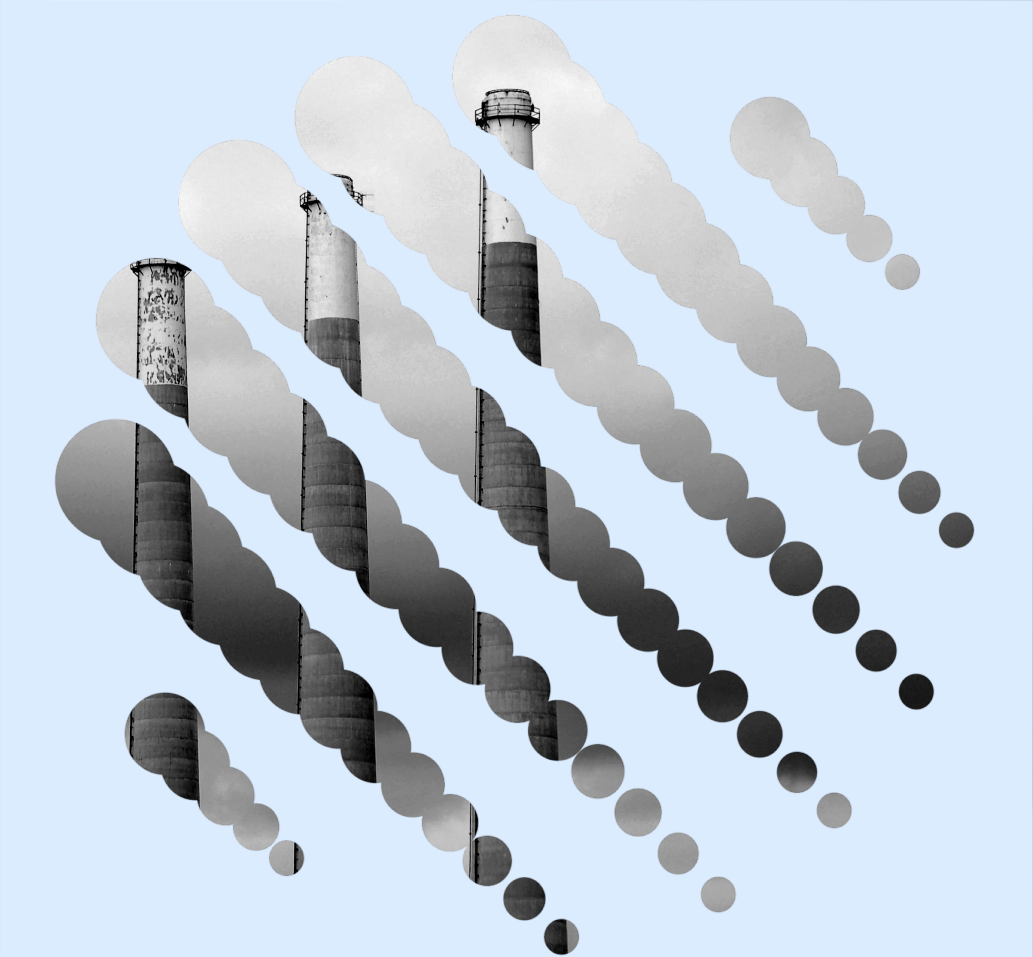
Transition Pathway Initiative

Management Quality and Carbon Performance of Energy Companies: November 2021 Update

Simon Dietz, Beata Bienkowska, Hayli Chiu, Dan Gardiner, Robin Goon, Nikolaus Hastreiter, Valentin Jahn, Issam Jamaleddine, Vitaliy Komar, Antonina Scheer, and Rory Sullivan



About TPI

What is TPI?

A global initiative led by Asset Owners and supported by Asset Managers. Established in January 2017, now with **115 supporters** accounting for nearly **$40 trillion of combined Assets Under Management and Advice**.

What does TPI do?

Using publicly disclosed data, TPI assesses the progress that companies are making on the **transition to a low-carbon economy**, supporting efforts to mitigate climate change:

- In line with the recommendations of TCFD
- Providing data for the CA100+ initiative
- Publishing data via an open-access online tool and on GitHub

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Key messages

- This is the Transition Pathway Initiative's 2021 assessment of the energy sector, comprising 190 companies in coal mining, electricity, and oil and gas (O&G) production and distribution.
- **The average Management Quality score of energy companies now stands at 2.8, up only marginally from 2.7 last year**. Electricity utilities lead with an average score of 3.1, O&G scores 3, while coal miners remain the worst performing TPI sector with a score of just 2.1 on average.
- **Only half of O&G producers and a quarter of coal miners disclose their Scope 3 use of sold product emissions**, even though this constitutes the largest source of emissions and transition risk for fossil-fuel producers.
- **This year, TPI has introduced an ambitious 1.5C scenario, updated its Below 2C scenario, and replaced the Paris Pledges scenario with a new National Pledges scenario, which considers more recent country emissions reduction commitments.** The National Pledges scenario is still insufficient to limit the global temperature increase to well below 2C.
- **The share of energy companies aligned with Below 2C in 2050 is 34%, a notable increase of 16 percentage points on last year.** This is largely driven by electricity utilities, 58% of which are aligned with Below 2C in 2050. And for the first time, three O&G companies (5%) are aligned with 1.5C in 2050.
- **However, it remains the case that only one in ten companies is aligned with 1.5C in 2050, the majority of companies we assess still fail to align with any of the temperature benchmarks, and alignment is worse when measured against 2030 than 2050.**

Transition Pathway Initiative

TPI coverage of the energy industry

In this report, **we cover 190 publicly listed energy companies** in four sectors: coal mining, electricity, oil and gas production, and oil and gas distribution.

This includes 27 new companies.

This year, in addition to equities, we have looked at the 30 largest bond issuers in each of electricity, and oil and gas. Most of these are already part of the TPI universe by virtue of having a large free-float market capitalisation. However, 11 newly added companies have a small free-float market cap or are not listed, for example Pemex.

Sector	Companies assessed on Management Quality	Companies assessed on Carbon Performance
Coal Mining	41	6
Electricity utilities	80	76
O&G production & distribution	71	58
Total	**190**	**140**

Pure play coal miners, oil and gas distribution companies, and electric utilities not involved in generation are not assessed on Carbon Performance.

We class 6 of the coal miners as diversified miners. The remaining diversified miners will be assessed during our Industrials/Materials update.

Two companies appear in two sectors

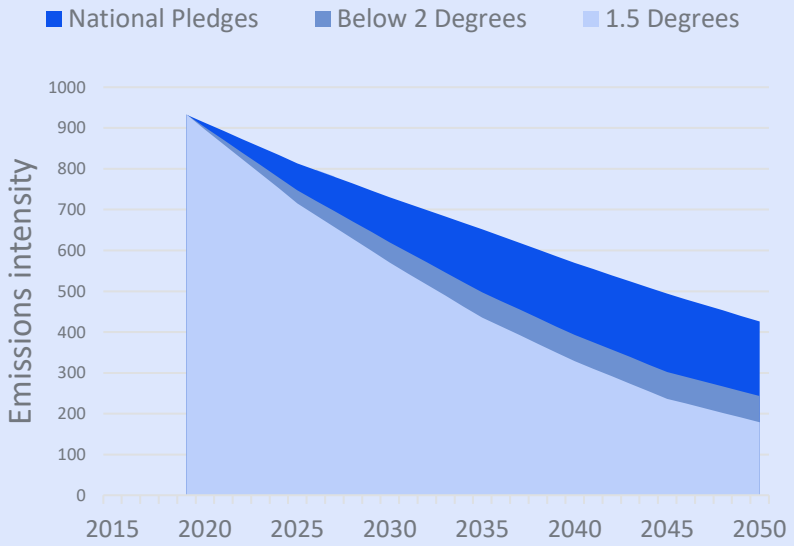
Transition Pathway Initiative

Update of the TPI benchmarks

Recognising recent scientific, policy and technology developments, TPI has updated its sectoral pathways and introduced new benchmarks:

1. ***National Pledges***, which builds on the IEA's 2020 Stated Policies Scenario (STEPS), takes into account policies which were in place or under development up to at least mid-2020, depending on the sector (replaces TPI's Paris Pledges scenario);
2. ***Below 2C***, which builds on the IEA's 2020 Sustainable Development Scenario and holds the temperature rise to below 1.8C with a 66% probability, or 1.65C with a 50% probability (updates the previous TPI Below 2C scenario);
3. ***1.5C***, which builds on the IEA's Net Zero by 2050 Scenario and holds the global temperature increase to 1.5C with a 50% probability (new scenario).

The new benchmarks start in 2019. See Section 3 for further details.



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Transition of the energy sector in numbers

2018

105 companies

Management Quality: 2.5

Carbon Performance
Alignment of 37 companies by 2030:

- **12% aligned with Below 2°C**
- 16% aligned with Paris Pledges
- 23% not aligned
- 49% not disclosing

2019

135 companies

Management Quality: 2.6

Carbon Performance
Alignment 109 companies by 2030:

- **12% aligned with Below 2°C**
- 4% aligned with 2°C
- 12% aligned with the Paris Pledges
- 59% not aligned
- 13% not disclosing

2020

163 companies

Management Quality: 2.7

Carbon Performance
Alignment of 125 companies by 2050:

- **18% aligned with Below 2°C**
- 19% aligned with the Paris Pledges
- 56% not aligned
- 7% not disclosing

2021

190 companies

Management Quality: 2.8

Carbon Performance
Alignment of 140 companies by 2050:

- **10% aligned with 1.5°C**
- 24% aligned with Below 2°C
- 9% aligned with National Pledges
- 53% not aligned
- 4% not disclosing

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Management Quality level

Companies' Management Quality ratings may not always reflect their most up-to-date disclosures. TPI updates its assessments once a year. The last update was in November 2021.

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*Note: Eneos (coal, and oil & gas) and Origin Energy (electricity, and oil & gas) are counted only once in the totals for each level.

Management Quality level

The average Management Quality score of energy companies is 2.8. This is a slight improvement of 0.1 points on last year. This means that, on average, the sector is yet to fully integrate climate change into operational decision-making (Level 3) and is well short of strategic assessment (Level 4).

Energy companies perform similarly on aggregate to companies in industrials/materials and in transport.

There remain sectoral differences within energy: **electricity utilities lead with an average Management Quality score of 3.1**, **oil and gas companies score 3 and coal miners remain the worst performing TPI sector with a score of just 2.1.**

Seven companies have reached TPI's highest level, 4*, by satisfying all Management Quality criteria: Anglo American, BHP, BP, Endesa, Eni, Equinor and Galp Energia.


Photo by Robert Linder on Unsplash

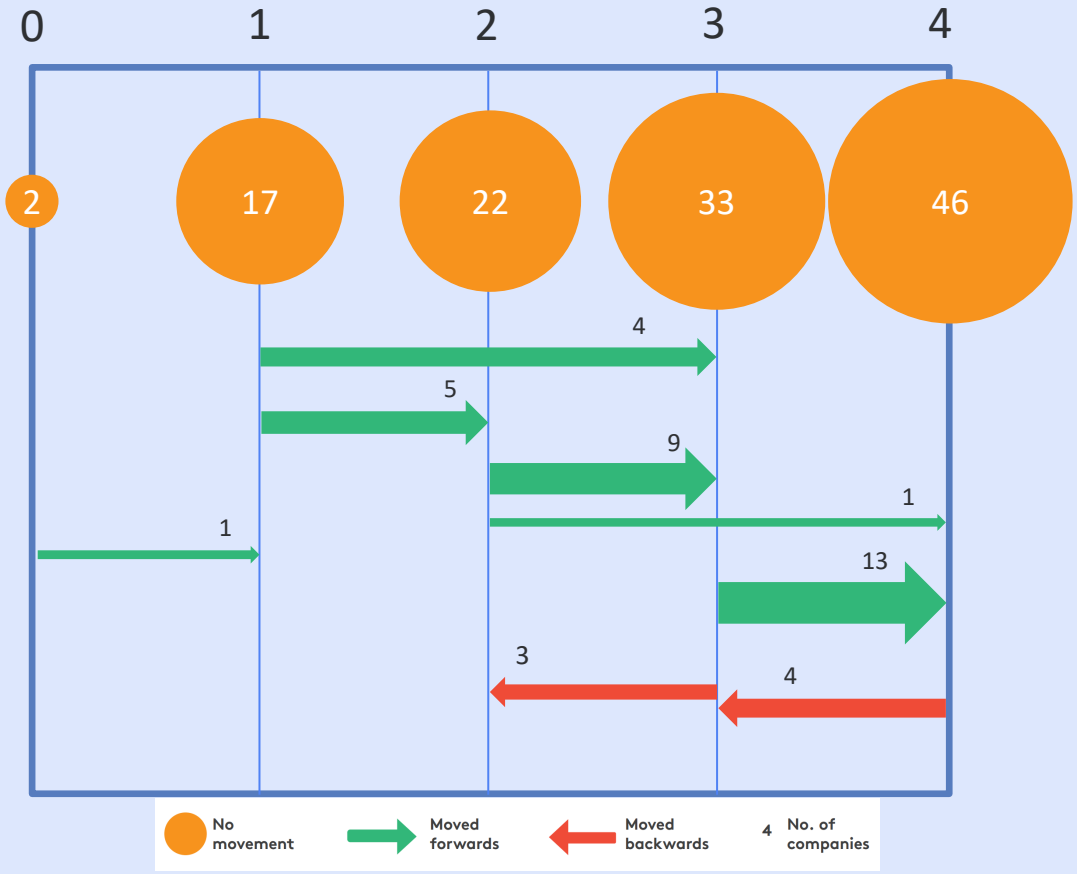
Trends in Management Quality

We have trend data on 160 energy companies. Most companies have been assessed at least twice. Current and historic data can be downloaded from the TPI tool.

Most companies (120) stay on the same level as last year. More companies have moved up at least one level (33) than have moved down (7), with the upward trend being stronger this year than last year.

Of the 33 companies moving up, 13 have progressed from Level 3 to 4. Five of those have begun disclosing emissions from use of sold products, crucial for fossil fuel producers.

Seven companies have moved down at least one level. Common reasons include a failure to disclose Scope 3 use of sold product emissions, as well to continue demonstrating support for domestic and international climate change mitigation.



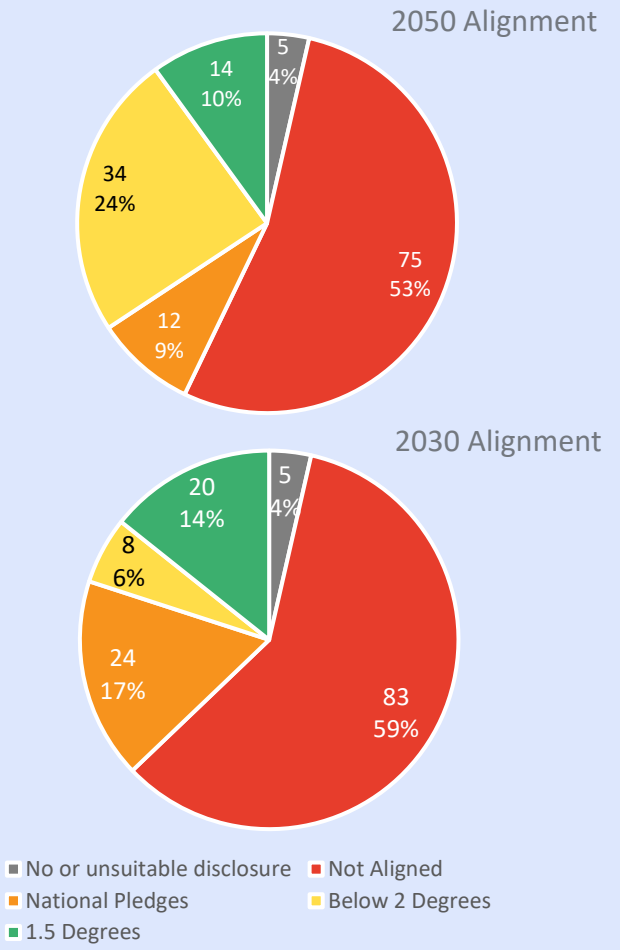
Carbon Performance: alignment with the Paris Agreement benchmarks

This year's Carbon Performance assessment covers 140 companies: electric utilities, oil and gas producers, and diversified miners involved in coal mining. We also test companies against new benchmarks, including for the first time a 1.5C benchmark.

10% of companies are aligned with a 1.5C scenario in 2050 and 14% are aligned with the same scenario in 2030.

24% of companies are aligned with the Below 2C scenario in 2050 and 6% are aligned in 2030.

If we take a 2050 horizon, we can see evidence of more alignment than in last year's assessment. In particular, the share of companies aligned with the Below 2C scenario (or better) has increased by 16 percentage points to 34%, while the share of companies that are not aligned has slightly decreased to 53%. However, it remains the case that only one in ten companies is aligned with 1.5C.



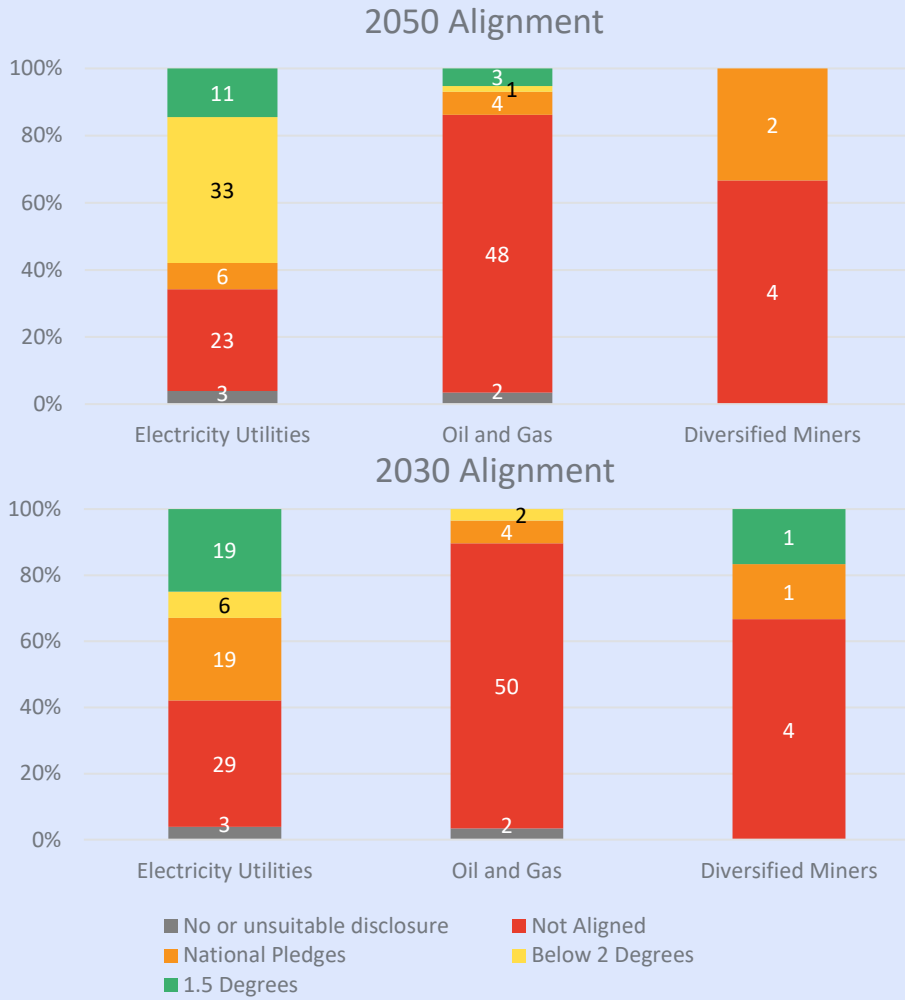
Carbon Performance: sector breakdown

Electricity utilities continue to have the best Carbon Performance in the TPI universe*. In fact, all 11 companies aligned with 1.5C in 2050 have set targets to reach net zero emissions by 2040 or earlier.

While the oil and gas sector transition appears considerably slower, for the first time we see companies that align with 1.5C and Below 2C in 2050. Occidental Petroleum, Total and Eni align with 1.5C in 2050, while Galp Energy is aligned with Below 2C in 2050.

The 2050 alignment of diversified miners with coal businesses has not changed since last year.

*Based on the share of companies aligned with 1.5C or Below 2C



Management Quality and Carbon Performance of bond issuers

This year, in addition to equities, we have looked at the 30 largest bond issuers in each of electricity, and oil and gas.

Most of these top 60 bond issuers are already part of the TPI universe of publicly traded companies.

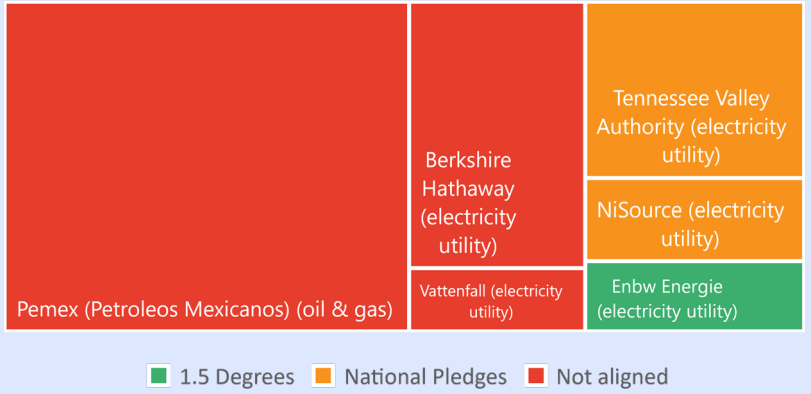
That leaves 11 large bond issuers to add to the TPI universe: five electric utilities, five oil and gas distribution companies (assessed only on Management Quality) and a non-publicly listed oil and gas producer (Pemex).

On Management Quality, the average score of these additional 11 companies is 2.4, meaning they are yet to incorporate climate change into operational decision-making.

On Carbon Performance, one utility aligns with the the 1.5C benchmark, two with the least ambitious National Pledges benchmark and three utilities along with Pemex are not aligned with any of our benchmarks.

Management Quality level of newly assessed bond issuers

Alignment of newly assessed bond issuers in 2050, scaled by outstanding issued debt



Note that Berkshire Hathaway is already assessed on Management Quality by TPI as a services company.

Sector focus:

Oil and gas

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Management Quality level

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Level 0
Unaware

0 company: 0%

Level 1
Awareness

4 companies: 6%

- Oil & Natural Gas
- Pemex
- Reliance Industries
- TATNEFT

Level 2
Building capacity

21 companies: 30%

- Apache
- Bharat Petroleum
- Cabot Oil & Gas
- Cheniere Energy
- Diamondback Energy
- Energy Transfer
- Enterprise Products
- EOG Resources
- HollyFrontier
- Marathon Oil
- Marathon Petroleum
- Oil Search
- Oneok
- Ovintiv
- Plains GP Hold
- Phillips 66
- Saudi Aramco
- Targa Resources
- Valero Energy

Level 3
Integrating into operational decision making

20 Companies: 28%

- Ampol
- Canadian Natural Resources
- Cenovus Energy
- Chevron
- China Petroleum & Chemical
- CNOOC
- Devon Energy
- Ecopetrol
- Exxon Mobil
- Formosa Petrochemical
- Idemitsu Kosan
- Kinder Morgan
- Lukoil
- NovaTek
- Petrochina
- Pioneer Natural Resource
- PTT
- Rosneft Oil
- Santos
- Snam IT
- TC Energy
- Williams

Level 4
Strategic assessment

26 Companies: 37%

- BP *
- Eni *
- Equinor *
- Galp Energia *
- Centrica
- ConocoPhillips
- Enbridge
- Eneos (Oil & Gas)
- Gazprom
- Hess
- Imperial Oil
- INPEX
- Lundin Energy
- Naturgy Energy
- Neste
- Occidental Petroleum
- OMV
- Origin Energy
- Petrobras
- Repsol
- Royal Dutch Shell
- Sasol
- SK Innovation
- Suncor Energy
- Total
- Woodside Petroleum

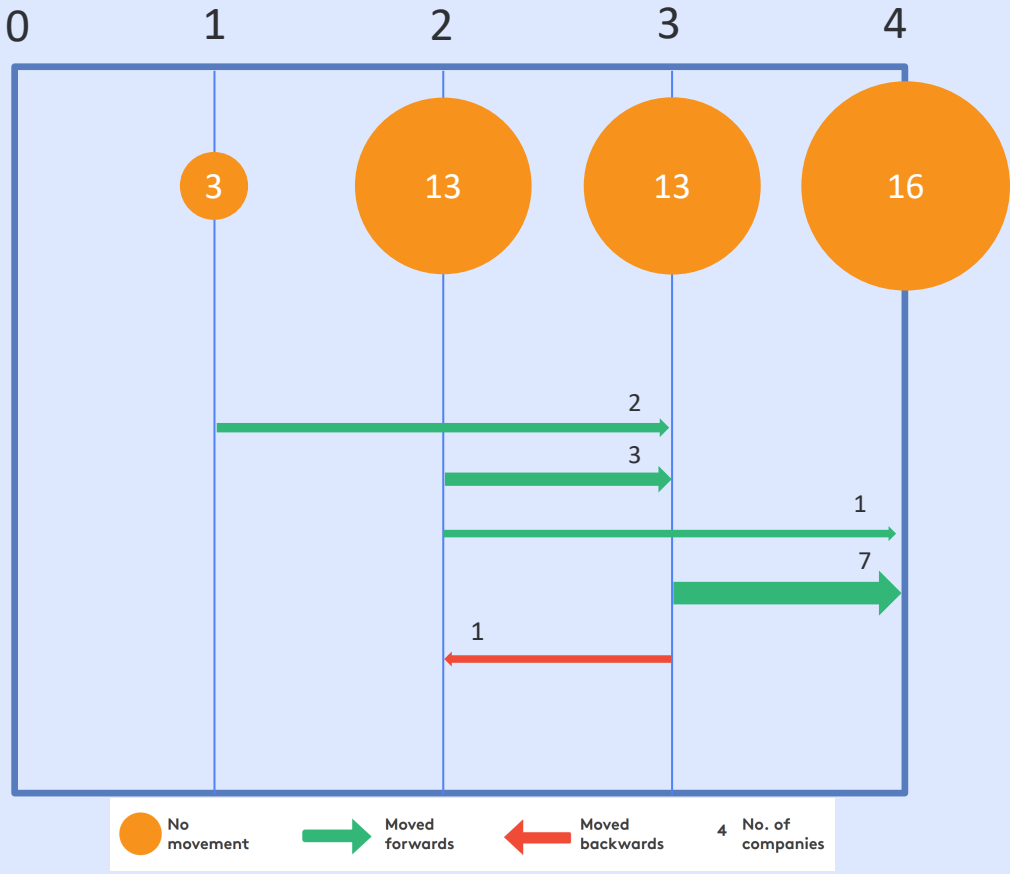
*Note: we include companies whose TPI sector is Oil & Gas or Oil & Gas Distribution

Trends in Management Quality

The average Management Quality score of the oil and gas sector is 3, up from 2.8 last year. For the first time, every oil and gas company assessed by TPI is at least on Level 1, acknowledging climate change as a significant issue for the business.

Out of 13 companies which have moved up, seven have moved from Level 3 to 4. A common reason for moving up from Level 3 is disclosure of Scope 3 emissions from use of sold products.

One company has been relegated from Level 3 to Level 2. This is due to a failure to set emissions reduction targets and establish a process to manage climate-related risks.

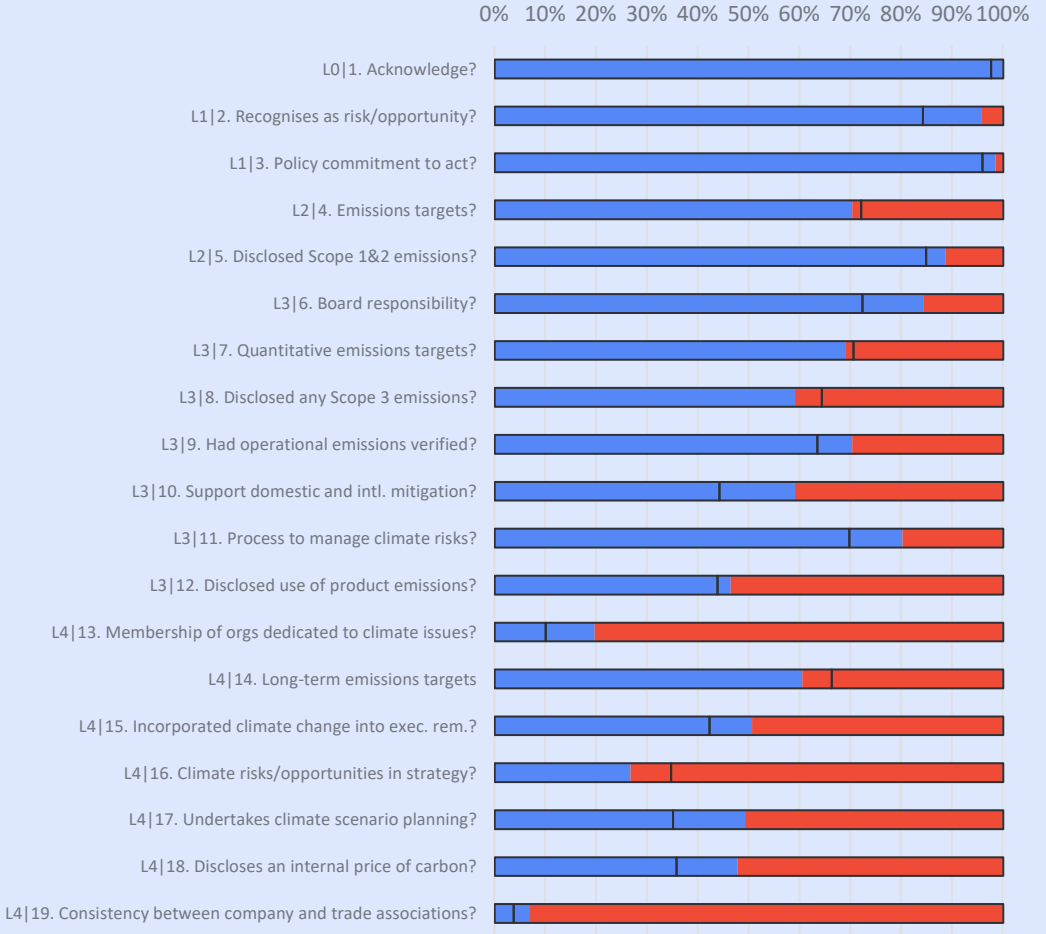


Management Quality: indicator by indicator

The oil and gas sector is strong on basic indicators (up to Level 1) but significantly weaker on more advanced ones: only one of the Level 4 indicators (MQ14) is satisfied by more than 60% of oil and gas companies.

Disclosure of Scope 3 emissions from use of sold products (MQ12) is particularly important, as this category typically represents the majority of companies' lifecycle emissions. Yet, despite a five percentage point improvement on last year, only 46% of companies satisfy this indicator.

Only 20% of companies disclose their membership of organisations dedicated to climate issues (MQ13), and only 7% ensure consistency between their own company climate policies and the positions of their trade associations (MQ19).

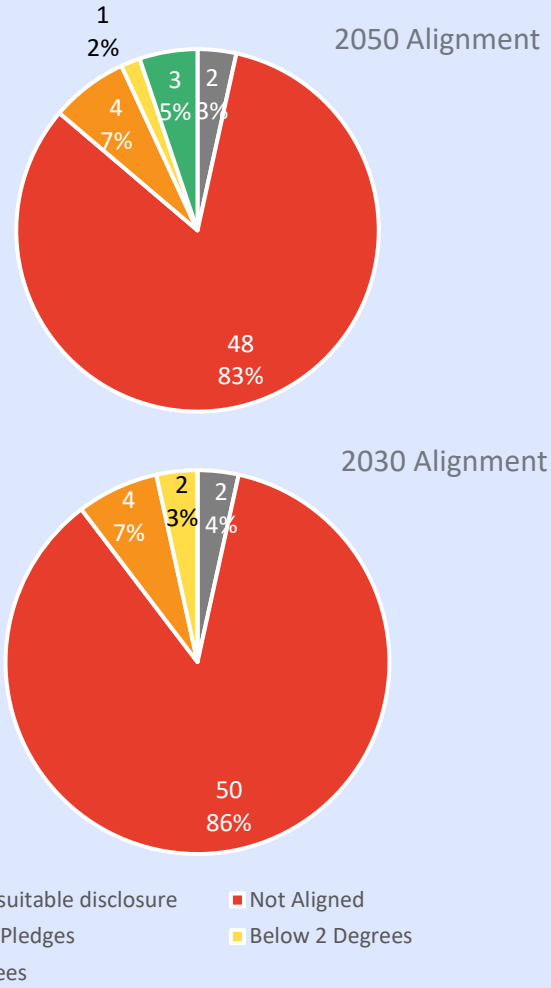


Carbon Performance: alignment with the Paris Agreement benchmarks

For the first time since TPI started assessing the oil and gas sector in 2019, we see companies aligning with our two most ambitious benchmarks. Although they represent only 7% of all assessed companies, this still constitutes progress.

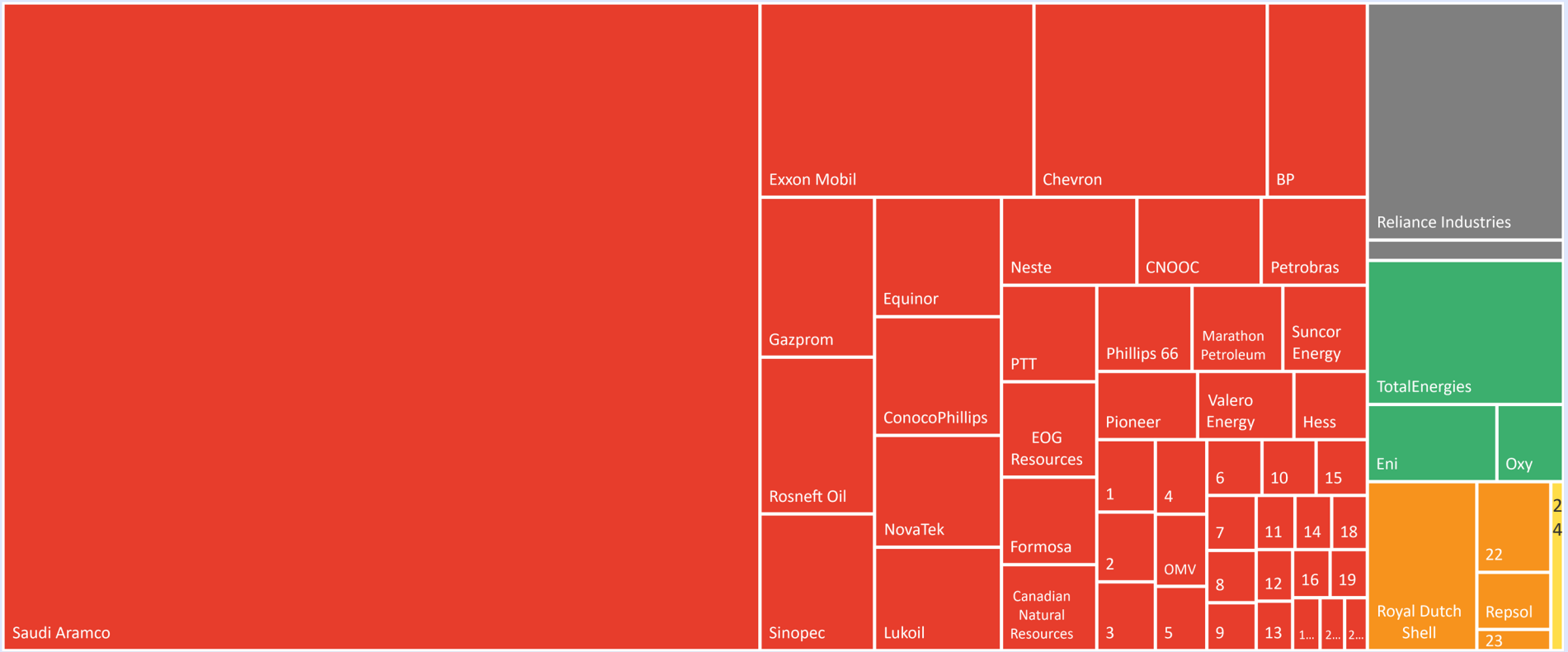
The emissions pathways of Occidental Petroleum, Total and Eni reach net zero by 2050, aligning them with our 1.5C benchmark. Galp Energia has set a net zero target on a more limited scope, which is still sufficient to align with Below 2C in 2050. On the other hand, the share of companies that are not aligned in 2050 stands at 83%, the same as last year.

Alignment in 2030 looks worse than in 2050. No company is aligned with 1.5C, while Occidental Petroleum and Origin Energy are aligned with Below 2C in 2030.



Alignment of oil and gas producers in 2050, scaled by market cap

1.5 Degrees | Below 2 Degrees | National Pledges | No or unsuitable disclosure | Not Aligned



1. Oil & Natural Gas
2. Imperial Oil
3. Woodside Petroleum
4. TATNEFT
5. Eneos (Oil & Gas)
6. Bharat Petroleum
7. Diamondback Energy
8. Santos
9. INPEX
10. Cenovus Energy
11. Lundin Energy
12. Sasol (Oil & Gas)
13. Cabot Oil & Gas
14. Devon Energy
15. Petrochina
16. Idemitsu Kosan
17. Oil Search
18. APA Corporation
19. Marathon Oil
20. Ovintiv
21. HollyFrontier
22. Ecopetrol
23. Origin Energy (O&G)
24. Galp Energia

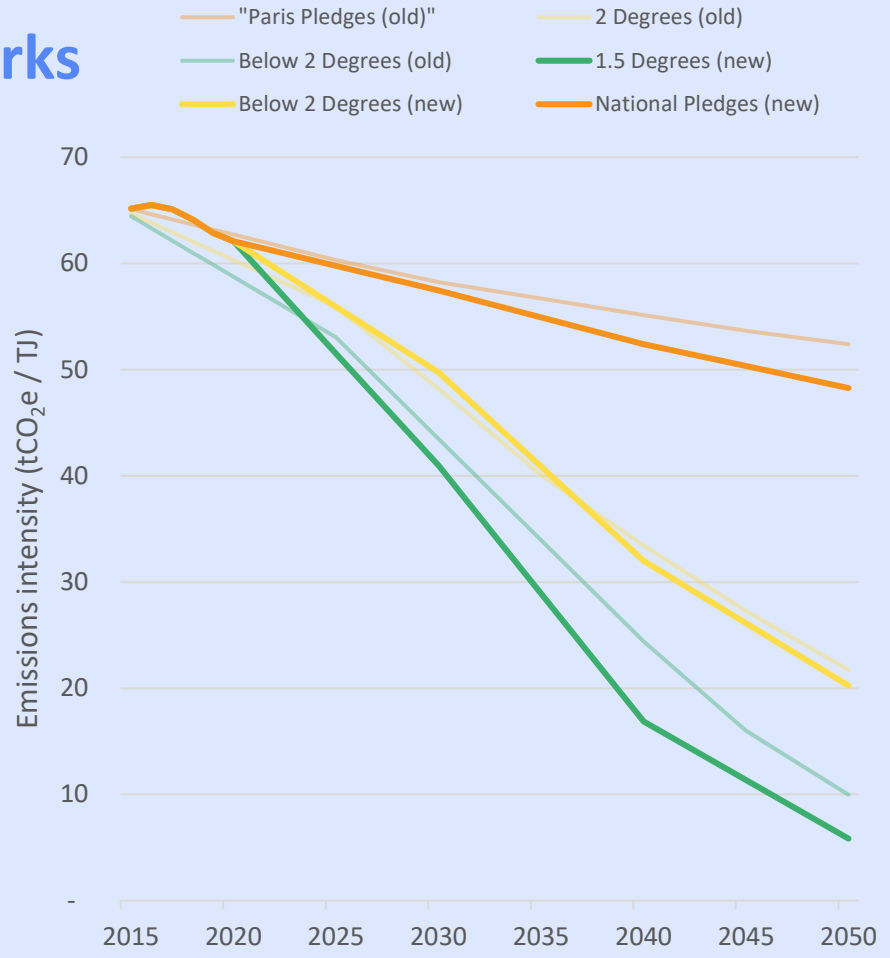
Update of the oil and gas benchmarks

The new 1.5C benchmark for the oil and gas sector requires a substantial transformation of the sector, including no new oil and gas fields approved for development beyond those already committed to as of 2021, according to the IEA.[1]

The 1.5C benchmark for oil and gas does not reach net zero by 2050. This is due to residual CH4 emissions and the exclusion of customer mitigation actions (discussed on the next slide).

The updated Below 2C scenario is based on a larger carbon budget and achieves net zero only in 2070. Consequently, it requires less significant emissions reductions than its predecessor.

Although the National Pledges scenario reflects more recent policies (made by mid-2021) than the old Paris Pledges scenario, the new curve is only slightly steeper.



*IEA (International Energy Agency) (2021), *Net Zero by 2050 - A Roadmap for the Global Energy Sector*, p.21

Customer mitigation actions in the oil and gas benchmarks

- **TPI's oil and gas benchmarks include not only the sector's operational emissions (e.g. from methane flaring, and energy used in refining), but also its Scope 3 emissions from use of sold products.** Reducing these emissions down the value chain is a major challenge, which will mostly be achieved by winding down fossil fuel production and switching to low-carbon energy carriers.

- **TPI's Carbon Performance assessments rely on the Sectoral Decarbonization Approach (SDA). The SDA allows the calculation of sectoral benchmarks that represent a sector's own contribution to the low carbon transition**.* This happens under the assumption that the rest of the economy transitions in parallel, e.g. that demand for low carbon energy will increase. Company-specific emissions pathways represent a company's own carbon emissions reduction efforts.[1]

- **In the most recent research cycle, TPI encountered Scope 3 emissions reduction targets of oil and gas companies explicitly relying on future customer mitigation actions**, such as the implementation of carbon capture and storage (CCS) technology and the purchase of carbon offsets. These actions go beyond an oil and gas company's own transition efforts. More importantly, no established mechanisms currently exist to track them. As these targets rely on an assessment boundary, which differs significantly from the TPI methodology, we do not reflect them in our company assessments.

- If customer mitigation actions were included in the 1.5C benchmark, they would account for 8.5% of the oil and gas sector's carbon budget from 2019 to 2050. **To ensure consistency with our approach to company assessments, we exclude customer mitigation actions from the benchmarks too.**

- **Consequently, our 1.5C benchmark does not reach net zero in 2050.** It represents the transition efforts which oil and gas companies have to make independent of CCS use by customers.

*For a detailed explanation of the SDA please refer to chapter 5 of TPI's State of Transition Report 2021.

Sector focus:

Electricity utilities

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Management Quality level

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Level 0
Unaware

0 company: 0%

Level 1
Awareness

6 companies: 8%

Berkshire Hathaway
PGE
Portland General Electric
Power Grid Corp of India
Saudi Electricity
Tenaga Nasional
Power Grid Corp of India

Level 2
Building capacity

11 companies: 14%

CenterPoint Energy
China Resources Power
Edison International
Eversource Energy
Gulf Energy Development
Hawaiian Electric
Hydro One
Idacorp
Kyushu Elec Power
NextEra Energy
Power Assets
Tennessee Valley Authority

Level 3
Integrating into operational decision making

31 Companies: 39%

AGL Energy
Algonquin Power & Utilities
Alliant Energy
Black Hills
CK Infrastructure
Chubu Electric Power
Chugoku
Con Edison
Duke Energy
Elia Group
Evergy
Eversource
Firstenergy
Fortis
Kansai Elec Power
Meridian Energy
NTPC
OGE Energy
PG&E
Pinnacle West Capital
PPL
Red Electrica
RWE
Sempra Energy
Southern Company
Tohoku Elec Power
Vattenfall
Verbund AG
Vistra Energy
WEC Energy Group
XCEL Energy

Level 4
Strategic assessment

32 Companies: 40%

Endesa *

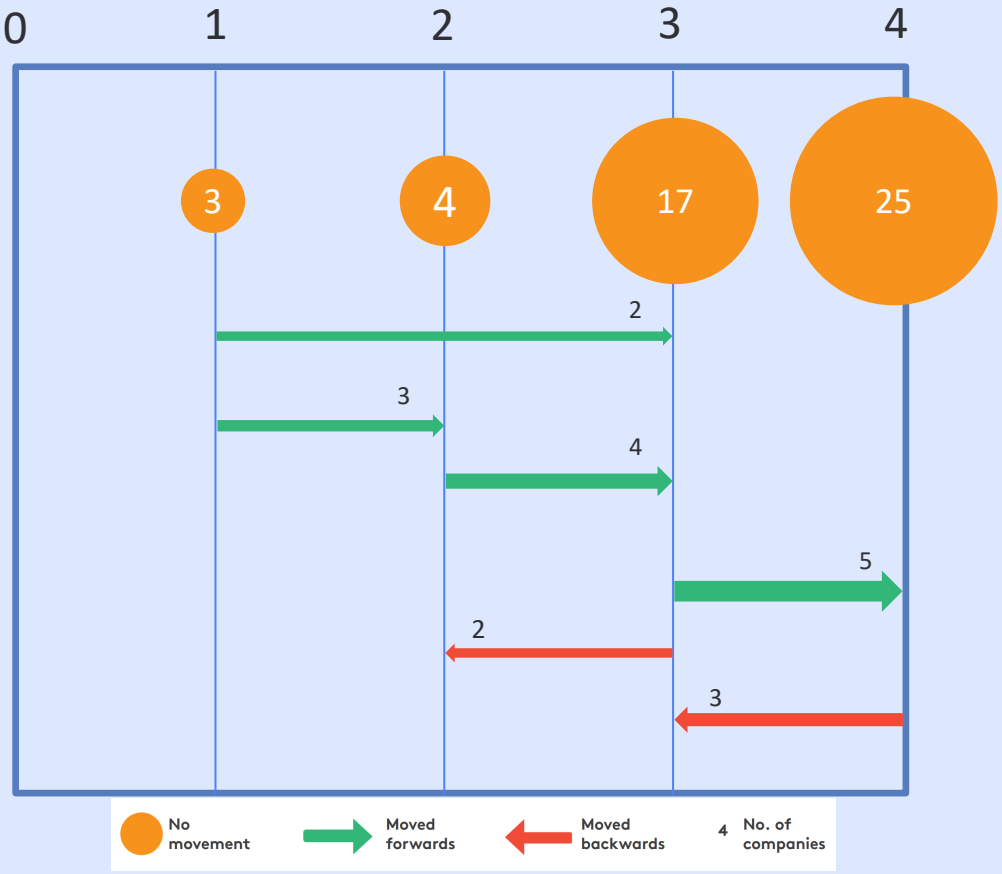
AES
Ameren
American Electric Power
CEZ
CLP
CMS Energy
Dominion Energy
DTE Energy
EDF
EDP
Electric Power Development
Emera
Enbw Energie
Engie
Enel
Entergy
E.ON
Exelon
Fortum
Iberdrola
KEPCO
National Grid
NiSource
NRG Energy
Origin Energy
Orsted
Public Service Enterprise Group
SSE
TEPCO
Terna
Uniper

Trends in Management Quality

The average Management Quality level of electricity utilities is 3.1, up from 3.0 last year. There are now 32 companies on Level 4, including two companies assessed for the first time, which are not included in the trends chart here. This constitutes 40% of all electricity utilities assessed on Management Quality, one of the highest proportions across all TPI sectors.

Out of 14 companies moving up, five have moved from Level 3 to Level 4. Common reasons include starting to verify operational emissions, as well as demonstrating support for national and international climate mitigation efforts.

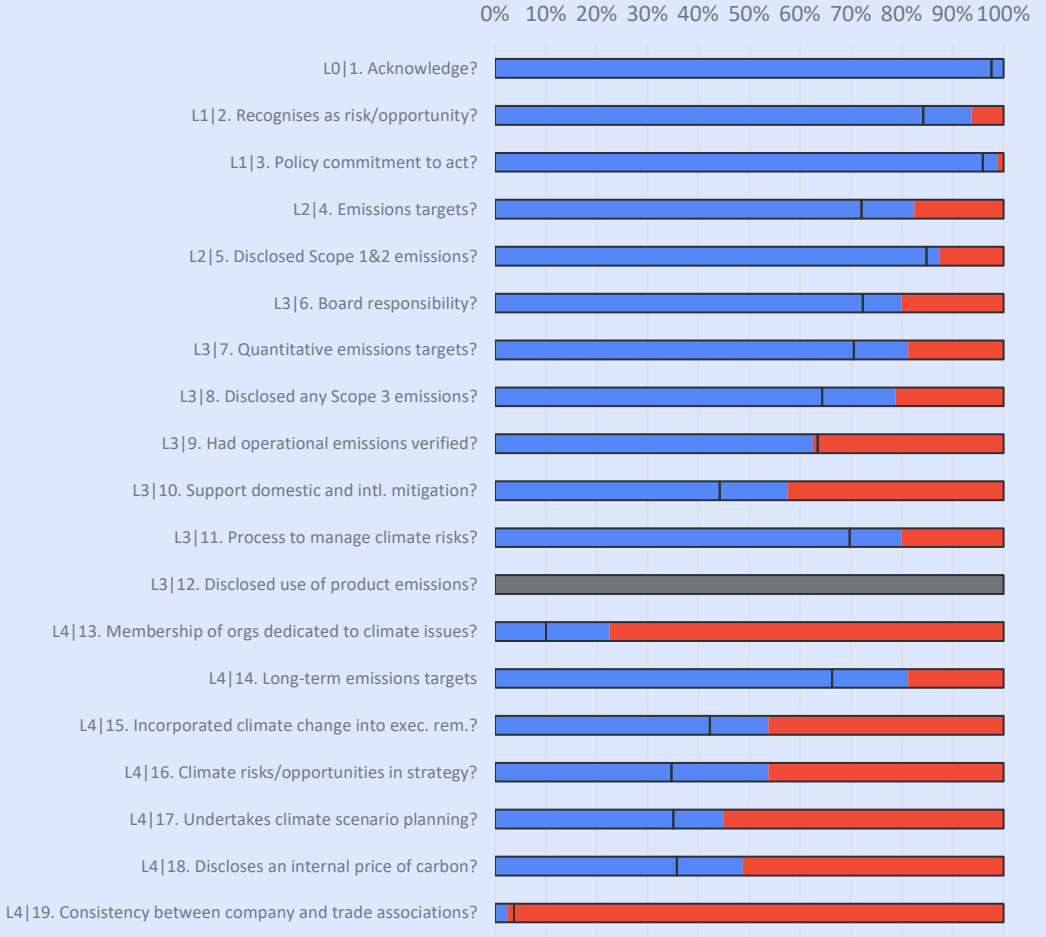
The three companies downgraded from Level 4 to 3 fall back because of a failure to demonstrate support for domestic and international efforts to mitigate climate change.



Management Quality: indicator by indicator

As was the case last year, electricity strongly outperforms the average TPI company on most indicators. Notably, the sector performs better on supporting domestic and international efforts on climate change and on target setting.

The only indicators where electricity utilities are slightly weaker than the average TPI company is having their operational emissions verified (Q9) and ensuring consistency between their positions on climate change and those of their trade associations (Q19). This latter indicator is the least achieved among all Management Quality indicators.

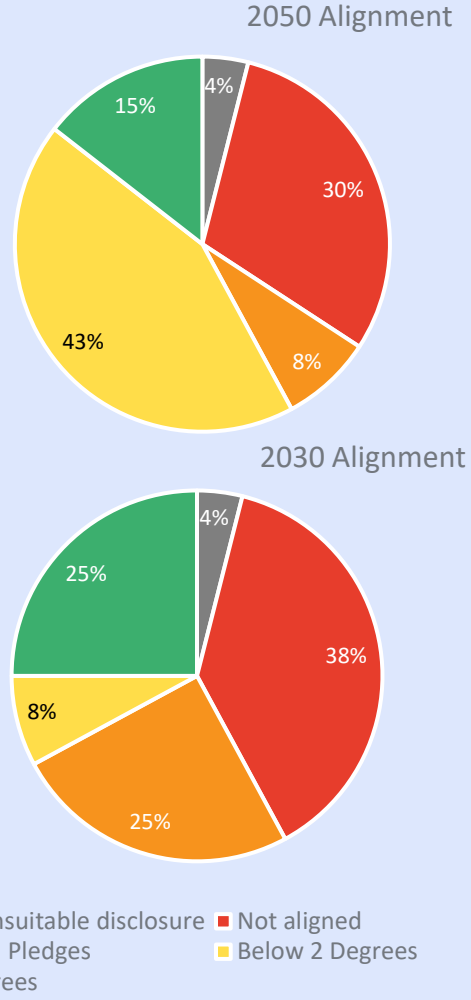


Carbon Performance: alignment with the Paris Agreement benchmarks

In order to align with the most ambitious 1.5C benchmark, electricity utilities must hit net zero by 2040, well ahead of the rest of the economy and a decade earlier than in the Below 2C benchmark. 15% of companies are aligned with 1.5C in 2050 and 25% are aligned with 1.5C in 2030.

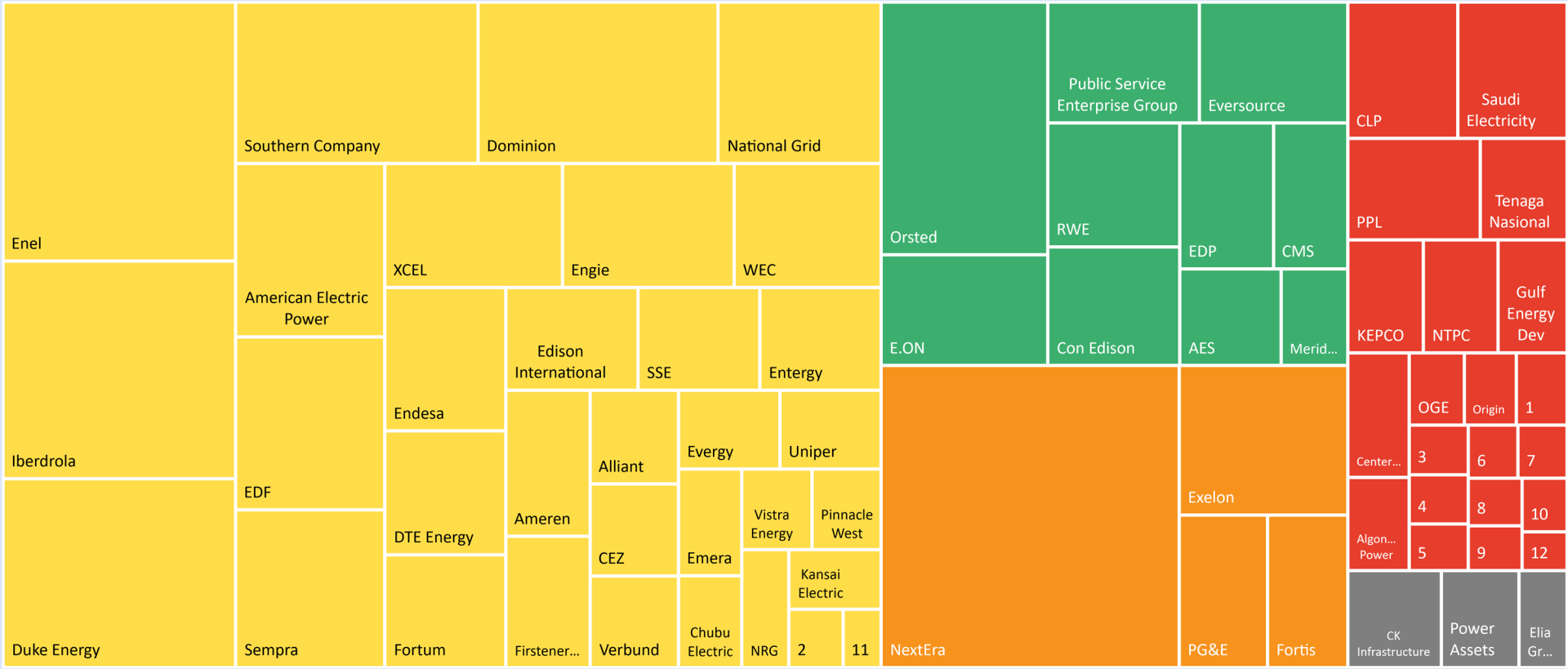
The recent proliferation of net zero commitments in the electricity sector has increased the share of companies aligned with the Below 2C scenario (or better) in 2050 from 35% to 58%. However, alignment with Below 2C or better in 2030 is little improved, highlighting the need for more ambitious medium-term targets to complement more distant net zero commitments.

The share of companies that are not aligned with any benchmarks has stagnated, partly because the new National Pledges scenario is significantly more stringent than TPI's old Paris Pledges scenario.



Alignment of electricity utilities in 2050, scaled by market cap

1.5 Degrees | Below 2 Degrees | National Pledges | No or unsuitable disclosure | Not aligned

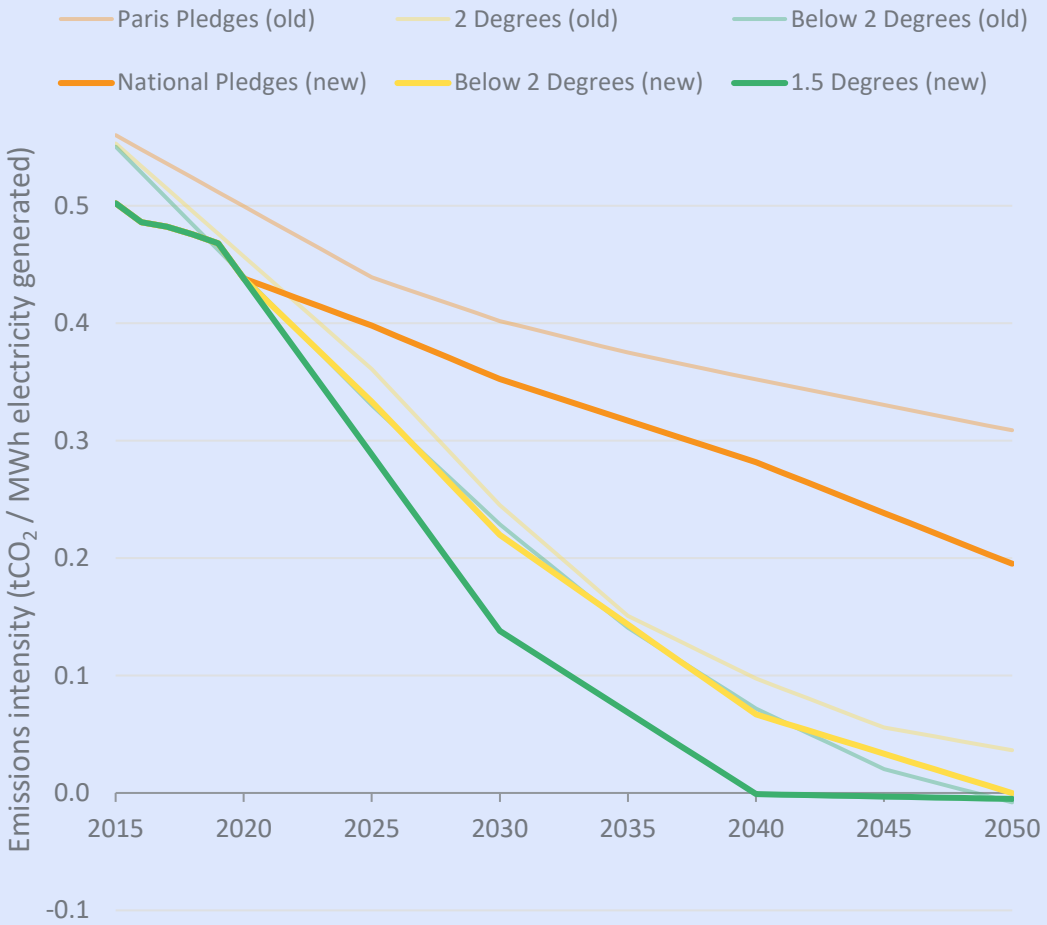


1. China Resources Power
2. AGL Energy
3. Idacorp
4. TEPCO
5. Tohoku Elec Power
6. Hawaiian Electric
7. Kyushu Elec Power
8. Chugoku
9. Black Hills
10. Portland General Electric
11. PGE
12. Electric Power Development

Update of the electricity benchmarks

The most ambitious 1.5C benchmark introduces a new deadline for the sector to reach net zero of 2040. Net emissions are thereafter required to be slightly negative, although TPI currently considers companies that simply reach net zero by 2040 to be aligned with this global electricity benchmark.

No electricity utility assessed by TPI is aiming for an emissions intensity below zero; the sector must begin establishing plans to do so using negative emissions technologies. Without such commitments, the electricity sector cannot meet its sectoral decarbonisation pathway in line with 1.5C.



Sector focus:

Coal mining

Transition Pathway Initiative

Management Quality level

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FTSE Russell

Level 0
Unaware

3 company: 7%

Huaibei Mining Group
Jardine Matheson
Shougang Fushan Resources

Level 1
Awareness

14 companies: 34%

Adani Enterprises
Adaro Energy
ANTAM
Astra International
Bukit Asam
China Coal
Coal India
Consol Energy
DMCI
ENN Ecological Holdings
Huadian Power International
Inner Mongolia Yitai Coal
Nippon Coke & Engineering
Yanzhou Coal Mining

Level 2
Building capacity

7 companies: 17%

Bumi
Coronado Global Resources
Jastrzebska Spolka Weglowa
New Hope
Semirara Mining and Power
Washington H. Soul Pattinson
Whitehaven Coal

Level 3
Integrating into operational decision making

8 Companies: 20%

Banpu
China Shenhua Energy
Empresas COPEC
Mitsubishi
Mitsui & Co
South32
Sumitomo
Toyota Tsusho

Level 4
Strategic assessment

9 Companies: 22%

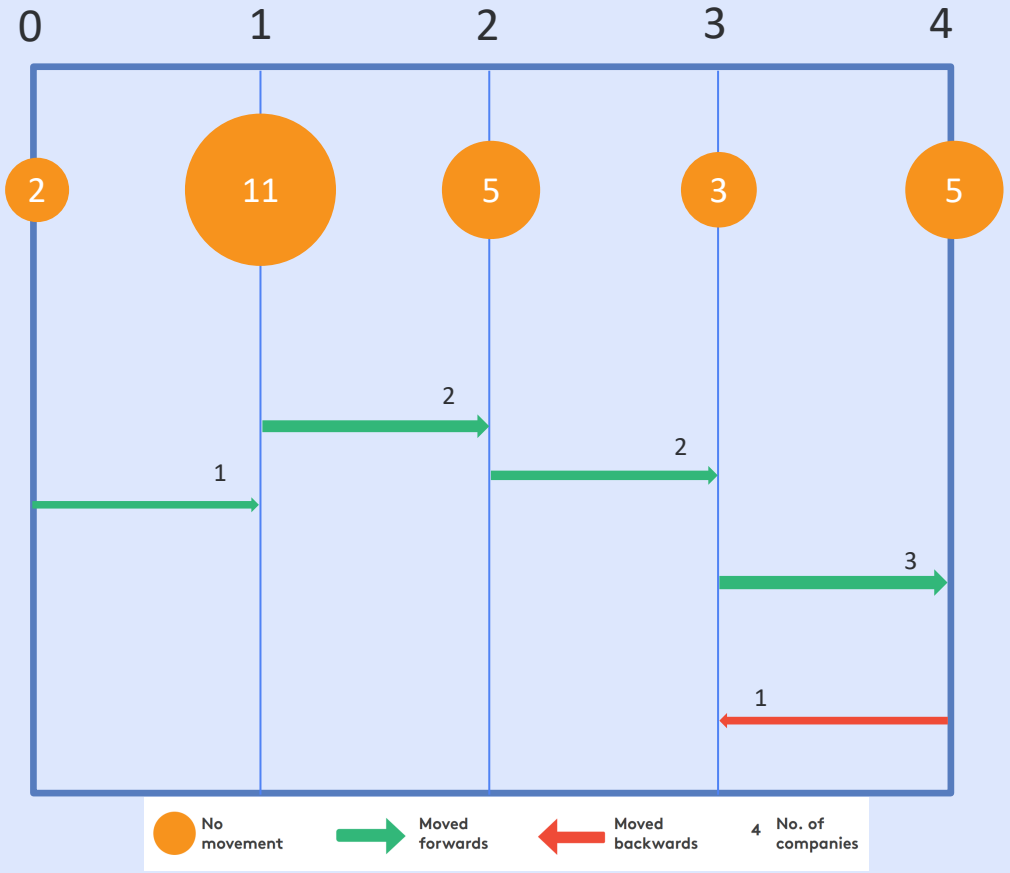
Anglo American *
BHP *

African Rainbow Minerals
Eneos (Coal Mining)
Exxaro Resources
Glencore (Coal Mining)
Sojitz
Teck Resources (Coal Mining)
Vale (Coal Mining)

Trends in Management Quality

The coal mining sector has one of the lowest average Management Quality scores in the TPI assessment universe, 2.1. This is a slight improvement on a score of 2 last year. Coal also has one of the highest shares of companies on Level 1 (34%), the majority of which have made no progress since last year (only two companies have advanced from Level 1 to 2).

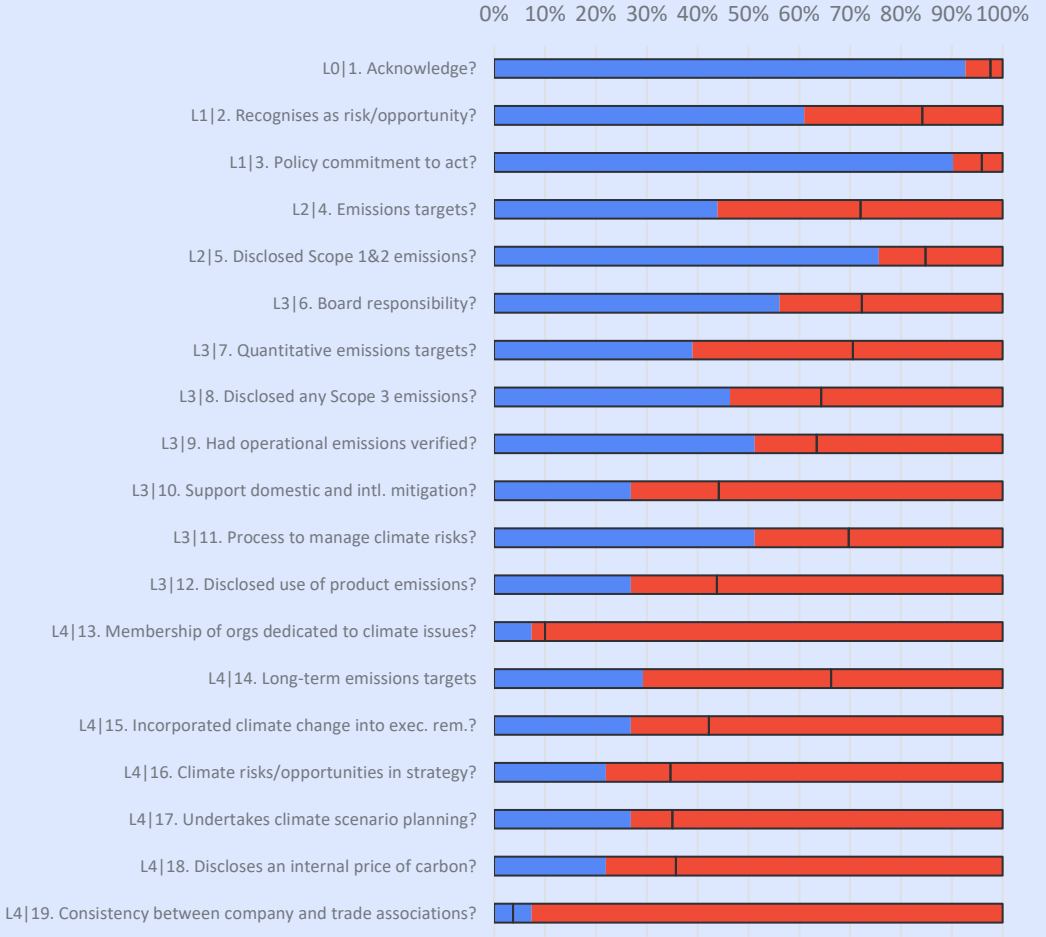
Out of the eight companies now on Level 4, five are diversified mining companies. BHP and Anglo American are unique among them in reaching Level 4*, satisfying all the TPI Management Quality indicators.



Management Quality: indicator by indicator

Unsurprisingly, the coal mining sector underperforms the TPI average on almost every indicator. The gap is particularly wide on setting emissions reduction targets (MQ4). Moreover, 7% of coal miners still not acknowledge climate change as an issue for the business (MQ1).

While 76% of companies now disclose their Scope 1 & 2 emissions (MQ5), disclosure of Scope 3 emissions from the combustion of sold coal remains low at 27% (MQ12). Like in oil and gas, these emissions from use of sold products account for the majority of coal miners' lifecycle emissions.

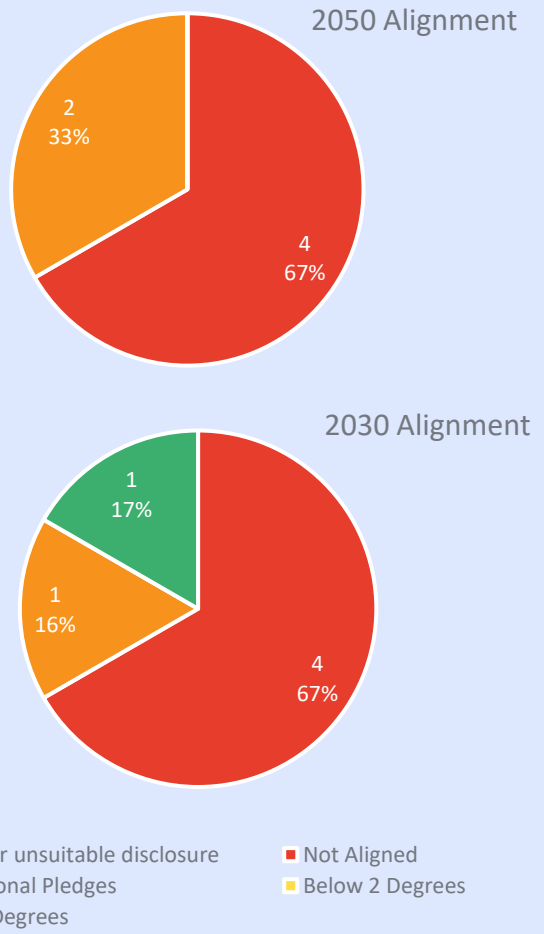


Carbon Performance: alignment with the Paris Agreement benchmarks

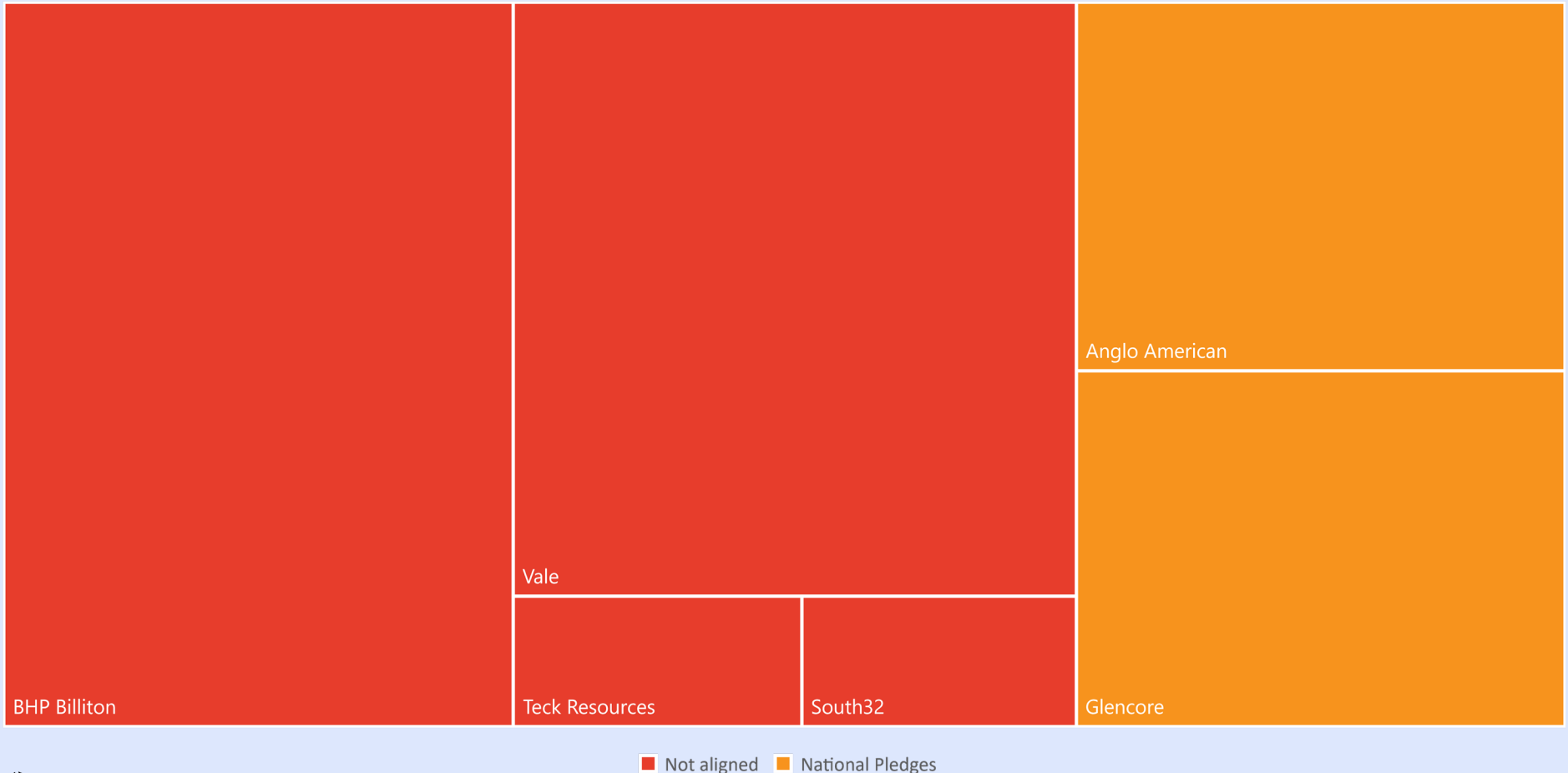
Out of 41 coal mining companies assessed by TPI, six have a diversified product portfolio including coal. This allows us to assess them on Carbon Performance, using the diversified mining sector methodology.

No mining company aligns with the most ambitious benchmark of 1.5C in 2050. Glencore is the only company to be 1.5C-aligned in 2030. Glencore is the only company in the sample with a net zero emissions ambition covering processing and use of its products (Scope 3, categories 10 and 11). Anglo American aligns with the National Pledges scenario in 2030 and 2050, primarily because of its lower relative portfolio exposure to coal.

The remaining four companies are not aligned with any of the benchmarks. Given that all of the companies assessed have set net zero operational emissions targets (Scope 1 and/or Scope 2), our results highlight the need for addressing the most material Scope 3 emissions.



Alignment of diversified miners with a coal business in 2050, scaled by market cap



Update of the diversified mining benchmarks

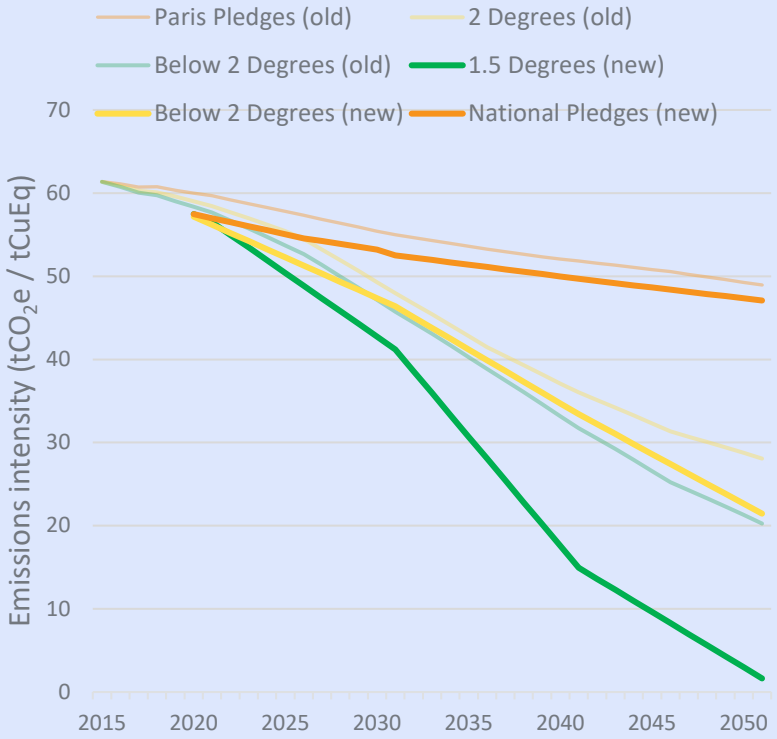
We have made two major changes to the diversified mining benchmarks: (i) an update of the underlying scenarios and (ii) improvements to the construction of the emissions pathways.

The new 1.5C benchmark is much steeper than TPI's previous most ambitious benchmark for the sector (Below 2C).

The updated Below 2C pathway closely follows its predecessor.

The updated National Pledges pathway is slightly more ambitious than its predecesor (Paris Pledges scenario) due to the inclusion of more recent national climate commitments.

Emission pathways for the new scenarios were constructed in a top-down manner, as opposed to the previously used bottom-up method[1]. This substantially reduces uncertainties connected to commodity-specific emission factors, and improves robustness of the methodology.



* For more details please refer to the updated diversified mining methodology document.

Update of Carbon Performance Benchmarks

- additional information

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Update TPI Benchmarks

	Old Benchmarks			*New Benchmarks*		
	Paris Pledges	**2 Degrees**	**Below 2 Degrees**	**National Pledges**	**Below 2 Degrees**	**1.5 Degrees**
Underlying main data source	IEA ETP 2017 Reference Technology Scenario	IEA ETP 2017 2 Degrees Scenario	IEA ETP 2017 Beyond 2 Degrees Scenario	WEO 2020/21 Stated Policies Scenario	ETP 2020 Sustainable Development Scenario, WEO21	Net-Zero Emissions by 2050 (NZE 2050) Scenario, WEO21
Time frame for TPI benchmarks	2014-2050	2014-2050	2014-2050	2019-2050	2019-2050	2019-2050
Temperature rise with 50% probability	~ 2.7C	2C	1.75C	~2.7C	1.65C	1.5C
Year of reaching net zero*	Does not reach net zero	2100	2060	Does not reach net zero	2070	2050
Carbon Budget (2016 – 2100) ($GtCO_2$)	No fixed carbon budget	1,140	720*	No fixed carbon budget	~865	~652
Negative emissions, including LULUCF (2016 – 2100) ($GtCO_2$)*	Negligible	~174**	~300**	Negligible	133***	77***

*Note that different sectors in the economy may reach net zero emissions at different points in time, in some cases significantly earlier than 2050
** Assumes constant negative emissions in the energy sector from 2060 until 2100
***Assumes no negative emissions from LULUCF and constant negative emissions in the energy sector from 2050 (NZE), 2070 (SDS) until 2100

Sectoral implications of the new benchmarks

Oil and gas

- The 1.5C benchmark is significantly steeper than previous TPI benchmarks.
- Yet, it does not hit net zero by 2050 due to residual CH4 emissions and the exclusion of customer mitigation actions (see slide 22).
- The new Below 2C benchmark is based on a larger carbon budget than its predecessor, building on recent scientific evidence.
- The National Pledges benchmark is only slightly more ambitious than Paris Pledges.

Electricity

- The 1.5C benchmark requires faster emissions reductions and hits net zero as soon as 2040.
- The Below 2C benchmark remains relatively unchanged.
- The National Pledges benchmark is significantly more ambitious than Paris Pledges.

Diversified mining

- The new 1.5C benchmark requires companies' carbon intensity to fall to nearly zero in 2050.
- The Below 2C and National Pledges benchmarks remain relatively unchanged.
- The new benchmarks start in 2019, reflecting the real historical evolution of emissions.

Transition Pathway Initiative

About TPI:

further information about the initiative

and methodology

Transition Pathway Initiative

TPI Governance and Strategic Partners

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Governance structure

Chair

THE CHURCH OF ENGLAND PENSIONS BOARD

Steering Committee

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**Full list of supporters available on the TPI website*

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Academic partner

Grantham Research Institute on Climate Change and the Environment

LSE The London School of Economics and Political Science

Data partner

FTSE Russell

Secretariat

PRI Principles for Responsible Investment

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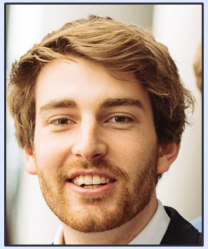

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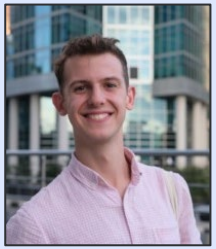

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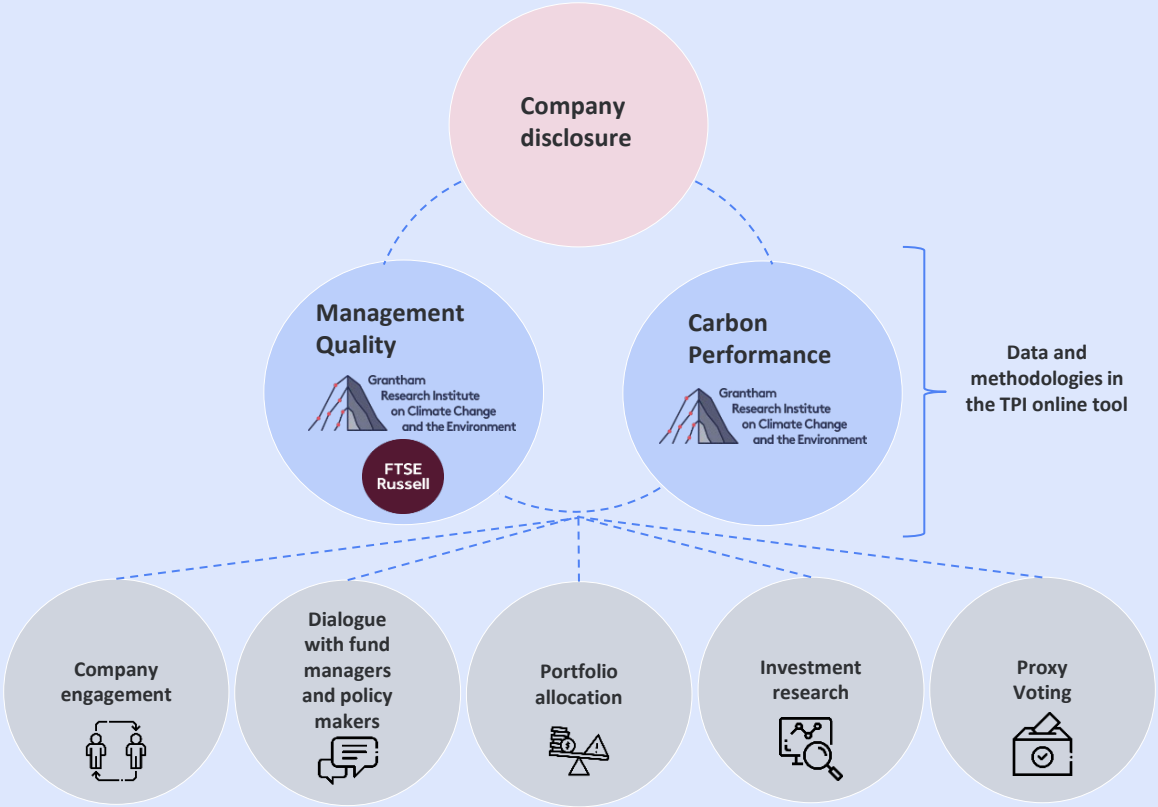
TPI design principles

1. **Disclosure-based:** Company assessments are based only on publicly available information
2. **Accessible and easy to use:** Outputs are designed to be useful to Asset Owners and Asset Managers, especially those with limited resources to assess climate change
3. **Not seeking to add unnecessarily to the reporting burden**: Aligned with existing initiatives and disclosure frameworks, such as CDP and TCFD
4. **Corporate level**: Pitched at a high level of aggregation

The TPI process



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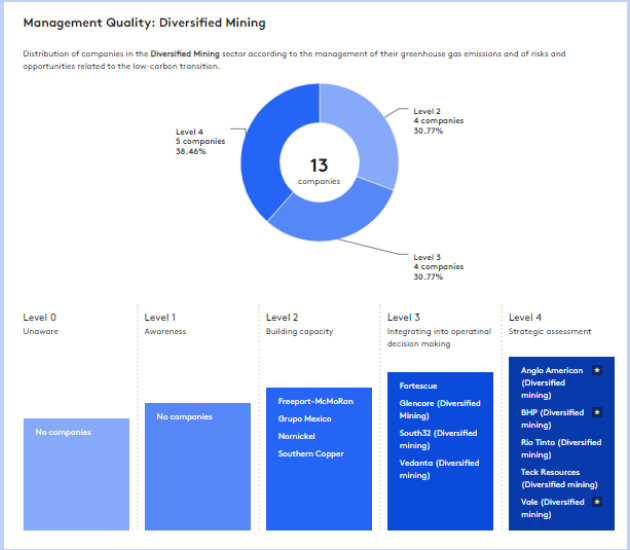
Overview of the TPI Tool

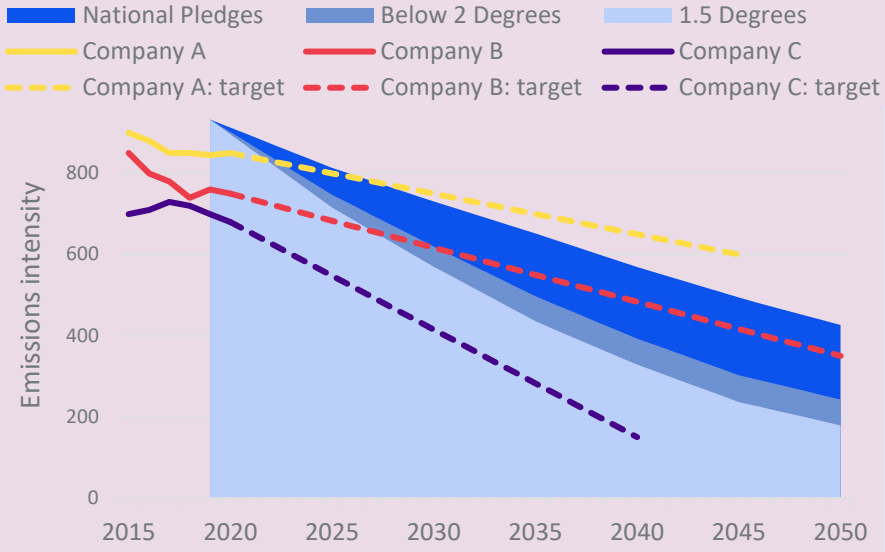
Management Quality

Assessment covers companies' governance of greenhouse gas emissions and the risks and opportunities arising from the low-carbon transition.



Carbon Performance

Assessment involves quantitative benchmarking of companies' emissions pathways against different climate scenarios consistent with the 2015 UN Paris Agreement.



Management Quality

- TPI's Management Quality framework is based on 19 indicators, each of which tests whether a company has implemented a particular carbon management practice. These indicators are used to map companies on to 5 levels.
- The data are provided by FTSE Russell
- See our latest *Methodology and Indicators Report, version 4.0,* for more detail.

FTSE Russell

Level 0	Level 1	Level 2	Level 3	Level 4
Unaware	Awareness	Building capacity	Integrating into operational decision making	Strategic assessment
				Company discloses membership and involvement in organisations or coalitions dedicated specifically to climate issues
			Company has nominated a board member/committee with explicit responsibility for oversight of the climate change policy	Company has set long-term quantitative targets (>5 years) for reducing its GHG emissions
			Company has set quantitative targets for reducing its GHG emissions	Company has incorporated climate change performance into executive remuneration
		Company has set GHG emission reduction targets	Company reports on its Scope 3 GHG emissions	Company has incorporated climate change risks and opportunities in its strategy
	Company recognises climate change as a relevant risk/opportunity for the business	Company has published info. on its operational GHG emissions	Company has had its operational GHG emissions data verified	Company undertakes climate scenario planning
Company does not recognise climate change as a significant issue for the business	Company has a policy (or equivalent) commitment to action on climate change		Company supports domestic & international efforts to mitigate climate change	Company discloses an internal carbon price
			Company has a process to manage climate-related risks	Company ensures consistency between its climate change policy and position of trade associations of which it is a member
			Company discloses Scope 3 GHG emissions from use of sold products (selected sectors only)	

Revision of Management Quality indicator on membership of climate organisations

Recognising the need to step up ambitions to limit warming to 1.5C, we have revised the Management Quality indicator that considers companies' membership of lobby groups active on climate issues.

The old indicator (MQ11) was: Does the company disclose its membership and involvement in trade associations engaged in climate issues?

The new indicator (MQ13) assesses a company's membership of organisations specifically dedicated to climate issues:

Does the company disclose its membership and involvement in organisations or coalitions dedicated specifically to climate issues?

As this updated indicator asks about companies' involvement in organisations dedicated specifically to climate issues, it is more demanding than its predecessor, so we have moved it on to Level 4.


Photo by Colton Duke on Unsplash

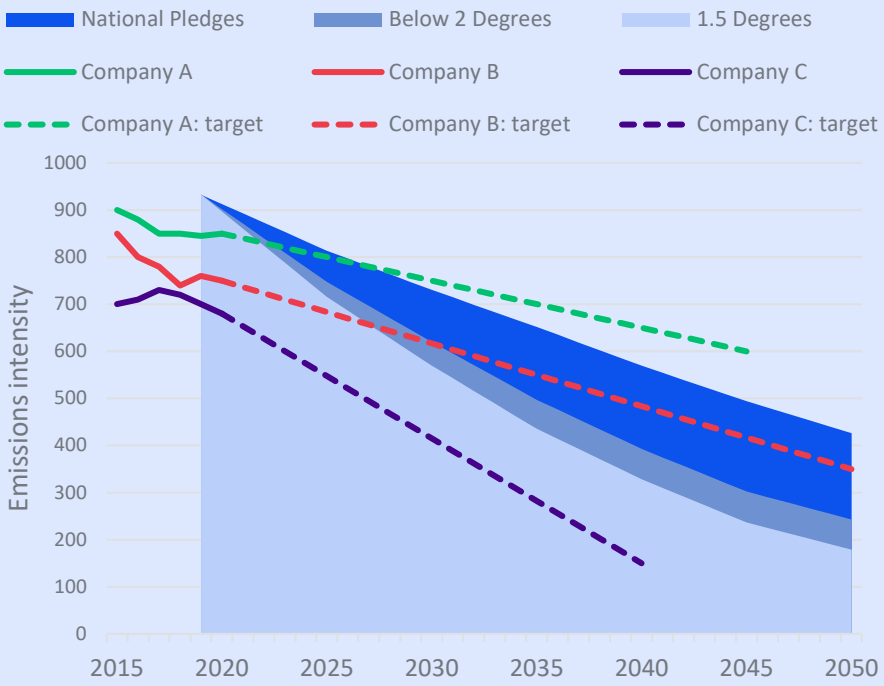
Carbon Performance

TPI's Carbon Performance assessment tests the alignment of company targets with the UN Paris Agreement goals.* Benchmarking is sector-specific and based on emissions intensity.

We use three benchmark scenarios for each sector, which in the energy sector cluster are:

1. ***National Pledges***, consistent with emissions reductions related to policies introduced or under development up to at least mid-2020, depending on the sector; *these reductions collectively are insufficient to limit global warming to 2°C or below*;
2. ***Below 2 Degrees***, consistent with holding the global temperature increase to below 1.8C with a 66% probability;
3. ***1.5 Degrees***, consistent with holding the temperature increase to 1.5C with a 50% probability.

*We use the Sectoral Decarbonization approach (SDA), which was created by CDP, WWF & WRI in 2015 & is also used by the Science Based Targets Initiative.



Company A is not aligned with any of the benchmarks.

Company B is eventually aligned with the National Pledges, but neither with Below 2C nor 1.5C.

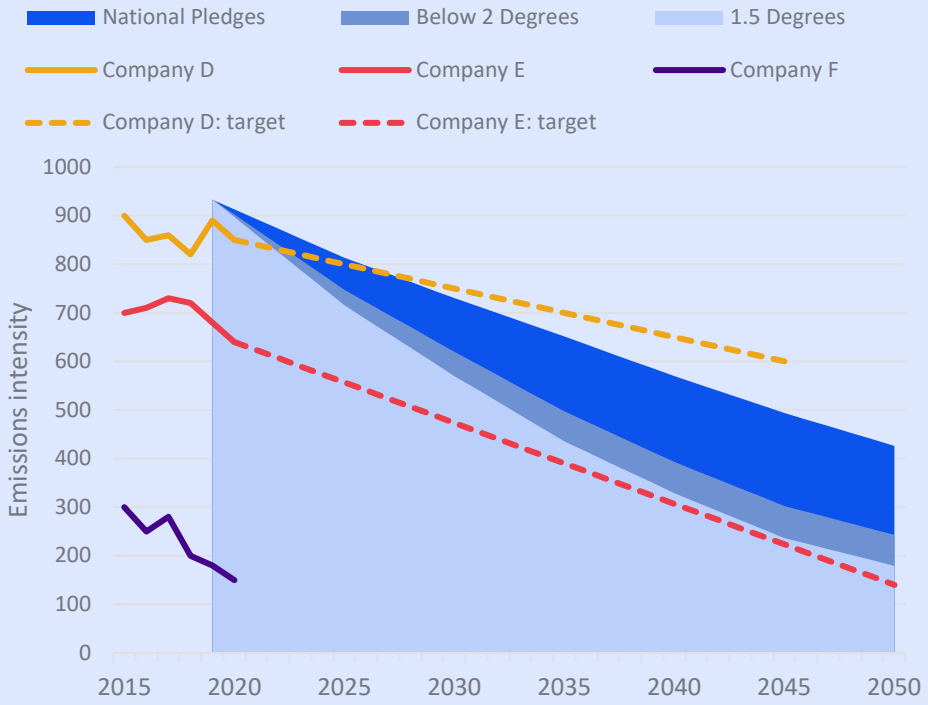
Company C is aligned with all Paris benchmarks, including 1.5C.

Reducing TPI's Carbon Performance data to a single alignment indicator

Our Carbon Performance data cover multiple years. How can they be used to answer the simple question: is a company aligned with the Paris goals?

To do this, we compare a company's emissions intensity in the last year for which we have data with the benchmarks at the end of the horizon. We look out as far as 2050, so for example:

- **Company with a 2050 target:** the company's projected 2050 emissions intensity is compared with the benchmark emissions intensities in 2050;
- **Company with no target:** the company's latest historical emissions intensity is compared with the benchmark intensities in 2050 (i.e. a comparison of where the company is now with where it would need to be in 2050).



Company D has a 2045 target, which is compared with the benchmarks in 2050. Company D is not aligned with any benchmark.

Company E has a 2050 target, which would place it below the 1.5C benchmark in 2050.

Company F has no target. However, in 2020, it already has an emissions intensity below the 1.5C benchmark.

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