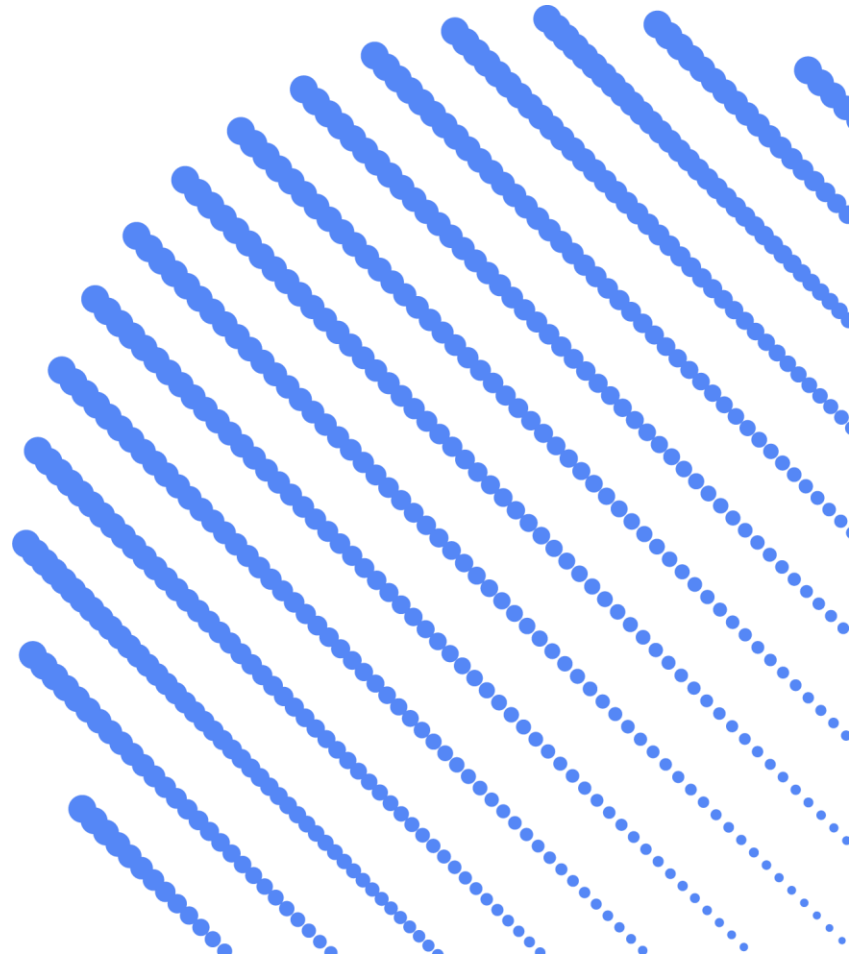




Transition  
Pathway  
Initiative

# Management Quality and Carbon Performance of Transport Companies: December 2019

Simon Dietz, Rhoda Byrne, Valentin Jahn, Michal Nachmany,  
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# Research Funding Partners



We would like to thank our Research Funding Partners for their ongoing support to the TPI and their enabling the research behind this report and its publication.



## Key messages

This slide set reports on TPI's latest assessment of the transport sector, comprising 57 companies in automobile manufacturing, airlines and international freight shipping. We cover more automobile manufacturers and airlines than last year, and we include shipping companies for the first time.

Only two transport companies are on Management Quality Level 0, unaware of or not acknowledging climate change as a business issue. Close to 60% of transport companies are on Level 3, integrating climate change into operational decision-making, or Level 4, strategic assessment of climate change. This is a similar percentage to the energy sector.

On average, the transport sector is just over halfway between Level 2 and Level 3. Reaching Level 3 requires both disclosure of operational GHG emissions and setting emissions reduction targets, so the average transport company is at the stage of putting these both in place.

Within the sector, auto companies have the best Management Quality, while airlines are in line with the transport sector average. Shipping is the worst performing sector in the TPI database on Management Quality at this time, alongside coal mining.

In aggregate, transport companies' Management Quality has improved since last year. Over one third of companies for which we have trend data have moved up at least one level from last year. Nonetheless more companies have stayed on Levels 0-3 than have moved up, and 7% of companies have moved down at least one level.

## Key messages

On Carbon Performance, 35% of companies are aligned with the least ambitious Paris/International Pledges benchmark and 19% are aligned with a path to keep global warming at 2C or below. These shares are slightly higher than those for the whole TPI database, as reported in our recent *TPI State of Transition Report 2019*.

Over two thirds of the 13 international freight shipping companies we assess are already aligned with a Below 2C benchmark for 2030. This is likely to be in part because the largest, publicly listed companies in the sector are unrepresentative of the sector as a whole, with larger, more efficient vessels.

Conversely only two airlines are expected to be aligned with the least ambitious International Pledges benchmark by 2030; Easyjet and Wizz Air. Many other airlines adopt the industry-wide approach of setting *net* emissions targets, which include the use of offsets. While offsets are in principle a cost-effective way to cut carbon, TPI cannot currently take into account targets that include offsetting, as it is unclear how much airlines' own emissions will fall under such targets. It is projected that the airline sector will have to reduce its own emissions significantly to deliver the Paris temperature goals. Setting more ambitious targets, and being transparent about their reliance on carbon offsetting to meet those targets, is key for airlines to demonstrate alignment with the Paris goals.

# About the Transition Pathway Initiative

# About TPI and this slide set

TPI is a global initiative led by Asset Owners and supported by Asset Managers. Established in January 2017, TPI now has over 50 supporters with \$15.5 trillion of combined Assets Under Management and Advice.\*

Using publicly disclosed data, TPI assesses the progress 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 Climate Action 100+ initiative.

All TPI data are published via an open-access online tool:  
[www.transitionpathwayinitiative.org](http://www.transitionpathwayinitiative.org).

This slide set presents our latest assessment of the transport sector, including automobile manufacturers, airlines and, for the first time, international freight shipping companies.

\*as of 7 October 2019



# TPI strategic relationships

The Grantham Research Institute on Climate Change and the Environment, a research centre 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) manages and provides supporter coordination to TPI. PRI is an international network of investors implementing the six Principles for Responsible Investment.



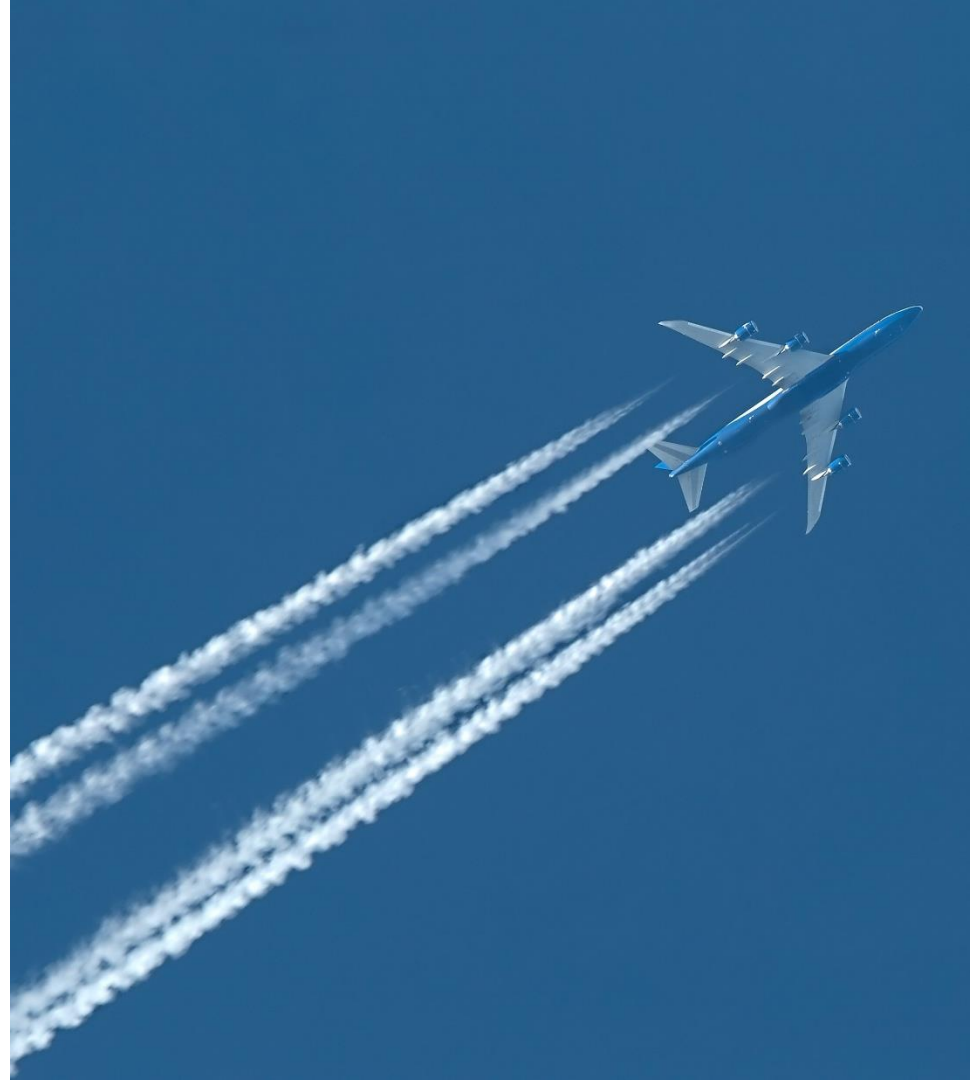
# TPI design principles

Company assessments are based only on publicly available information: *disclosure-based*

Outputs should be useful to Asset Owners and Asset Managers, especially with limited resources: *accessible and easy to use*

Aligned with existing initiatives and disclosure frameworks, such as CDP and TCFD: *not seeking to add unnecessarily to the reporting burden*

Pitched at a high level of aggregation: *corporation-level*





# Overview of the TPI Tool

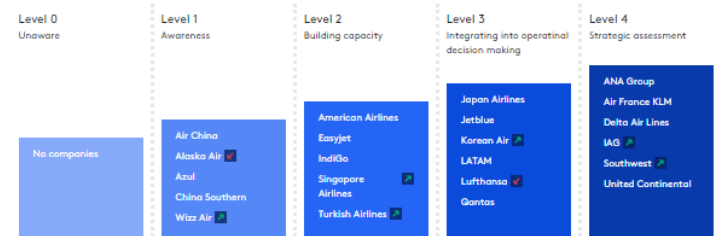
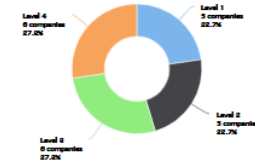
TPI's company assessments are divided into 2 parts:

1. *Management Quality* covers companies' management/governance of greenhouse gas emissions and the risks and opportunities arising from the low-carbon transition;
2. *Carbon Performance* assessment involves quantitative benchmarking of companies' emissions pathways against the international targets and national pledges made as part of the 2015 UN Paris Agreement, for example limiting global warming to below 2°C.

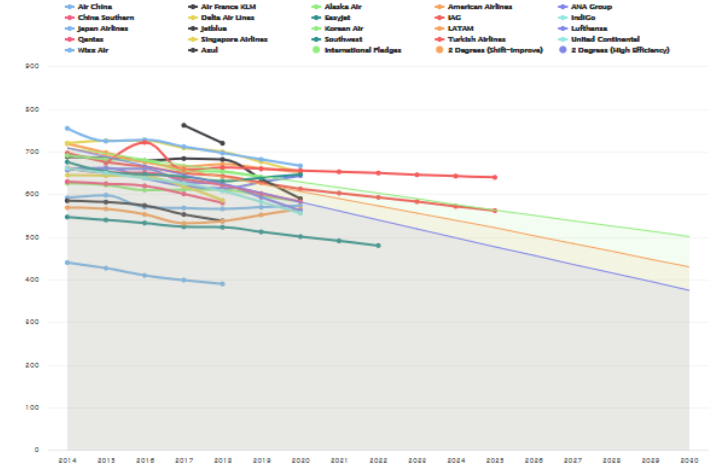
Both of these assessments are based on company disclosures.

## Management Quality: Airlines

Distribution of companies in the Airlines sector according to the management of their greenhouse gas emissions and of risks and opportunities related to the low-carbon transition.



## Carbon Performance: Airlines



# Management Quality

## Level 0

Unaware

## Level 1

Awareness

## Level 2

Building capacity

## Level 3

Integrating into operational decision making

## Level 4

Strategic assessment

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 19 indicators are used to map companies on to 5 levels/steps. The data are provided by FTSE Russell. See our latest *Methodology and Indicators Report, version 3.0*, for more detail.

Company does not recognise climate change as a significant issue for the business

Company recognises climate change as a relevant risk/opportunity for the business

Company has a policy (or equivalent) commitment to action on climate change

Company has set GHG emission reduction targets

Company has published info. on its operational GHG emissions

Company has nominated a board member/committee with explicit responsibility for oversight of the climate change policy

Company has set quantitative targets for reducing its GHG emissions

Company reports on its Scope 3 GHG emissions

Company has had its operational GHG emissions data verified

Company supports domestic & international efforts to mitigate climate change

Company discloses membership and involvement in trade associations engaged on climate (*new question*)

Company has a process to manage climate-related risks

Company discloses Scope 3 GHG emissions from use of sold products (selected sectors only)

Company has set long-term quantitative targets (>5 years) for reducing its GHG emissions

Company has incorporated climate change performance into executive remuneration (*modified question*)

Company has incorporated climate change risks and opportunities in its strategy

Company undertakes climate scenario planning

Company discloses an internal carbon price

Company ensures consistency between its climate change policy and position of trade associations of which it is a member (*new question*)

# Carbon Performance

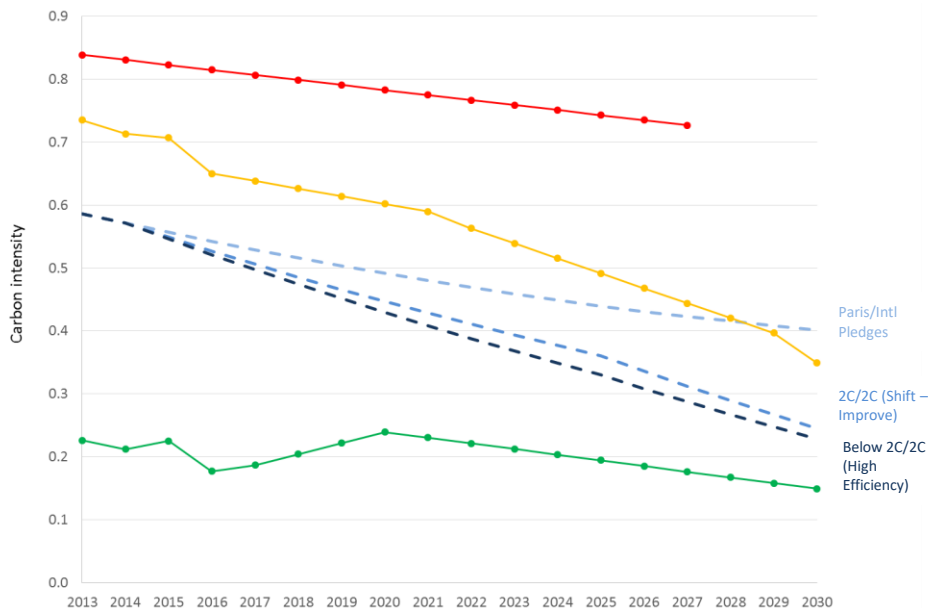
TPI's Carbon Performance assessment tests the alignment of company targets with the UN Paris Agreement goals\*. We use 3 benchmark scenarios for each sector.

For autos and airlines these are:

1. *Paris/International Pledges*, consistent with emissions reductions pledged by countries as part of the Paris Agreement (i.e. NDCs) and through other international forums (e.g. the International Civil Aviation Organisation);
2. *2 Degrees (Shift-Improve)*, consistent with the overall aim of the Paris Agreement, albeit at the low end of the range of ambition;
3. *2 Degrees (High Efficiency)*, a variant of the previous scenario that 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.

For international shipping, as there is little scope to shift to a lower carbon mode, we replace the *2 Degrees (High Efficiency)* scenario with a *Below 2 Degrees (B2D) scenario*.

Benchmarking is sector-specific and based on emissions intensity (e.g. grams of CO<sub>2</sub> per tonne kilometre). See TPI website for further details.



Company A is not aligned with any of the benchmarks

Company B is eventually aligned with the Paris/International Pledges, but neither 2C/2C (Shift-Improve) nor Below 2C/2C (High Efficiency)

Company C is aligned with all Paris benchmarks, including Below 2C/2C (High Efficiency)

\*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.

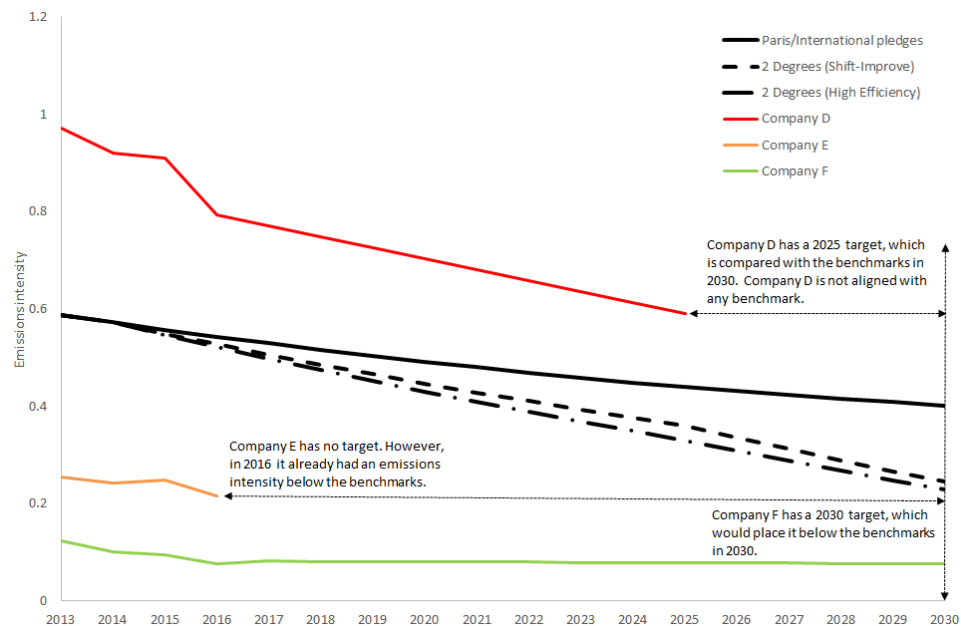
# Reducing TPI's Carbon Performance data to a single indicator of alignment with Paris

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, which is 2030 for the transport sub-sectors we assess.

Thus, for example:

- Company with a 2030 emissions reduction target – the company's expected 2030 emissions intensity is compared with the benchmark emissions intensities in 2030;
- Company with no emissions reduction target – the company's historical emissions intensity is compared with the benchmark emissions intensities in 2030 (i.e. a comparison of where the company is now with where it would need to be in 2030).



# The state of transition in transport: overview of results



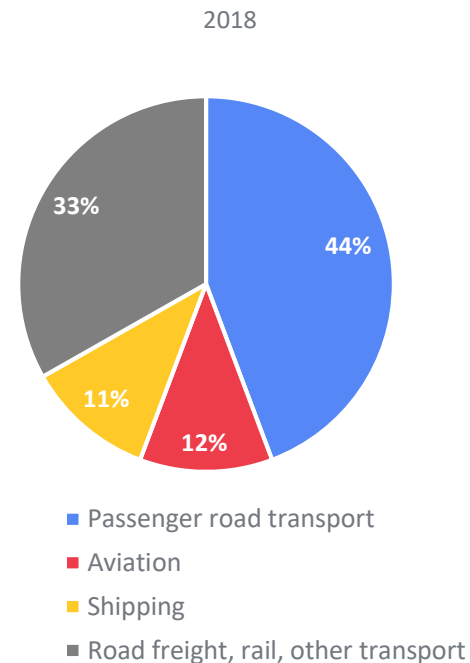
## Transport direct emissions by mode

Our assessment covers three subsectors within transport: automobile manufacturing, aviation and international freight shipping.

Together, the emissions from fuel combustion from passenger road vehicles, aviation and shipping represent around **two thirds** of direct transport emissions (see chart opposite).\*

Overall, direct emissions from the transport sector currently account for nearly **one quarter** of total energy-related CO<sub>2</sub> emissions worldwide.

\*Our assessment of shipping focuses on international freight shipping, which represents around 87% of the total shipping emissions shown opposite, with the balance arising from domestic freight transport and sea passenger transport, including cruise-ships. As in previous years, our assessment of automobile manufacturing focuses on passenger cars.



Source: IEA's Tracking Clean Energy Progress, 2019

# TPI company coverage in transport

This latest TPI report covers 57 of the world's largest and highest-emitting public companies involved in automobile manufacturing, air transportation and international freight shipping.

Two of these sectors, autos and airlines, have been previously assessed by TPI, allowing us to track companies' progress. We extend coverage in the autos sector from 21 to 22 companies, and in airlines from 20 to 22\*.

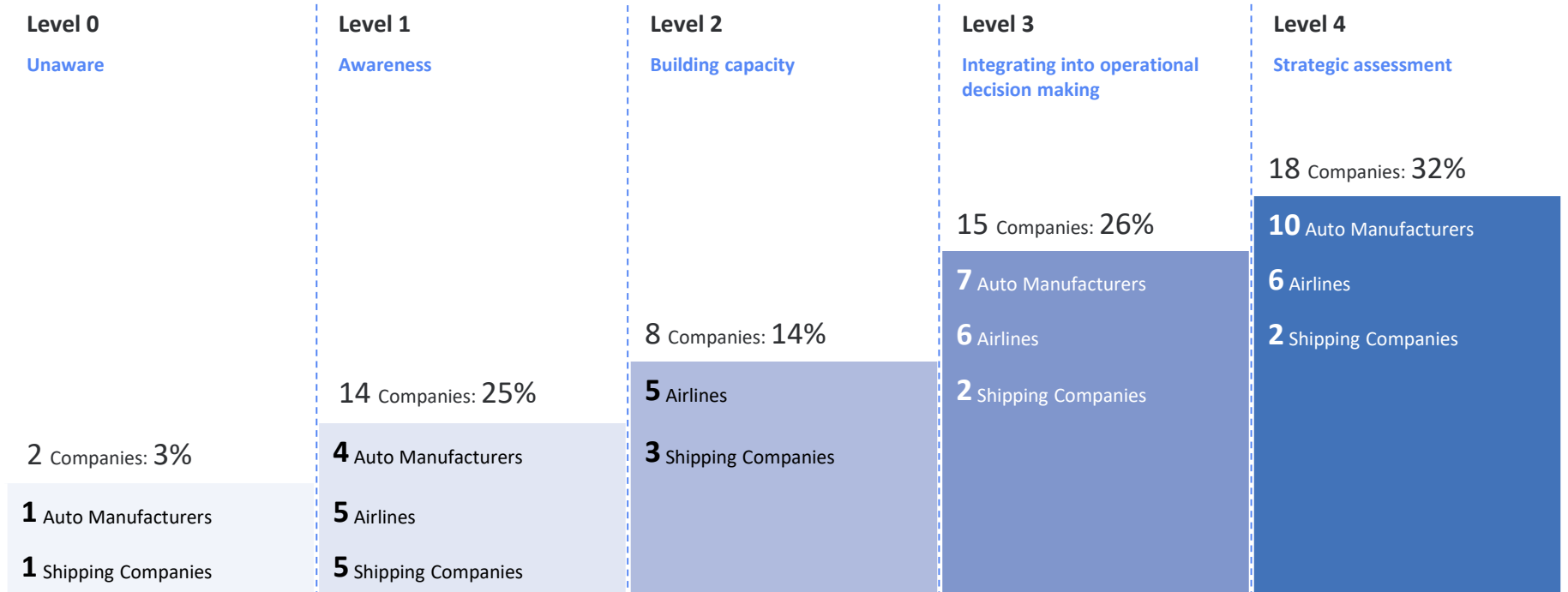
For the first time, we assess the international shipping sector, covering 13 companies involved in freight transportation.

We provide a Carbon Performance assessment of all 57 companies.

Sector	Companies assessed on Management Quality	Companies assessed on Carbon Performance
<b>Autos</b>	22	22
<b>Airlines</b>	22	22
<b>Shipping</b>	13	13
<b>Total</b>	57	57

\*Our autos assessment now includes SAIC Motor and our airlines assessment now includes Air France-KLM and Azul SA.

# Management Quality level





# Management Quality level

Transport companies' average Management Quality level score is now 2.6, meaning the average company is moving towards integrating climate change into operational decision making (Level 3).

Reaching Level 3 requires both disclosure of operational GHG emissions and setting emissions reduction targets, so the average company is at the stage of putting these both in place.

Within the sector, automobile manufacturers' average Management Quality score is 3, airlines' average is 2.6, but shipping companies only average 1.9, making shipping the worst performing sector in the TPI database at present, alongside coal-mining.

No company satisfies all Management Quality criteria: there are no 4\* companies. It has become significantly harder to achieve a 4\* rating this year, due to the inclusion of challenging new and modified questions about lobbying and executive remuneration respectively. See our latest *Methodology and Indicators Report, version 3.0*, for more detail.

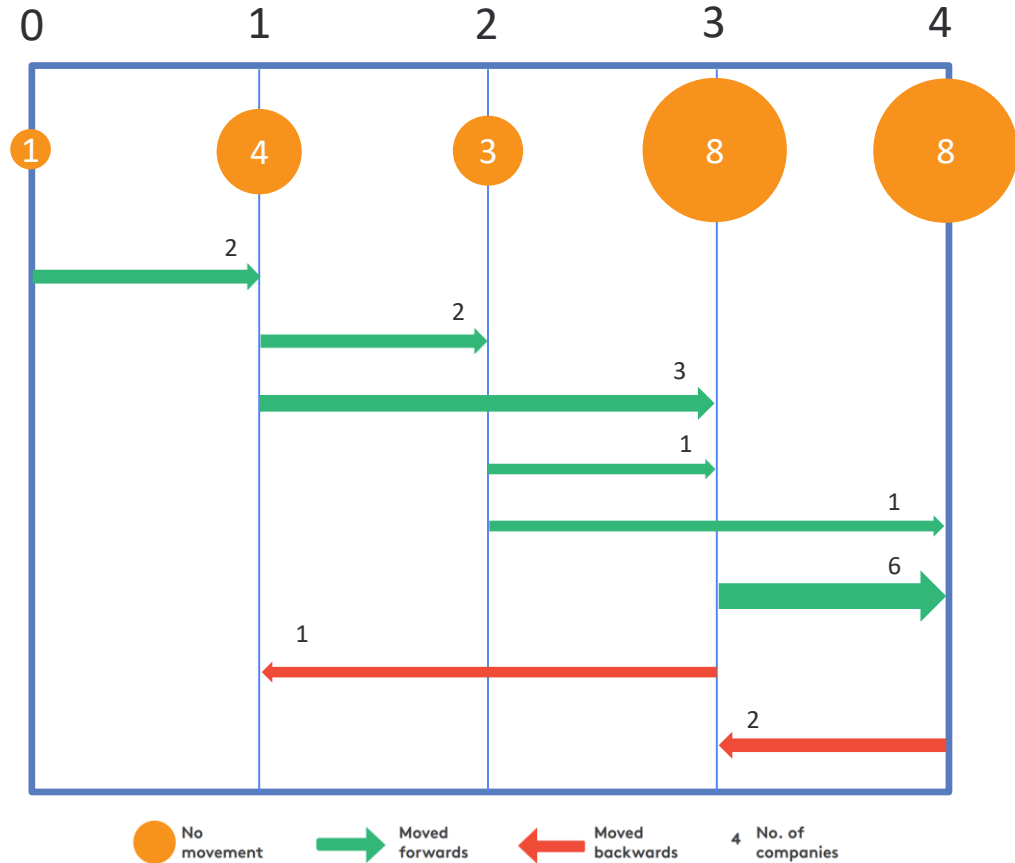


# Trends in Management Quality

We have trend data on 42 companies, which have now been assessed by TPI at least twice. We find that:

- 24 companies (57%) stayed on the same level as their previous assessment;
- 15 companies (36%) moved up at least one level;
- 3 companies (7%) moved down at least one level.

Twelve shipping companies, two airlines and one auto manufacturer are assessed for the first time in this report and are therefore not included in this trend analysis.



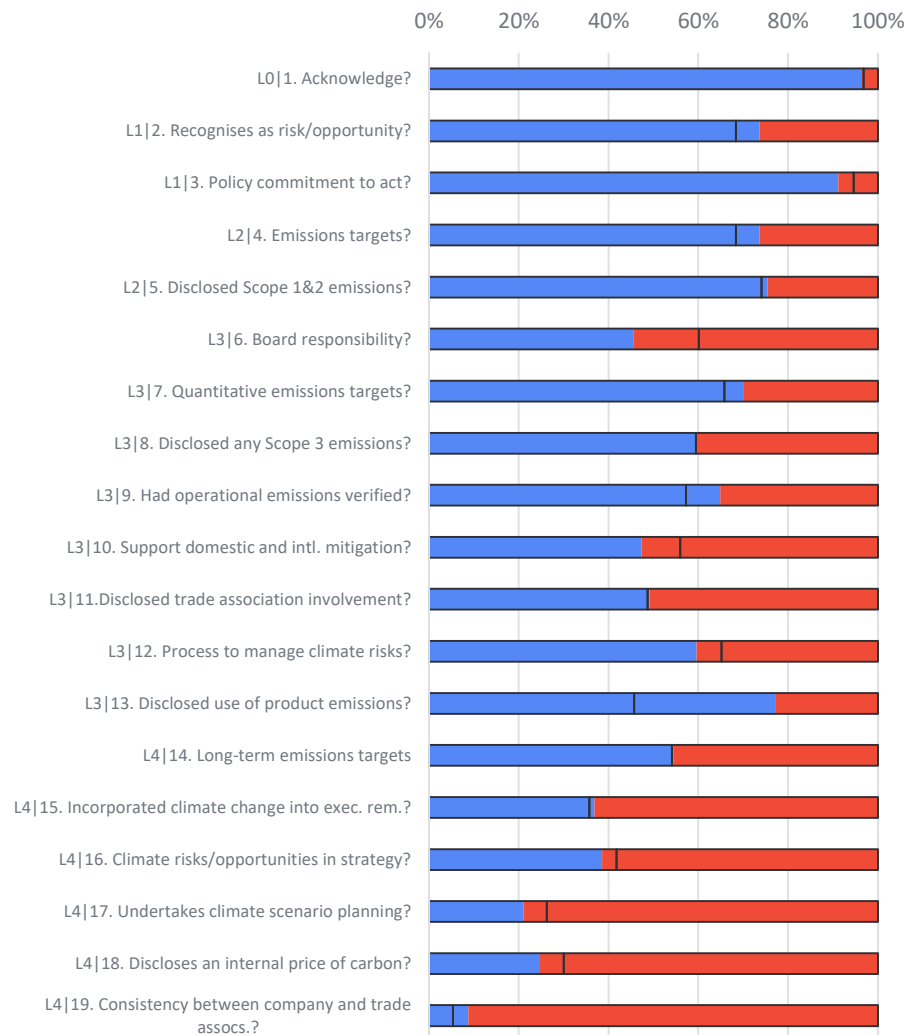
# Management Quality: indicator by indicator

Most transport companies implement the basic carbon management practices, with fewer taking the more advanced steps. We see this general pattern in all TPI sectors.

Compared with the TPI database as a whole, the transport sector is relatively average on most indicators. However, it performs notably worse than average on assigning board responsibility for climate change and on supporting international and domestic mitigation efforts.

Transport companies perform better than average on disclosing emissions from use of their product. Note this question only applies to auto manufacturers, whose lifecycle emissions mainly comprise Scope 3.

We have added two new questions on lobbying this year (Q11 and Q19). We find that half of transport companies disclose their membership and involvement in trade associations that are engaged in climate issues. However, only 9% ensure consistency between their climate change policy and the positions taken by those trade associations. While low, this is above average for companies assessed by TPI at this time.

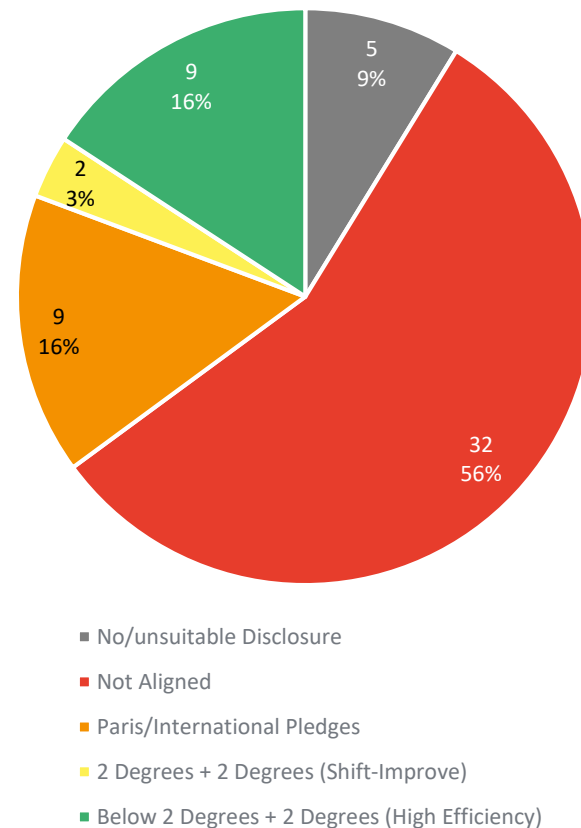


## Carbon Performance: alignment with the Paris Agreement benchmarks

Only 20 out of 57 transport companies (35%) are aligned with one or more of the Paris Agreement benchmarks for 2030. Of those 20, only 9 (16%) are aligned with the most ambitious benchmark. These shares are slightly higher than the Carbon Performance of companies across our whole database, as presented in our *TPI State of Transition Report 2019*.

Disclosure is also better in the transport sector than across the TPI database, with only 9% of transport companies providing unsuitable or no disclosure. This compares with 21% of companies across the whole database.

These results assume companies' carbon intensity does not increase or decrease after the last year for which we have data (see slide 12 on the method). Therefore we also repeated the analysis, classifying as Paris-aligned only those companies with 2030 emissions targets that would put them below the benchmarks. This is a more stringent test of alignment. The results show that an additional 7 companies (12%) are out of alignment under this measure, mainly because some low-emissions airlines and shipping companies do not have 2030 targets.



## Carbon Performance: sector breakdown

Shipping fares better than any other sector in the TPI database on Carbon

Performance. Eight of the 13 companies we assess are aligned with the most ambitious Below 2C benchmark. This is due in part to the structure of the sector. Carbon intensity varies significantly by vessel type and size. Larger shipping companies tend to operate bigger, more efficient vessels. Thus the public companies we assess may be unrepresentative of the sector as a whole.

By contrast, airlines is the second worst performing TPI sector on Carbon Performance (oil & gas being the worst). Only two airlines are expected to be aligned with any of the benchmarks by 2030; Easyjet and Wizz Air. This is due in part to airlines' use of *net* emissions reduction targets, which include the use of offsets. We cannot currently take net emissions targets into account, as it is unclear what these targets mean for airlines' own emissions.

The autos sector is positioned somewhere between airlines and shipping on Carbon Performance, with around 40% of companies being aligned with the Paris Pledges. However, only Daimler and Tesla are aligned with 2C (Shift-Improve).



# Sector focus: auto manufacturing



## Key messages – automobile manufacturers

The auto manufacturing sector performs strongly on Management Quality and is the best-performing large sector in the TPI database, together with electricity. Over three quarters of auto manufacturers are now on Level 3 or 4.

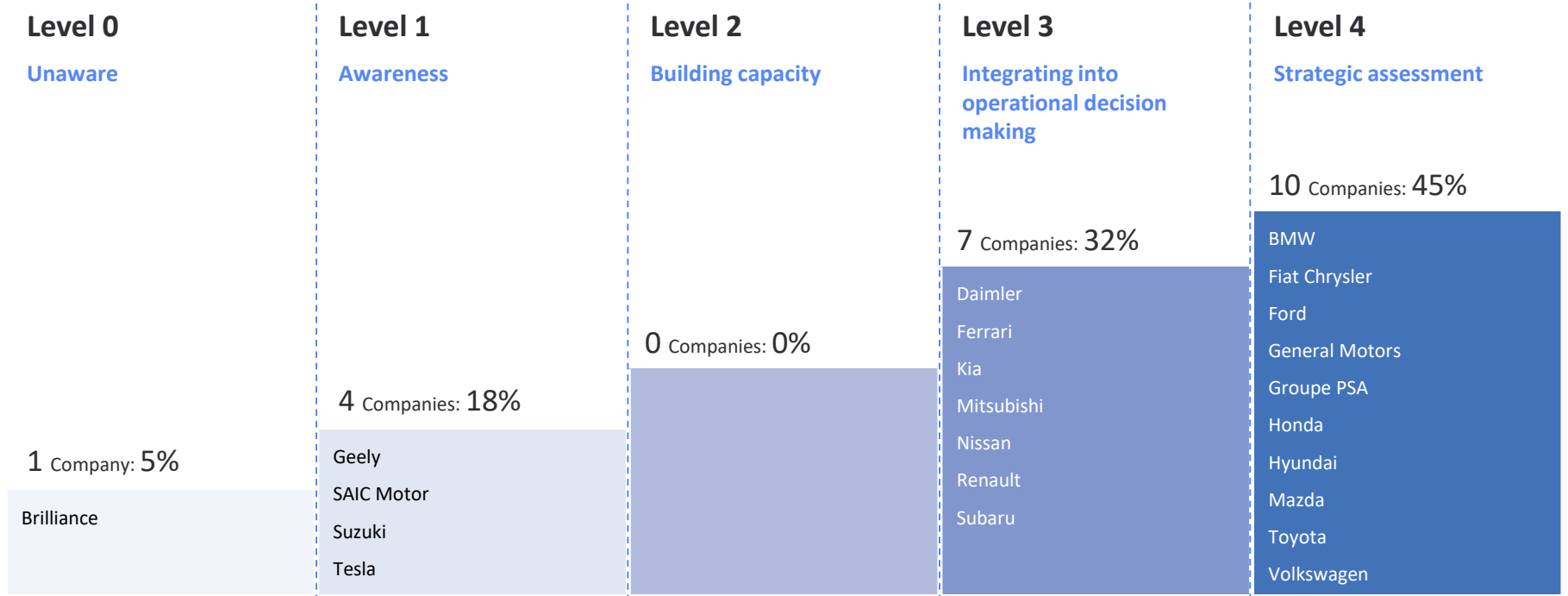
Over forty per cent of auto manufacturers for which we have trend data improved their Management Quality score this year, with almost a quarter of companies progressing to Level 4. In particular, we are seeing improvements in board oversight of climate change issues and disclosure of emissions from product use.

By contrast, auto manufacturers' Carbon Performance is weaker. While 41% of companies are targeting a fleet emissions intensity better than the Paris Pledges benchmark in 2030, only two companies (9%) will be aligned with either of the 2C benchmarks. This compares with 16% of companies that are aligned with the 2C benchmark or better across the TPI database as a whole. With its EV-only fleet, just Tesla is aligned with the most ambitious 2C (High Efficiency) benchmark.

Only half of the world's 10 largest auto manufacturers have targets to 2030. While these five companies are aligned with the least ambitious (Paris Pledges) benchmark, none are aligned with the more ambitious benchmarks.

# Management Quality level

Companies' Management Quality ratings may not always reflect their most up-to-date disclosures. TPI updates its assessments once a year.





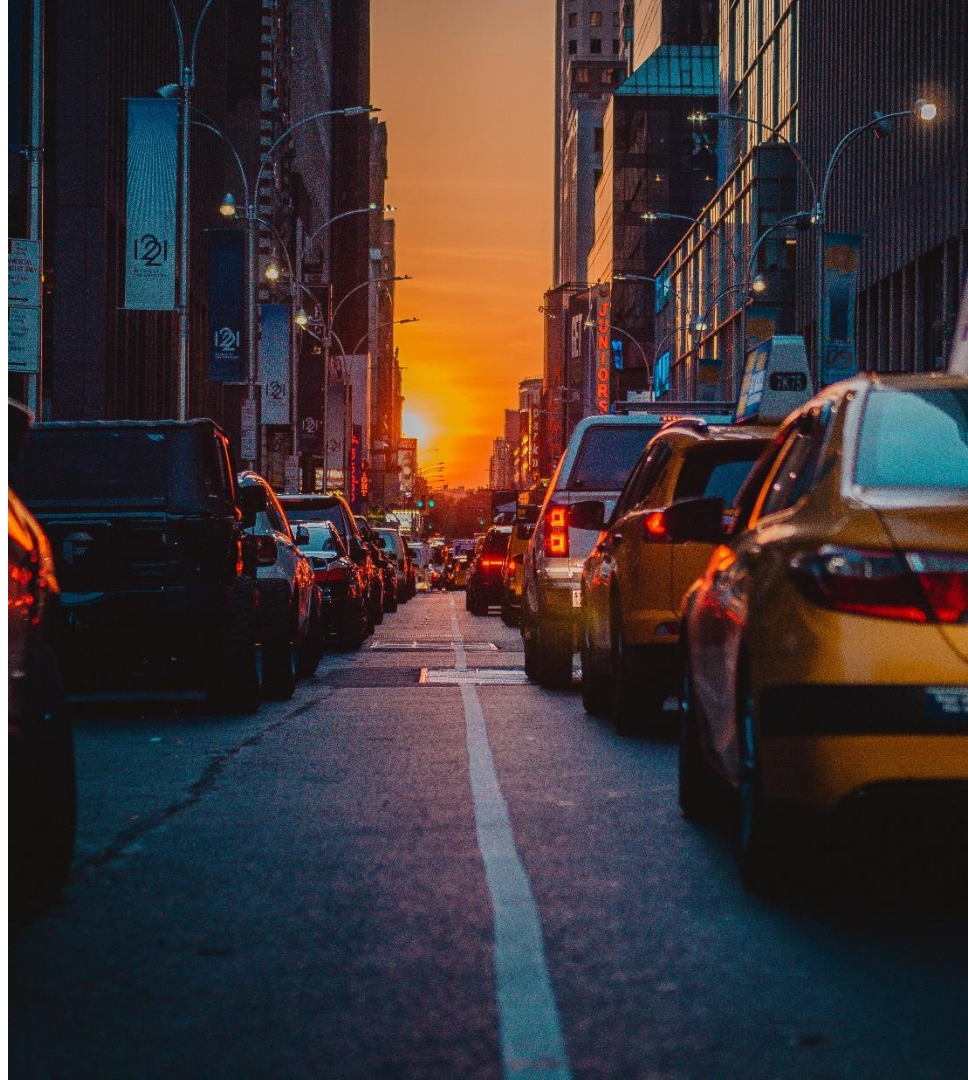
# Management Quality level

Our assessment of this sector includes the world's 22 largest automobile manufacturers by market capitalisation.

The average Management Quality score is 3, which makes it the best-performing large sector in the TPI database, alongside electricity utilities.

Seventy seven per cent of companies are now on Level 3 or 4, but there are no 4\* companies.

There is a clear divide between the majority of companies at Levels 3 and 4, and five companies at Level 0 or 1. However, of these five companies that perform poorly on Management Quality, Suzuki and Tesla are leaders on Carbon Performance.

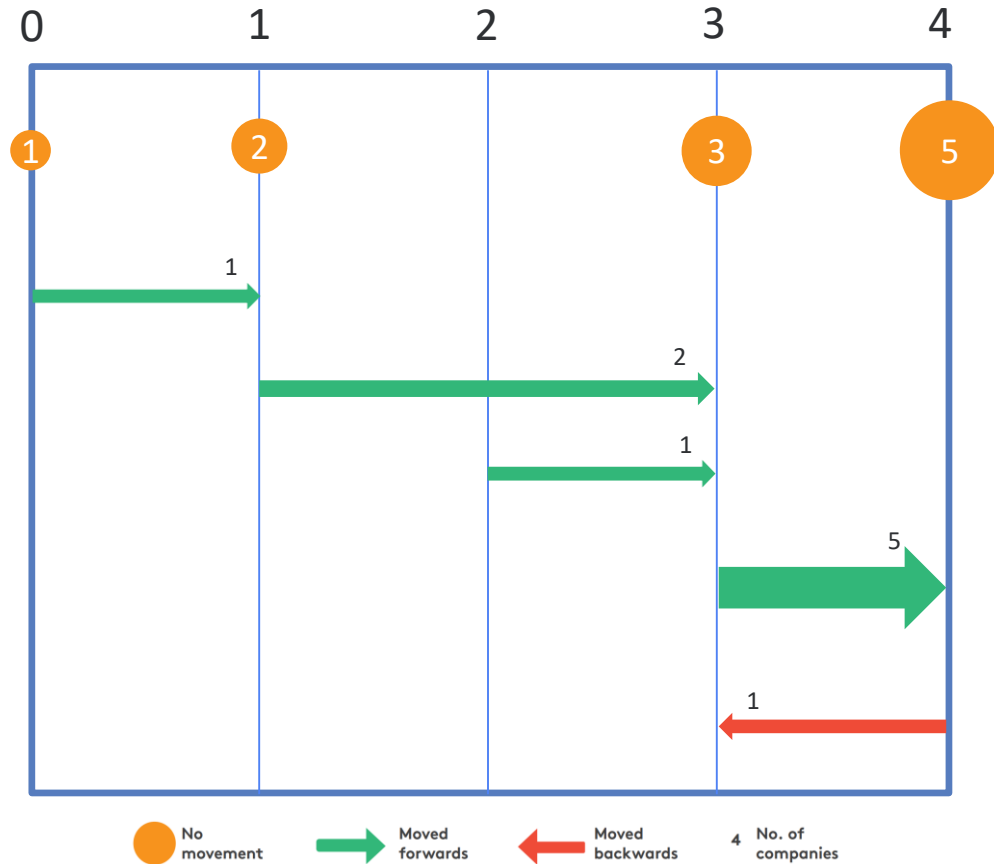


# Trends in Management Quality

The automobile sector's average Management Quality score increased from 2.5 in 2018 to 3 this year. This is a significant improvement. Of the 21 auto companies for which we have trend data, 11 remained at the same level, while 9 progressed at least one level. Notably Tesla is no longer on Level 0, because it disclosed its operational (Scope 1 and 2) emissions for the first time. Two companies (Kia and Ferrari) jumped from Level 1 to 3 by explicitly recognising climate change as a business risk/opportunity.

Five companies progressed from Level 3 to 4, for reasons that include: having board oversight of climate change, improved disclosure of Scope 3 emissions, and supporting domestic and international efforts to mitigate climate change.

Only one company (Daimler) moved down a level, as its most recent disclosures on trade association involvement and support for mitigation efforts were judged to be insufficient. Brilliance is the only company that has not progressed from Level 0.

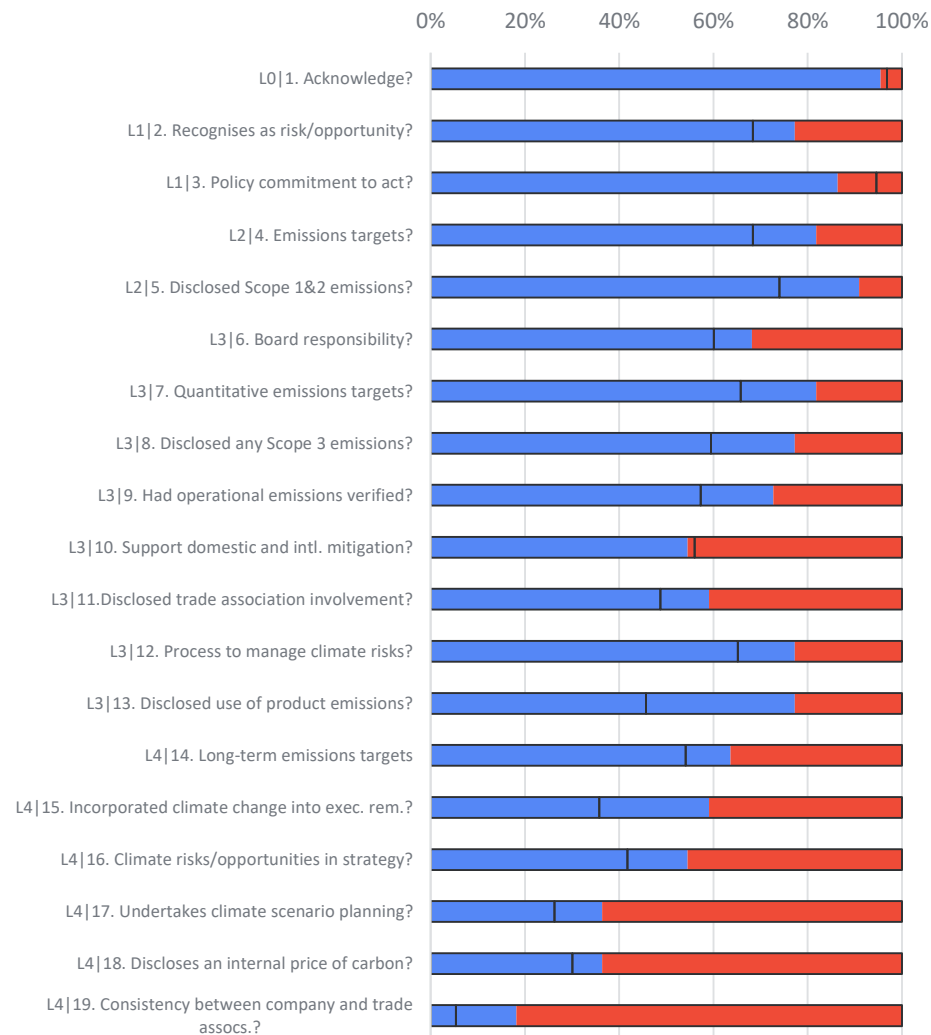


# Management Quality: indicator by indicator

In keeping with the sector's high overall Management Quality, auto manufacturers outperform the average TPI company on most indicators and in particular on all Level 4 indicators.

Auto manufacturers perform particularly well on incorporating climate change into executive remuneration, ensuring consistency between their own climate change policy and the positions taken by their trade associations, and disclosing emissions from use of their product.

However, the autos sector performs worse than average on having a policy commitment to act on climate change, one of TPI's most basic Management Quality criteria. This is driven by a few laggards in the sector.



# Carbon Performance: alignment with the Paris Agreement benchmarks

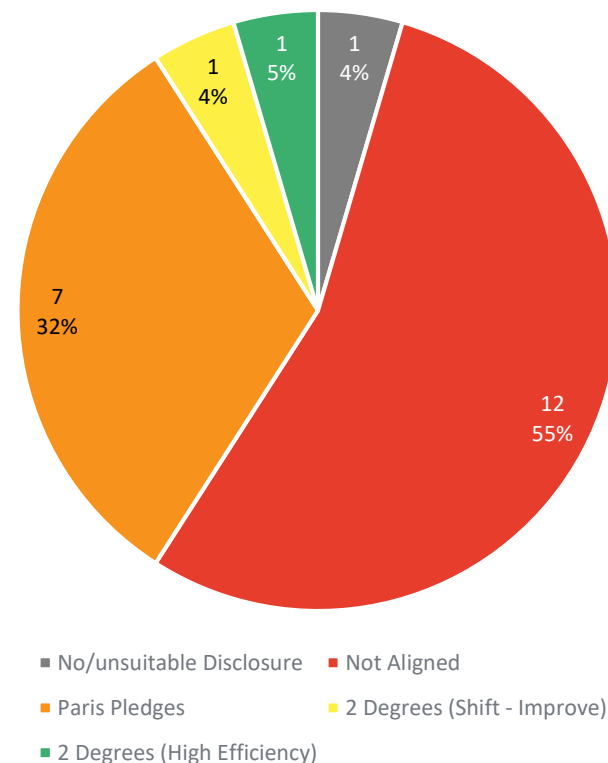
Auto manufacturers' fleets are getting cleaner; average fleet emissions intensity is currently falling at a rate of about 2-2.5% per year based on 2016-2018 data.

Nine auto manufacturers (41%) are aligned with the Paris Pledges benchmark in 2030. This is an improvement on 29% of companies in alignment last year. Of those nine, only two are aligned with either of the 2C benchmarks, however. Only Tesla is aligned with 2C (High Efficiency).

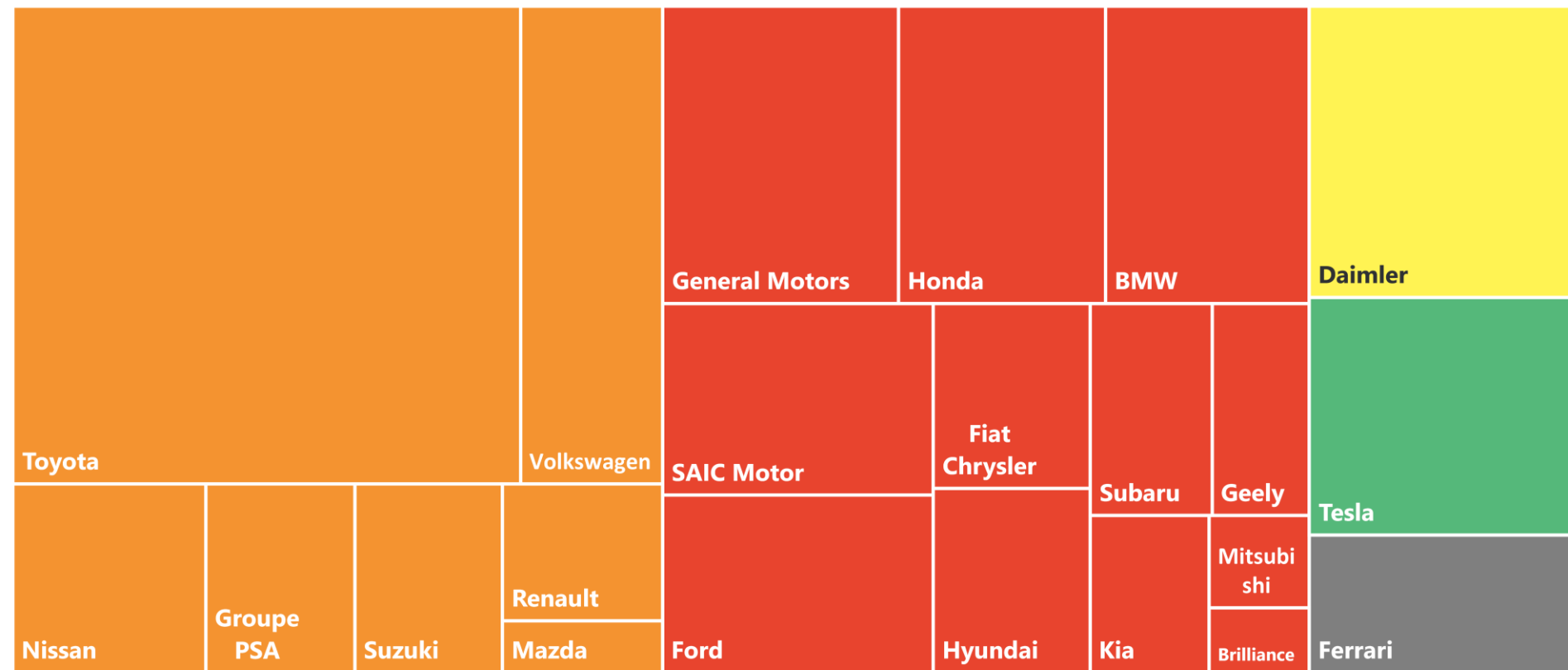
Eight of the nine companies that are aligned with the Paris Pledges benchmark have a 2030 emissions target, while the remaining one (Suzuki) aligns on the basis of its 2020 fleet emissions intensity target.

Comparing the Carbon Performance of auto manufacturers with other sectors in the TPI database shows that a higher-than-average share of auto companies are aligned with the Paris Pledges benchmark, but a lower-than-average share of auto companies are aligned with the more ambitious 2C or Below 2C benchmarks.

Auto companies with lower fleet emissions intensities today are much more likely to have set a 2030 fleet emissions target.



# Alignment of auto manufacturers, scaled by market cap.



Source for market capitalisation: FTSE Russell (20/11/2019), average of last 4 quarters (before investibility weight)

■ No Disclosure 
 ■ Not Aligned 
 ■ Paris Pledges 
 ■ 2 Degrees (Shift-Improve) 
 ■ 2 Degrees (High Efficiency)



# Sector focus: airlines



## Key messages – airlines

This is TPI's second assessment of the airline sector. Compared with other sectors in the TPI database, airlines are about mid-table on Management Quality. No airline is on Level 0, meaning all companies acknowledge climate change as a business issue. On average, the sector is just over halfway between Levels 2 and 3, so it is moving towards integrating climate change into operational decisions. Just over one quarter of airlines are now on Level 4, indicating they are taking a strategic approach to climate change.

The airline sector's Carbon Performance is worse than any other sector in the TPI database, with the exception of oil and gas. While 60% of airlines have carbon intensities of flight operations that are aligned with the benchmarks in 2020, only two airlines remain aligned with any of the benchmarks in 2030.

Most airlines have not set targets beyond 2020, or adopt the industry-wide approach of setting emissions targets, which include the use of offsets. While offsets are in principle a cost-effective way to cut carbon, we cannot currently take into account targets that include offsetting, as it is unclear how much airlines' own emissions will fall under such targets. It is projected that the airline sector will have to reduce its own emissions significantly to deliver the Paris temperature goals. Setting more ambitious targets, and being transparent about their reliance on carbon offsetting to meet those targets, is key for airlines to demonstrate alignment with the Paris goals.

Our benchmarks do not currently include the sector's non-CO<sub>2</sub> effects on warming, due to the uncertainty in quantifying them. Further progress is needed by the industry in this area. It is very likely that inclusion of non-CO<sub>2</sub> effects would make the benchmarks more challenging to achieve.



# Management Quality level

Companies' Management Quality ratings may not always reflect their most up-to-date disclosures. TPI updates its assessments once a year.

## Level 0

Unaware

0 Companies: 0%

## Level 1

Awareness

5 Companies: 23%

Air China  
Alaska Air Group  
Azul  
China Southern Airlines  
Wizz Air

## Level 2

Building capacity

5 Companies: 23%

American Airlines  
Easyjet  
IndiGo (InterGlobe Aviation)  
Singapore Airlines  
Turkish Airlines

## Level 3

Integrating into  
operational decision  
making

6 Companies: 27%

Deutsche Lufthansa  
Japan Airlines  
Jetblue Airways  
Korean Air Lines  
LATAM Airlines Group  
Qantas

## Level 4

Strategic assessment

6 Companies: 27%

Air France KLM  
ANA Holdings  
Delta Air Lines  
IAG  
Southwest Airlines  
United Continental





# Management Quality level

This is our second assessment of airlines. We have expanded our coverage from 20 to 22 companies since our first assessment in Spring of this year. Airlines' average Management Quality score is now 2.6, putting the average company in this sector just over halfway between "Building capacity" (Level 2) and "Integrating into operational decision making" (Level 3).

There are no airlines on Level 0 now; all companies are acknowledging climate change as a business issue. There are five companies on Level 1, which is the same number as in the Spring assessment.

Over half of the airlines assessed are now on Level 3 or 4, which is fractionally higher than in our first assessment. In particular, there is a notable increase in the number of companies on Level 4, up from four to six since Spring 2019. We are seeing some progress.

However, there are still no 4\* airlines, meaning none satisfy all 18 applicable Management Quality criteria.



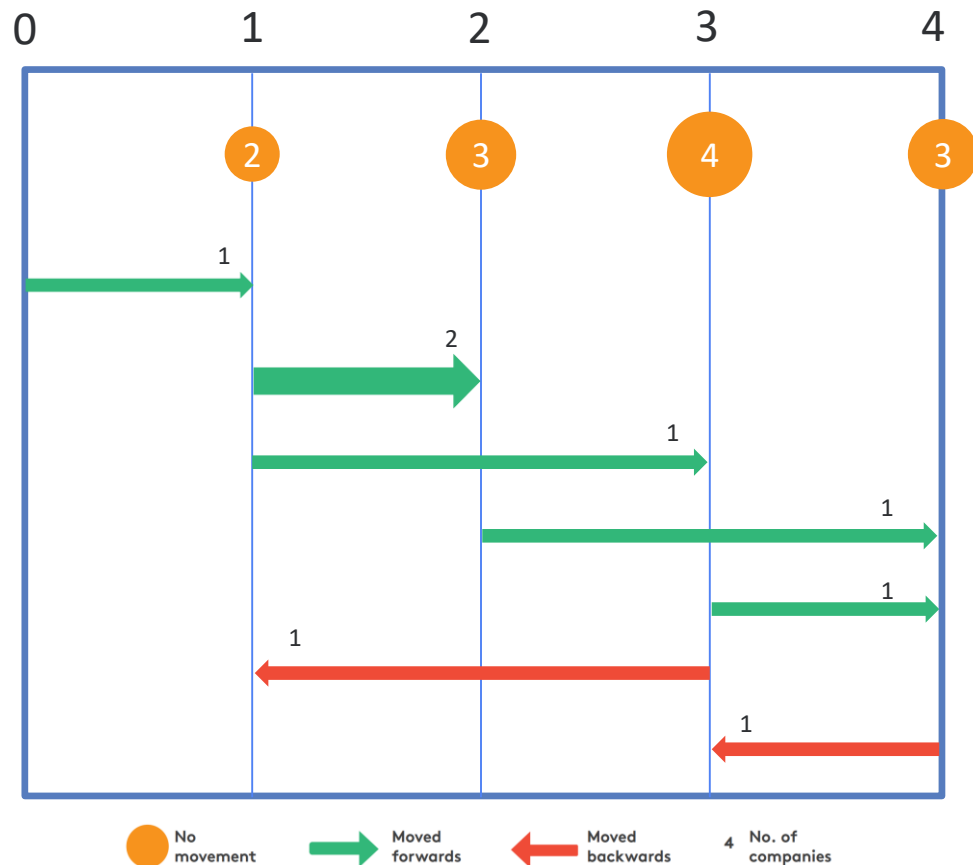
# Trends in Management Quality

The average Management Quality score of airlines has risen from 2.4 in Spring 2019 to 2.6 in this assessment.

Of the 20 airlines for which we have trend data, 12 (60%) remain at the same level as their last assessment. Seven of these are already on Level 3 or 4.

A total of six companies have moved up at least one level. Progress towards the bottom of the TPI staircase is due mainly to companies disclosing a policy to act on climate change (e.g. Wizz Air moves up to Level 1), or explicitly recognising climate change as a business risk/opportunity. Two airlines (IAG and Southwest) have moved up to Level 4 as a result of improved target setting, clear board oversight of climate change and having emissions data verified.

Two companies (Alaska Air and Lufthansa) have moved down levels, as their most recent disclosures were judged to provide insufficient evidence on specific Management Quality criteria.



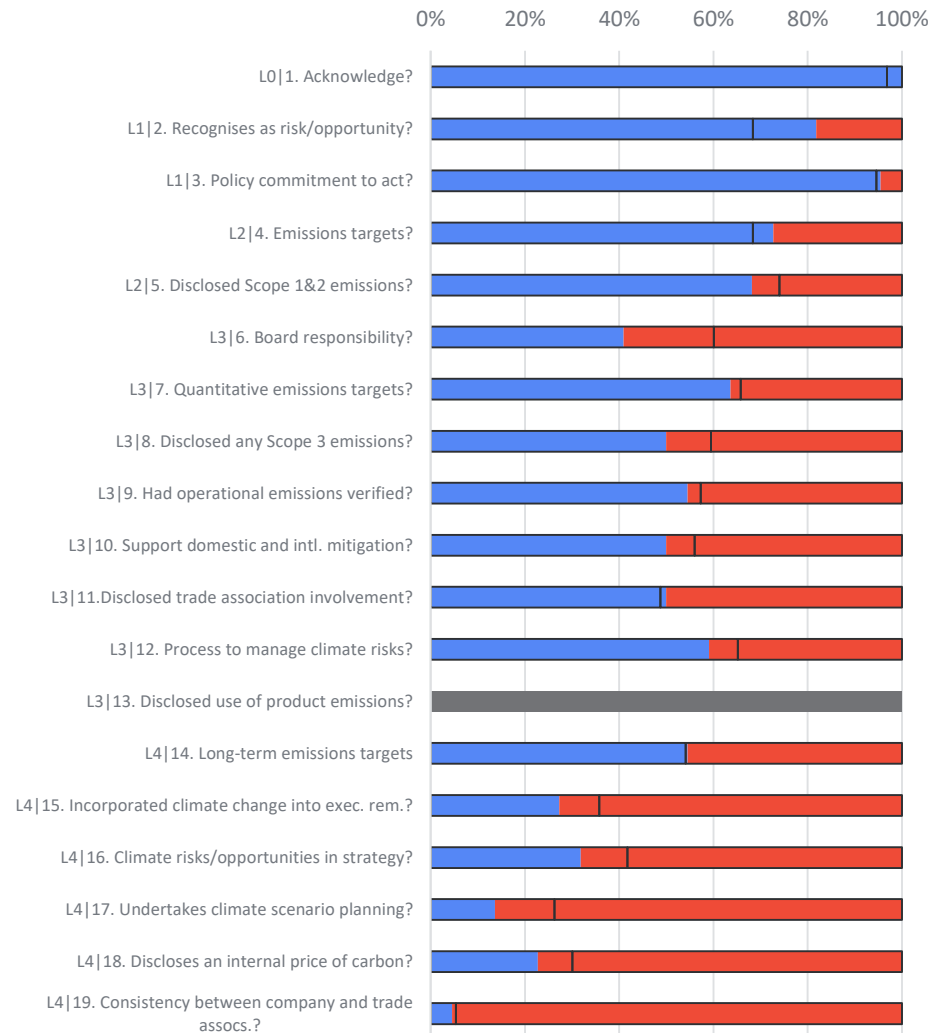
# Management Quality: indicator by indicator

Like other TPI sectors, we see more implementation by airlines of the basic carbon management practices, less of the more advanced practices.

Airlines out-perform the average TPI company on explicitly recognising the business risks and opportunities of climate change and setting some form of emissions reduction target.

Conversely airlines are weaker than average on other indicators, in particular on a series of Level 4 indicators that includes:

- having board oversight of climate change;
- incorporating climate change into executive remuneration;
- incorporating climate risks/opportunities in company strategy.



## Carbon Performance benchmarks for airlines: from passenger to tonne km

Like shipping, the vast majority of lifecycle emissions in the airline sector currently stem from combustion of fuel. We therefore focus on these **Tank-to-Wheel** (TTW) carbon emissions, which typically represent around 98% of a company's Scope 1 and 2 carbon emissions. Our analysis does not take into account Scope 3 emissions, which include emissions from aircraft manufacture and upstream (Well-to-Tank) fuel emissions.

We divide TTW carbon emissions from aircraft by a measure of 'transport work' to obtain our Carbon Performance metric for airlines, the carbon intensity of flight operations. In our Spring 2019 assessment, we used passenger kilometres (PKs) as the measure of transport work, that is, the number of passengers transported multiplied by the distance carried. We have refined our benchmarks in this assessment to include freight, so our measure of carbon intensity is now grams of CO<sub>2</sub> per **tonne kilometre** (TK).\*

\* We convert passenger kilometres into equivalent tonne kilometres using an industry conversion factor of one passenger being equivalent to 150kg. This takes account of a passenger plus their baggage, and the infrastructure (such as seating) that is required to transport passengers compared with freight.



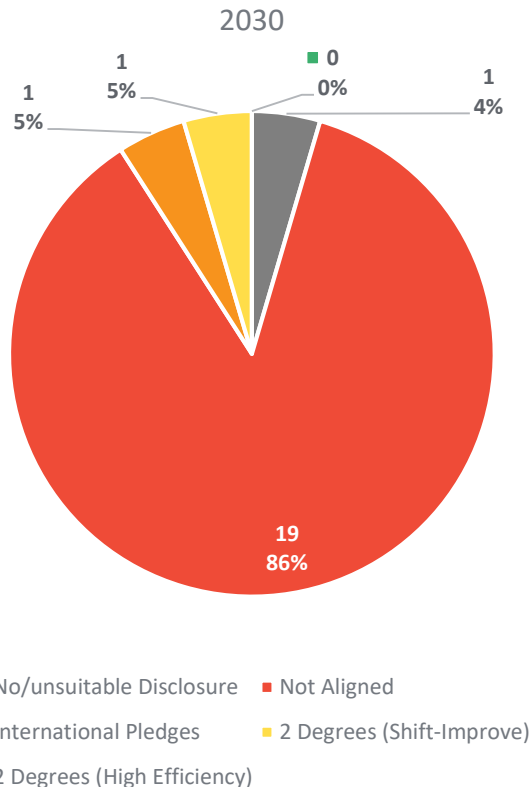
# Carbon Performance: alignment with the Paris Agreement benchmarks

Up to 2020, most airlines have gross targets in place that relate specifically to their own operational emissions. As a result, almost 60% of the airlines assessed are aligned with at least one of the benchmarks for 2020.

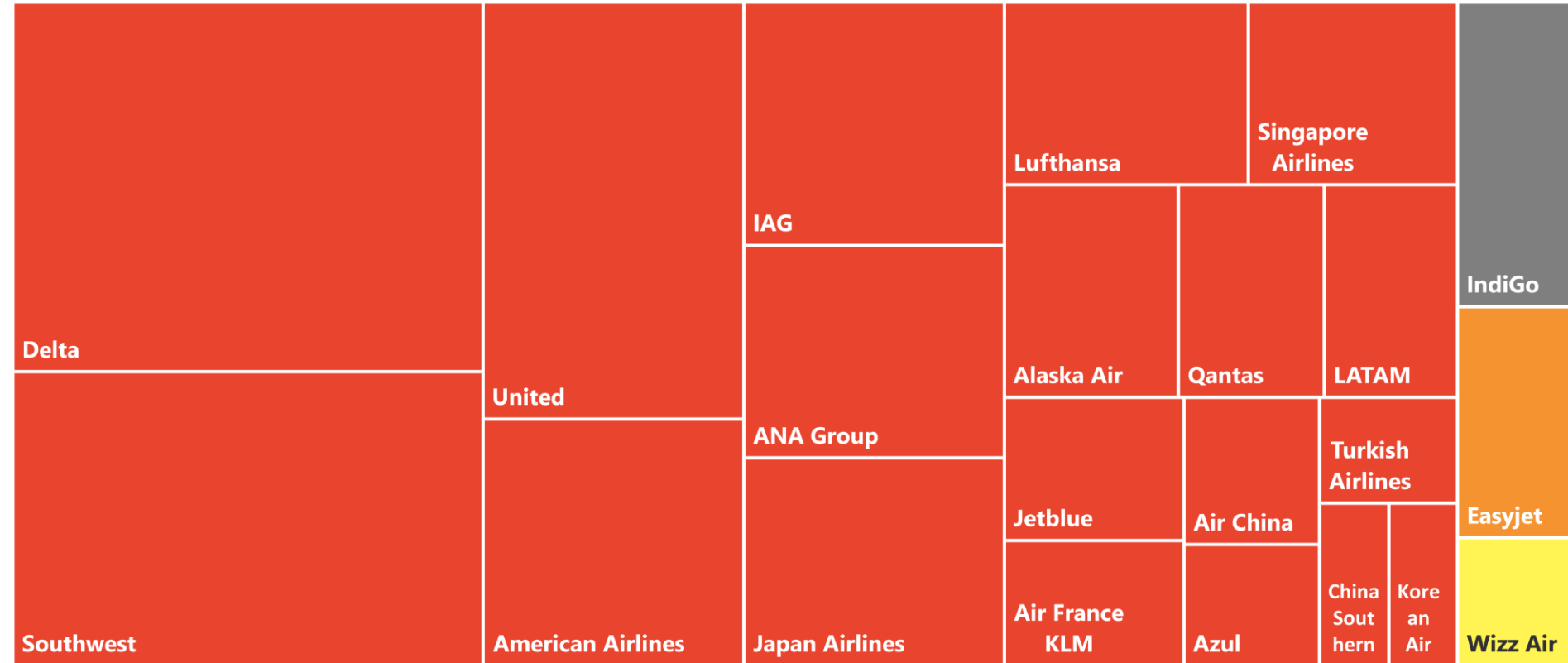
However, beyond that, only two airlines (Easyjet and Wizz Air) are aligned with any of our benchmarks for 2030 (see chart opposite).

The reason for this is that most airline targets for 2030 are based on net emissions, including offsetting. We do not currently take into account airlines' net emissions targets. While market-based measures are in principle a cost-effective way to cut carbon, it is unclear how much airlines' gross emissions will fall under such targets and modelling organisations like IEA project that airlines' gross/own emissions must fall.

There is a need for greater ambition and transparency in airline target-setting.



# Alignment of airlines, scaled by market cap.



Source for market capitalisation: FTSE Russell (20/11/2019), average of last 4 quarters (before investibility weight)

■ No Disclosure 
 ■ Not Aligned 
 ■ International Pledges 
 ■ 2 Degrees (Shift-Improve) 
 ■ 2 Degrees (High Efficiency)



# A recent trend: setting net zero targets

Recently, several airlines have gone beyond the industry's long-term goal of reducing absolute net emissions by 50% by 2050 compared with 2005 levels. Both IAG and Qantas have set a 2050 net zero target. Easyjet has set a more immediate net zero target, by committing to offset all its flight emissions from November 2019.

In order for TPI to use these net zero targets, we need further information on projected absolute emissions and the contribution to emissions reductions from: biofuels, fleet renewal/operational efficiencies and offsetting.

Easyjet estimates its net zero target will cost c. £25m in 2020, equivalent to around £3/tonne of CO<sub>2</sub>. The cost of offsets in the voluntary market is considerably lower than in key compliance markets like the EU ETS (currently around £20/t). This highlights the need to ensure carbon offsets used by airlines are of high quality and result in real emissions reductions.

Further, as the cost of offsets is only a small fraction of the estimated cost of decarbonisation within the sector – in the range \$115-230/t (Energy Transitions Commission) – this carbon price is insufficient to incentivise airlines to invest in low-carbon technologies to reduce their own emissions.

Airline	Target type	Target date	Flight Emissions (2018) Mt*
IAG	20% reduction in net emissions	2030	29.8
	Net zero emissions	2050	
Qantas	Net zero emissions	2050	12.3
Easyjet	Net zero emissions	November 2019 onwards	7.6
Industry (IATA) goal	50% reduction in net emissions	2050	918.0

\*Source: ICCT (2019) and airline disclosures



# Sector focus: international shipping





## Key messages – shipping (i)

This is our first assessment of the shipping sector. We assess the 13 largest publicly owned companies engaged in international marine freight transportation, selected on the basis of market capitalisation. International marine freight transport accounts for 87% of all shipping emissions, the remainder coming from domestic shipping and passenger transport, including cruise-ships.

The sector performs poorly on Management Quality, with the average international shipping company below the average company in other transport sectors and in our database as a whole. Nearly half of the companies we assess fail to explicitly recognise the business risks/opportunities presented by climate change, and almost 40% fail to disclose their operational emissions. Only 15% of companies have allocated board responsibility for climate change.

In contrast, the Carbon Performance of these companies is good, with the majority already aligned with our most ambitious Below 2C benchmark for 2030, and 5 out of 13 companies having set long-term targets to 2050, most of which are aligned with (or more ambitious than) the IMO industry target for that date.

The carbon intensity of a shipping company is determined not only by its mitigation efforts, but also by structural factors, such as the composition of its fleet. Carbon intensity varies widely by vessel size and type. For example, companies whose fleets comprise mainly large oil tankers fall well below our benchmarks, which are determined by the composition of the international freight shipping fleet as a whole.

## Key messages – shipping (ii)

The strong Carbon Performance of most companies we assess may thus be partly attributable to company size. Larger companies tend to operate newer, larger vessels, which have lower carbon intensities than small vessels. This is particularly true in container shipping, where ship size has increased significantly in the last two decades and carbon intensity for the largest container-ships is less than half that for the smallest container-ships (UNCTAD).

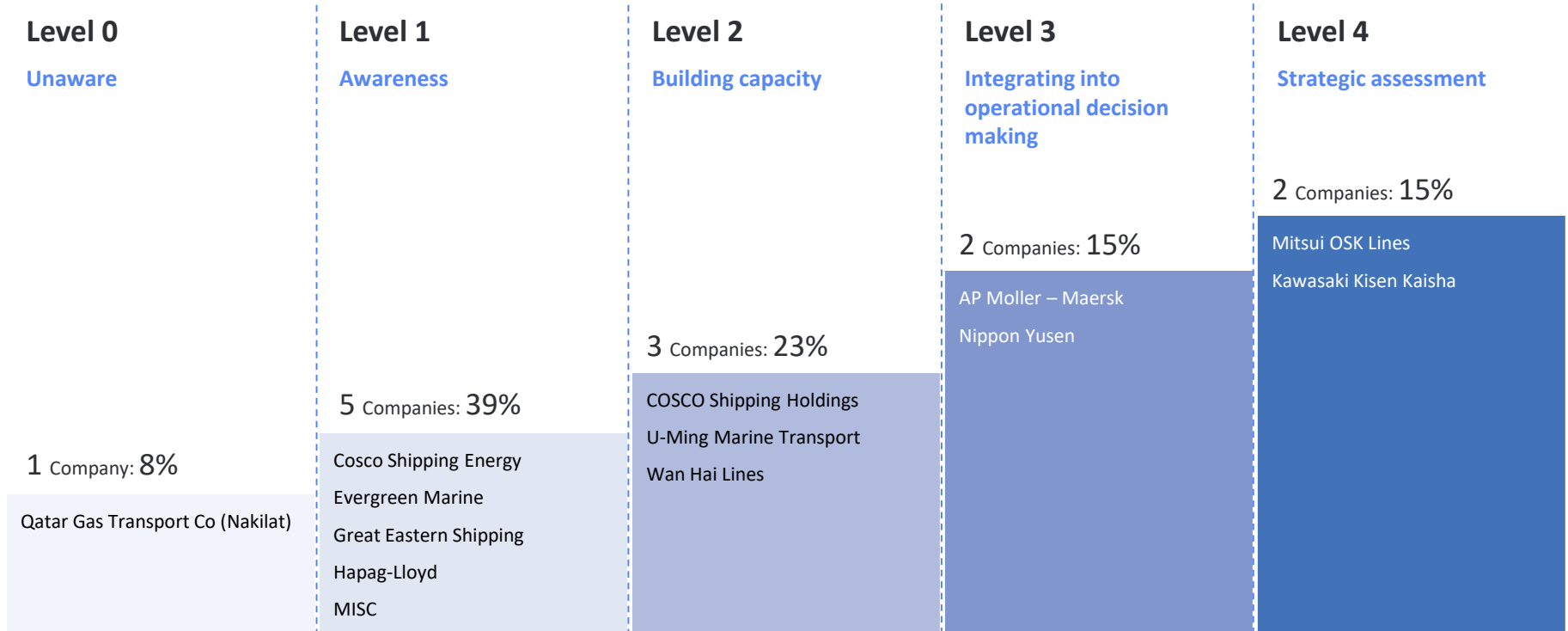
Given the effect of fleet composition and vessel size on a company's Carbon Performance, it is useful to also look at another indicator of Carbon Performance, a company's ambition for 2030 relative to its own current carbon intensity. Three of the companies assessed have ambitious carbon intensity targets for 2030, which are between 23% and 32% below their 2018 intensity. However, others are less ambitious, with implied target reductions in carbon intensity of between 0% and 13% to 2030.

There are well recognised data challenges in this sector relating to quantification of international shipping emissions and related transport activity. We tested the robustness of our results using an alternative Below 2C benchmark, based on different data sources, and found that our conclusions are not significantly affected: most of the companies remain aligned even with the more stringent alternative benchmark. Going forward, we expect data consistency in this sector to improve, particularly with the introduction of the IMO's new mandatory Data Collection System and the expected publication next year of the IMO's fourth GHG inventory.



# Management Quality level

Companies' Management Quality ratings may not always reflect their most up-to-date disclosures. TPI updates its assessments once a year.



# Management Quality level

This is TPI's first assessment of international shipping. We assess the sector's 13 largest publicly owned companies, selected on the basis of market capitalisation.

The average Management Quality score of the shipping companies assessed is 1.9, putting the average company almost at Level 2 (building capacity).

This is lower than either autos or airlines, which have average scores of 3 and 2.6 respectively. In fact, the international shipping sector is one of the worst performing sectors on Management Quality in the TPI database at present. Almost half of companies are on Level 0 or 1.

That said, there are some high performers in the sector. Five companies provide long-term targets to reduce emissions that stretch to 2050, including one with a zero emissions target at that date. There are four companies on Level 3 or Level 4, and three of these are based in Japan.



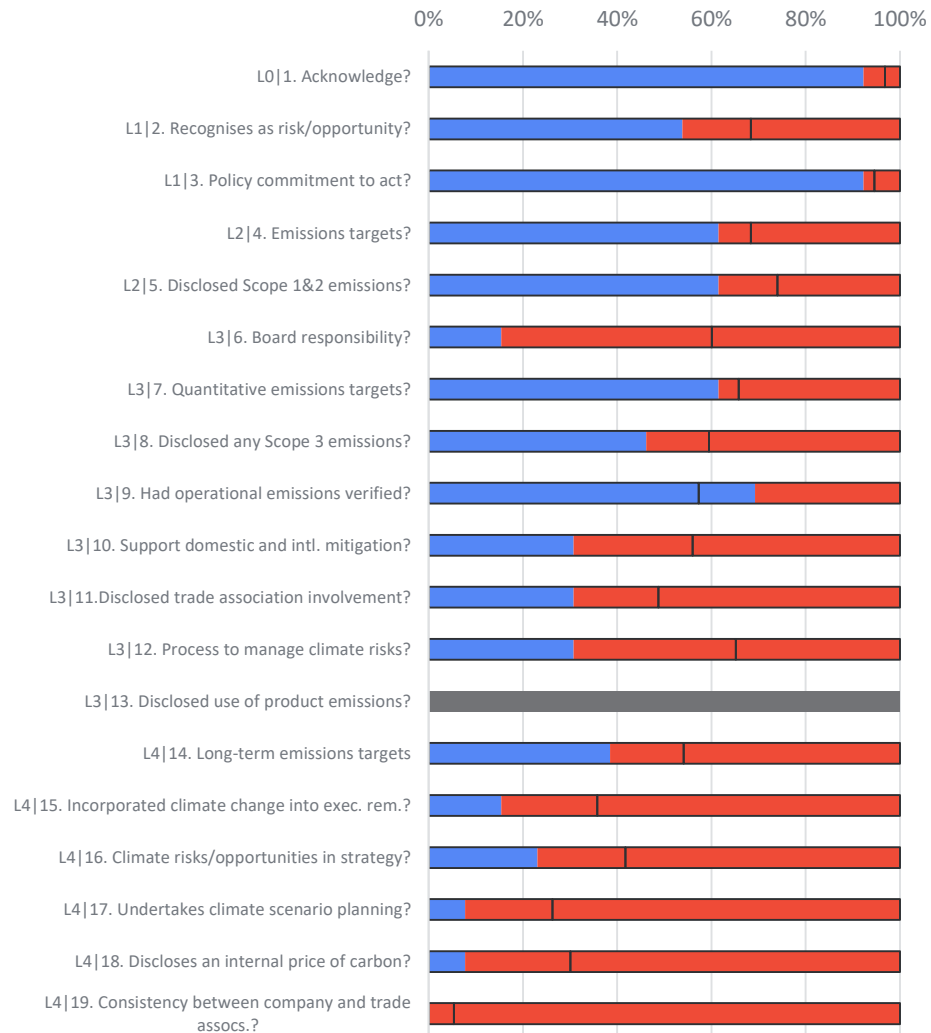
# Management Quality: indicator by indicator

In keeping with the sector's low average Management Quality, international shipping companies perform relatively poorly on almost all of TPI's individual Management Quality indicators.

This is particularly true for:

- explicitly recognising climate change as a business risk/opportunity;
- disclosing emissions data;
- having board oversight of climate change;
- managing climate related-risks.

In addition, a lower proportion of shipping companies than average can demonstrate support for international and domestic efforts to mitigate climate change.



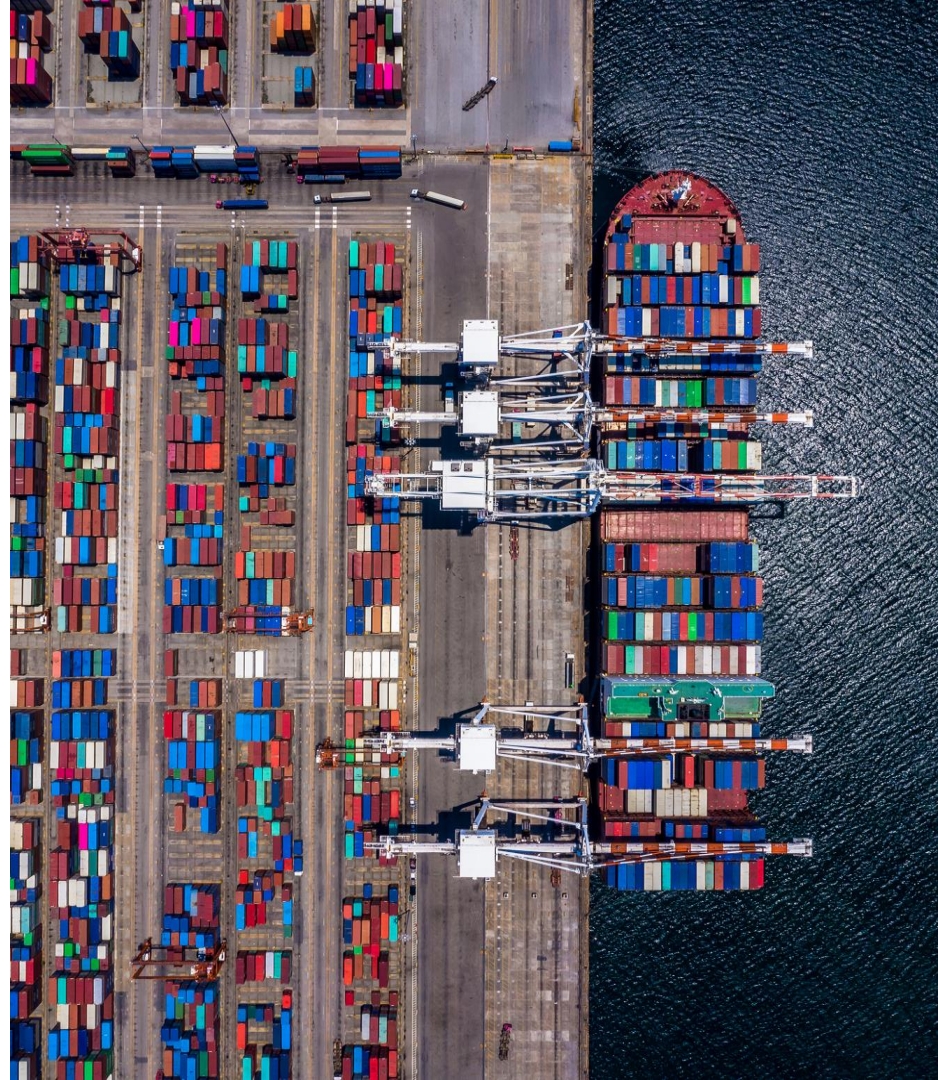
# Carbon Performance benchmarks for shipping

In the shipping sector, the vast majority of lifecycle emissions currently stem from combustion of fuel in shipping vessels. We therefore focus on these **Tank-to-Wheel** (TTW or Tank-to-Propeller) carbon emissions, which typically represent around 98% of a company's Scope 1 and 2 carbon emissions. Our analysis does not take into account Scope 3 emissions, which include emissions from shipbuilding and upstream (Well-to-Tank) fuel emissions.

We divide TTW vessel carbon emissions by a measure of 'transport work' to obtain our Carbon Performance metric for shipping. We use **tonne kilometres** (t-kms) as the measure of transport work, that is, the number of tonnes of cargo transported multiplied by the distance carried.\*

Our assessment focuses on **international freight transport**, which represents around 87% of total shipping emissions, with the balance arising from domestic shipping and passenger transport.

\* For container shipping, we convert transport work expressed in Twenty Foot Equivalent Units (TEUs) to tonnes using a typical industry conversion factor.

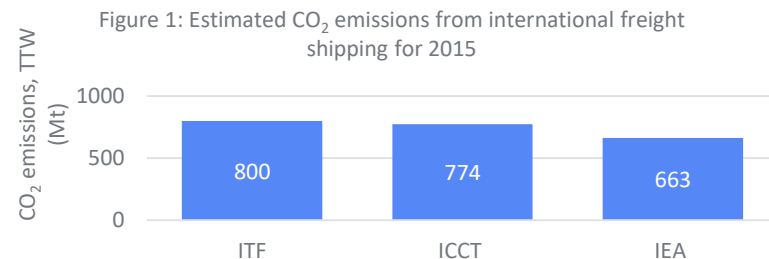


# Data sources

There are well-recognised data-consistency challenges in this sector. Estimates of shipping emissions vary between organisations due to different methods of estimating shipping fuel consumption and allocating fuel between domestic and international shipping.

Our benchmarks are derived using emissions and tonne kilometre data from the International Transport Forum's (ITF) most recent International Freight Model (2019). ITF's historic **emissions** data are comparable with most other sources, including the International Council on Clean Transport's sector inventory study (ICCT, 2017), which updated the IMO's Third Greenhouse Gas Inventory (2014). IEA historic data for international shipping are consistently lower than those from other organisations due to the different methods of estimation (ICCT, 2017). (See Figure 1)

Data for **tonne kilometres** vary between sources. We use ITF's historic t-km figures for international freight shipping. These are lower than those provided by UNCTAD for global seaborne trade. The difference is mainly due to the inclusion in the latter of domestic coastal shipping and differences in classification of domestic trade. (See Figure 2)



*Note: ICCT figure is based on total international shipping emissions for 2015 less emissions from cruise ships (which we assume are the main source of emissions from international passenger transport). IEA figure includes all international shipping emissions and may therefore be slightly inflated by international passenger transport emissions.*

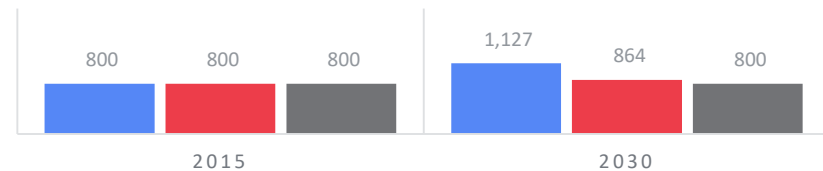


# Benchmark scenarios

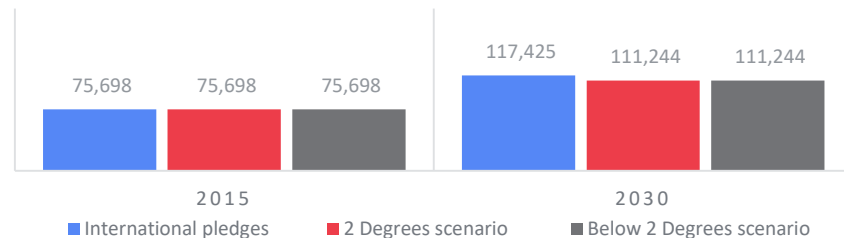
Using ITF's data, augmented by IEA data, we derive 3 benchmark scenarios for international freight shipping.

1. Our **International Pledges** scenario is based on ITF's Current Ambition scenario, which reflects policies already in place to decarbonise international freight shipping. Thus it includes IMO's efficiency standard for new ships (the Energy Efficiency Design Index). However, it does not include IMO's emissions targets (to reduce international shipping emissions by at least 50% by 2050, to reduce carbon intensity by 40% by 2030 and 'to pursue efforts' to reduce carbon intensity by 70% by 2050, all based on 2008 levels), because as yet there are no other policies in place to meet these targets.
2. Our **Below 2 Degrees** scenario uses ITF's estimate of 2015 emissions as a starting point and applies the IEA assumption that international shipping CO<sub>2</sub> emissions need to be broadly flat between 2015 and 2030 to meet the IEA's Sustainable Development Scenario (SDS).
3. Finally, we also provide a **2 Degrees scenario**, derived from the Below 2 Degrees scenario above and using IEA data. Further details of the scenarios are provided in the Appendix.

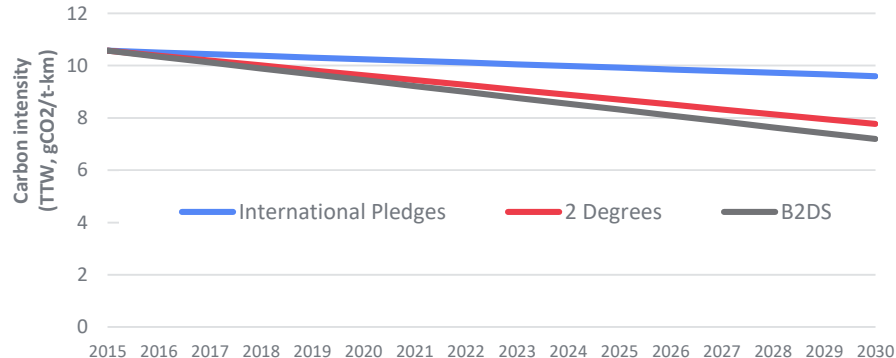
Benchmark scenario CO<sub>2</sub> emissions (Mt)



Benchmark scenario t-kms (billions)



Benchmark carbon intensity pathways for international freight shipping



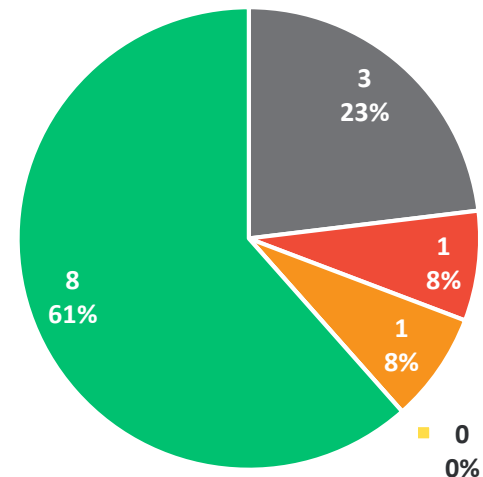


## Carbon Performance: alignment with the Paris benchmarks

Unlike Management Quality, the Carbon Performance of the largest publicly owned companies in international shipping is relatively good.

Eight of the companies we assessed are already aligned with the most ambitious of our 2030 benchmarks. Of these eight, five have long-term emissions targets, while the remaining three align on the basis of current or 2020 emissions intensity. Three companies have either insufficient or unsuitable disclosure to have their Carbon Performance assessed and a further two are not projected to be aligned with the 2C or Below 2C benchmarks by 2030.

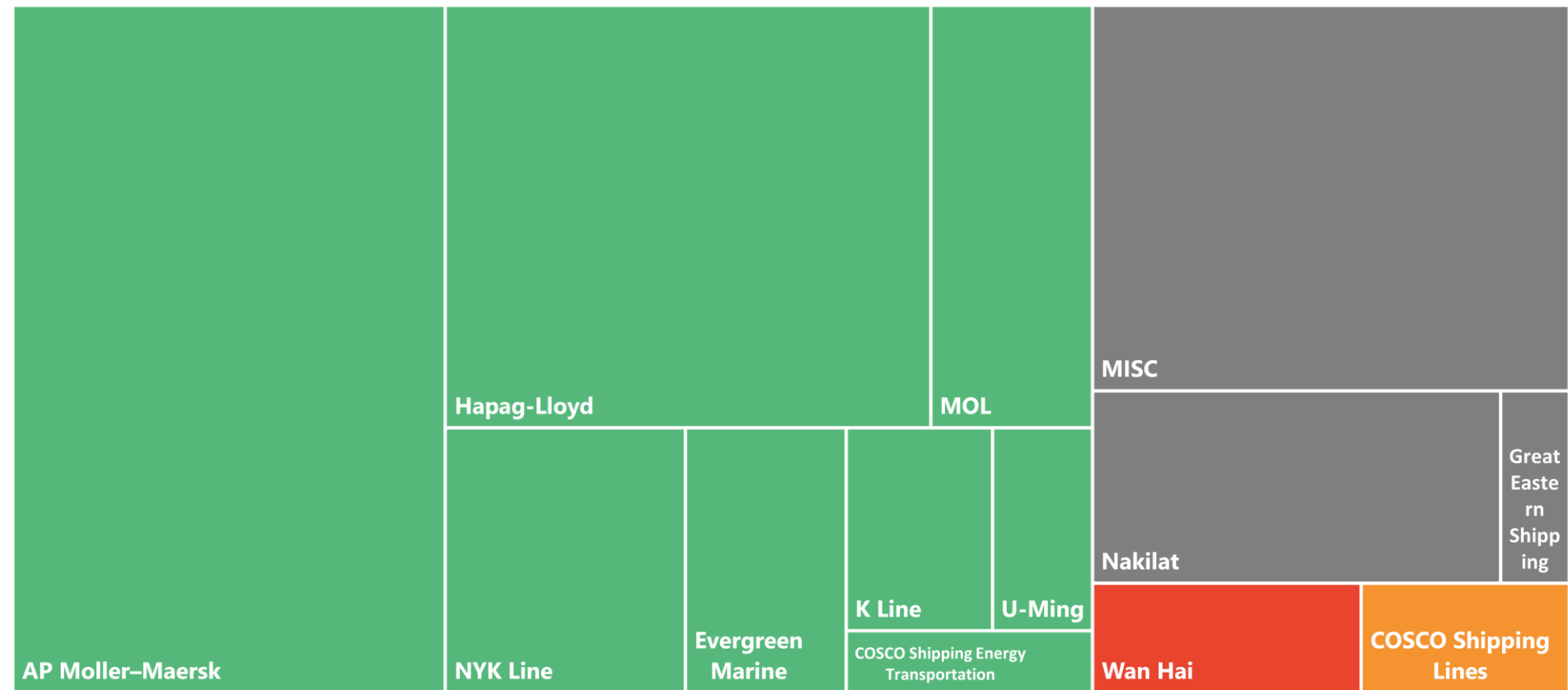
While the performance of most of the companies we can assess on Carbon Performance is good, it is important to note that some of the largest shipping companies are under private ownership and are therefore not included in our assessment. In addition, the performance of our sample may not be representative of the sector as a whole due to (i) fleet composition and (ii) company size bias. These issues are explored further in the Appendix.



- No/unsuitable Disclosure
- International Pledges
- Below 2 Degrees
- Not Aligned
- 2 Degrees



## Alignment of shipping companies, scaled by market cap.



Source for market capitalisation: FTSE Russell (20/11/2019), average of last 4 quarters (before investibility weight)

No Disclosure
  Not Aligned
  International Pledges
  2 Degrees
  Below 2 Degrees



# Some key factors affecting shipping companies' current and future emissions intensity

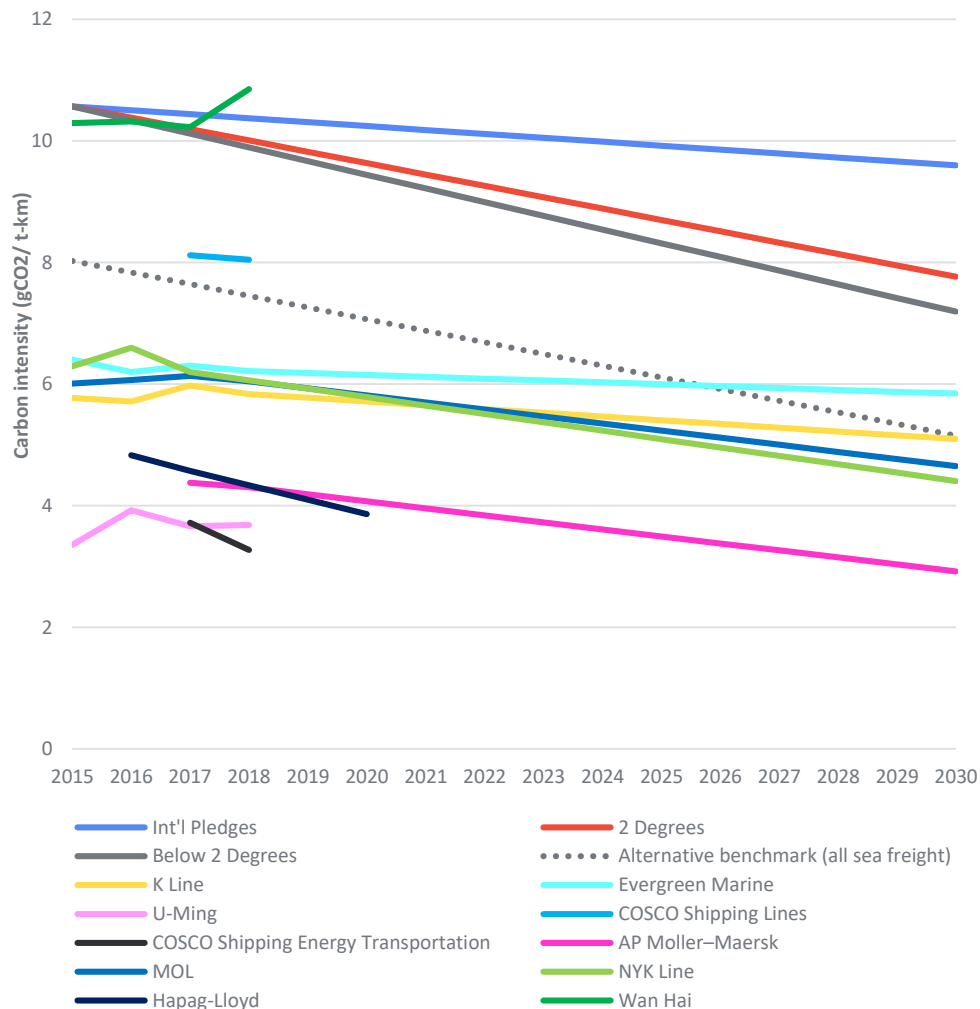
Factor	Time frame	Effect
Fleet composition	Current	Carbon intensity varies significantly between vessel types and sizes (see Appendix). Thus a company's carbon intensity will depend on the composition of its fleet.
Fleet age	Current/ future	Newer vessels are more fuel efficient than older ones, so a company's carbon intensity will be affected by the age of its fleet and its investment in fleet renewal.
Operational measures	Current	Measures such as route planning, improved capacity utilisation and speed reduction ('slow-steaming') can reduce fuel consumption per unit of transport work and thus reduce carbon intensity.
Technical measures	Current/ future	Ships may be retrofitted with technologies such as wind assistance and advanced hull coating to reduce fuel consumption and therefore carbon intensity. Other technological developments involving ship design, hull and propulsion efficiencies will provide opportunities for carbon intensity reductions from the mid 2020s.
Fuel type	Current/ future	Switching to lower carbon fuels will reduce carbon intensity. LNG is the option current available, but this provides only small CO <sub>2</sub> savings and requires investment in infrastructure. In the longer term, there are opportunities for low/zero-carbon fuels such as ammonia, hydrogen, sustainable biofuel and electric battery (short distance transport only).

Sources: Energy Transition Commission and University Maritime Advisory Service



# Test of robustness of our benchmarks

Given inconsistency in the data on international freight transport volumes between various sources, which may affect our benchmarks, we test the robustness of our results. We derive an alternative benchmark pathway for Below 2C, using different data sources. As a key inconsistency in the data relates to how international and sea domestic trade are classified, our alternative benchmark includes all freight shipping, that is, both domestic and international freight, rather than just focusing on the latter. We use UNCTAD t-km data for *global* seaborne trade and an estimate of emissions from *total* sea freight based on ICCT data. The alternative Below 2C benchmark is shown by the dotted grey line in the chart opposite. The chart shows that our results are not significantly affected by the alternative lower benchmark, that is, most companies fall below all of the benchmarks.



# Appendix: further analysis of shipping



## TPI shipping benchmark scenario assumptions

Scenario	Assumptions	Source
International Pledges	<p>We use emissions and t-km figures for 2015 and 2030 from ITF's Current Ambition scenario, which assumes:</p> <ul style="list-style-type: none"> <li>• moderate fuel efficiency improvements in line with IEA's New Policy Scenario (NPS), reflecting existing policies, i.e. the IMO's Energy Efficiency Design Index (EEDI) regulation for new ships, equivalent to 1% annual improvement across global fleet</li> <li>• moderate reductions in coal and oil trade, but overall growth in transport demand of 3% per year between 2015 and 2030</li> </ul>	ITF Transport Outlook (2019)
2 Degrees	<ul style="list-style-type: none"> <li>• We estimate emissions for 2030 in the 2 Degrees Scenario (2DS) as being 8% higher than that in the Below 2 Degrees scenario (B2DS) (see below), based on the difference between these two scenarios in IEA's ETP, the latest IEA report which provides data for a 2DS</li> <li>• We assume t-kms are the same as under the B2DS(see below)</li> </ul>	<p>IEA Energy Technology Perspective (ETP) (2017)</p> <p><i>Note the emissions figures provided in the ETP (2017) are Well-to-Wheel emissions and relate to all shipping (i.e. they include domestic and passenger transport). However, for comparison with TTW emissions for international freight shipping in the B2DS, we make simplifying assumptions.</i></p>
Below 2 Degrees	<ul style="list-style-type: none"> <li>• For emissions, we use ITF's Current Ambition scenario figure for 2015 as starting point and apply growth rate implied by IEA's Sustainable Development Scenario (SDS) for international shipping, which is approximately zero, to derive 2030 figure. Implicitly, this reflects the IEA assumptions that low carbon fuels (including ammonia and hydrogen) account for 7% of international shipping fuel in 2030 and that annual efficiency improvements are greater than those under the International Pledges scenario.</li> <li>• For t-kms, we use ITF's High Ambition scenario, which reflects a greater decline in demand for coal oil transport than in their Current Ambition scenario</li> </ul>	<p>ITF model (2019)</p> <p>IEA Tracking Clean Energy Progress (TCEP)(May 2019)</p>



# Impact of fleet composition on Carbon Performance

TPI's Carbon Performance assessment is at a **company** level. This approach gives rise to a particular issue in the shipping sector, because carbon intensities vary significantly across vessel types and sizes, as shown in Figure 1.

We compare the average carbon intensity of a company's fleet with the benchmarks, calculated as the average carbon emissions intensity across the entire international freight shipping fleet. Therefore a company's Carbon Performance, when compared with the benchmarks, will be determined not only by its mitigation efforts, but also by its fleet composition, compared with the international freight shipping fleet as a whole.

Figure 2 shows the composition of the global fleet by vessel type based on Dead Weight Tonnage (DWT), which is a reasonable proxy for transport work, and the Below 2C carbon intensity for 2018. These data are compared with the equivalent for three sample companies. While this analysis does not take into account vessel size, it shows that, as expected, the company operating a fleet comprising mainly oil tankers (COSCO Shipping Energy) has a lower carbon intensity than the container-ship company (COSCO Shipping Lines/Holdings) and the mixed fleet company (Mitsui OSK).

Figure 1: Estimated carbon intensity by vessel type and size

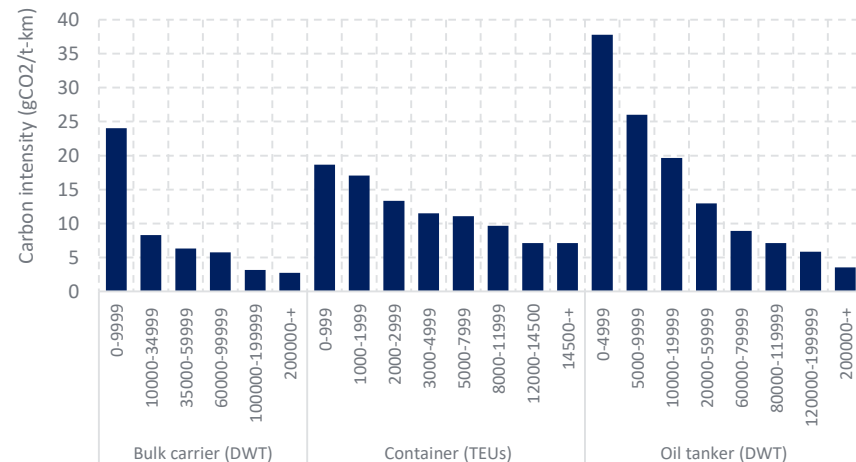
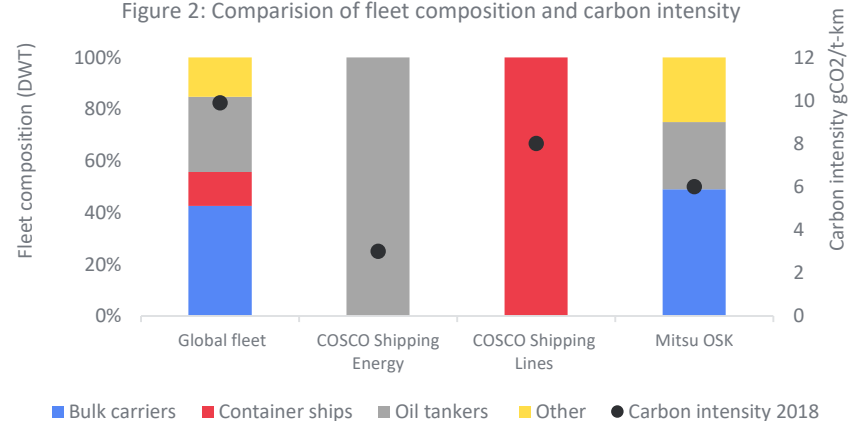


Figure 2: Comparison of fleet composition and carbon intensity



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