbon pricing globally remains an essential step to fight climate change, other (second-, third- or fourth-best from a textbook perspective) options must be explored, including with regard to the financial system.').

are required to report their emissions to an environmental agency.[155] Lastly, laws may require companies to put in place due diligence systems and plans containing adequate measures to identify risks and to prevent severe impacts on environment.[156] Again, these environmental duties and liabilities generally do not differentiate between public and private companies, and therefore may discipline the latter as well.

There is increasing litigation against companies for their contribution to climate change or for their failure to transition to net-zero based on the abovementioned legal areas.[157] For example, recently, Royal Dutch Shell – a carbon major – was ordered by a court to reduce its GHG emissions by 45 per cent until 2030, compared to 2019 levels based on tort law and human rights protections.[158] In another example, a Peruvian farmer sued RWE, a German energy company, for compensation of the costs incurred due to climate change to which RWE was a contributor.[159] A plethora of other private litigation is currently pending, having been encouraged by these headline-making stories.

There is no *a priori* reason why private companies cannot be subject to the same litigation, which should have *ex ante* and *ex post* disciplining effects. They are subject to the same provisions, and thus to the same duties and liabilities. In particular, developments in attribution science would enable singling out a company's contribution to climate change, point out cases where private companies have a large

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[155] Under an emissions trading system, companies would need to track and report on the emissions of their installations within the scope of the system. In the US, oil and gas companies are required to report production and GHG emissions data under the GHG Reporting Program of the Environmental Protection Agency for any basin in which their annual GHG emissions exceed 25,000 metric tons of CO2e. See https://cfpub.epa.gov/ghgdata/inventoryexplorer/data_explorer_flight.html.

[156] France pioneered such a law by adopting 'the duty of due vigilance' in 2017. See E. Savourey and S. Brabant, 'The French Law on the Duty of Vigilance: Theoretical and Practical Challenges Since its Adoption' (2021) 6 *Business and Human Rights Journal* 141. In the EU, the European Commission has very recently adopted a Proposal for a Directive on corporate sustainability due diligence. See Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Corporate Sustainability Due Diligence and amending Directive (EU) 2019/1937 COM(2022) 71 final (Proposal for A Directive on CSDD).

[157] See, eg, G. Ganguly, J. Setzer and V. Heyvaert, 'If at First You Don't Succeed: Suing Corporations for Climate Change' (2018) 38 *Oxford Journal of Legal Studies* 841; J. Setzer and C. Higham, 'Global Trends in Climate Change Litigation: 2022 Snapshot' (June 2022) at https://www.lse.ac.uk/granthaminstitute/publication/global-trends-in-climate-change-litigation-2022/.

[158] See further Milieudefensie et al. v. Royal Dutch Shell plc. At http://climatecasechart.com/climate-change-litigation/non-us-case/milieudefensie-et-al-v-royal-dutch-shell-plc/.

[159] See further Luciano Lliuya v. RWE AG at http://climatecasechart.com/climate-change-litigation/non-us-case/lliuya-v-rwe-ag/.

carbon footprint.[160] A likely problem here is the relative lack of transparency. A potential plaintiff would not know the (full) environmental impact of a private company unless they voluntarily divulge it, or unless an egregious and obvious case occurs. The success of lawsuits will also depend on litigation rules, the availability of collective redress, and the deterring effect of high litigation costs, depending on the jurisdiction in question. Finally, environmental liability may ultimately suffer from the same deficiencies as the global regulatory efforts with respect to pricing carbon.

c. The disciplining effect of bank financing

Although private companies are not listed on the capital market (at least on the equity market) and thus are not generally subject to 'sustainability' pressure from institutional investors, they can still be subject to similar indirect control from their financiers, namely banks.[161] Banks are the conventional financing source for private companies.[162]

Banks themselves are coming increasingly under scrutiny or are being disincentivised in terms of financing assets or projects with negative environmental impacts. The UN Environmental Programme's Principles for Responsible Banking provides, for example, a (voluntary) framework for ensuring that signatory banks' strategy and practice align with the Sustainable Development Goals and the Paris Climate Agreement.[163] So far, over 270 banks representing over 45% of banking assets worldwide have now joined this movement.[164] A recent similar initiative is the industry-led, UN-convened Net-Zero Banking Alliance, which brings together 113 banks worldwide representing 38% of global banking assets, which are committed to align their lending and investment portfolios with net-zero emissions by 2050.[165]

Sustainability-linked loans are another example of how banks incorporate sustainability into their financing of companies. Prominent associations such as the

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[160] See, eg, R.F. Stuart-Smith et al, 'Filling the Evidentiary Gap in Climate Litigation' (2021) 11 *Nature Climate Change* 651.

[161] See, eg, Raval, n 34 above (citing Brian Gilvary, the head of Ineos Energy, who states that '[w]e're a private company with private shareholders, but we still have to operate in a way that is in line with what governments, *banks* and investors want to achieve.') (emphasis added); A. Hoffman and V. Dezem, 'Oil Trader CFOs Say Banks Are Demanding Green Targets for Loans' *Bloomberg* 16 June 2021 at https://www.bloomberg.com/news/articles/2021-06-16/oil-trader-cfos-say-banks-are-demanding-green-targets-for-loans ('[…] the world's biggest oil trading houses said banks are increasingly demanding they meet environmental, social and governance targets to access loans critical to their business.').

[162] See, eg, O.-K. Hope and D. Vyas, 'Private Company Finance and Financial Reporting' (2017) 47 *Accounting and Business Research* 506 (providing a comprehensive assessment of private firms' financing sources and their relation with financial reporting practices).

[163] See https://www.unepfi.org/banking/bankingprinciples/.

[164] *ibid.*

[165] See https://www.unepfi.org/net-zero-banking/.

Loan Market Association (LMA), the Loan Syndications & Trading Association (LSTA), and the Asia Pacific Loan Market Association (APLMA) have developed 'Sustainability Linked Loan Principles' to facilitate and support this loan market,[166] which is increasingly growing.[167] In this type of loan, the cost of capital (through interest payable) and restrictions on the debtor company are tied to certain sustainability scores and actions.[168]

As banks orient themselves towards sustainability, policymakers aim to achieve transparency and verifiability in this regard. The Taxonomy Regulation is a landmark achievement here. According to Article 8, banks need to disclose the extent to which their activities are associated with economic activities that qualify as environmentally sustainable according to this Regulation.[169] In a delegated act, the European Commission further specified this disclosure obligation and adopted the so-called 'green asset ratio (GAR)' as the key performance indicator to be disclosed, in accordance with the recommendations of the European Banking Authority (EBA).[170] This ratio indicates 'the proportion of exposures related to Taxonomy-aligned activities compared to the total assets of those credit institutions.'[171] Effectively, this disclosure requirement provides transparency on the extent to which the financing activities in a credit institution's banking book (including loans and advances, debt securities, and equity instruments)[172] are associated with economic activities aligned with the Taxonomy Regulation. It also limits banks' discretion on the term 'sustainability' as the EU taxonomy system defines what counts as 'environmentally sustainable'.[173] Overall, this disclosure would provide a single metric on the green

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[166] See APLMA, LMA and LSTA, 'Sustainability Linked Loan Principles: Supporting Environmentally and Socially Sustainable Economic Activity' (May 2021) at https://www.lsta.org/content/sustainability-linked-loan-principles-sllp/.

[167] See, eg, S. Kim et al, 'ESG Lending' (ECGI Finance Working Paper No. 817/2022, March 2022) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3865147.

[168] See also M. Driessen, 'Sustainable Finance: An Overview of ESG in the Financial Markets' in D. Busch, G. Ferrarini and S. Grünewald (eds), *Sustainable Finance in Europe: Corporate Governance, Financial Stability and Financial Markets* (Springer, 2021) 331.

[169] See n 136 above.

[170] Commission Delegated Regulation (EU) 2021/2178 of 6 July 2021 supplementing Regulation (EU) 2020/852 of the European Parliament and of the Council by specifying the content and presentation of information to be disclosed by undertakings subject to Articles 19a or 29a of Directive 2013/34/EU concerning environmentally sustainable economic activities, and specifying the methodology to comply with that disclosure obligation C/2021/4987 OJ L 443. For the EBA's recommendation, its opinion and report on the GAR, see https://www.eba.europa.eu/eba-advises-commission-kpis-transparency-institutions%E2%80%99-environmentally-sustainable-activities.

[171] See Commission Delegated Act, n 170 above, recital (5).

[172] *ibid.*

[173] Activities will be deemed environmentally sustainable if they fulfil the conditions enumerated under Article 3 of the Taxonomy Regulation. The European Commission has further developed a

credentials of a bank's balance sheet,[174] improving comparability and mitigating the risk of greenwashing.[175]

Banks would also be concerned with the climate risk exposure of the debtor companies out of their own intrinsic motivations. High exposure to transition risks and/or physical risks should increase the default risk of the debtor company.[176] Those risks mean that company operations may shrink or become less profitable, or companies may be subject to significant liabilities and damages.[177] Accordingly, banks should be carrying out detailed due diligence on these factors when lending to private companies unless moral hazard problems intervene.[178] However, it is also well known that 'brown' activities are expected to remain very profitable during the ongoing transition period. In fact, oil majors have recently announced a surprising return to significant profits.[179] And, although banks reduced such financing, it still remains robust.[180]

Taxonomy compass to help identify such activities. See https://ec.europa.eu/sustainable-finance-taxonomy/.

[174] However, currently, the nominator of the GAR does not include exposure to companies not reporting under the NFRD, thus (most) private companies. Under these rules, for banks, exposure to a private company would then be zero-taxonomy-aligned, see Commission Delegated Regulation, n 170 above, Art 7(3) and Annex V.

[175] Yet, a side effect similar to the brown-spinning by companies can arise: banks may simply sell their 'brown' loans to private-debt funds, which would not affect the financing of underlying operations. See, eg, 'Who Buys the Dirty Energy Assets', n 35 above (stating that '[p]rivate-debt funds snap up oil and gas loans from banks' and giving the example of Brookfield acquiring the entire portfolio of North American oil and gas loans of ABN AMRO, a Dutch bank).

[176] See, eg, Basel Committee on Banking Supervision, 'Climate-related Risk Drivers and Their Transmission Channels' (April 2021) 1 at https://www.bis.org/bcbs/publ/d517.pdf ('[c]redit risk increases if climate risk drivers reduce borrowers' ability to repay and service debt (income effect) or banks' ability to fully recover the value of a loan in the event of default (wealth effect).').

[177] *ibid*, 12–15.

[178] Banks' expectations of bail out in the case of realizing climate risks may create moral hazard, which can diminish their incentives to discipline or monitor the client on the climate change-related issues. See, eg, G. Steele, 'Confronting the 'Climate Lehman Moment': The Case for Macroprudential Climate Regulation' (2020) 30 *Cornell Journal of Law and Public Policy* 109, 137–140; Bolton et al, n 154 above, 9 ('central banks may have to confront a situation where they are called upon […] to intervene as climate rescuers of last resort […] forc[ing] them to […] buy a large set of carbon-intensive assets and/or assets stricken by physical impacts.').

[179] S. Mellor, 'You'd think $90 oil and record electricity prices would mean more green investment. You'd be wrong' *Fortune* 10 February 2022 at https://fortune.com/2022/02/10/big-oil-exxonmobil-chevron-shell-bp-total-green-investment-energy-transition-dividends-buybacks/.

[180] See, eg, Tasneem Hanfi Brogger & Alastair Marsh, 'European Banks Funded $55 Billion of Polluting Projects in 2021' *Bloomberg* 14 February 2022 at https://www.bloomberg.com/news/articles/2022-02-14/european-banks-funded-55-billion-of-polluting-projects-in-2021.

Still, banks should expect to feel growing regulatory pressure in this regard. First, prudential regulatory tools increasingly target banks' climate risk management via ongoing supervisory assessment and interaction,[181] disclosure,[182] and especially stress-testing. Several supervisory authorities have launched climate stress tests for banks.[183] For example, the European Central Bank (ECB) will carry out a stress test exercise on climate risk as its annual supervisory stress test for 2022.[184] Second, supervisory authorities assess whether to include requirements specific to climate risk in the capital adequacy framework for banks.[185]

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[181] See, eg, the supervisory reports released by the ECB on the state of climate and environmental risk management and disclosure in the banking sector, available at https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202111guideonclimate-relatedandenvironmentalrisks~4b25454055.en.pdf and https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.ECB_Report_on_climate_and_environmental_disclosures_202203~4ae33f2a70.en.pdf. The recent Banking Package 2021 aims to elaborate on and extend requirements related to banks' climate risk management and disclosure. See 'Questions and Answers on the Banking Package 2021' (27 October 2021) at https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_5386.

[182] For example, in the EU, under the Capital Requirements Regulation (art 449a), large, listed banks are already required to disclose information on ESG risks, including physical risks and transition risks. See the consolidated version of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012.

[183] See, eg, P. Baudino and J.-P. Svoronos, 'Stress-testing Banks for Climate Change – A Comparison of Practices' (FSI Insights on Policy Implementation No. 34, July 2021) at https://www.bis.org/fsi/publ/insights34.pdf.

[184] ECB Press Release, 'ECB Banking Supervision launches 2022 climate risk stress test' (27 January 2022) at https://www.bankingsupervision.europa.eu/press/pr/date/2022/html/ssm.pr220127~bd20df4d3a.en.html. Bank of England has already conducted a similar exercise, see https://www.bankofengland.co.uk/news/2022/may/boe-publishes-results-of-the-2021-biennial-exploratory-scenario-financial-risks-from-climate-change.

[185] See, eg, Deloitte, 'Climate-related Financial Risk in Banking: The State of Play on Capital Requirements' (23 July 2021) at https://ukfinancialservicesinsights.deloitte.com/post/102h3pj/climate-related-financial-risk-in-banking-the-state-of-play-on-capital-requirem; Ivana Baranović et al, 'The Challenge of Capturing Climate Risks in the Banking Regulatory Framework: Is There A Need for A Macroprudential Response?' (ECB Macroprudential Bulletin, Issue 15, October 2021) at https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/index.en.html ('[c]apital-based macroprudential measures could increase banks' resilience to climate risks and affect incentives and prices in the allocation of funding, but would require careful calibration.'); Bank of England Prudential Regulation Authority, 'Climate-related Financial Risk Management and The Role of Capital Requirements' (28 October 2021) at https://www.bankofengland.co.uk/prudential-regulation/publication/2021/october/climate-change-adaptation-report-2021 (stating that the PRA has undertaken an initial review on the linkages between climate-related financial risks and regulatory capital).

All in all, if banks reduce their financing for assets or projects with non-sustainable credentials, then private companies will not be able to undertake such projects unless they can internally finance them. This will lead to private companies transforming their activities to become more sustainable. Similarly, if banks raise the cost of capital for private companies with high exposure to transition and physical risks, companies should better monitor and manage such risks (to a socially desirable extent). Evidence suggests that relevant developments are already afoot.[186]

d. Other factors

There are some additional factors that may discipline private companies in terms of their environmental performance. An important one here is reputation. In particular, large private companies whose activities attract media attention may be susceptible to reputational effects and thus refrain from engaging in operations that could potentially trigger a public backlash or negative consumer behaviour. Furthermore, family-owned private companies cultivate the long-term 'brand' of the company, again providing incentives to curb externalities.[187]

Another important factor is that private companies may be a part of the same ecosystem as public companies. Indeed, private companies are on the supply chain of public companies. In terms of net-zero strategies and targets, an increasing spotlight is being put on scope 3 emissions, which occur in a company's value chain. If public companies attempt to reduce their scope 3 emissions, they encourage private companies in their supply chain to reduce their emissions too. Alternatively, private companies that provide 'greener' products or services will have a competitive advantage on the global product market.

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[186] On the environmental performance, see, eg, S. Chava, 'Environmental Externalities and Cost of Capital' (2014) 60 *Management Science* 2223 ('[l]enders […] charge a significantly higher interest rate on the bank loans issued to firms with […] environmental concerns [such as hazardous chemical, substantial emissions, and climate change concerns]'); N.H. Wellalage and V. Kumar, 'Environmental Performance and Bank Lending: Evidence From Unlisted Firms' (2021) 30 *Business Strategy and the Environment* 3309 ('[unlisted] firms with better environmental performance received approximately 6.4% higher loans (as a ratio of total sales) […]'). On the climate risk, see, eg, G. Capasso, G. Gianfrate and M. Spinelli, 'Climate Change and Credit Risk' (2020) 266 *Journal of Cleaner Production* 1 ('companies with high carbon footprint are perceived by the market as more likely to default, *ceteris paribus*.'); E. Ginglinger and Q. Moreau, 'Climate Risk and Capital Structure' (ECGI Finance Working Paper No 737/2022, June 2022) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3327185 ('bankers and bondholders increase the spreads when lending to firms with the greatest risk').

[187] See, eg, J. Dekker and T. Hasso, 'Environmental Performance Focus in Private Family Firms: The Role of Social Embeddedness' (2016) 136 *Journal of Business Ethics* 293 (finding that 'in cases where the firm is highly embedded in the social community […] family firms have a higher environmental performance focus.').

V. POLICY IMPLICATIONS

As seen above, in the fight against climate change to achieve the Paris Agreement goals, private companies also need to do their part and reduce their externalities, especially GHG emissions. Where operational, direct regulation (or pricing) of carbon externalities and environmental duties are reasonably the best option to achieve this intended result (even though it may not always be successful). The regulatory framework on public disclosure, however, does not apply equally to private companies, opening up a significant lacuna (although this is currently changing somewhat). Likewise, other disciplinary mechanisms such as institutional shareholder stewardship or activism, do not apply similarly to private firms as they do to listed companies.

In sum, the regulatory framework encouraging private firms to mitigate their GHG emissions and other externalities remains incomplete. In discussing regulatory responses to this problem, it is apt to consider both changes to (i) the corporate governance arrangements and (ii) the disclosure framework. We will argue below that if policymakers are to make use of the latter, it is logical to include private firms.

(i) First, we are concerned that corporate governance arrangements cannot be a complementary mechanism let alone a proper substitute for bringing about 'sustainable' private companies.

To start with, there is now an extensive debate on how to shape directors' duties in companies going forward. Some scholars see 'the shareholder value maximisation' mantra in corporate management as being responsible for the global environmental problems we currently face and argue for a reform of directors' duties to care for more interests than shareholder value.[188] In its 'sustainable corporate governance' initiative, the European Commission had also picked up on this issue, considering reforming directors' duties 'to take into account all stakeholders' interests which are relevant for the long-term sustainability of the firm […] as part of their duty of care […]'.[189] While the soundness of this reform and the evidence on which it is based were highly disputed,[190] it is even more questionable whether reforming directors' duties to push

[188] See, eg, L.E. Strine Jr., 'Restoration: The Role Stakeholder Governance Must Play in Recreating a Fair and Sustainable American Economy A Reply to Professor Rock' (2021) 76 *The Business Lawyer* 397.

[189] European Commission, 'Inception Impact Assessment – Ares(2020)4034032' (30 July 2020) 3 at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12548-Sustainable-corporate-governance_en (Inception Impact Assessment).

[190] The initiative and the underlying study from Ernst & Young have attracted substantial criticism for various shortcomings. See, eg, A. Edmans et al, 'Call for Reflection on Sustainable Corporate Governance' (7 April 2021) at https://ecgi.global/news/call-reflection-sustainable-corporate-governance; M. Roe et al, 'The Sustainable Corporate Governance Initiative in Europe' (2021) 38 *Yale Journal on Regulation Bulletin* 133; A. Bassen, K. Lopatta and W.-G. Ringe, 'The EU Sustainable

them to take environmental issues into account would be effective in private companies. Crucially, private companies are commonly characterised by large blockholders who control the operations and strategy of the company alone or collectively.[191] These controlling shareholders also have the power to nominate, elect, and remove company directors, and, usually, they, their relatives and associates sit on the board.[192] In such an environment, directors of private companies are beholden to the controlling shareholders even if it is their duty to consider other interests. Combined with minimal enforcement of directors' duties and hurdles in the way of a substantial liability of directors in the continental European jurisdictions,[193] directors may still rather prioritize the interests of the controlling shareholder, which might not align with environmental interests.[194] We therefore welcome that in its 'Proposal for a Directive on corporate sustainability due diligence (CSDD)' that follows the abovementioned 'sustainable corporate governance' initiative, the European Commission did not undertake any far-reaching reform of directors' duties, as previously signalled.[195]

Corporate governance codes can also affect how the directors of companies approach their duties. These codes are generally directed at listed companies, but some jurisdictions have corporate governance codes for (large) private companies as well. For example, the UK introduced the 'Wates Corporate Governance Principles' to be applied by private companies on a 'comply or explain' basis.[196] One principle exhorts boards to consider the impact of the company's activities on the environment.[197] Given its soft nature, it is at least doubtful whether such counsel has

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Corporate Governance Initiative—room for improvement' Oxford Business Law Blog, 15 October 2020 at https://www.law.ox.ac.uk/business-law-blog/blog/2020/10/ec-corporate-governance-initiative-series-eu-sustainable-corporate.

[191] See n 97 above.

[192] See n 116 above.

[193] See in this regard M. Gelter, 'Why Do Shareholder Derivative Suits Remain Rare in Continental Europe?' (2012) 37 *Brooklyn Journal of International Law* 844, and B.R. Cheffins and B.S. Black, 'Outside Director Liability Across Countries' (2006) 84 *Texas Law Review* 1385.

[194] See also Gözlügöl, n 97 above.

[195] For a brief discussion, see W.-G. Ringe and A.A. Gözlügöl, 'The EU Sustainable Corporate Governance Initiative: where are we and where are we headed?' Harvard Law Forum on Corporate Governance, 18 March 2022 at https://corpgov.law.harvard.edu/2022/03/18/the-eu-sustainable-corporate-governance-initiative-where-are-we-and-where-are-we-headed/.

[196] For these principles, see https://www.frc.org.uk/getattachment/31dfb844-6d4b-4093-9bfe-19cee2c29cda/Wates-Corporate-Governance-Principles-for-LPC-Dec-2018.pdf. This initiative was 'driven by evidence that private companies constitute a vast (and increasing) portion of the UK economy and its recent experience that their actions (including several recent large-scale failures) can have a significant impact on their employees, suppliers and other stakeholders.' See https://www.clearymawatch.com/2018/06/uk-proposes-new-corporate-governance-code-large-private-companies/.

[197] Wates Principles, n 196 above, 21.

any traction at all. Furthermore, as stated above, executive remuneration tied to sustainability metrics or independent directors with sustainability (or net-zero transition) expertise are rare commodities in private companies.

(ii) We certainly think that indirect effects resulting from financial, reputational, or other factors could constitute a significant push for sustainability in private companies or could exert a certain discipline. A further tool which policymakers are increasingly making use of is disclosure. As we outlined above, climate risk and impact disclosures now cover or will be extended to (large) private companies. We submit that if policymakers are to use disclosure not only to address information asymmetry in public markets (as in climate risk disclosures) but as a tool to provide transparency, to mobilize stakeholder pressure, and thus to discipline companies (as in climate impact disclosure), it is only logical and consistent that such disclosures are also extended to certain private companies.

In the traditional securities regulation paradigm, the disclosure of 'financial' information is necessary to overcome information asymmetries and preserve market integrity.[198] These needs are particularly acute in big, anonymous public markets where investors lack verifiable information or would face prohibitive costs to obtain them. Thus, it makes sense to require periodic and *ad hoc* disclosure of financial information only for companies that are public or issued securities traded on a regulated market. In terms of climate risk disclosures that have more of a financial nature, public companies are natural addressee of such rules. Although private company investors might have similar needs, they might contract for such information at low costs or obtain it directly via usual information channels (eg, via sitting on company boards). However, climate impact disclosures that are not based on financial relevance should not be considered as a tool to overcome pricing issues for investors on public markets. The recipient of non-financial information is not limited to investors but encompasses a broader audience that includes stakeholders, media, NGOs, and the general public. Therefore, the intended aim of these disclosures is to provide transparency on the societal impact of relevant companies, to inform and mobilize stakeholders and relatedly to encourage firms to improve their record on carbon emissions or any other desirable activity.[199] In brief, the primary regulatory

[198] See generally L. Enriques and S. Gilotta, 'Disclosure and Financial Market Regulation', N. Moloney, E. Ferran and J. Payne (eds), *The Oxford Handbook of Financial Market Regulation* (Oxford: OUP, 2015) 512–35 (examining the debate over mandatory disclosure to the public as a regulatory technique for financial markets, with emphasis on issuers of securities).

[199] See also L. Enriques, H. Hansmann, R. Kraakman and M. Pargendler, 'The Basic Governance Structure: Minority Shareholders and Non-Shareholder Constituencies' in R. Kraakman et al (eds), *The Anatomy of Corporate Law: A Comparative and Functional Approach* (Oxford: OUP, 2017) 94 ('These […] obligations relate to information that, while arguably valuable from a social standpoint, may not always be relevant for shareholder affiliation decisions motivated solely by financial considerations. Rather,

objective of climate impact disclosures is to promote the transition to a greener economy rather than to overcome (only) the investors' information gaps. Therefore, it would be consequential to decouple this from public firm-oriented securities regulation and to require disclosures also from private companies that may be relevant from a sustainability perspective, thus removing the no-longer-rational public/private divide in terms of societal impact.[200]

While the European policymakers have wholeheartedly embraced this approach of non-investor oriented (climate) impact disclosure,[201] they inconsistently restricted addressees to public companies – as in the NFRD. Private companies may come under the scope, but only when they issued bonds traded on an EU regulated market, which again adopts a 'securities regulation' paradigm. Therefore, the forthcoming CSRD that puts private and public companies on an equal footing is a welcome development and remedies this inconsistency in the European approach. Indeed, many stakeholders reported interest in large private companies' disclosures during the consultation period of the CSRD initiative.[202] On the other hand, although the UK has also adopted climate impact disclosures in the form of GHG emission reporting for private companies, it is quite limited in itself, and in comparison to public companies, which we claim is unjustified.

While theoretically it makes sense that climate impact disclosures as non-investor-oriented disclosures can be extended to private companies,[203] whether

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their goal is to facilitate entry and exit decisions by shareholders (and consumers) on socially minded criteria and, where such decisions are taken on a sufficiently large scale, to shape substantive corporate conduct.').

[200] Lipton, n 142 above, 520 ('there is a growing divergence between companies that are defined as public under the securities laws, and companies that are sufficiently large and impactful that the general public may have a legitimate need for disclosure about their operations.'). Similarly, some 'public' companies in the traditional securities regulation sense may have little societal relevance although they would be subject to broader disclosure regime if sticking to the classical public/private divide. See also D.C. Langevoort and R.B. Thompson, '"Publicness" in Contemporary Securities Regulation After the JOBS Act' (2013) 101 *The Georgetown Law Journal* 337.

[201] See n 118 above.

[202] See COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a Directive of the European Parliament and of the Council amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting SWD/2021/150 final, 45, 69, 156-57 at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021SC0150.

[203] Some scholars argued for such an extension. See, eg, Partick Bolton et al, 'Mandatory Corporate Carbon Disclosures and The Path to Net Zero' (CEPR Policy Insight No 111, October 2021), 3 at https://cepr.org/active/publications/policy_insights/viewpi.php?pino=111 ('[p]rivate firms beyond a certain minimum size […] [should] report their global greenhouse gas emissions […]'); J. Armour, L. Enriques and T. Wetzer, 'Mandatory Corporate Climate Disclosures: Now, but How?' (2021) *Columbia Business Law Review* 1085, 1131 ('if the footprint of climate disclosure obligations were limited only to public firms, this would create an incentive for firms to "go dark" by delisting in order

policymakers should indeed do so is dependent on (partly idiosyncratic) cost-benefit analysis.[204]

We should first note the danger of putting the spotlight in terms of environmental impact only on public companies: this would invite brown-spinning and arbitrage. A standardized and comprehensive disclosure regime for public companies is likely to push their ('climate impact or risk conscious') investors to engage with investee companies to reduce their externalities and to increase societal pressure and reputational consequences on these companies, especially the laggards. As we noted above, a convenient way of improving a company's sustainability performance (or that of the funds investing in these companies) is to divest of carbon-intensive assets, especially to parties that are immune to similar pressure such as private companies – a practice that may be sanctioned by public investors concerned with only firm-level risk or green credentials. In other words, disclosure may induce companies and their investors to focus only on the climate metric which is being disclosed.[205] This is obviously not helpful for overall climate targets as emissions related to those assets remain more or less the same, just switching from the balance sheet of a public company to a private (or state-owned) one. Extant literature shows that uneven regulation, especially disclosure obligations, affects firms' operations, shifting activities from regulated firms to unregulated ones.[206] A similar phenomenon

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to avoid having to make such disclosure, or for high-emission activities to switch from listed to private firms.'); L.E. Strine, Jr., 'Toward Fair and Sustainable Capitalism' (University of Pennsylvania Institute for Law & Economics Research Paper No 19–39, August 2020) at https://ssrn.com/abstract=3461924 (arguing for ESG disclosures from companies, whether public or private, with more than $1 billion in annual sales). See also G.S. Georgiev, 'The Breakdown of the Public-Private Divide in Securities Law: Causes, Consequences, and Reforms' (2021) 18 *NYU Journal of Law & Business* 221, 284–85 (stating that climate-related disclosure that only applies to public companies 'fails to capture a significant segment of entities across the economy.').

[204] Overall, it is difficult to ascertain the costs and benefits of a mandatory disclosure regime to a full extent. See C. Leuz and P. Wysocki, 'The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research' (2016) 54 *Journal of Accounting Research* 525, 529 ('we are still far from being able to perform quantitative cost–benefit analyses [of disclosure regulation]').

[205] Sandra Batten, Rhiannon Sowerbutts and Misa Tanaka, 'Let's talk about the weather: the impact of climate change on central banks' (Bank of England Staff Working Paper No. 603, May 2016), 22 at https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/lets-talk-about-the-weather-the-impact-of-climate-change-on-central-banks ('disclosure could induce firms to change their strategy to focus on improving the metric which is being disclosed, rather than long-term economic efficiency.').

[206] See Thomas Rauter, 'The Effect of Mandatory Extraction Payment Disclosures on Corporate Payment and Investment Policies Abroad' (2020) 58 *Journal of Accounting Research* 1075 (showing that uneven disclosure regulation distorts capital allocation). See further H.B. Christensen, E. Floyd, L.Y. Liu, and M. Maffett, 'The Real Effects of Mandated Information on Social Responsibility in Financial Reports: Evidence from Mine-Safety Records' (2017) 64 *Journal of Accounting and Economics* 284, 292

might happen, or indeed might be already happening as carbon-intensive assets move from public markets to private ones as both systems have become to inhabit different ecosystems with regard to sustainability transparency and pressure.[207] These different ecosystems (shaped by different market and regulatory expectations) create arbitrage opportunities for private companies to benefit from.

Would extending similar disclosure obligations to private companies help alleviate the problem? It obviously depends on the benefits of climate impact disclosure as well as the relative effectiveness of other rules to alleviate the same problem.[208] Or, generally, would disclosure obligations increase the sustainability performance of private companies?

The answer to both questions depends on whether and to what extent disclosure obligations can trigger 'societal or stakeholder' pressure on private firms, imposing on them a cost in the case of low sustainability performance.

This is not a far-fetched idea. In line with the well-known idiom of 'sunlight is the best disinfectant',[209] disclosure has long been used as a regulatory tool instead of, or coupled with, a command-and-control regulation to increase compliance with relevant laws and regulations (as otherwise opacity lends itself to abuse) and to decrease socially undesirable behaviour.[210] A central thesis here is that disclosure facilitates social/stakeholder pressure over the company to a certain extent. It would lower, for example, search and information processing costs for the media, NGOs, employees, corporate and individual customers,[211] and affected parties to exert

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(showing that public firms subject to mine-safety disclosures required by the SEC are more likely to close dangerous mines than unregulated (private) firms).

[207] See also H.B. Christensen, L. Hail and C. Leuz, 'Mandatory CSR and Sustainability Reporting: Economic Analysis and Literature Review' (2021) 26 *Review of Accounting Studies* 1176, 1216 ('if mandatory CSR standards apply only to [public] firms, we could observe a shift of such activities from regulated to unregulated (private) firms.'); Coffee, Jr., n 70 above ('[a]s ESG disclosure becomes more costly (and it will), we may see the ratio between public and private firms owning "dirty energy" assets shift significantly towards a higher percentage of private companies.').

[208] For example, a robust carbon pricing regime that makes it financially unprofitable to invest in 'brown' assets would eliminate any arbitrage problem that stems from different ecosystems in which public and private companies find themselves.

[209] L.D. Brandeis, *Other People's Money and How the Bankers Use It* (New York: F.A. Stokes, 1914) 92 ('[p]ublicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman.').

[210] Relevant examples include rules on mandatory disclosure of extraction payments or disclosure of the use of conflict minerals in the EU and the US.

[211] Christensen et al, n 207 above, 1207 ('[s]tandardized CSR reports might serve as a starting point for consumers who are typically less informed and sophisticated than investors […] and could help them with peer comparisons.'). Admittedly, stakeholder pressure via consumers is limited to consumer-facing businesses. But corporate customers on the supply chain can be also important. See, eg, R. Dai, H. Liang and L. Ng, 'Socially Responsible Corporate Customers' (2021) 142 *Journal of Financial Economics* 598.

influence via naming and shaming, boycotting, protesting, and litigation, among other methods.[212] Indeed, a recent survey of CFOs of European companies shows that such pressure from various stakeholders exists for most companies in relation to climate change.[213] In this regard, fear of reputation damage as a result of increasing transparency on company activities is an important cost element.[214] Moreover, disclosure could increase the liability risk by making it easier to sue and establish causation.[215] Given the recent rise in climate change litigation, NGOs including grassroots movements and activist groups would be more likely to target private companies with large externalities as a result of disclosure. Media is also an important channel via which sustainability disclosures could have real effects.[216] Disclosures should additionally make it easier for the media to compare and rank companies as well as reducing information-gathering costs.[217] Finally, with more transparency on the externalities, affected groups and more generally the public can use their political clout to provide politicians with the seemingly necessary impetus to act on socially undesirable behaviour.[218]

Although theoretically sound, whether and to what extent disclosure can mobilize stakeholder/societal pressure and impose costs on low-performing firms, especially in the context of private companies and environmental externalities, is not empirically certain. If it was the case, the danger of brown-spinning could be alleviated to a certain extent. In other words, if private companies face consequences as a result of disclosure (of low sustainability performance), they would not have the same incentives to acquire highly-polluting assets as they would have (or currently

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[212] Christensen et al, n 207 above, 1213 and 1217. See also Lipton, n 142 above, 506 ('[c]orporate stakeholders cannot pressure managers to change behaviors of which they are unaware.').

[213] Michela Coppola & Julian Blohmke, 'Feeling the heat? Companies are under pressure on climate change and need to do more' *Deloitte Insights* 12 December 2019 at https://www2.deloitte.com/us/en/insights/topics/strategy/impact-and-opportunities-of-climate-change-on-business.html.

[214] See K. Hombach and T. Sellhorn, 'Firm Value Effects of Targeted Disclosure Regulation: The Role of Reputational Costs' (TRR 266 Accounting for Transparency Working Paper Series No. 18, 2018) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3204505 (studying 'the reputational costs of targeted disclosure regulation' and finding that '[c]onsistent with reputational costs imposed on affected firms, […] the rule's negative effect on firm value is stronger where greater reputational risk makes firms more vulnerable to public pressure.'); Rauter, n 206 above (findings suggest that mandatory extraction payment disclosures increase the reputational cost of corporate behaviour). See also C.A. Hill, 'Marshalling Reputation to Minimize Problematic Business Conduct' (2019) 99 *Boston University Law Review* 1193.

[215] See, eg, S. Olmstead and N. Richardson, 'Managing the Risks of Shale Gas Development Using Innovative Legal and Regulatory Approaches' (2014) 38 *William & Mary Environmental Law and Policy Review* 177.

[216] Christensen et al, n 207 above, 1204.

[217] *ibid*, 1205.

[218] Lipton, n 142 above, 519.

have) when operating in the dark. That is why, in his 2022 letter to portfolio companies, State Street CEO Cyrus Taraporevala calls for a 'universal disclosure requirement for all companies of a certain size in their portfolios — irrespective of whether they are publicly-traded or privately-held, to avoid the pernicious effects of "brown-spinning".'[219]

There is some empirical evidence, largely showing that sustainability disclosure leads to better environmental performance. This evidence mostly relates to public companies, reflecting a problem we have indicated, namely that private companies operate mostly in the dark. Some evidence outlines the positive effects of disclosure at the level of plants, which are also owned by private companies. The relevant studies have shown that investor pressure, which is most prominent in public companies, albeit useful, is not necessarily crucial for the disclosure mandates to create a disciplining effect.[220] Other evidence directly relates to public companies' disclosures.[221] This could also be relevant if the identified forces driving the desirable result could be replicated in the private companies context. One study posited that mandatory ESG disclosure reduces the occurrence of negative firm-level ESG events because it makes it less likely that firms can hide ESG incidents *ex post*,[222] which is also applicable in the private companies context. Another study postulated that firms reduce their emissions after disclosure because of potential future GHG-emissions-related regulation and higher reputational costs associated with high levels of GHG

[219] C. Taraporevala, 'CEO's Letter on Our 2022 Proxy Voting Agenda' (12 January 2022) at https://www.ssga.com/us/en/individual/mf/insights/ceo-letter-2022-proxy-voting-agenda.

[220] See S. Tomar, 'Greenhouse Gas Disclosure and Emissions Benchmarking' (ECGI Finance Working Paper No. 818/2022, March 2022), 'Online Appendix', 22 at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3448904 ('unclear whether facilities face pressure from investors[…]'); L. Yang, N.Z. Muller and P.J. Liang, 'The Real Effects of Mandatory CSR Disclosure on Emissions: Evidence from the Greenhouse Gas Reporting Program' (NBER Working Paper No. 28984, July 2021) at https://www.nber.org/papers/w28984 (finding that power plants that are subject to emissions reporting reduced emission rates by seven per cent although this rate increases to 10 per cent for plants owned by publicly traded firms.).

[221] See, eg, P. Krueger, Z. Sautner, D. Yongjun Tang and R. Zhong, 'The Effects of Mandatory ESG Disclosure Around the World' (ECGI Finance Working Paper No. 754/2021, December 2021) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3832745 ('mandatory ESG disclosure has beneficial informational and real effects.'); V. Jouvenot and P. Krueger, 'Mandatory Corporate Carbon Disclosure: Evidence from a Natural Experiment' at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3434490 ('[f]irms respond to [disclosure requirements] by reducing GHG emissions by about 16 percent.').

[222] Krueger et al, n 221 above, 4 ('[m]andatory ESG regulation should make it less likely that firms can hide ESG incidents ex post, which in turn should have ex ante disciplinary effects on firm management and should reduce the likelihood of ESG incidents.').

emissions as a result of transparent and standardized disclosure.[223] This is also pertinent for private companies. Lastly, some evidence demonstrates that sustainability disclosures lead to better firm performance environmentally at the shareholders' expense, showing the effect of stakeholder pressure, which should not be largely different for private companies.[224] Absent better evidence on private companies, policymakers have to operate on the basis of potential calculated benefits and costs. The recent move to require disclosure by private companies creates a natural experiment to better tease out any effect of the disclosure on the private companies' behaviour.

Apart from potential stakeholder/societal pressure, we should note two potential firm-level and wider benefits of disclosure. First, there can be a nudge effect: it may stimulate large private companies to review, evaluate, and benchmark their environmental impact & strategy.[225] Second, the disclosure mandate will force private companies that have hitherto been in the dark to produce (public) information about their environmental impact and strategy in a standardised, verified, and comprehensive way. Apart from providing transparency and associated benefits, this might have systemic benefits. For example, the uneven playing field between public and private companies would be levelled, thus eliminating the classical problem of avoiding regulatory obligations tied to being public by staying private (ie, removing incentives to remain private longer to avoid sustainability disclosures).[226] Furthermore, as a systemic benefit, there can be some positive externalities of private companies' climate impact disclosure. First, policymakers might get a better view of the consequences of the brown-spinning phenomenon. Absent disclosure, policymakers might observe that carbon-intensive assets switch to private players (and ascertain to what extent this happens), yet might remain ignorant of the degree of its social harm. As argued above, although the transfer of highly-polluting assets from public to private companies is not *per se* harmful, there can be a certain loss of

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[223] Jouvenot and Krueger, n 221 above, 5 ('the introduction of mandatory carbon disclosure could be seen as signalling future GHG emissions related regulatory action […] In addition, there is the possibility that high levels of GHG emissions are associated with higher future reputational costs […]').

[224] Y.-C. Chen, M. Hung and Y. Wang, 'The Effect of Mandatory CSR Disclosure on Firm Profitability and Social Externalities: Evidence from China' (2018) 65 *Journal of Accounting and Economics* 169, 170 ('our findings indicate that mandatory CSR disclosure changes firm behavior and generates positive externalities at shareholders' expense.').

[225] Cf S.M. Bainbridge, 'Dodd-Frank: Quack Federal Corporate Governance Round II' (2011) 95 *Minnesota Law Review* 1779 (referring to such disclosures as 'therapeutic disclosures'). On the benchmarking, see Christensen et al, n 207 above, 1213 ('better CSR reporting could facilitate inter-firm learning [by] lower[ing] the costs of peer benchmarking, especially within the same industry.') and 1215 ('firms want to avoid the public backlash associated with looking worse than their peers [and] could also learn from their peers.'). See also Tomar, n 220 above ('mandatory, granular disclosure can curb GHG emissions, and that benchmarking plays an important role in this process').

[226] See also Bolton et al, n 203 above, 6; Armour et al, n 203 above, 1131.

transparency in terms of the environmental impact of those assets (eg, disclosure of emissions related to those assets), and of the discipline provided by public markets.[227] Transparency requirements on private companies that would hence cover the private acquirer of those assets can shed light on the issue of the extent to which those assets continue polluting, which can be important in order to understand the overall impact on the world ecosystem. Such an economy-wide view might also be important for public market investors. For example, BlackRock recently argued that '[u]niform disclosures would […] provide market participants with a clearer understanding of how the transition to a lower carbon economy is progressing across the entire economy.'[228] However, it might be difficult to tease out how public investors might really benefit from private company disclosures and to quantify those benefits. As far as satisfying the policymakers' need to have an economy-wide view and information is concerned, private company disclosures do not need to be public but can be made to the relevant regulator, which can then pass on aggregated information to the public and interested parties.

Another positive externality is to reduce the transaction costs for financial institutions (such as banks) and public companies in obtaining relevant climate impact data from private companies. Banks, for example, may have their own supervisory and reporting obligations, and in fulfilling those, they may need to obtain environmental impact information from private companies to which they lend.[229] Similarly, as public companies disclose their Scope 3 emissions, they need to take into account the impact of private companies on their supply chain, requiring them to obtain similar information from these private companies. If private companies do not track and report such information themselves, banks and public companies need to negotiate one-by-one with these private companies to obtain information and to monitor their reporting, which may result in considerable (repetitive) transaction and monitoring costs that can be avoided by private company (audited) disclosure. Indeed, BlackRock argued that '[t]he absence of consistent private and public market disclosure standards forces public companies to step into the role of policing their value chain partners and clients through negotiating the implementation and monitoring of the data they need for their own disclosures, such as private companies' GHG emissions reporting.'[230] Another benefit might be that private companies'

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[227] See notes 63–68 above and text thereto. See also 'The Truth about Dirty Assets', n 34 above ('as dirty assets pass into private hands, it becomes harder to tell if their owners plan to reduce their output over time, or expand it.').

[228] See BlackRock's comment letter to the SEC consultation on 'The Enhancement and Standardization of Climate-Related Disclosures for Investors' (17 June 2022), 4 at https://www.sec.gov/comments/s7-10-22/s71022-20132288-302820.pdf.

[229] Note however that under the current Taxonomy-reporting system, banks do not need to take into account their exposure to private companies under the green asset ratio (yet). See n 174 above.

[230] See BlackRock Comment Letter, n 228 above, at 4.

audited/assured (public-facing) disclosures[231] make the disclosure of parties using this data more robust. Otherwise, the reliability of information which private companies relay to their contractual parties for their own disclosure is dependent on contracting parties' incentives to ensure that, which might be questionable.[232] Policymakers need to take into account these positive externalities in their cost-benefit analysis.

What would be the costs of requiring climate impact disclosure by private companies? Obviously, there is the cost of tracking and reporting environmental impact (such as emissions) and the cost of putting in place plans, targets and oversight mechanisms.[233] Yet, these costs are largely eliminated for private firms that need to track and report their emissions for their installations under environmental regulation or emission trading system anyway, or for private firms that deal with banks/ investors and public companies that demand such information in their dealings with them as a result of their own obligations. In such cases, policymakers might consider that if private companies incur these costs anyway with or without disclosure, they might opt for disclosure to obtain benefits that are potentially associated with it, as we explained above. In this case, the choice for policymakers is between two scenarios: (i) no disclosure mandate: private companies incur these costs but zero potential broader benefits for society and (ii) disclosure mandate: private companies incur these costs but disclosure might bring further (disciplinary and other) benefits. However, costs of disclosure might not be limited to these basic costs. In particular, disclosure might reveal proprietary information that private companies would not want normally to disclose. Therefore, policymakers need to identify to what extent climate impact disclosures can reveal proprietary information that would disadvantage private firms and thus impose extra costs on them (and also relatedly on the society).[234]

Related to the cost-benefit analysis, an important issue to decide is how to calibrate the scope of private companies that would fall under the disclosure

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[231] In the EU, while the NFRD left it to the discretion of Member States whether to require assurance for non-financial reporting, the upcoming CSRD (Art 3(12)) introduces an audit (assurance) requirement for the reported sustainability information to ensure that it is accurate and reliable.

[232] In other words, there is a conflict of interest. Parties that contract for and monitor the other parties' data reporting have an incentive that they underreport as it reduces their (disclosed) impact as well (via Scope 3 for example).

[233] Although disclosure does not make such (strategy-related) items mandatory to adopt; if, as a result of disclosure, revealing the absence of such items imposes a cost on the companies, they would adopt such mechanisms, which is the purpose of disclosure in the first place.

[234] See, eg, T. R. Fetter, A. L. Steck, C. Timmins and D. Wrenn, 'Learning by Viewing? Social Learning, Regulatory Disclosure, and Firm Productivity in Shale Gas' (NBER Working Paper No. 25041, June 2020) (studying disclosure of chemical inputs firms use in the shale gas industry that may expose trade secrets and reduce innovation incentives, and concluding that '[o]ur results suggest there is a long-run welfare trade-off between the potential benefits of information diffusion and transparency, and the potential costs of reduced innovation.').

requirement in order to not inflict substantial costs. Ideally, companies that impose the largest externalities (eg the high-emitters) should be subject to the disclosure requirements. A good proxy here can be company size (according to assets or revenue, for example) because, as the company gets larger, its emissions are likely to increase.[235] However, in certain sectors, even relatively small companies can be important. These sectors are carbon-intensive sectors such as utilities, energy, and materials.[236] Therefore, we would recommend a two-pronged approach where, for companies operating in carbon-intensive sectors, the threshold for the disclosure requirements to apply is lower.[237]

In terms of emissions(-related) reporting, an alternative regulatory design could entail forcing firms that emit higher than a certain threshold to disclose. Such a framework would require companies to track their emissions and disclose them if they surpass the given threshold. Obviously, they can cheat by under-reporting, but verification requirements such as auditing (or assurance) can provide a certain safety net. Furthermore, to understand whether they are under the threshold or not, (almost) all companies need to track their emissions, which can impose disproportionate costs on them. Therefore, this framework should also include a size criterion so that some companies do not need to track and report at all. It should be noted however that whether it be tied to emissions or size, any threshold which is necessary not to inflict disproportionate costs would be open to arbitrage by the firms[238] and would need to be dynamically calibrated.

We have so far written on climate impact disclosures for private companies. Another issue is whether private companies should also be required to disclose the effects of climate change and of related regulatory and market developments on their

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[235] See S. Alogoskoufis et al, 'ECB Economy-Wide Climate Stress Test: Methodology and Results' (ECB Occasional Paper Series 281, September 2021), 27 at https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op281~05a7735b1c.en.pdf (showing that in the euro area, 'large companies seem to be the biggest polluters given that they contribute almost 90% of the overall emissions'). The report further states that '[f]irms are categorised as large, medium, small and micro based on the size of their total assets. The thresholds for this categorisation are based on the European Commission's definition of SMEs.' *ibid.*

[236] See note 19 above and text thereto (citing a study showing that especially in those sectors, private companies have similar carbon intensity as public companies). See also text to notes 25–33 above (explaining how relatively small private companies in those sectors have still large carbon footprints).

[237] This is similar to the approach adopted in the Proposal for a Directive on CSDD. The latter applies lower thresholds to sectors where adverse impacts on human rights and environment can be acute, including extraction of minerals and manufacture of materials. See Art 2, n 156 above.

[238] See, eg, Darren Bernard et al, 'Size Management by European Private Firms To Minimize Proprietary Costs of Disclosure' (2018) 66 *Journal of Accounting and Economics* 94 ('at least 8% of firms near thresholds that impose income statement disclosure manage size downward, and the average firm that manages size sacrifices more than 6% of its assets.').

business, namely climate risk disclosures (or climate-related *financial* disclosures). As we explained above, policymakers not only moved to include private companies under climate impact disclosures but also under climate risk disclosure regimes, such as demanding reporting similar to the TCFD requirements in the UK.

These disclosures, which are generally demanded of public companies, are financially relevant and thus investor-oriented. From the investor protection perspective, in private companies, information asymmetries are less acute and significantly less costly to eliminate for investors absent public disclosure. However, as the management of such risks can be socially desirable,[239] one broader benefit of disclosure by large private companies would be a nudge towards identifying and assessing those climate-related risks (which are not reflected and revealed in the public markets).[240] Yet, as argued above, banks, as financiers, and controlling shareholders (including private equity firms) may already move forward private companies to this end without any nudge from (public) disclosure.[241] Therefore, overall, the case for disclosure here is not strong. Anyway, potentially reflecting the view that it is socially desirable (from financial stability and macroeconomic perspective) that important private firms should identify and address such risks, the UK only required TCFD-based reporting from 'very large' private companies. The EU, on the other hand, requires such disclosures from 'large' private firms that are considerably smaller than private firms under the UK regime.

Lastly, policymakers have also started to require companies to put in place a transition plan, involving some climate targets. Although (both types of) disclosure requirements also involve such net-zero targets and strategies among their demands, this might be understood as an additional push for companies to materialize and accelerate their climate action. In the EU, the proposed CSDD includes such requirements.[242] The UK is preparing similar measures as of 2023 under the auspices

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[239] See Section II Part C.

[240] Indeed, this was the key benefit identified in interviews with large private firms in the UK that were voluntarily making disclosures largely aligned with the TCFD requirements. See AECOM, 'An assessment of climate-related reporting by large UK private companies' (June 2021), 2 at https://publications.aecom.com/media/files/An_assessment_of_climate-related_reporting_by_large_UK_private_companies_AECOM.pdf. Another benefit might be a positive externality in the sense of producing information that is relevant for other parties such as public authorities. See also Armour et al, n 203 above, 1123. However, again, to satisfy the needs of a public authority, disclosures do not need to be public, rather can be made to the relevant authority.

[241] In widely-held companies, managers may fail to address climate-related risks due to agency problems. See Condon, n 76 above, 22–26. However, with their large economic stakes in the company, controlling shareholders would have incentives to address climate-related financial risks.

[242] It requires a certain group of companies, under some conditions, to adopt net-zero transition plans and targets as well as mandating due diligence systems and plans. See Proposal for a Directive on CSDD, n 156 above, Art 15 and Arts 5-11. See also, Wolf-Georg Ringe, 'Net-Zero Plans under the

of the newly set up Transition Plan Taskforce.[243] There are certain well-known issues with announced net-zero transition plans and it is not clear whether such nudges for companies some of which already voluntarily adopted net-zero pledges (however rather unconvincingly) can make a difference or add value otherwise. A comprehensive analysis would remain outside the scope of this article. Yet, if policymakers are convinced of values of such steps, these rules should also address private companies.[244] If such measures only address public companies, they would send the unintended signal that public companies are the only ones that need to transition, exacerbating the arbitrage problems we discussed between public and private players.

VI. CONCLUSION

This article has argued that private companies are highly relevant to climate change mitigation and adaptation. They impose similar environmental externalities to those of their public counterparts. They are also increasingly buying highly-polluting assets divested by public carbon majors – the so-called 'brown-spinning' phenomenon. Private companies are also subject to climate-related risks as they are systematic risks, which is important for macro-economic and financial stability concerns.

However, private companies lack disciplining mechanisms available to public companies to a significant extent. Institutional investor engagement and activism, and other corporate governance mechanisms (such as executive remuneration tied to environmental performance and independent board members with climate expertise) are largely absent in private companies. Importantly, there has long been a lack of transparency and climate-related disclosure requirements for private companies. Therefore, private companies have come to inhabit a different ecosystem than public companies in terms of transparency, scrutiny, and pressure in relation to their climate change mitigation and adaptation efforts, creating arbitrage opportunities. However, private companies are obviously still subject to generic regulatory instruments and may be constrained by their financiers (banks) and other factors such as reputation.

Proposed CSDD', Oxford Business Law Blog (28 April 2022), https://www.law.ox.ac.uk/business-law-blog/blog/2022/04/net-zero-plans-under-proposed-csdd.

[243] See https://transitiontaskforce.net/about/.

[244] Indeed, the proposed CSDD drops the usual public/private divide and uses size-related indicators to determine the scope of addressee companies. See Proposal for a Directive on CSDD, n 156 above, Art 2. The UK's intended measures on net-zero transition plans seem to apply, however, only to listed companies, at least initially. See https://www.gov.uk/government/publications/fact-sheet-net-zero-aligned-financial-centre/fact-sheet-net-zero-aligned-financial-centre and https://www.ey.com/en_uk/sustainability/what-mandated-net-zero-transition-plans-mean-for-uk-listed-companies.

Policymakers have also started to include private companies under climate-related reporting, especially in the EU and to a lesser degree, in the UK. It remains absent in the US. We argued that this trend may remedy the inconsistency in the policymakers' approach to climate impact disclosures to some extent. This type of climate-related disclosure is designed for a wider audience than investors and is not primarily aimed at overcoming the information gap concerning investors on public markets, but rather promoting the transition to a green economy. Therefore, it is consistent to extend these disclosure requirements to private companies. The public/private divide that has its roots in the securities regulation paradigm does not reflect the (potential) environmental impact of companies and thus should not be consequential in terms of whether policymakers require such disclosures from the relevant firm. Although theoretically sound, policymakers may need to ascertain the costs and benefits of private company climate-related disclosures. As available empirical evidence relevant to this cost-benefit analysis is rather scant, policymakers need to make their choices under uncertainty. We identified certain (firm-specific and wider) benefits of disclosure as well as pointing to certain costs. This analysis can inform such a choice.

What remains certain however is the increasing relevance of private companies on the path to net zero. So far, as we have demonstrated, this path has mostly focused on public companies, which invites regulatory and reputational arbitrage opportunities. This should give further impetus to policymakers to pay careful attention to this (rather dark) part of the economy and use their regulatory power to holistically address the problem of climate change, rather than creating a legal or market ecosystem where companies and investors focus on the metric reported rather than achieving real impact.

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