TPI State of Transition Report 2021

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Transition Pathway Initiative

The Transition Pathway Initiative

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The Transition Pathway Initiative (TPI) is a global initiative led by asset owners and supported by asset managers, established in January 2017.

Aimed at investors, it assesses companies' progress on the transition to a low-carbon economy, supporting efforts to address climate change. Over 100 investors globally have already pledged support for the TPI; jointly they represent nearly US$25 trillion combined Assets Under Management and Advice. Using companies' publicly disclosed data, TPI:

- Assesses the quality of companies' management of their carbon emissions and of risks and opportunities related to the low-carbon transition, in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).
- Assesses how companies' planned or expected future Carbon Performance compares with international targets and national pledges made as part of the 2015 Paris Agreement on climate change.
- Publishes the results via an open-access online tool: **www.transitionpathwayinitiative.org**.

TPI strategic relationships

The Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science (LSE) is TPI's academic partner. It has developed the assessment framework, provides company assessments, and hosts the online tool. **FTSE Russell** is TPI's data partner. FTSE Russell is a leading global provider of benchmarking, analytics solutions and indices. The **Principles for Responsible Investment** (PRI) provides a secretariat to TPI. PRI is an international network of investors implementing the six Principles for Responsible Investment.

Research funding partners

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Foreword

Adam Matthews, Chair, Transition Pathway Initiative (TPI)

Faith Ward, Transition Pathway Initiative (TPI)

When we established the Transition Pathway Initiative in 2017 with the vision that it would enable asset owners and asset managers to play their role in driving the low carbon transition, we didn't anticipate the scale of the impact it would be having some four years later. Today, at the beginning of the transition decade, we have over 100 funds with $25 trillion in assets under management (AUM) and advisement using TPI and a strategic partnership supporting the Climate Action 100+ benchmark used by 570 investors with $54 trillion AUM.

Central to the TPI vision is having an assessment framework, based on publicly disclosed information, that enables investors to objectively and robustly assess corporate practices and processes and their impact in terms of real-world reductions in carbon emissions. From the start our view has been that corporate disclosure is fundamental to enabling investors to understand how companies are preparing themselves for the low carbon transition. No ifs or buts – this information must be disclosed publicly, for all to see.

This report, and the company-by-company assessments on the TPI website, tell investors and companies exactly where they stand. Much has been achieved, but we are not on target and companies must therefore accelerate their efforts. They need to move from commitments and target-setting to publishing transition plans that can be independently assessed by TPI, enabling equity and debt investors to understand the company's transition strategy and capital investment plans. Investors also need to step up and support those companies with credible transition plans and, where needed, provide the finance needed to deliver on these plans.

Investors and companies cannot do this alone. We need policy frameworks that both incentivise (e.g. carbon pricing, taxes) and mandate action, thereby helping to scale up private capital investment in the low carbon transition. This is why it is essential that investors also assess sovereign bonds and governmental ambition and action. Additionally, it underlines the need for continued focus on the relationship between corporate lobbying and influence on public policy.

As we move through this transition decade the complexity will grow and this will require TPI to broaden and deepen our analysis and understanding. We will do this based on the principles that have served TPI so well: independence, academic rigour, full transparency and no barriers or paywalls.

"As we move through this transition decade the complexity will grow and this will require TPI to broaden and deepen our analysis and understanding."

Summary: key findings

401

COMPANIES ASSESSED BY TPI. THEY REPRESENT 16% OF GLOBAL MARKET VALUE.

16

SECTORS ASSESSED BY TPI FROM FOUR CLUSTERS: ENERGY, INDUSTRIALS AND MATERIALS, TRANSPORT, CONSUMER GOODS AND SERVICES.

2.6

AVERAGE MANAGEMENT QUALITY SCORE. COMPANIES ARE HALFWAY BETWEEN 'BUILDING CAPACITY ON CLIMATE CHANGE' AND 'INTEGRATING CLIMATE CHANGE INTO OPERATIONAL DECISION-MAKING'.

15%

OF COMPANIES ARE ALIGNED WITH THE BELOW 2°C BENCHMARK IN 2050.

401 companies from 16 business sectors are covered by the TPI State of Transition Report 2021. These companies represent approximately 16% of global market value and a much larger share of global greenhouse gas emissions from listed companies.

Most companies in the TPI universe[1] now have basic carbon management practices in place, such as a policy commitment to act on climate change and disclosure of operational greenhouse gas emissions, but most companies are still not taking a truly strategic approach to the issue. The average Management Quality score – assessing companies' climate governance – of the 401 companies in the TPI universe is 2.6, which is slightly over halfway between 'building capacity on climate change' (Level 2) and 'integrating climate change into operational decision-making' (Level 3). Strategic carbon governance and management practices are found at Level 4.

The average Management Quality score of the TPI universe is marginally lower than last year, when it was 2.7. This is partly attributable to the addition of new companies to the universe: companies added over the last year average only 2.0. This is associated with their relatively small size and concentration in emerging markets. We also see limited progress among companies scored previously by TPI:

1 The 'TPI universe' refers to the companies that TPI has assessed in its latest research cycle.

69% of companies have stayed on the same Management Quality level, 17% have moved up at least one level, while 14% have moved down at least one level. Most movement is between Levels 3 and 4 and it goes in both directions. Companies appear to be struggling to maintain their performance against key indicators at the corporate–policy interface, in particular in terms of support for climate policy and disclosure of climate lobbying by trade associations.

On Carbon Performance – our measure of how current and future emissions align with the goals of the Paris Agreement – 15% of companies now align with the most ambitious Below 2°C benchmark in 2050, 2% align with 2°C, but 47% do not align with any of the benchmarks and 16% provide insufficient disclosure. The pattern of alignment in 2030 is similar.

Although Carbon Performance remains weak, we see promising signs:

- The share of companies previously scored by TPI that have increased their alignment with Below 2°C in 2030 has risen slightly, and the share of previously scored companies providing insufficient disclosure has fallen slightly.
- Although companies' emissions reduction targets are still not ambitious enough, they are becoming longer-term. The average target year is now 2039, a meaningful increase on the average target year of 2032 found in last year's analysis.
- We see an encouraging momentum behind net zero targets. A year ago, 14 companies had genuine net zero targets covering their most material emissions. One year later, this number has more than doubled to 35 companies.

Although an increasing number of companies now have net zero commitments, they often fail to cover the most significant emissions. For example, net zero pledges in the oil and gas sector typically cover operational emissions and only sometimes include downstream emissions from the use of companies' products. Net zero production targets in autos similarly exclude emissions from the use phase of sold vehicles (the majority of lifecycle emissions for new vehicles).

In most sectors, companies are not reducing emissions fast enough to hit their 2030 targets. In no sector are companies reducing emissions fast enough to meet their 2050 targets. Electricity utilities have reduced their emissions the most and are on track to meet their 2030 targets, but even they are not on track to meet their 2050 targets. Oil and gas companies have hardly reduced their emissions intensities, while their targeted intensity reductions are very modest. Diversified mining companies with targets, and aluminium producers, have increased their carbon intensities in recent years.

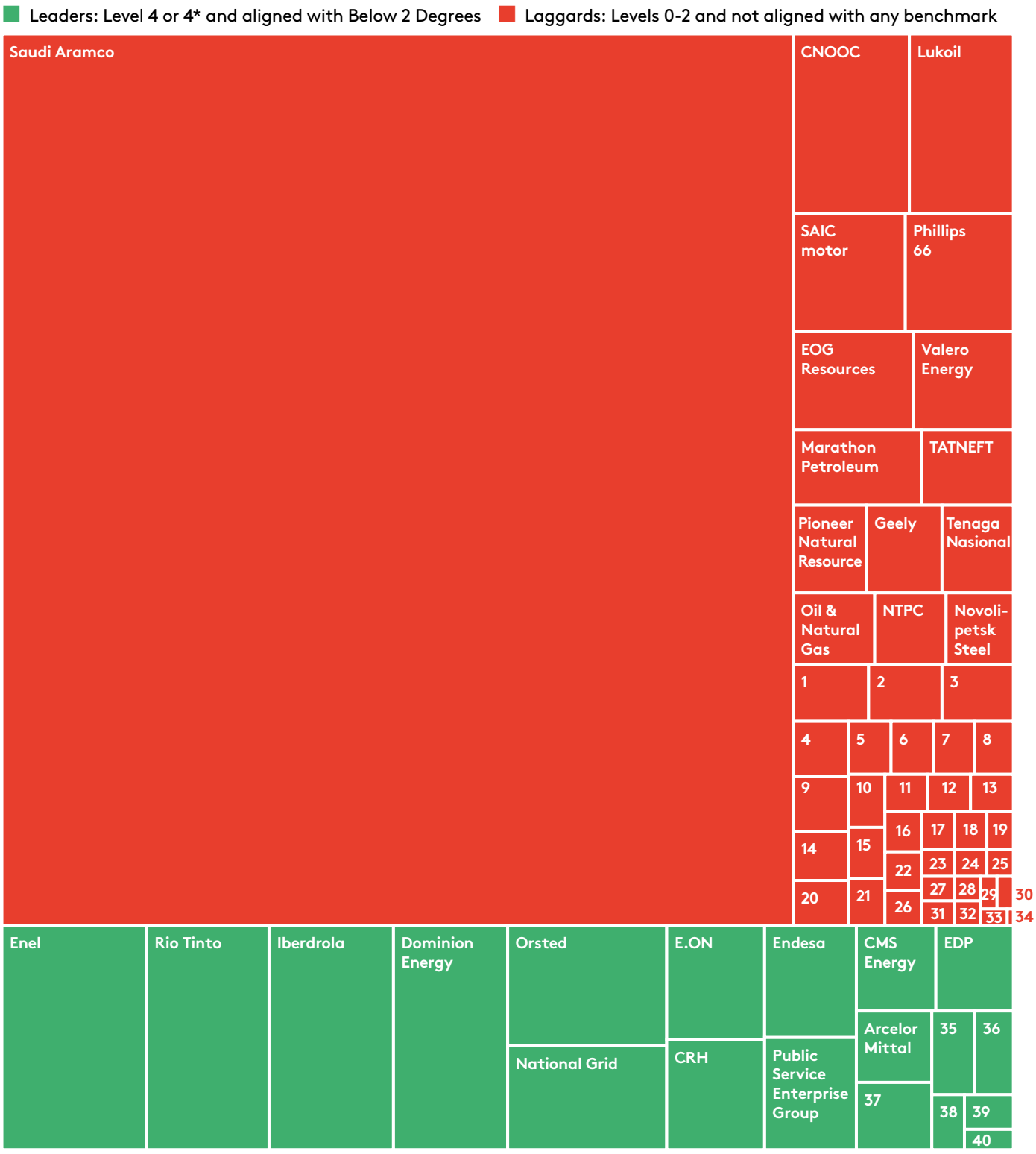
Now that we have more data, we see a clearer, though still imperfect, correlation emerging between Management Quality and Carbon Performance. Companies at a higher Management Quality level disclose better data on emissions and activity and are statistically more likely to be aligned with at least the Paris Pledges scenario (i.e. consistent with the reductions pledged by countries as part of the Paris Agreement in the form of the first set of Nationally Determined Contributions or NDCs). Furthermore, high Management Quality in 2017 predicted faster emissions reductions between 2017 and 2019: companies that were on Management Quality Level 4 in 2017 reduced their emissions intensity by an average of 5.3% between 2017 and 2019, nearly four times more than Level 0 to 3 companies.

Figure S1 picks out the leaders and laggards in the TPI universe. We define leaders as companies at Management Quality Level 4 or 4* and aligned with Below 2°C in 2050. We define laggards as companies at Management Quality Levels 0–2 and those not aligned with any Carbon Performance benchmarks. There are more laggards than leaders in number and, due to the huge size of Saudi Aramco, in market capitalisation.

"The 2021 UN Climate Change Conference (COP26) is an opportunity for companies to accelerate their efforts by setting ambitious emissions reduction targets, both long-term and intermediate, and to implement strategic carbon management and governance practices. Next year we hope to see a much higher share of sectoral leaders – those at Management Quality Level 4 or 4* and aligned with the Below 2°C benchmark in 2050."

BEATA BIENKOWSKA, TPI RESEARCH DEPUTY AND PROJECT LEAD

Figure S1. The leaders and laggards in Carbon Performance and Management Quality across the TPI universe (size of box represents relative size by market capitalisation)



1. *Concho Resources*
2. *Serverstal*
3. *CenterPoint Energy*
4. *Petro China*
5. *Noble Energy*
6. *China Resources Power*
7. *Marathon Oil*
8. *HollyFrontier*
9. *Diamondback Energy*
10. *Nine Dragons Paper Industries*
11. *Easyjet*
12. *Portland General Electric*
13. *Kyushu Elec Power*
14. *Singapore Airlines*
15. *Brilliance*
16. *Semen Indonesia*
17. *Lee & Man Paper Manufacturing*
18. *PGE*
19. *Indah Kiat Pulp & Paper*
20. *Dangote Cement*
21. *Hawaiian Electric*
22. *Buzzi Unicem*
23. *Korean Air*
24. *China Southern*
25. *Ovintiv*
26. *Air China*
27. *Azul*
28. *Nippon Paper Industries*
29. *Kobe Steel*
30. *Siam City Cement*
31. *Daio Paper*
32. *United States Steel*
33. *QAMCO*
34. *Shandong Chenming*
35. *Pinnacle West Capital*
36. *NRG Energy*
37. *United Continental*
38. *Cemex*
39. *Voestalpine*
40. *Acerinox*

1 Introduction

This is the 2021 State of Transition Report from the Transition Pathway Initiative (TPI). Each year we review the progress made by the world's highest-emitting public companies on the transition to a low-carbon economy. The companies analysed in this year's report are collectively worth US$11 trillion, approximately 16% of global market cap.[2]

The analysis draws on the entire database maintained by TPI, a global initiative led by asset owners and supported by asset managers. Established in January 2017, TPI is now supported by 100 investors globally with US$25 trillion in assets under management and advice (as of March 2021). The TPI database now covers 401 corporations worldwide (20% up on last year) in 16 business sectors (Table 1.1).

Table 1.1. TPI sectoral coverage and Carbon Performance measures associated with the sectors

Sector		No. of companies assessed on Management Quality	No. of companies assessed on Carbon Performance	Sectoral Carbon Performance measures
Energy	Coal mining	35	-	-
	Electricity utilities	68	66	Carbon intensity of electricity generation
	Oil and gas	54	53	Carbon intensity of primary energy supply
	Oil and gas distribution	7	-	-
Transport	Automobiles	23	23	New vehicle carbon emissions per kilometre
	Airlines	23	23	Carbon emissions per revenue tonne kilometre
	Shipping	16	16	Carbon emissions per tonne kilometre
Industrials/materials	Aluminium	19	13	Carbon intensity of aluminium production
	Cement	33	33	Carbon intensity of cementitious product
	Chemicals	36	-	-
	Diversified mining	13	13	Carbon emissions per tonne of copper equivalent
	Paper	23	23	Carbon intensity of pulp, paper and paperboard production
	Steel	32	29	Carbon intensity of crude steel production
	Other industrials	18	-	-
Consumer goods		9	-	-
Consumer Services		6	-	-
Total*		**401**	**292**	

*Notes: *Companies assessed in more than one sector are counted once. For definitions of Management Quality and Carbon Performance, please see p7-8.*

2 This is based on the World Bank's **estimate** of global market capitalisation in 2018.

Focusing on the sectors of the global economy with the highest greenhouse gas emissions, TPI selects the largest public companies, based on market capitalisation. These companies usually constitute the largest holdings in investor portfolios, as well as usually being the highest emitters of greenhouse gases. TPI also covers a number of additional companies that are subject to engagement by the Climate Action 100+ investor initiative. These additional companies are large within their sector, often regional if not global, and have high lifecycle greenhouse gas emissions or are strongly dependent on high-emitting companies.

The data in this report were published on the online TPI database[3] between mid-2020 and early 2021. The next comprehensive update of the database will be carried out in stages over the rest of 2021. This year, we also plan to expand our coverage to new companies, including major corporate bond issuers, and new sectors, including food producers and banks.

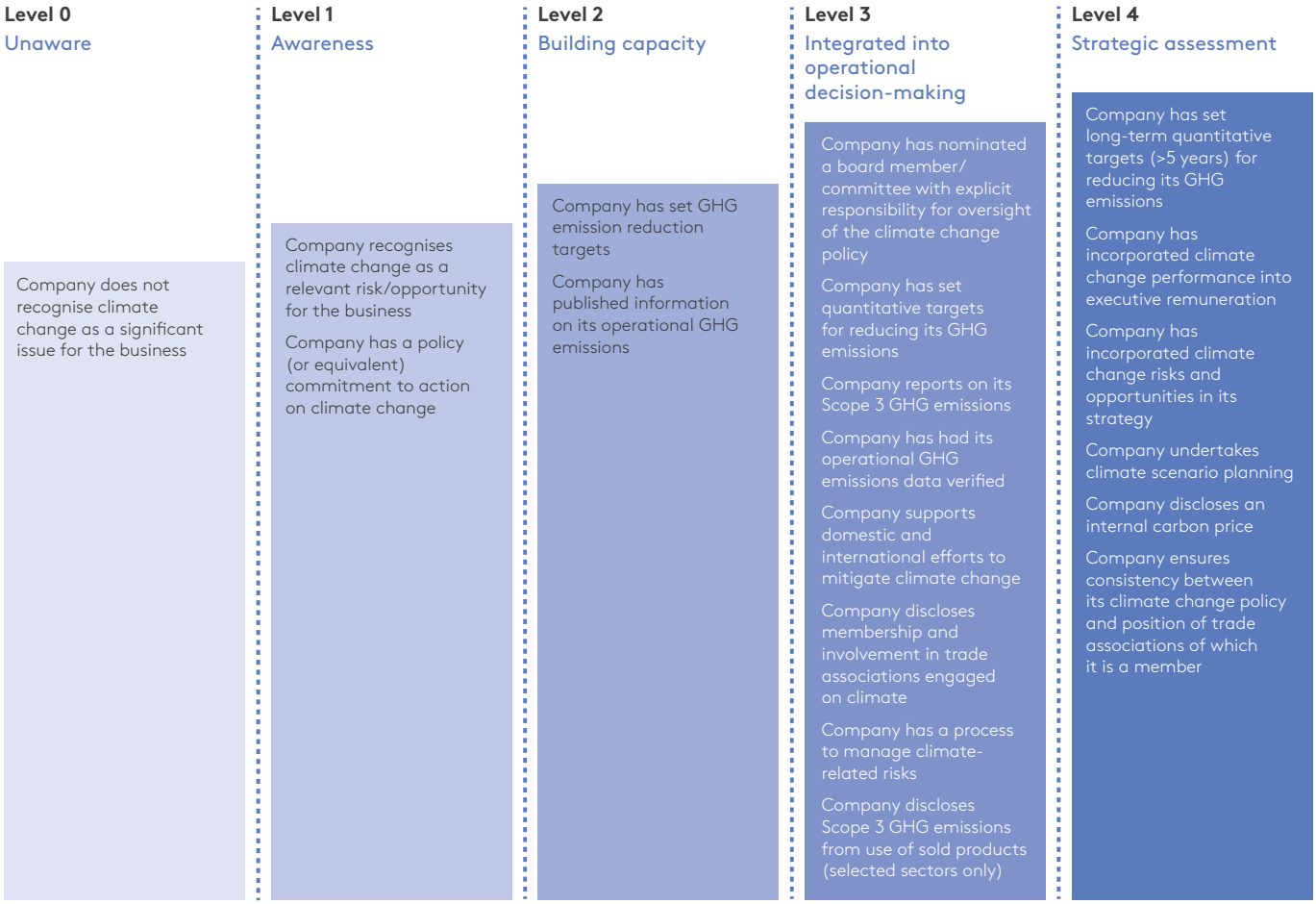
Overview of methodology

Using public disclosures, TPI assesses companies on their Management Quality and Carbon Performance, two different but related elements of how companies are approaching the low-carbon transition. The former focuses on inputs and processes, the latter on outcomes. Together, these assessments provide a holistic view of companies' progress, both backward- and forward-looking.

Management Quality

TPI's Management Quality framework is currently based on 19 indicators, each of which tests if a company has implemented a particular carbon management practice (Yes/No), such as formalising a policy commitment to action on climate change, disclosing its emissions, or setting emissions targets. The indicators are described in detail in Appendix 1. See also our latest Methodology and Indicators Report.[4]

Figure 1.1. Management Quality levels and indicators



3 At **https://transitionpathwayinitiative.org/sectors**
4 Dietz S et al. (2019) **Methodology and indicators report: Version 3.0.** TPI.

These 19 indicators are then used to map companies on to five levels, as shown in Figure 1.1. Companies need to be assessed as 'Yes' on all of the questions pertaining to a level before they can advance to the next, with the exception of Level 0. Companies that have been assessed as 'Yes' on all the Level 4 questions (and thus all questions in the framework) are described as 4* companies. The data underpinning the indicators are provided by FTSE Russell, based on companies' public disclosures.

Carbon Performance

TPI's Carbon Performance assessment translates emissions targets made at the international level under the 2015 UN Paris Agreement on climate change into benchmarks, against which the performance of individual companies can be compared. We take a sector-by-sector approach, recognising that different sectors of the economy face different challenges arising from the low-carbon transition, including where emissions are concentrated in the value chain and how costly it is to reduce emissions.

Table 1.1 above lists the Carbon Performance measures used in each sector we cover. These measures are intended to cover the majority of lifecycle emissions in a sector, while also taking into account issues of data availability. We benchmark emissions in most sectors against three scenarios that are derived from modelling by the International Energy Agency (IEA), as summarised in Table 1.2 and depicted in Figure 1.2, using the example of the cement sector.

PHOTO: ALEXANDER ABERO/UNSPLASH

PHOTO: AARON BURDEN/UNSPLASH

Table 1.2. Description of TPI's Carbon Performance benchmark scenarios

PARIS PLEDGES

Consistent with the emissions reductions pledged by countries as part of the Paris Agreement in the form of the first set of Nationally Determined Contributions (NDCs) from 2015. In the case of international shipping and aviation, we use an 'International Pledges' scenario based on emissions commitments made by the International Maritime Organisation (IMO) and the International Civil Aviation Organisation (ICAO). Both existing NDCs and international commitments are insufficient to limit global warming to 2°C or below. This has become more apparent with the recent announcement of net zero goals by several national governments, which, if delivered, can close the gap between national pledges and the 2°C ceiling on warming.

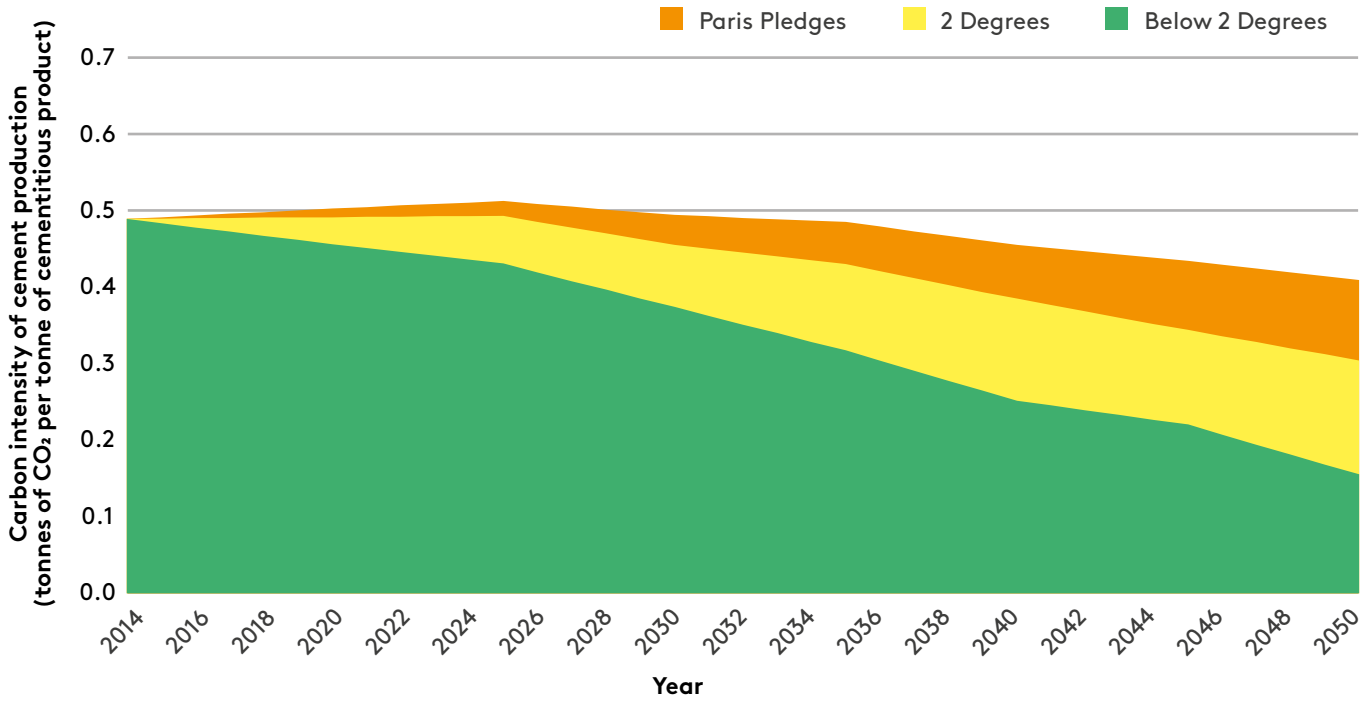
2 DEGREES

Consistent with the overall aim of the Paris Agreement to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels", albeit at the low end of the range of ambition. This scenario gives a probability of 50% of holding the global temperature increase to 2°C by 2100.

BELOW 2 DEGREES

Consistent with a more ambitious interpretation of the Paris Agreement's overall aim. This scenario gives a 50% probability of holding the global temperature increase to 1.75°C by 2100.

Figure 1.2. TPI benchmark scenarios – example of cement production



More detailed information on the TPI methodology can be found **here**.[5]

5 https://www.transitionpathwayinitiative.org/methodology

2 State of Transition 2021

In this section, we present TPI's latest findings on Management Quality and Carbon Performance, and we compare them with our findings from previous years.

PHOTOS: SCIENCE IN HD/UNSPLASH

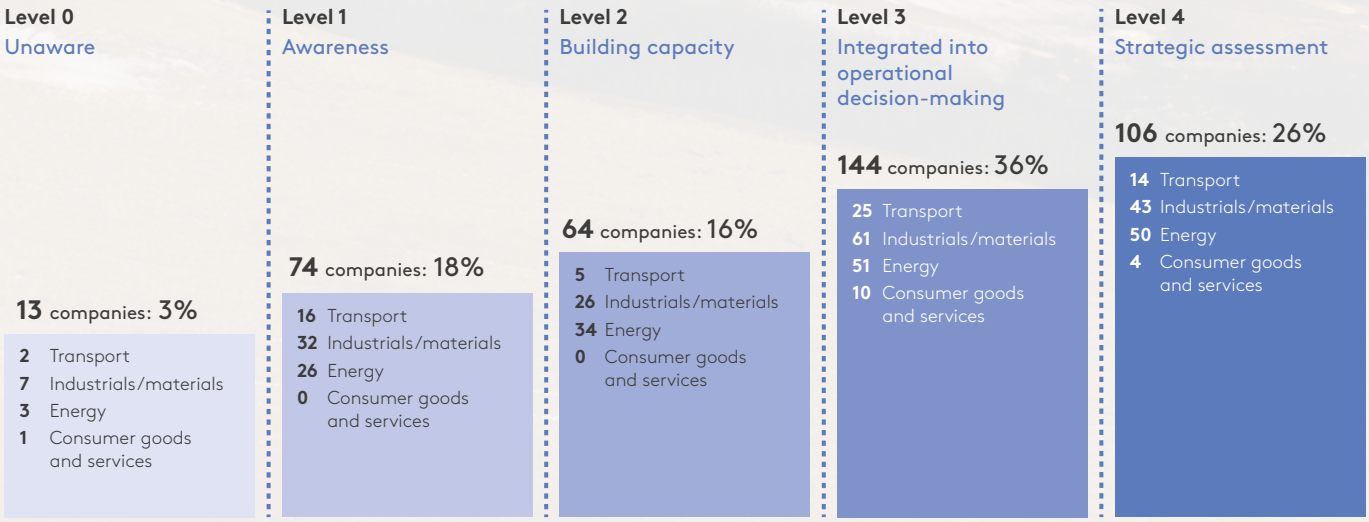
Management Quality: climate governance

Management Quality levels

The average Management Quality level of all companies in the TPI database is now 2.6, slightly over halfway between 'building capacity on climate change' (Level 2) and 'integrating climate change into operational decision-making' (Level 3). This average score means that most companies in the TPI universe meet the two requirements for rising from Level 2 to 3: setting an emissions reduction target (qualitative or quantitative) and disclosing operational emissions (Scope 1 and 2[6]) – see Figure 2.1.

At the lower end of the staircase, 38% of companies are on Levels 0 to 2. These companies are yet to undertake some or all of four basic climate management practices: recognising climate change as a relevant business risk or opportunity, having a policy commitment to act on climate change, setting an emissions target, and disclosing their operational emissions.

Figure 2.1. Management Quality level of all TPI companies, on aggregate and by cluster of sectors



Note: 10 companies appear in two sectors and two companies appear in three sectors

6 Under the Greenhouse Gas Protocol, "Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions." See Greenhouse Gas Protocol, **https://ghgprotocol.org/sites /default /files /standards_supporting/FAQ.pdf**, for definitions.

Table 2.1. 4* companies, their sectors and their Carbon Performance

Company	Sector	Carbon Performance
Anglo American	Coal and diversified mining	Paris Pledges
BMW	Autos	Paris Pledges
Eni	Oil and gas	Paris Pledges
Equinor	Oil and gas	Paris Pledges
Klabin SA	Paper	Paris Pledges
Total SE	Oil and gas	Paris Pledges
BHP	Coal and diversified mining	Not aligned
BP	Oil and gas	Not aligned
Galp Energia	Oil and gas	Not aligned
Hess	Oil and gas	Not aligned
Vale	Coal and diversified mining	Not aligned
Air Liquide	Chemicals	Not assessed on Carbon Performance
Philips	Other industrials	Not assessed on Carbon Performance
Terna	Electricity utilities	Not assessed on Carbon Performance

The remaining 62% of companies are on the top two levels of the staircase: 36% are on Level 3 and 26% of companies are on Level 4. Reaching Level 4 requires the implementation of a wider variety of carbon management practices, including assigning board responsibility for climate change, disclosing Scope 3 emissions, supporting domestic and international efforts to mitigate climate change, and setting *quantified* emissions targets.

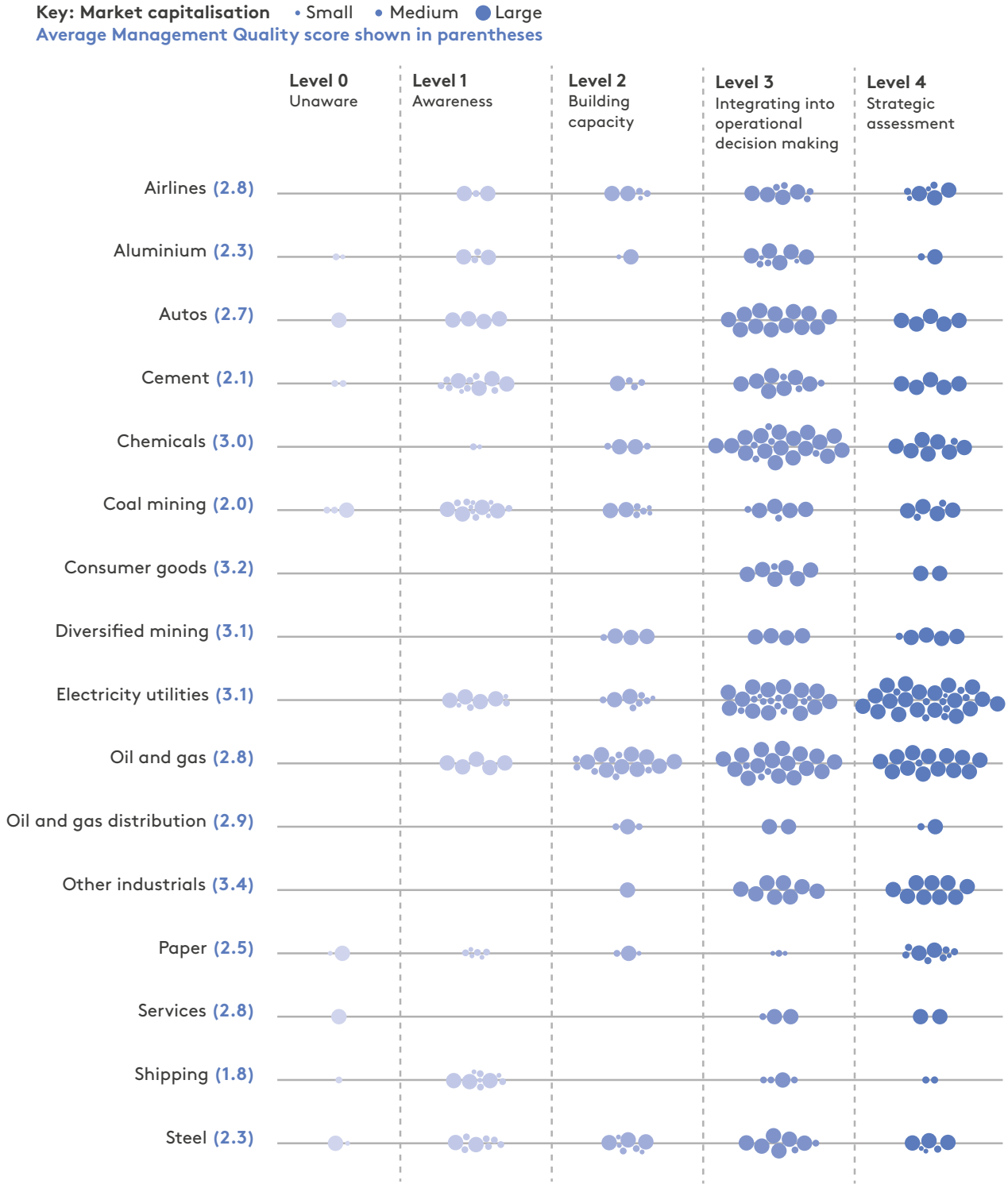
The number of 4* companies, which meet every Management Quality indicator, has risen to 14. Six of these are oil and gas companies and three are diversified mining companies with coal businesses. Of the 4* companies assessed on Carbon Performance, six are aligned with the Paris Pledges but none is aligned with 2°C or below – see Table 2.1.

Of the core TPI sectors,[7] electricity utilities and diversified miners perform the best on Management Quality, followed by chemicals companies. Shipping and coal mining are the worst performing sectors. The average Management Quality scores of the core sectors assessed by TPI are fairly uniformly distributed in an interval from 1.8 to 3.1 (see Figure 2.2). Manufacturers of basic materials (aluminium, cement, paper and steel) tend to perform poorly as a group and sit at the lower end of this interval. Meanwhile, energy sectors excluding coal, and transport sectors excluding shipping, sit at the higher end.

"Reaching Level 4 requires the implementation of a wider variety of carbon management practices."

7 TPI's core sectors are those listed in Figure 2.2, excluding consumer goods, services and other industrials.

Figure 2.2. Management Quality by company and sector



Indicator by indicator

Companies assessed by TPI tend to have implemented the basic carbon management practices but are less likely to have implemented strategic practices. Across sectors, 94% of companies now have a policy commitment to act on climate change, 80% explicitly recognise climate change as a business risk/opportunity, 79% disclose their Scope 1 and 2 emissions, and 69% have some form of emissions reduction target in place – see Figure 2.3.

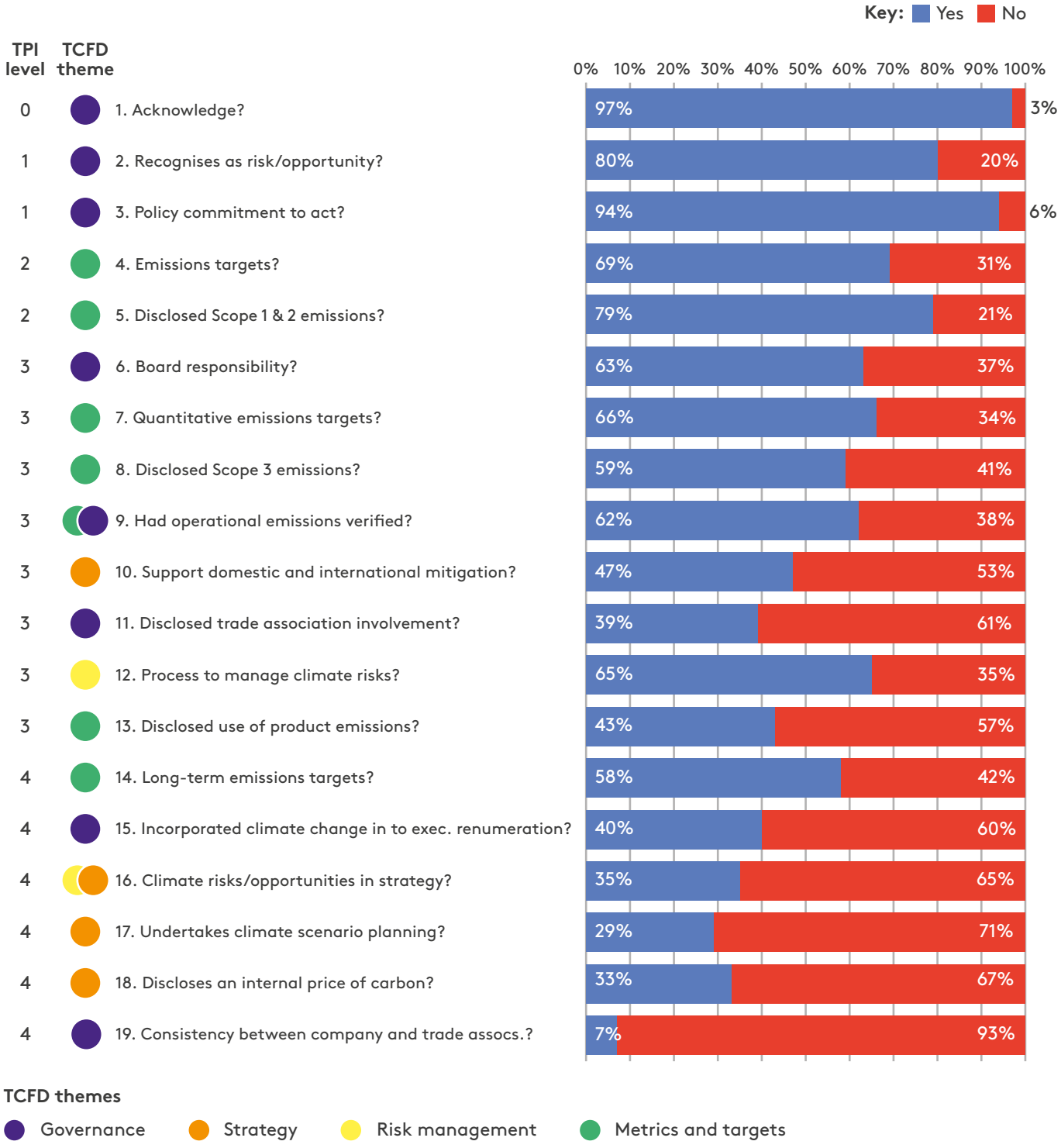
Companies struggle on key indicators at the corporate–policy interface. Three of TPI's indicators evaluate companies based on their involvement in the broader climate policy sphere. This involvement is important, because climate change is a problem replete with market failures that require government intervention in the form of regulations, taxes and subsidies. Companies should demonstrate support for domestic and international mitigation efforts (Q10), disclose their membership and involvement in trade associations engaged in climate issues (Q11), and manage inconsistencies between their positions on climate issues and those of these trade associations (Q19). Forty-seven per cent of companies satisfy Q10 and only 39% of companies satisfy Q11, making performance on both of these Level 3 indicators noticeably worse than most other indicators on the same level. Only 7% of companies satisfy Q19, making this the most difficult of all TPI's Management Quality indicators to achieve.

Among the more advanced indicators, companies perform well on managing climate risk (Q12) and setting long-term emissions reduction targets (Q14). These are management practices familiar in corporate decision-making, making it perhaps unsurprising that companies perform relatively well on them.

Performance on the various indicators differs significantly between sectors. Although most sectors mirror the aggregate distribution in Figure 2.3, there are several outliers (see Appendix 2). Only 38% of assessed shipping lines recognise climate change as a relevant business risk/opportunity, while scarcely one-third of coal mining companies and only half of steelmakers have set even a qualitative emissions reduction target. Sectors with notably stronger performing companies include electricity, chemicals, other industrials, and consumer goods and services. In all five of these sectors, more than three-quarters of companies have set long-term targets (Q14).

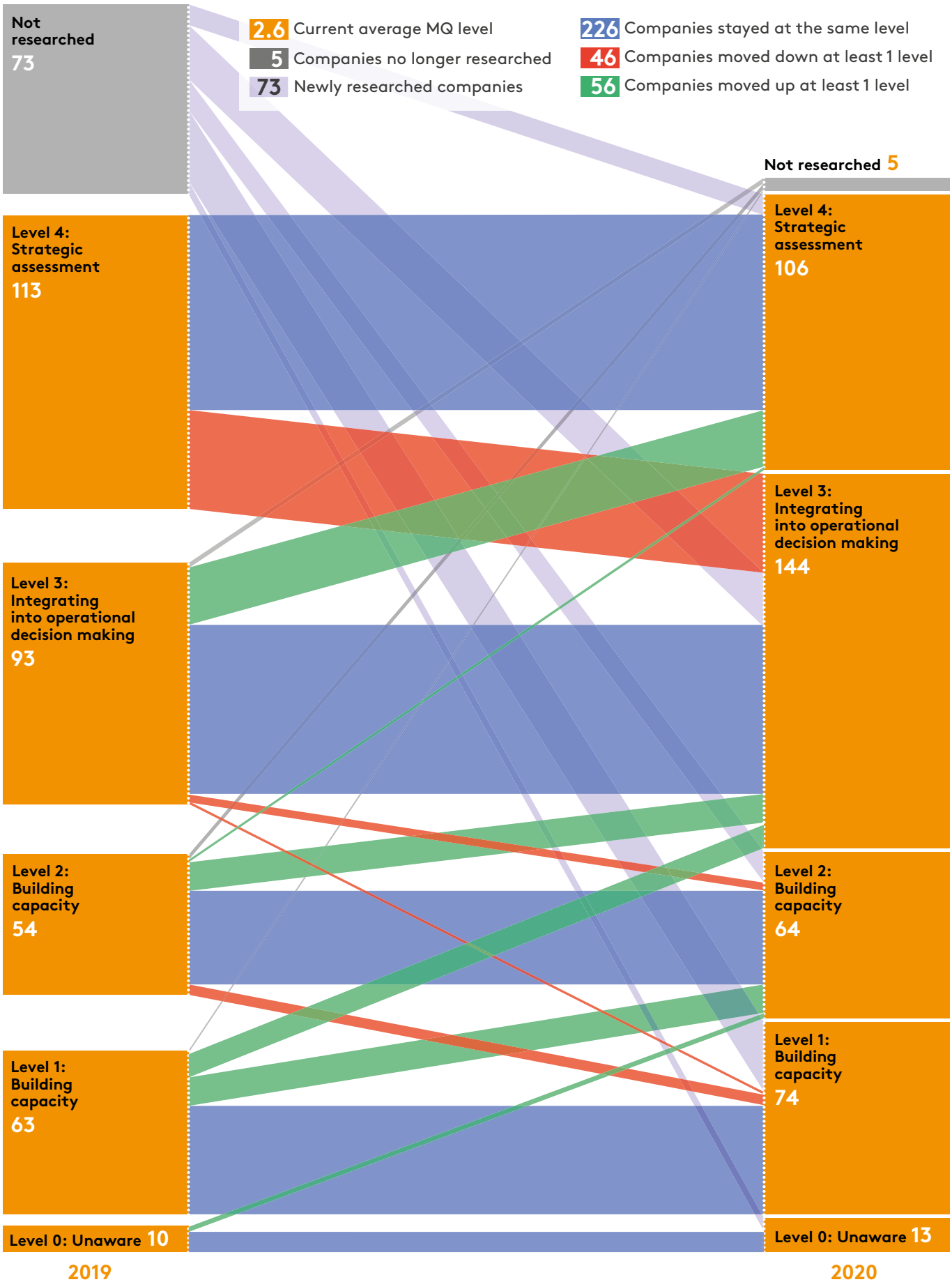
PHOTO: BOBBY STEVENSON/UNSPLASH

Figure 2.3. Management Quality, indicator by indicator, mapped against TCFD* themes



*Note: *TCFD = Task Force on Climate-related Financial Disclosures*

Figure 2.4. Trends in Management Quality between 2019/20 and 2020/21



Trends in Management Quality

On aggregate, there has not been much progress on Management Quality since the last research cycle. The majority of companies are standing still, and nearly as many companies are moving down levels as are moving up. We have trend data on 328 companies that were in 2020's State of Transition Report and are assessed again this year. Of these, 226 (69%) have stayed on the same level, up from 62% that remained static last year; 56 (17%) have moved up at least one level, which is a marked reduction on the 29% that moved up last year; and 46 (14%) have moved down at least one level – an increase from the 9% that moved down last year (see Figure 2.4).To an extent, this may be a natural consequence of companies gradually moving up the Management Quality staircase. As they do so, it becomes harder to progress further. Nonetheless, the increasing share of companies moving down levels stands out.

Most movement this year is between Levels 3 and 4 and it goes in both directions. The largest flow of companies is downward from Level 4 to 3 (38 companies). The second largest flow is upward from Level 3 to 4 (22 companies). Although the number of companies moving down from Level 4 to 3 has been unusually large this past year, it is in line with previous years that we see most movement between these two levels.

"The TPI universe has become more stagnant and where there is movement it is now about as likely to be downward as upward, in stark contrast to previous years."

VALENTIN JAHN, POLICY OFFICER

Just a few indicators are responsible for the majority of this movement between Levels 3 and 4. The single biggest factor behind companies moving down from Level 4 to 3 is a failure to continue disclosing involvement in trade associations that are active in climate lobbying (Q11), followed by a failure to continue demonstrating support for domestic and international efforts to mitigate climate change (Q10). These two indicators focusing on the corporate–policy interface are closely related. They are also responsible for many of the upward movements from Level 3 to 4. Figure 2.5 visualises the indicators driving movement between Levels 3 and 4.

On Levels 0 to 2 we see less movement, but what movement we do see is mostly upwards. Thirty-four companies (10 per cent) moved up from Levels 0, 1 or 2 last year. Nine of these companies moved up two levels from Level 1 to 3. Only 4 companies on Levels 0 to 2 moved down.

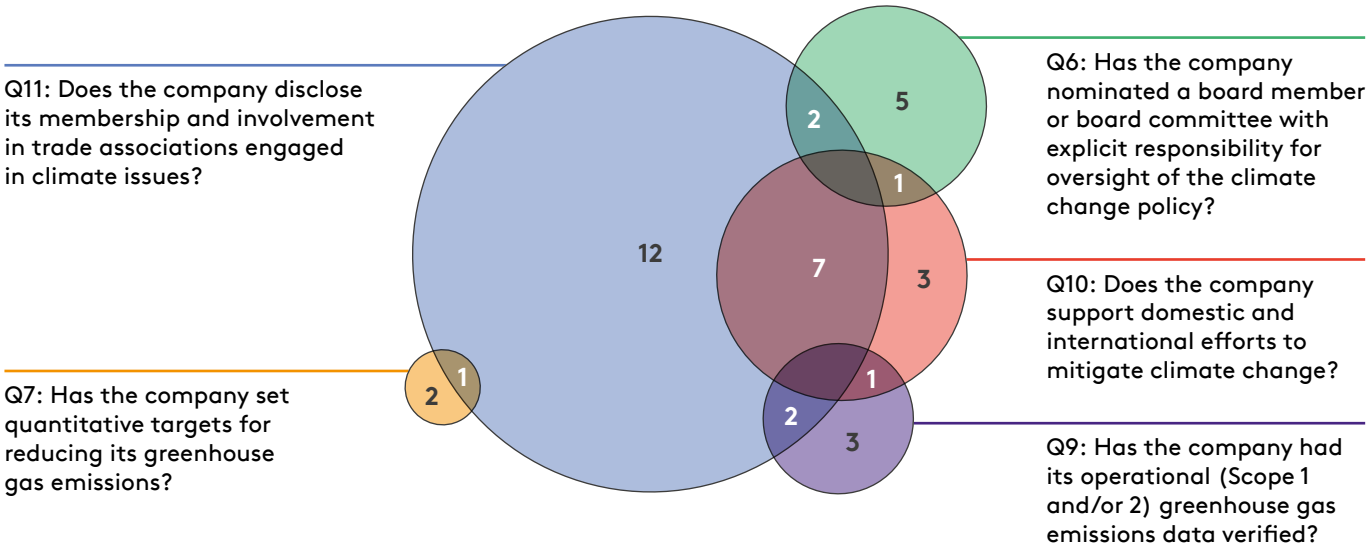
Newly added companies tend to start from a lower base than those previously assessed by TPI. The addition of 73 companies to the TPI universe since 2020's State of Transition Report has resulted in the average Management Quality score decreasing from 2.7 to 2.6. Sixty per cent of the new companies start on Levels 0 to 2. The average Management Quality score of the new companies is 2.0, which contrasts with an average score of 2.8 for companies assessed previously. Therefore, it is the addition of new companies that has brought the universe-wide average down.

Newly added companies tend to be smaller because within each sector our sampling procedure prioritises the largest companies by market cap first. This could help to explain the relatively poor performance of the new companies, as our previous work has identified company size/value as being correlated with Management Quality. Another possible explanatory factor is geography. The newly added companies are more likely to be headquartered in emerging markets. Our work usually finds Management Quality scores are lower in emerging markets. Of the new companies, the average Management Quality score of those headquartered in North America, Europe, Japan, Australia and New Zealand is 2.3, whereas the average score of those headquartered in emerging markets is only 1.4.

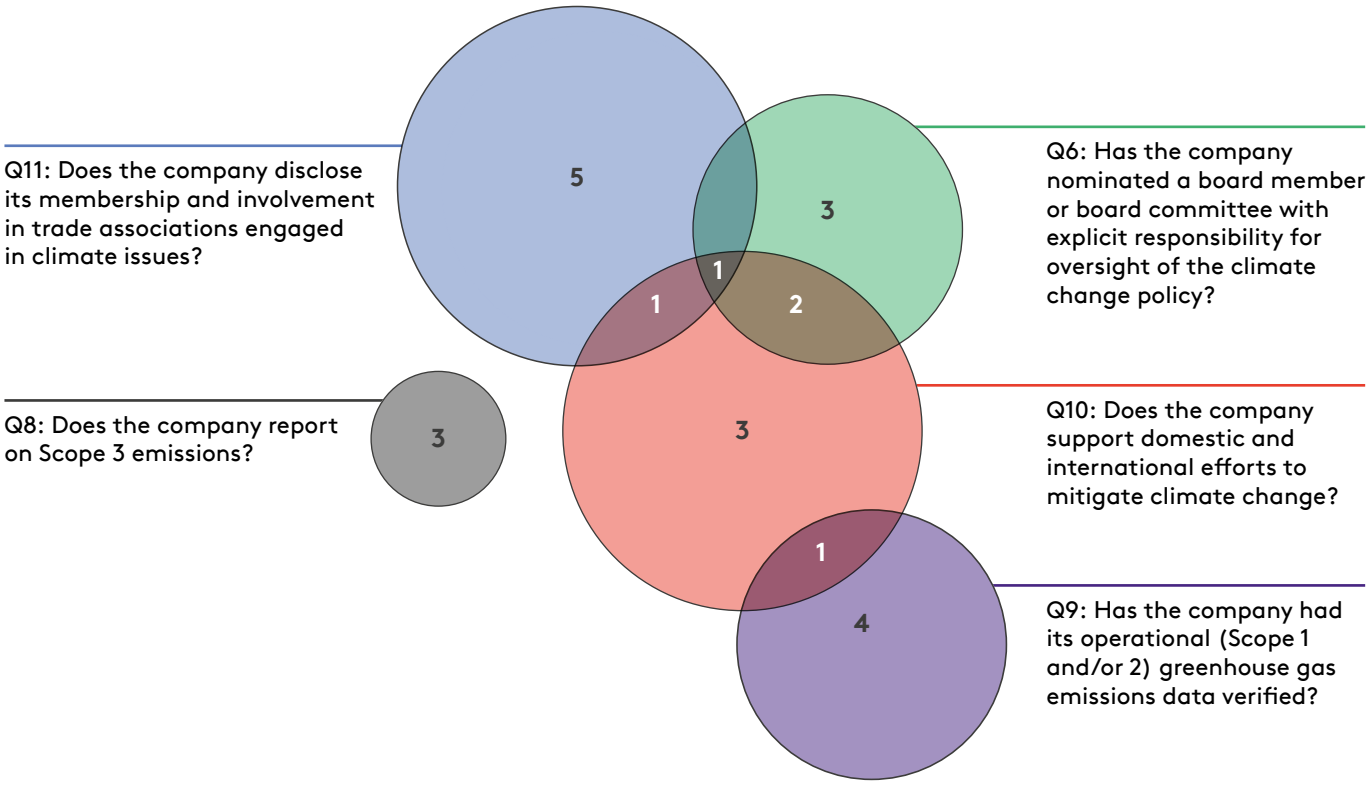
"The newly added companies are more likely to be headquartered in emerging markets."

Figure 2.5. Indicators responsible for companies moving between Levels 3 and 4

a. Indicators responsible for downward movement



b. Indicators responsible for upward movement



Note: Overlapping circles indicate that companies move down/up by changing their score on multiple indicators.

PHOTO: DANIST / UNSPLASH

Carbon Performance: alignment with Paris Agreement benchmarks

TPI's Carbon Performance assessments look at whether companies' emissions intensity pathways are aligned with the Paris Agreement goals. This year's report assesses 292 companies on Carbon Performance, an increase of 54 companies on last year. We now cover 10 sectors, including diversified mining for the first time. We now look out to 2050 in all sectors, whereas in the 2020 State of Transition report we did this only for oil and gas.

Figures 2.6 and 2.7 summarise Carbon Performance data across all sectors, classifying whether a company is aligned with the Paris Pledges established in 2015, with a pathway to limit global warming to 2°C, or with a more ambitious pathway to limit global warming to below 2°C.

Alignment can be tested on different timeframes. We look at alignment in both 2030 and 2050, which means that we can look for differences in medium- and long-term corporate ambition. Both horizons are important. If all companies wait until 2050 to align with the benchmarks, *cumulative* carbon emissions will have exceeded the carbon budget for capping warming at 2°C or below. Section 5 provides a more in-depth explanation of the benchmarks we use and what alignment entails.

Looking out to 2050, 15% of companies align with the most ambitious Below 2°C benchmark,[8] 2% align with 2°C,[9] and 20% align with the least ambitious Paris Pledges benchmark. Forty-seven per cent of companies do not align with any of the benchmarks. Sixteen per cent provide insufficient disclosure for TPI to calculate their Carbon Performance. This is either due to missing disclosure, or companies disclosing their emissions or activity data in an unsuitable form. The pattern of alignment in 2030 is similar to 2050.

We can identify some modest improvements in Carbon Performance compared with last year's State of Transition Report. A like-for-like comparison is possible by focusing on alignment in 2030 and on companies assessed both last year and this year. Doing so, we find a 3 percentage point increase in the share of companies aligned with Below 2°C and a 5 percentage point decrease in the share of companies providing unsuitable disclosure.

The sectors most aligned with Below 2°C are diversified mining (38% of companies in 2030 and 31% of companies in 2050) and electricity (27% and 35%, respectively). Lagging far behind is the oil and gas sector, where no company is aligned with 2°C or below, either in 2030 or 2050. Note that due to their publication dates this report excludes the most recent emissions reduction targets announced by oil and gas companies, such as the new net zero targets of Royal Dutch Shell and Occidental Petroleum. These could change the picture slightly and will be covered in our next energy report later this year.

With the exclusion of diversified mining, the addition of new companies drags down Carbon Performance, just as it has done to Management Quality. In the last year, we have added 47 companies on Carbon Performance, excluding diversified mining. Of these, only 11% align with Below 2°C in 2030, 5 percentage points lower than the share of existing companies. The gap is even wider in 2050. Moreover, 47% of the new companies (excluding diversified mining) provide insufficient disclosure, more than four times larger than the corresponding share of existing companies. Again, the relatively smaller size of the newly added companies, and their relative concentration in emerging markets, are likely to be explanatory factors for this disparity.

Although 2030 and 2050 alignment are similar on the aggregate level, there are striking differences in autos, cement and electricity, all of which show much stronger alignment in the long term. This indicates that these sectors are currently planning to backload their decarbonisation efforts, banking on rapid reductions post-2030.

8 In the airline and auto sectors, this benchmark corresponds to '2°C (High Efficiency)'. This assumes there is no shift in passengers to lower-carbon modes of transport; instead, all emissions reductions are delivered through increased fuel efficiency and low-carbon technology.

9 In the airline and auto sectors, this benchmark corresponds to '2°C (Shift-Improve)'. This assumes that transport will be decarbonised through a combination of shifting passengers to lower-carbon modes alongside increased fuel efficiency and low-carbon technology.

Figure 2.6. Carbon Performance alignments with the Paris Agreement benchmarks in 2030 and in 2050 (number and percentage of companies)

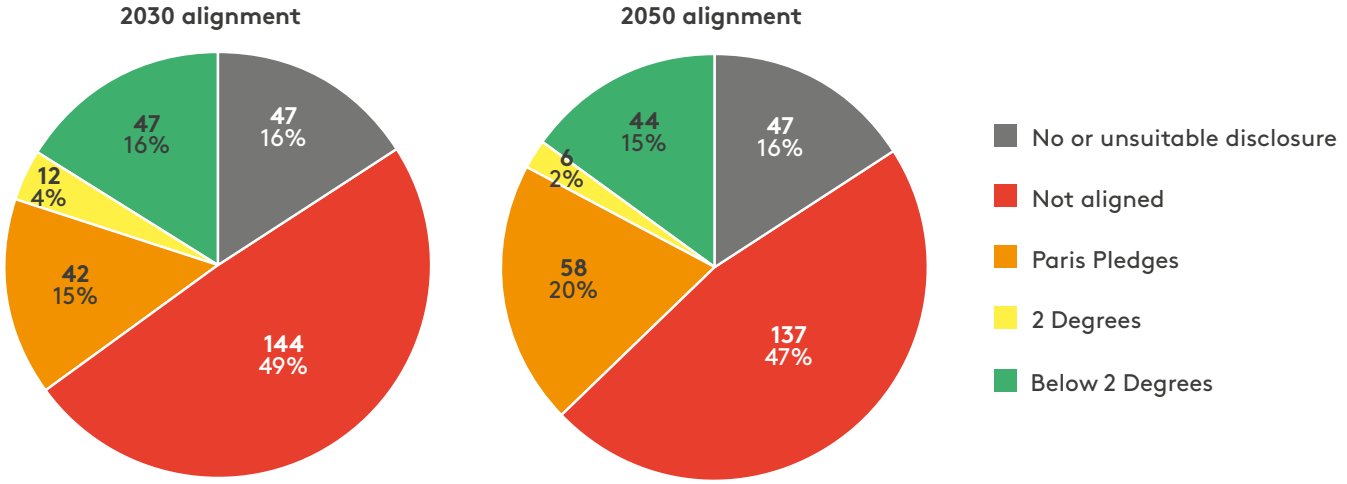
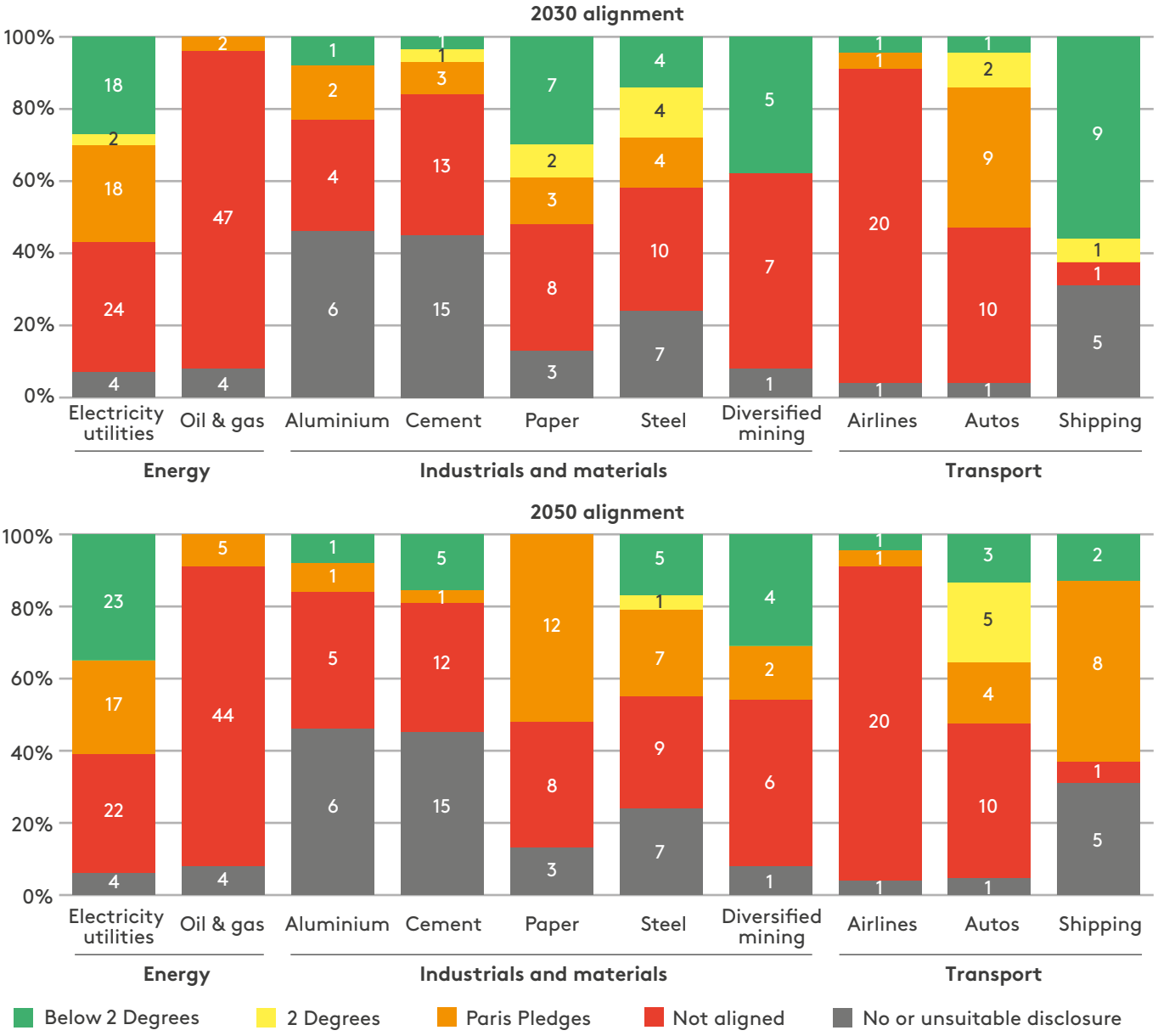


Figure 2.7. Carbon Performance alignments with the Paris Agreement benchmarks in 2030 and in 2050 by sector and cluster (number and percentage of companies)



Corporate emissions reduction targets

Emissions reduction targets are central to most companies' Carbon Performance. This section focuses on these targets in more detail. Of the 292 companies assessed on Carbon Performance, 67% have set a quantitative emissions reduction target (Q7), although not all of them are useable in calculating company emissions intensities.

How ambitious are company targets?

Most companies' emissions targets are not ambitious enough. Using the results of our Carbon Performance assessment, we find that only 30% of companies with emissions targets are aligned with the Below 2°C benchmark. Four per cent align with 2°C, but 38% do not align with any benchmark. Note that companies without targets are excluded from these figures, in contrast to the data provided in the previous section.[10]

We see an encouraging momentum behind genuine net zero targets. A year ago, 14 companies had genuine net zero targets, by which we mean net zero targets covering their most material emissions. One year later, this number has more than doubled to 35 companies. Unsurprisingly, the electricity sector has taken the lead, with 23 companies pledging to reach net zero by 2050. According to modelling by the IEA[11], global electricity generation must become carbon negative by 2049 to keep global warming below 2°C. The first corporate net negative target assessed by TPI was set by the Indian cement manufacturer Dalmia Bharat.

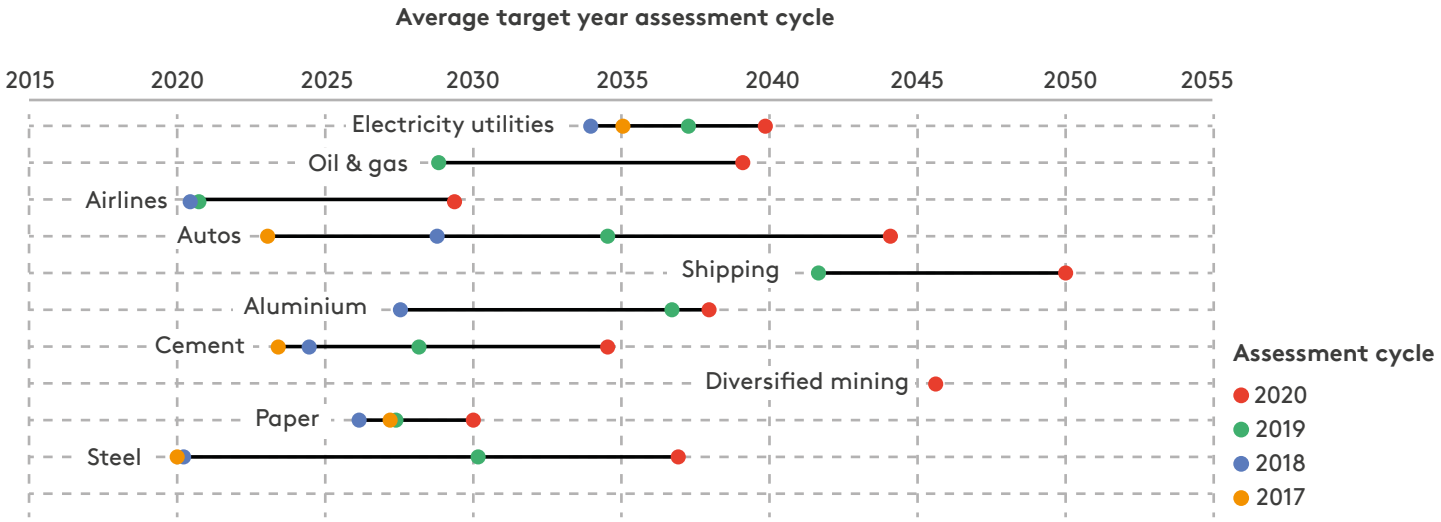
Many more companies have set net zero targets, but they often cover a limited scope of lifecycle emissions. For example, net zero pledges in the oil and gas sector typically cover operational emissions and only sometimes include downstream emissions from the use of companies' products. None includes third-party energy sales.[12] Overall, none of the oil and gas companies we have assessed on Carbon Performance would reach net zero by 2050, although pledges made since we completed this assessment may change the picture slightly.[13] There are similar limitations in other sectors: several auto manufacturers have defined net zero production targets, which exclude emissions from the use phase of sold vehicles (the majority of lifecycle emissions for new vehicles). In short, a net zero target does not necessarily mean that a company's material emissions reach net zero. Investors should pay close attention to target coverage.

How forward-looking are company targets?

Company targets across sectors are becoming increasingly long-term. The average target year for all sectors is now 2039, a meaningful increase on the average target year of 2032 in last year's assessment;[14] see Figure 2.8. Shipping lines' targets are the most forward-looking, with an average target year of 2050, although only five companies assessed in that sector have any target at all. Shipping is followed by diversified mining and auto manufacturers, which have average target years of 2046 and 2044, respectively. Aviation continues to be the least forward-looking sector, but it too has increased its average target year from 2021 in last year's assessment to 2029 in this year's. Recall that our assessment of airlines excludes net emissions targets with unspecified use of offsetting.

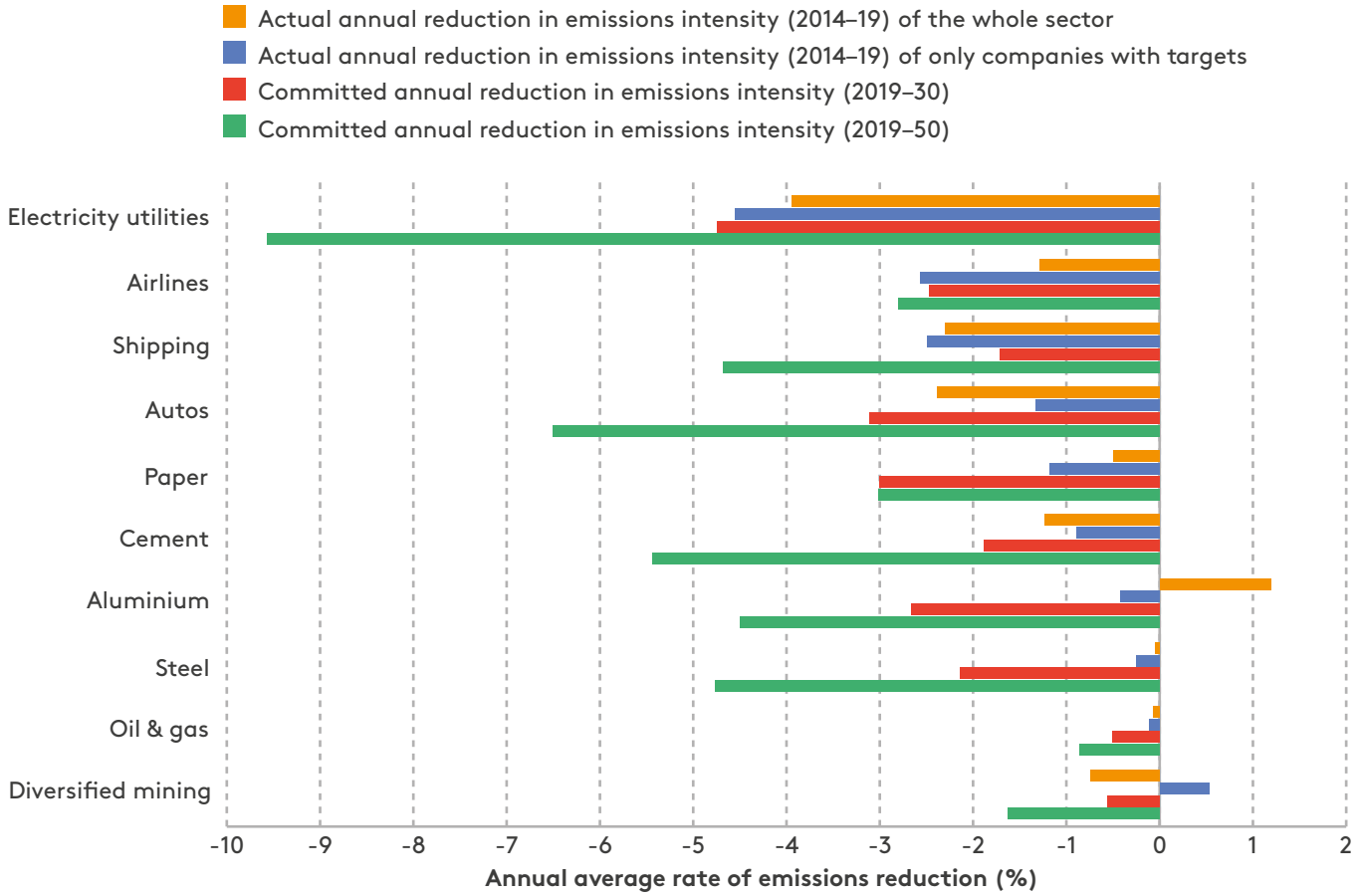
10 Within the whole TPI universe, 15% of companies assessed on Carbon Performance are aligned with Below 2°C in 2050 (see Figure 2.6 earlier in this section).
11 International Energy Agency [IEA] (2017) **Energy Technology Perspectives**.
12 Some other net zero declarations in the oil and gas sector do cover emissions from all energy sales but state emissions intensity reductions that are incompatible with our 2°C and Below 2°C benchmarks.
13 See TPI's **Briefing Paper** of May 2020 for a detailed discussion of net zero targets set by European oil and gas companies (Dietz et al., *Carbon Performance of European Integrated Oil and Gas Companies)*.
14 Note that we exclude from this analysis companies without any targets, and we exclude all intermediate targets.

Figure 2.8. Average year of company targets by sector over the last four TPI assessment cycles



Note: This is the first year that diversified mining companies are assessed. Oil and gas and shipping have been assessed twice by TPI, airlines and aluminium three times, and the remaining sectors four times.

Figure 2.9. Historical rates of reduction in emissions intensity ('actual reduction') compared with required rates of reduction to meet companies' own emission reduction commitments ('committed reduction')



Note: For some companies, the 2030 target is a linear interpolation between their current emissions intensity and their longer-term target. Algonquin Power was excluded from this analysis as an outlier, due to its large increase (154%) in emissions.

Are ambitious long-term targets underpinned by intermediate targets?

Out of the 42 companies that have set targets aligned with Below 2°C,[15] 19 (45%) have not set any intermediate targets. This suggests that these companies are yet to define a precise roadmap from now until their target year, which tends to be relatively far off (their average target year is 2047). This absence of information makes it more difficult for investors to hold companies accountable for their commitments. The remaining 23 companies have all set at least one interim target, seven have set two interim targets and two companies have set three.

"In addition to setting ambitious long-term targets, it is important that companies define clear milestones along the way to avoid backloading decarbonisation efforts to the more distant future."

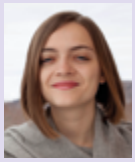
NIKOLAUS HASTREITER, TPI RESEARCHER

Are companies on track to hit their targets?

In most sectors, companies are not reducing emissions fast enough to hit their 2030 targets. In no sector are companies reducing emissions fast enough to meet their 2050 targets. Figure 2.9 compares the annual reductions needed to meet company targets with trends in historical emissions intensity, looking at both the entire sector and the subset of companies that have targets. To make the comparison, we calculate an annual average reduction rate for company emissions intensities between 2014 and 2019. We then calculate how much companies must reduce their emissions intensities annually to reach their future targets. Note that company targets are not necessarily aligned with TPI's emissions intensity benchmarks. That would require, in many cases, even faster reductions.

Electricity utilities have reduced their emissions the most: they are on track to meet their 2030 targets, but their ambitious 2050 targets are still well out of reach at current rates. Airlines and shipping lines with targets follow and are similarly on track to meet their 2030 targets but not their 2050 targets. Oil and gas companies have hardly reduced their emissions intensities, while their targeted intensity reductions are very modest. Steel companies perform similarly poorly, although their ambitions have increased in line with other industrial sectors. Diversified mining companies with targets and aluminium producers have increased their carbon intensities; they must begin reducing emissions even faster to meet their targets.

Companies with targets have reduced emissions slightly faster than companies without targets. Among all companies assessed by TPI on Carbon Performance, the average annual reduction rate was 1.6% between 2014 and 2019, while the reduction rate for those with targets was 1.9%. We find the same pattern in most sectors, with the exceptions being autos, cement and diversified mining.



"The slow emissions reductions we see in emitting sectors highlight the need for further investor and regulatory pressure on companies to drive the decarbonisation measures needed to meet corporate targets. In many cases, these targets must also become much more ambitious."

ANTONINA SCHEER, TPI RESEARCHER

"Electricity utilities have reduced their emissions the most: they are on track to meet their 2030 targets, but their 2050 targets are still well out of reach"

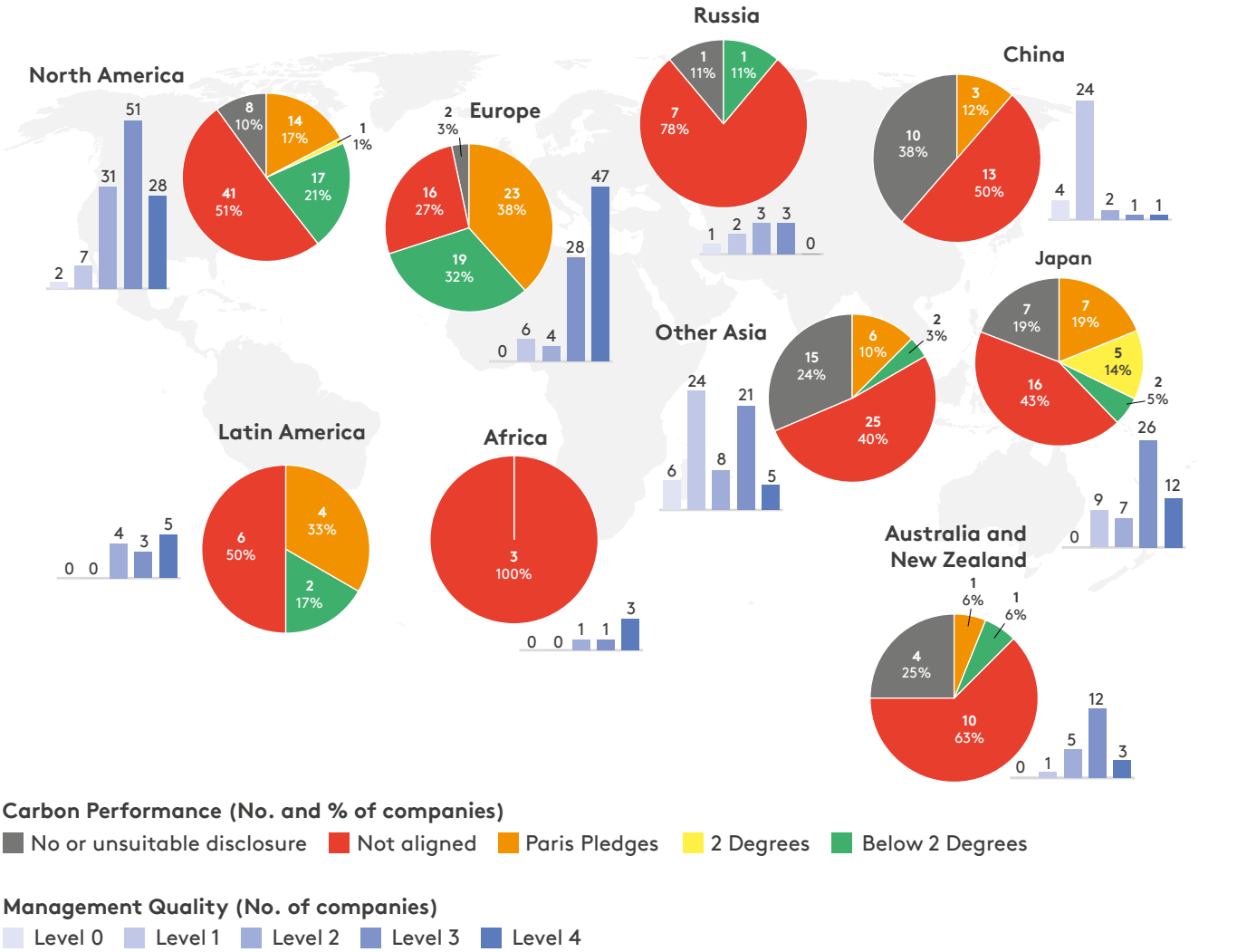
15 Out of the 42 companies, Tesla and Eversource Energy already align with a Below 2°C scenario with their current performance. Their targets aim to keep their emissions intensities at zero.

Management Quality and Carbon Performance by geography

Figure 2.10 provides a breakdown of Management Quality scores and Carbon Performance by region, based on the countries in which assessed companies are listed.

Europe continues to lead on Management Quality and Carbon Performance. Over half of European companies are on Management Quality Level 4 and none is on Level 0. Thirty-two per cent of European companies are aligned with Below 2°C, compared with only 11% of companies operating in the rest of the world. This strong performance is attributable in some measure to the tough regulatory regime for carbon emissions in European Union, compared with other regions. Sector-specific regulations and fiscal measures are driving emissions intensity improvements in electricity and auto manufacturing, for instance. The positive impact of strong regulatory environments underscores the need for companies and investors to enhance their efforts at the corporate–policy interface, through trade associations and other lobbying frameworks.

Figure 2.10. Carbon Performance and Management Quality by geography



Note: We have clustered the companies according to the following breakdown: North America (119 companies); Europe (85); Russia (9); Japan (54); China (32); Other Asia (64); Latin America (12); Australia and New Zealand (21); Africa (5).

PHOTO: CHUTTERSNAP/UNSPLASH

Compared to last year, we see more alignment with 2°C or below in most regions, especially in North America and Japan. In North America, the share of companies aligned with 2°C and below has risen from 16% to 22%. Japanese companies have also improved their Carbon Performance, with 19% now aligned with 2°C or below, nearly double the share recorded in 2020's State of Transition Report.

It is important to bear in mind that, by prioritising the largest companies by market capitalisation, we do not have a representative sample for regions beyond Europe, North America and Asia. Our coverage of companies operating in Africa is notably sparse. It is also important to bear in mind that TPI's Carbon Performance benchmarks are based on global average emissions intensity requirements, since most companies we assess operate on a global scale. Benchmarks that account for regional heterogeneities in historical emissions, technology availability and economic development could lead to more stringent decarbonisation pathways for companies operating primarily in industrialised countries, while the opposite is true for companies in emerging markets.

3 The link between Management Quality and Carbon Performance

In this section, we examine the association between Management Quality and Carbon Performance. We analyse the statistical relationship between company Management Quality and Carbon Performance in this year's data. We also analyse the relationship between past Management Quality and subsequent Carbon Performance by correlating Management Quality in 2017 with emissions reductions from 2017 to 2019. With growth in the TPI universe and four years of data for some companies, we now have reasonable sample sizes to conduct such analysis. It is important to remember that correlation does not necessarily imply causation – there are not enough data to formally test for cause and effect.

NATHAN QUELOZ/UNSPLASH

Are Management Quality and Carbon Performance correlated?

Figure 3.1 shows the relationship between Management Quality and Carbon Performance. We group companies by Management Quality level and show the share of companies aligned with each of our Carbon Performance benchmarks.

Companies at a higher Management Quality level disclose better emissions and activity data, which enables us to assess Carbon Performance. Only around half of companies on Levels 0 and 1 disclose suitable emissions data (38% and 55%, respectively); the share rises to over 80% for Levels 2, 3 and 4 (83%, 93% and 99%, respectively). This shows that basic carbon management is a prerequisite for enabling investors to test companies' alignment with the Paris goals.

Stronger Management Quality correlates with better Carbon Performance, albeit imperfectly. Fifty-seven per cent of Level 4 companies are aligned with at least the Paris Pledges scenario, whereas the shares are lower at Levels 0 to 3 (0%, 19%, 28% and 38% of companies, respectively). The share of companies aligned with TPI's most ambitious Below 2°C benchmark also rises as the Management Quality level rises. The correlation holds especially well in electricity, cement and steel, but is weak in autos and diversified mining.[16]

No Level 4* company is aligned with 2°C or below (see Table 2.1). This, together with the imperfect correlation between Management Quality and Carbon Performance, highlights the need for investors to consider both aspects of corporate climate action when engaging with companies.

Does past Management Quality level correlate with subsequent reductions in emissions?

To answer this question, we compare the Carbon Performance of companies that we assessed on Management Quality in 2017 and for which we can estimate emissions intensity reductions between 2017 and 2019 (for a total of 72 companies).[17] The results are displayed in Figure 3.2, where each point represents a company.

There is some evidence that high Management Quality predicts faster emissions reductions, although the evidence is suggestive, not unequivocal. Companies that were on Management Quality Level 4 in 2017 reduced their emissions intensity by an average of 5.3% between 2017 and 2019, which is 3.7 times more than Level 0 to 3 companies (which saw an average reduction of 1.4%). Since these averages could have been skewed by outliers like steel maker Acerinox (which made an emissions reduction of 33% between 2017 and 2019), and electricity utilities Enel (a reduction of 28%) and Iberdrola (a reduction of 19%), we also looked at the difference in medians. Although the difference shrinks a little, the median reduction for Level 4 companies is still 1.6 times that of Level 0 to 3 companies (2.2% versus 1.4% repectively). These differences are statistically significant, although only weakly so, which is partly down to comparatively small sample sizes.[18]

"The share of companies aligned with TPI's most ambitious Below 2°C benchmark rises as the Management Quality level rises."

16 The relationship between Management Quality and Carbon Performance across all sectors is statistically significant, based on Pearson's Chi squared test ($p<0.01$).

17 One outlier is removed from this analysis: American electricity utility First Energy, a company that was on Level 1 in 2017 and that started operating coal power plants in 2019, increased its carbon intensity per MWh generated by 70% and is therefore excluded from the data reported in this section.

18 One-sided t-test (-2.2, $p<0.05$), One-sided Mann-Whitney test ($p<0.1$).

Figure 3.1. The Paris alignment of companies at each Management Quality level

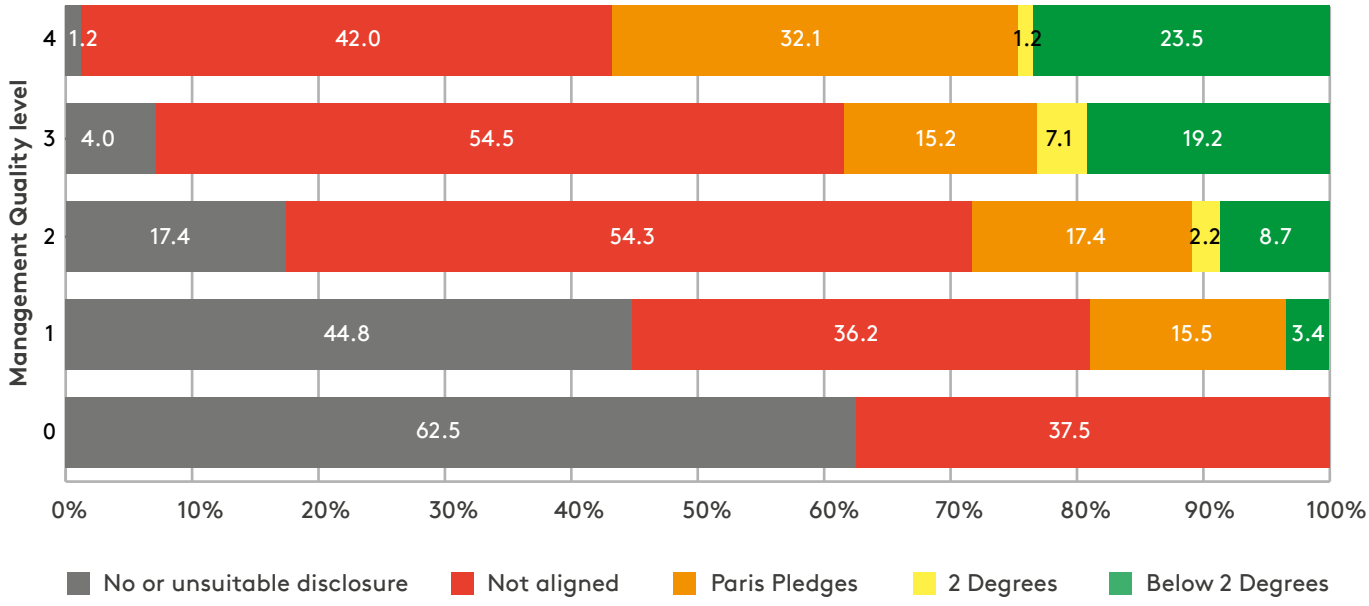
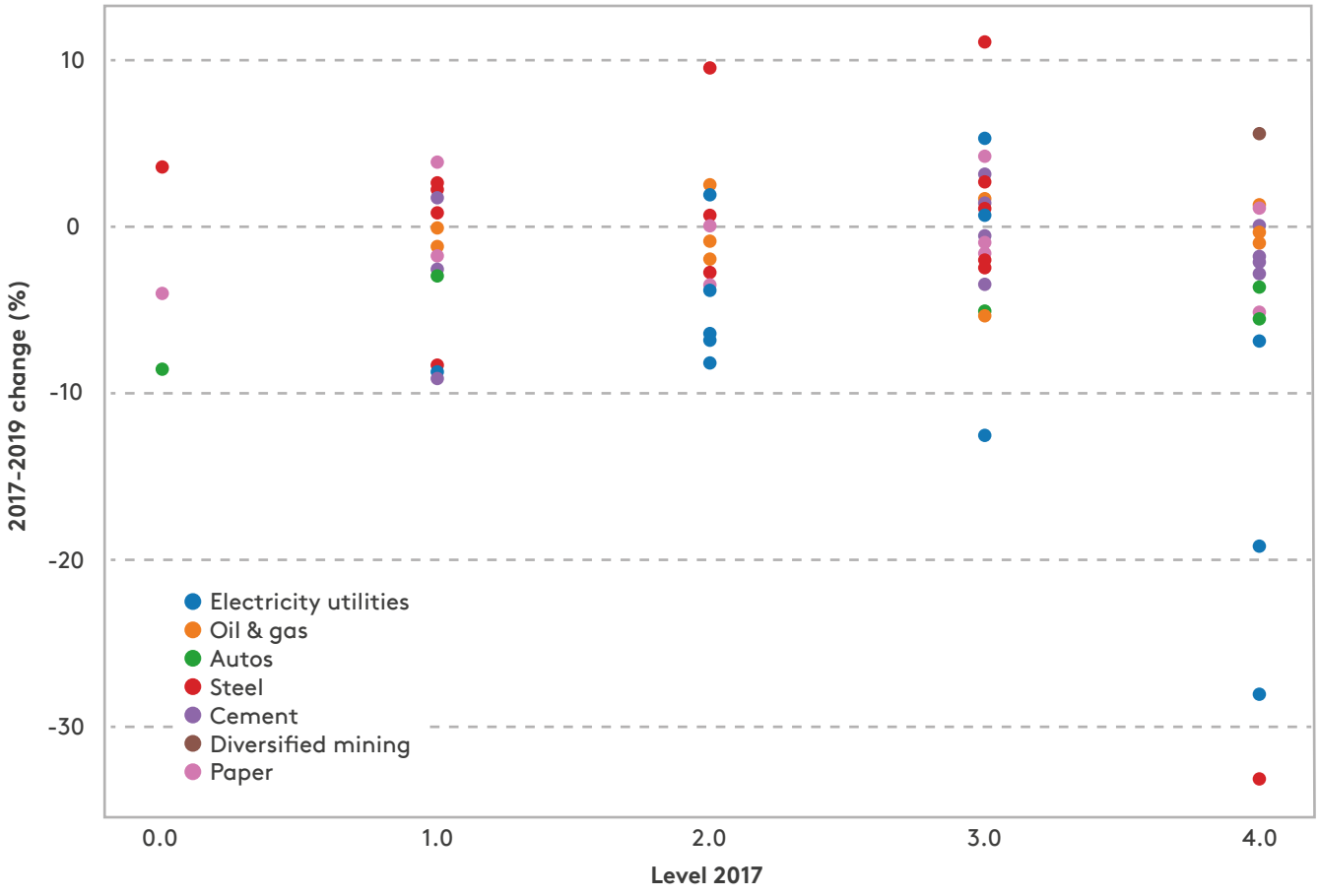


Figure 3.2. Historical changes in emissions intensities between 2017 and 2019 against companies' Management Quality in 2017



4 Sector focus: Diversified mining

Diversified mining companies extract a wide range of materials, including energy commodities, ores, metals and precious elements. These products are key inputs to most other industrial processes, making the diversified mining sector an essential part of the global economy. Along with its economic importance, the sector is also responsible for significant greenhouse gas emissions.

This year, we assessed the Carbon Performance of diversified mining companies for the first time, covering the sector's 13 largest publicly owned companies. Directly or indirectly through the processing and use of their products, these companies emit more than 2.5 billion tonnes of carbon-dioxide-equivalent (CO_2e) per year.[19] We are further developing our Carbon Performance methodology for this sector based on corporate and investor feedback, as well as increased data availability. We augment it as usual with Management Quality data.

Management Quality level of diversified mining companies

Diversified mining is among the highest-performing TPI sectors on Management Quality. The average Management Quality score of diversified mining companies is 3.1. Nine companies out of 13 are on Level 3 or 4, and there are no Level 0 or 1 companies (see Figure 4.1). Anglo American, BHP Billiton and Vale have achieved the highest score of 4*. Indicators on which diversified miners outperform include verification of operational emissions (Q9) and disclosure of emissions from the use of sold products (Q13). Diversified mining is among the few TPI sectors in which all companies satisfy indicators Q1 to Q3 (see Appendix 2). The sector performs slightly worse than the TPI average on four indicators: setting quantitative (Q7) and long-term emissions targets (Q14), disclosing Scope 3 emissions (Q8), and supporting domestic and international efforts to mitigate climate change (Q10).

"The diversity of the mining sector calls for a targeted engagement approach. Investors should consider operational emissions, long-term Scope 3 targets, product mix decarbonisation strategies and supply chain engagement."

VITALIY KOMAR, TPI RESEARCHER

Carbon Performance of diversified mining companies

A higher share of diversified mining companies is aligned with Below 2°C in 2050 than in any other industrial sector. Four companies (31%) are aligned with Below 2°C in 2050: Freeport-McMoRan, Glencore, Grupo Mexico and Nornickel (Figure 4.2). There is only one diversified mining company with no emissions disclosure (Southern Copper); this contrasts with other industrials/materials sectors, where nearly one-third of companies fail to disclose appropriate emissions and activity data.

Production mix significantly impacts diversified mining companies' alignment with TPI's benchmarks. TPI's Carbon Performance methodology for the sector includes Scope 3 emissions from the processing of sold products (category 10) and the use of sold products (category 11). These downstream emissions account for the vast majority of these companies' lifecycle emissions and are thus their most material source of transition risk. Scope 3 emissions intensities vary substantially between commodities, however. For example, it is only 8.2 tCO_2e per tonne of copper, but for iron ore it is as much as 116 tCO_2e per tonne of copper equivalent. These differences in turn generate large differences in starting points for companies' emissions intensity.

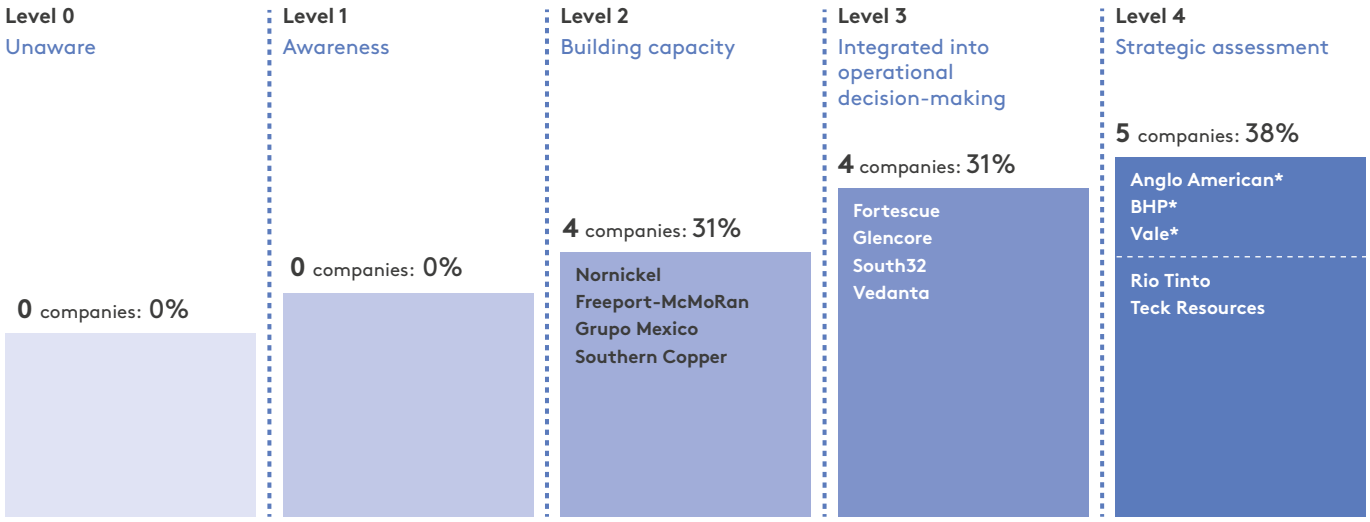
For those companies with more emissions-intensive commodity portfolios, the scope of emissions reduction targets is critical for alignment with the Paris goals.

19 TPI calculation based on disclosed corporate data.

PHOTO: NICK HILLIER/UNSPLASH

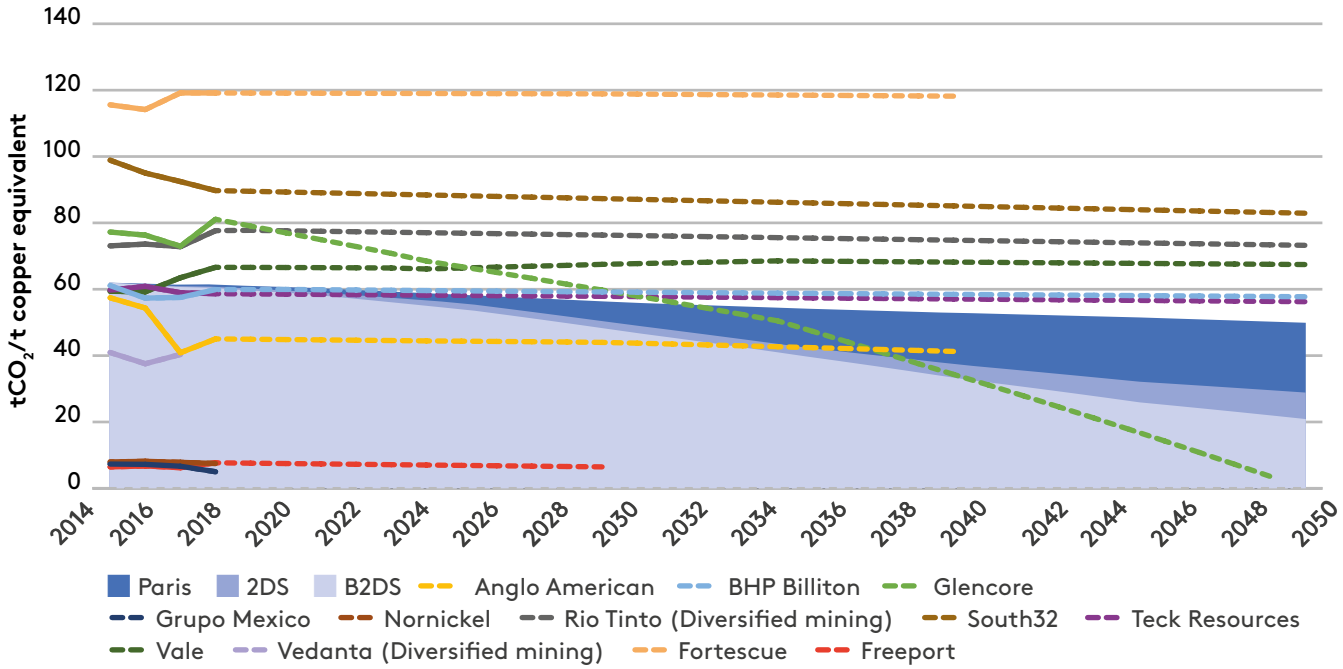
Only two of the 13 companies assessed have set Scope 3 emissions reduction targets accepted in our analysis. On the other hand, nine companies have set operational emissions reduction targets. While operational emissions reductions should be encouraged, setting ambitious Scope 3 targets is essential to the alignment of diversified mining companies, especially those whose portfolio of products leads them to start with a high intensity (e.g. those with a large share of iron ore in their portfolio). Strategic options available to mining companies to reduce their Scope 3 emissions include decreasing fossil energy, iron ore and metallurgical coal exposure, engaging with supply chain partners to work on decreasing steel manufacturing emissions through low-carbon production methods (e.g. encouraging direct reduction of iron to make primary steel in electric arc furnaces; carbon capture, utilisation and storage), and accelerating investments into less emissions-intensive materials.

Figure 4.1. Management Quality level of the diversified mining sector



*Note: On Level 4, a * indicates a 4* company, i.e. one that has been assessed as 'Yes' on all the Level 4 questions (and thus all questions in the framework).*

Figure 4.2. Alignment of diversified mining companies' Carbon Performance with Paris benchmarks, 2016–2050



5 Explainer: interpreting emissions scenarios and benchmarks

The science of climate change tells us that global temperature increases in proportion to cumulative absolute emissions of CO_2.[20] This is why meeting the Paris Agreement temperature goals of well below 2°C, preferably 1.5°C, requires staying within an absolute CO_2 emissions budget.

However, TPI measures company Carbon Performance based on emissions intensity, i.e. company emissions divided by an appropriate measure of company activity, such as megawatt hours of electricity generated or tons of crude steel produced. The main reason for normalising company emissions per unit of activity is to enable comparisons. Companies' absolute emissions are strongly related to company size, so comparisons based on absolute emissions would mainly tell us how big companies are, not how clean.

This creates a challenge. How can an absolute emissions budget be translated into emissions intensity benchmarks and how do we measure company performance against those benchmarks?

The Sectoral Decarbonisation Approach

The first part of the question – how can an absolute emissions budget be translated into emissions intensity benchmarks – has been addressed by the Sectoral Decarbonisation Approach (SDA), developed by CDP, WWF and the World Resources Institute in 2015. Crucially, the SDA starts with an absolute emissions budget. Using an integrated economy–energy model (usually from the International Energy Agency [IEA]), the SDA then divides the absolute, economy-wide emissions budget into sectoral budgets, e.g. for electricity and steel. From the same model, the SDA takes estimates of sectoral activity, e.g. megawatt hours of electricity generated and tons of crude steel produced, and then divides emissions by activity to obtain sectoral emissions intensity scenarios or benchmarks (see Figure 5.1). It is important to use a consistent estimate of sectoral activity, because the low-carbon transition implies changes not only to emissions but also to activity, e.g. modal shifts in transport.

Assessing company pathways against the benchmarks

The second part of the question requires good judgement on the part of investors. If a company's emissions reduction pathway always lies above the Paris Agreement benchmarks, then clearly it cannot be described as Paris-aligned, and vice versa for a company whose pathway always lies below them. The difficult cases are those that lie in between (see Figure 5.2).

What happens if a company starts above the benchmarks but has set emissions reduction targets that would eventually bring it below the benchmarks? This is common because most companies are starting above the benchmarks, unless their business model gives them a cleaner starting point than their industry peers (something that occurs at times in shipping and steel, for instance). Unfortunately, there is no exact science here, because what is required of each individual company depends on what the other companies in the sector are doing and on how market shares are changing, something that cannot be systematically forecast.

Since it is cumulative emissions that matter, the company's entire emissions pathway from today to 2050 matters, not just the endpoint. If a company is above the benchmarks until just before 2050 (i.e. backloading its emissions reduction efforts), it will have used up a disproportionate share of the sectoral emissions

20 Damon Matthews H, et al. (2009) The proportionality of global warming to cumulative carbon emissions. *Nature* 459. 7248: 829-832.

Figure 5.1. Summary of the Sectoral Decarbonisation Approach

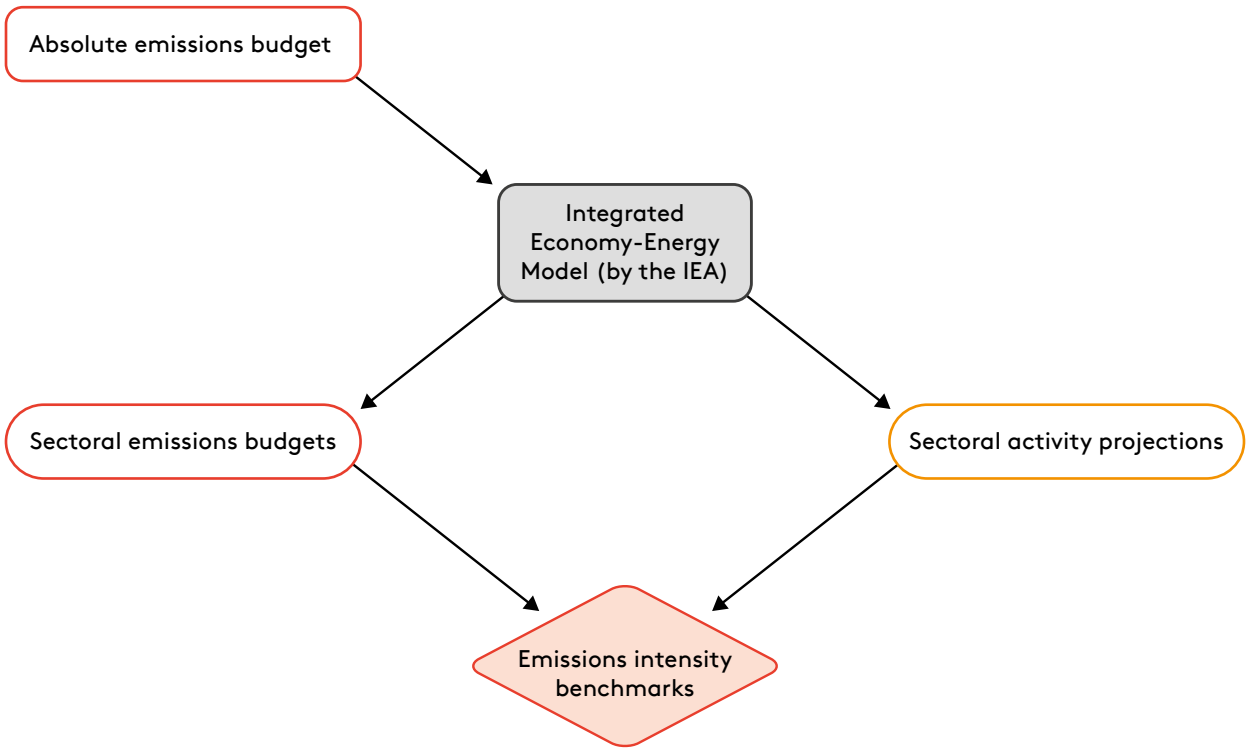
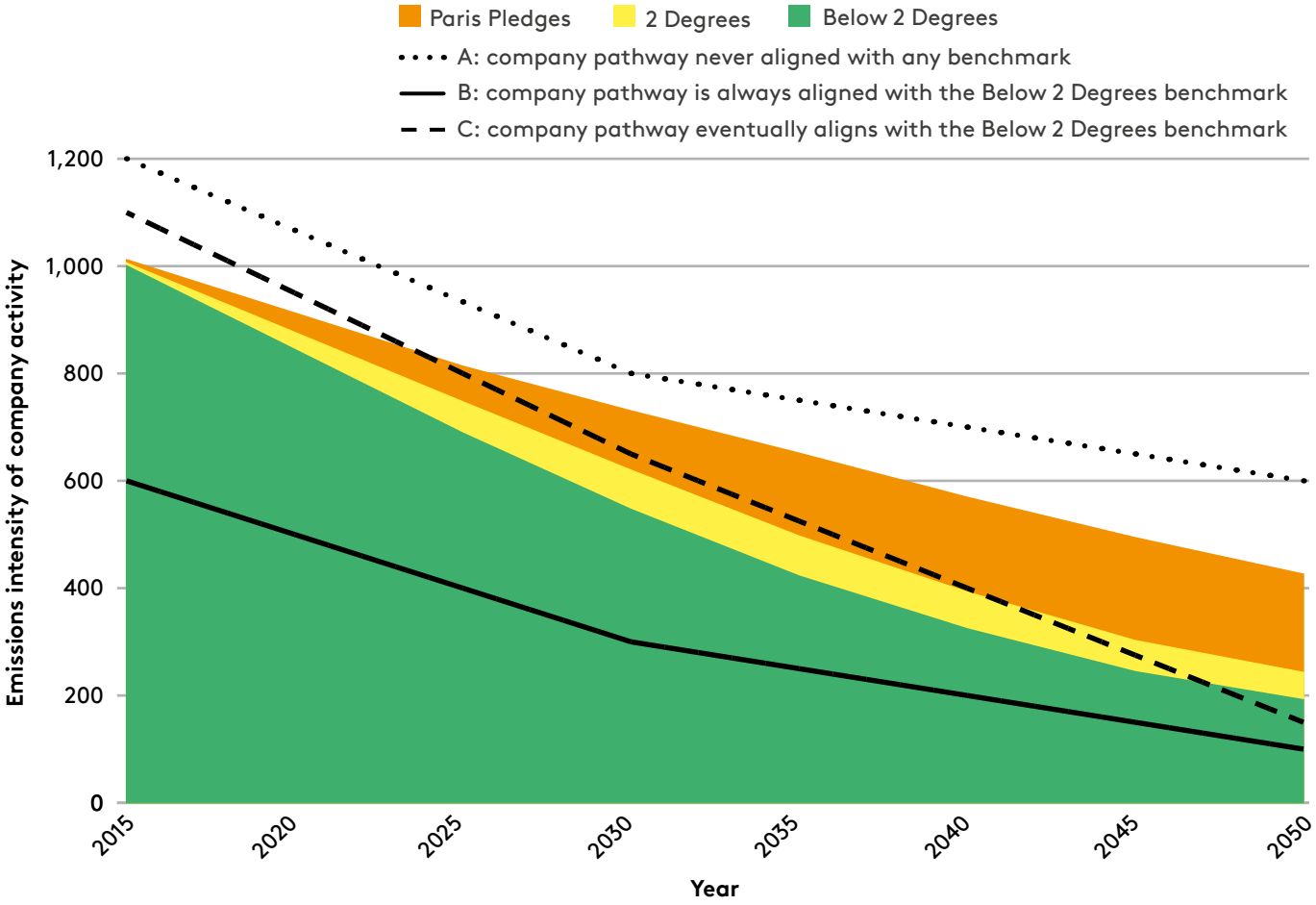


Figure 5.2. Stylised representation of companies aligning with the different benchmarks at different stages, 2015–2050



budget and the sector as a whole will be over-budget, unless other companies compensate. There is evidence of backloading in autos, cement and electricity, as discussed above.

Companies could be required to undercut the benchmarks later on by the same cumulative amount by which they overshoot them today, thus ensuring the company's cumulative emissions intensity is the same as the benchmarks.[21] Account could also be taken of changing market shares, if investors believe with a high degree of confidence that a company is going to gain or lose market share in the future.

In general, investors should be looking for companies to align themselves with the benchmarks as soon as is practicable. In some sectors, such as electricity, this can be within 10 to 15 years. In other sectors, such as cement and oil and gas, it may take longer.

PHOTO: MATTHEW T RADER/UNSPLASH

21 Rekker S et al. (2021) The Paris-compliant company: Measuring transition performance using a strict science-based approach. *INET Oxford Working Paper* No. 2021-03.

6 Implications for investors

From an investor perspective, greenhouse gas emissions are a measure of a company's climate impact and a measure of investment risk and opportunity (depending on its performance relative to the TPI benchmarks). In that context, reducing greenhouse gas emissions (i.e. improving a company's Carbon Performance) reduces its environmental impact, reduces its downside risk and increases upside opportunities. Furthermore, improving a company's governance processes, policies, targets and disclosures (i.e. improving its Management Quality) should enable it to better manage the risks and opportunities associated with climate change. As discussed in Section 4, there is also some evidence that improving Management Quality will lead to improvements in Carbon Performance.

While the case for action is clear, the results presented in this year's State of Transition Report are sobering. Many companies have established climate policies, report on their emissions and have set targets, but many – despite being among the world's largest greenhouse gas emitters – have yet to take a strategic approach to managing climate change-related risks and opportunities. This is seen in the targets that companies are setting for themselves. In 2050, only 15% of companies expect to align with TPI's most ambitious Below 2°C benchmark. A further 2% expect to align with 2°C, and 20% align with the less ambitious Paris Pledges benchmark. Of the remaining 63%, 47 percentage points do not align with any of the benchmarks and 16 percentage points provide insufficient disclosure for TPI to calculate their Carbon Performance.

The growth in the number of companies setting net zero targets is, however, encouraging. It suggests that we may be on the cusp of a systemic transformation in how these large greenhouse gas emitting companies view the strategic risks and opportunities presented by climate change. However, we should not get carried away just yet. Only 35 of the 292 companies assessed on Carbon Performance have made genuine net zero commitments. As this report has discussed, many of the commitments have limited scope and only cover a small proportion of company emissions. Furthermore, it is not clear how these commitments are being translated into concrete action and targets over the short and medium term. TPI's analysis suggests that too many companies expect to leave the bulk of the action to reduce their emissions to the 2040s. This raises questions about the credibility of net zero commitments and, as discussed in Section 5, suggests that companies will be significantly overshooting their benchmarks and so using up disproportionate shares of the available sectoral emissions budgets.

Our analysis leads to four important recommendations for companies seeking to demonstrate to their investors that they are effectively managing their climate change-related risks, opportunities and impacts:

- Companies should commit to achieving net zero greenhouse gas emissions by 2050 or sooner, covering their material emissions.
- Companies should set short-, medium- and long-term targets that align with these commitments, and should ensure that their emission reduction trajectory aligns with the relevant TPI Carbon Performance benchmark and does not significantly overshoot the benchmark.
- Companies should publish their strategy and capital expenditure plans that explain how they are going to meet their greenhouse gas emission reduction commitments and targets.
- Companies should provide disclosures that enable TPI and other investor initiatives to assess their current performance and to track performance against their objectives and targets. The TPI **methodology notes**[22] set out the disclosures expected from different sectors.

22 Go to **https://www.transitionpathwayinitiative.org/publications** and apply the 'methodology' filter.

Appendix 1: TPI Management Quality indicators

Level 0: Unaware of (or not Acknowledging) Climate Change as a Business Issue

Question 1 — **Does the company acknowledge climate change as a significant issue for the business?**

[If the company does not acknowledge climate change as a significant issue for the business, it is placed on Level 0]

Notes

Companies are assessed as Yes if they:

- Recognise climate change as a relevant risk and/or opportunity for the business (Q2); or
- Have a policy or an equivalent statement committing them to take action on climate change (Q3); or
- Have set greenhouse gas emission reduction targets (Q4); or
- Have published information on their operational greenhouse gas emissions (Q5).

Level 1: Acknowledging Climate Change as a Business Issue

Question 2 — **Does the company recognise climate change as a relevant risk and/or opportunity for the business?**

Notes

Companies are assessed as Yes if they demonstrate recognition of climate change as a relevant risk and/or opportunity to the business, or if they have incorporated at least two of the following, more advanced management practices, namely they:

- Have a process to manage climate-related risks (Q12);
- Have set long-term quantitative targets for reducing their greenhouse gas emissions (Q14);
- Incorporate climate change performance into remuneration for senior executives (Q15);
- Incorporate climate change risks and opportunities in their strategy (Q16);
- Undertake climate scenario planning (Q17);
- Disclose an internal price of carbon (Q18);
- Ensure consistency between their climate change policies and the positions taken by trade associations of which they are members (Q19).

Question 3 — **Does the company have a policy (or equivalent) commitment to action on climate change?**

Notes

Companies are assessed as Yes if they have a published policy or commitment statement on climate change that commits them to addressing the issue, or to reducing or avoiding their impact on climate change (e.g. to reduce emissions or improve their energy efficiency).

Level 2: Building Capacity

Question 4 **Has the company set greenhouse gas emission reduction targets?**

Notes

Companies are assessed as Yes if they have greenhouse gas emissions reduction targets. These targets may cover Scopes 1, 2 and/or 3, and they may be quantified or unquantified.

This question is less demanding than Questions 7 and 13, which require companies to have set quantified targets and for those quantified targets to be long-term, respectively. Companies that are assessed as Yes on Question 7, or Yes on Questions 7 and 13, are automatically assessed as Yes on Question 4.

Question 5 **Has the company published information on its operational (Scope 1 and 2) greenhouse gas emissions?**

Notes

Companies are assessed as Yes if they report on their Scope 1 and 2, or their Scope 1, 2 and 3 emissions. Companies that only report Scope 1 emissions are assessed as No.

Level 3: Integrating into Operational Decision-Making

Question 6 **Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy?**

Notes

Companies are assessed as Yes if they provide evidence of clear board or board committee oversight of climate change, or if they have a named individual/position responsible for climate change at board level.

Question 7 **Has the company set quantitative targets for reducing its greenhouse gas emissions?**

Notes

Companies are assessed as Yes if they have set quantified targets to reduce greenhouse emissions in relative or absolute terms (Scopes 1, 2 and/or 3).

This question is more demanding than Question 4, as companies must have set quantitative targets to reduce emissions. This question differs from Question 13, which asks whether companies have set quantified targets for reducing greenhouse gases over the long term (i.e. targets that are more than 5 years in duration). Companies that are assessed as Yes on Question 13 are automatically assessed as Yes on this question.

Question 8 **Does the company report on Scope 3 emissions?**

Notes

Companies are assessed as Yes if they report on Scope 3 emissions separately, either in total or in one or more categories, or if they provide a total for Scope 1, 2 and 3 emissions.

Question 9 **Has the company had its operational (Scope 1 and/or 2) greenhouse gas emissions data verified?**

Notes

Companies are assessed as Yes if their operational greenhouse gas emissions have been independently verified by a third party, or if they state the international assurance standard they have used and the level of assurance.

Question 10	**Does the company support domestic and international efforts to mitigate climate change?**
Notes	Companies are assessed as Yes if they demonstrate support for mitigating climate change through membership of business associations that are supportive, and if they have a clear company position on public policy and regulation.
Question 11	**Does the company disclose its membership and involvement in trade associations engaged in climate issues?**
Notes	Companies are assessed as Yes if they have disclosed their memberships of trade associations that engage on climate-related issues, and if they have disclosed their involvement in these trade associations.
Question 12	**Does the company have a process to manage climate-related risks?**
Notes	Companies are assessed as Yes if they have integrated climate change into multi-disciplinary company-wide risk management, or if they have a specific climate-related risk management process.
Question 13*	**Does the company disclose materially important Scope 3 emissions?** **applicable to some sectors only*
Notes	Scope 3 emissions are diverse and many companies only disclose in a sub-set of categories. In some sectors, particular categories of Scope 3 emissions are materially important, in the sense of being a large share of lifecycle emissions. In these sectors, we require companies to specifically disclose emissions in the relevant category or categories. For example, in automobile manufacturing, coal mining, and oil and gas production, we ask: does the company disclose Scope 3 emissions from the use of sold products?

Level 4: Strategic Assessment

Question 14 **Has the company set long-term quantitative targets for reducing its greenhouse gas emissions?**

Notes

Companies are assessed as Yes if they have set quantified, long-term targets (i.e. more than 5 Years in duration) to reduce greenhouse emissions in relative or absolute terms (Scopes 1, 2 and/or 3).

This question is more demanding than Question 7, as the targets must not only be quantitative, they must also be long-term.

Question 15 **Does the company's remuneration for senior executives incorporate climate change performance?**

Notes

Companies are assessed as Yes if executive remuneration incorporates climate change performance.

Question 16 **Does the company incorporate climate change risks and opportunities in their strategy?**

Notes

Companies are assessed as Yes if they detail how they incorporate climate change risks and opportunities in their strategy (mitigation, new products, R&D, etc.), and if they disclose the impact of climate change risks and opportunities on financial planning (OPEX, CAPEX, M&A, debt).

Question 17 **Does the company undertake climate scenario planning?**

Notes

Companies are assessed as Yes if they mention the 2 degrees scenario in relation to business planning or confirm they have conducted climate related scenario analysis, and if they describe the business impact of one or more climate scenario analysis.

Question 18 **Does the company disclose an internal price of carbon?**

Notes

Companies are assessed as Yes if they have and disclose their internal carbon price.

Question 19 **Does the company ensure consistency between its climate change policy and the positions taken by trade associations of which it is a member?**

Notes

Companies are assessed as Yes if they have a stated policy or commitment to ensure consistency between their climate change policy and the position taken by the trade associations of which they are members, and for responding appropriately in those instances where the trade association's position is significantly weaker than or contradicts that of the company.

Appendix 2: Heat map of Management Quality indicator by indicator at the sector level

Key: Yes — No

	Transport			Energy				Industrials and materials								
	Autos	Airlines	Shipping	Coal mining	Electricity utilities	Oil & gas	Oil & gas distribution	Aluminium	Chemicals	Cement	Paper	Steel	Diversified mining	Other industrials	Services	Consumer goods
L0|1. Acknowledge?	96%	100%	94%	91%	100%	100%	100%	89%	100%	94%	91%	94%	100%	100%	83%	100%
L1|2. Recognises as risk/opportunity?	78%	87%	38%	60%	91%	91%	100%	68%	94%	61%	65%	72%	100%	100%	83%	100%
L1|3. Policy commitment to act?	91%	100%	88%	86%	97%	100%	100%	84%	100%	91%	87%	88%	100%	100%	83%	100%
L2|4. Emissions targets?	78%	74%	63%	34%	84%	65%	57%	58%	86%	61%	65%	50%	69%	100%	83%	100%
L2|5. Disclosed Scope 1 & 2 emissions?	87%	70%	56%	63%	88%	87%	71%	79%	97%	64%	74%	63%	85%	94%	83%	100%
L3|6. Board responsibility?	57%	57%	19%	51%	79%	81%	86%	58%	78%	30%	52%	53%	85%	72%	83%	100%
L3|7. Quantitative emissions targets?	78%	74%	63%	31%	82%	59%	57%	53%	83%	61%	61%	47%	62%	89%	83%	100%
L3|8. Disclosed any Scope 3 emissions?	74%	61%	25%	43%	76%	48%	71%	53%	78%	45%	57%	47%	54%	72%	67%	100%
L3|9. Had operational emissions verified?	70%	65%	50%	54%	56%	63%	57%	63%	86%	55%	48%	47%	92%	89%	67%	89%
L3|10. Support domestic and international mitigation?	39%	43%	25%	26%	68%	50%	71%	42%	53%	30%	43%	38%	46%	78%	50%	78%
L3|11. Disclosed trade association involvement?	39%	35%	13%	23%	63%	41%	43%	26%	33%	21%	48%	25%	46%	72%	50%	44%
L3|12. Process to manage climate risks?	70%	57%	31%	54%	76%	76%	86%	58%	83%	36%	48%	53%	77%	89%	83%	100%
L3|13. Disclosed use of product emissions?	74%	n/a	n/a	29%	n/a	43%	43%	n/a	n/a	n/a	n/a	n/a	100%	40%	n/a	n/a
L4|14. Long-term emissions targets?	70%	70%	50%	23%	76%	50%	57%	47%	78%	55%	48%	38%	54%	78%	83%	100%
L4|15. Incorporated climate change into executive renumeration?	57%	35%	13%	26%	56%	43%	43%	26%	56%	24%	26%	28%	46%	50%	33%	78%
L4|16. Climate risks/opportunities in strategy?	61%	35%	25%	23%	62%	28%	43%	16%	33%	15%	26%	19%	38%	56%	17%	67%
L4|17. Undertakes climate scenario planning?	52%	13%	13%	29%	40%	46%	43%	26%	17%	12%	13%	16%	46%	39%	17%	56%
L4|18. Discloses an internal price of carbon?	39%	35%	13%	20%	50%	39%	57%	16%	36%	18%	26%	25%	38%	50%	17%	56%
L4|19. Consistency between company and trade associations?	17%	0%	0%	11%	6%	13%	14%	11 %	8 %	0%	4%	0%	38%	11%	17%	0%

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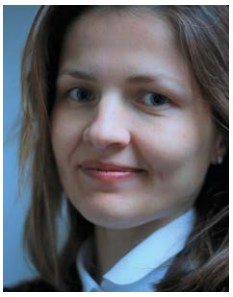

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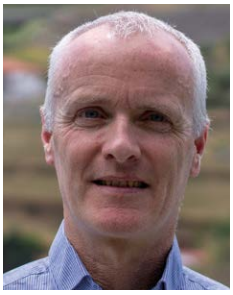

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