Management Quality and Carbon Performance of Airlines: March 2019

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Key messages

• This slide set reports on TPI’s latest assessment; our first of the world’s largest publicly owned airlines.

• The airline sector makes a significant and fast-growing contribution to climate change: currently it accounts for 2% of global CO₂ emissions and 12% of transport-related CO₂ emissions. In addition, aviation has climate impacts beyond CO₂ emissions, such as the formation of contrails and clouds, which are likely to be significant.

• Most of the 20 airlines we assess demonstrate awareness of climate change as a business issue and are building capacity by disclosing their operational emissions and setting emissions targets.

• Four airline companies are taking a strategic approach to climate change: ANA Group, Delta, Lufthansa and United.

• Compared with other sectors in the TPI database, airlines are about mid-table on Management Quality. Relatively many companies in this sector have set quantified emissions targets, but relatively few align executive remuneration with ESG issues, incorporate climate risks and opportunities in their strategy, or undertake and disclose climate scenario planning.
Key messages continued

• TPI benchmarks the Carbon Performance of airlines based on their CO₂ emissions from flight operations. Non-CO₂ effects on warming are not included, as currently they are not incorporated in company disclosures, or in the IEA model used to benchmark the sector, due to the uncertainty in quantifying them. Further progress needs to be made on understanding airlines’ overall impact on the climate, as non-CO₂ effects are thought to be significant. If they were taken into account, the benchmarks would almost certainly be tighter.

• Most large publicly owned airlines have a CO₂ emissions intensity that is below the TPI benchmarks at present. Up to 2020, this is set to remain the case. Three quarters of airlines have an emissions or fuel efficiency target for 2020 and most of those airlines will have a CO₂ emissions intensity below the benchmarks in 2020.

• However, in the longer term, the airline sector performs poorly, with none of the 20 airlines providing a 2030 target that would clearly reduce flight emissions. Some airlines have no long-term target and most others have adopted the industry-wide approach of controlling net emissions through offsetting. More ambitious targets are needed, as is more transparency about how much airlines will rely on offsets to meet their targets. According to IEA and others, the airline sector will have to reduce its own emissions significantly.
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. Aimed at investors, it assesses companies’ progress on the transition to a low-carbon economy, supporting efforts to address climate change. Established in January 2017, TPI is now supported by more than 40 investors with over £10.3/$13.3 trillion AUM.

Using companies’ publicly disclosed data, TPI:

• Assesses the quality of companies’ management of their carbon emissions and of risks and opportunities related to the low-carbon transition, in line with the recommendations of TCFD;

• Assesses how companies’ planned or expected future Carbon Performance compares to international targets and national pledges made as part of the 2015 UN Paris Agreement;

• Publishes the results via an open-access online tool: www-transitionpathwayinitiative.org.

This slide set presents our latest assessment; our first of the airlines sector.
TPI Partners

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) provides a secretariat 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 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.
TPI’s Management Quality framework is based on 16-17 indicators, each of which tests whether a company has implemented a particular carbon management practice. These 16-17 indicators are used to map companies on to 5 levels/steps. The data are provided by FTSE Russell.
Carbon Performance

TPI’s Carbon Performance assessment tests the alignment of company targets with the Paris Agreement goals, using the same basic approach as Science-Based Targets.

Benchmarking is sector-specific and based on emissions intensity.

For the airline sector, TPI uses 3 benchmark scenarios:

1. **International Pledges**, reflecting pledges made by countries as part of the Paris Agreement and commitments made at the UN’s International Civil Aviation Organisation to reduce international aviation emissions;

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 air passengers to lower-carbon modes of transport and instead all emissions reductions are delivered through increased fuel efficiency and low-carbon jet fuel.

Further details on methodology can be found in the appendix to this slide set and in a separate Methodology Note for the airlines sector.

Company A is not aligned with any of the benchmarks

Company B is eventually aligned with the 2 Degrees (Shift-Improve) benchmark but not the 2 Degrees (High Efficiency) benchmark

Company C is aligned with all the benchmarks, including 2 Degrees (High Efficiency)
Beyond 2020, many airlines replace a fuel efficiency target with two absolute targets set by the international airline industry:

- to cap net emissions at 2020 levels;
- to halve net emissions by 2050 from 2005 levels.

These net targets rely on the use of carbon offsets purchased from other sectors to augment emissions reductions within the airline sector.

The IEA model produces a carbon budget for air transport that excludes the use of offsets. IEA projects that, after taking into account emissions reductions from other sectors, airlines will still have to reduce their gross emissions significantly.

We do not currently take into account airline emissions targets that rely on offsets, because it is unclear how much airlines’ gross emissions will fall.
Non-CO$_2$ climate impacts of aviation

The airline sector’s contribution to climate change is more than just its CO$_2$ emissions. Aircraft flying at altitude affect warming through emissions of Nitrogen Oxides and water vapour, and the formation of contrails and cirrus clouds.

There is high uncertainty about the contribution of these non-CO$_2$ effects to global warming, but they are thought to be significant.

Currently non-CO$_2$ effects are not incorporated in company disclosures, or in the models used to benchmark them. Therefore TPI’s analysis is necessarily restricted to CO$_2$ emissions at this stage. Taking non-CO$_2$ effects fully into account would almost certainly result in tighter benchmarks.
Results: Management Quality of Airlines
## Management Quality level

<table>
<thead>
<tr>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unaware</td>
<td>Awareness</td>
<td>Building capacity</td>
<td>Integrating into operational decision making</td>
<td>Strategic assessment</td>
</tr>
</tbody>
</table>

**4 companies**
- ANA Group
- Delta
- Lufthansa
- United

**6 companies**
- Alaska Air
- IAG
- Japan Airlines
- Jetblue
- LATAM
- Qantas

**5 companies**
- American Airlines
- Easyjet
- IndiGo
- Southwest
- Air China
- China Southern
- Korean Air
- Singapore Airlines
- Turkish Airlines

**1 company**
- Wizz Air

* Companies disclose new information all the time and, since this assessment was undertaken, some companies have provided enhanced disclosures (e.g. Wizz Air). Therefore companies’ Management Quality ratings may not always reflect their most up-to-date disclosures. TPI updates its assessments once a year.
Management Quality level

Airlines’ average Management Quality score is 2.4, putting the average company in this sector just short of halfway between “Building capacity” (Level 2) and “Integrating into operational decision making” (Level 3).

Six out of 20 airline companies are on Levels 0 and 1, while 10 out of 20 companies are on Levels 3 and 4.

Compared with other sectors in the TPI database, airlines’ Management Quality is about mid-table, with several other sectors, such as autos and electricity, out-performing it.

No company satisfies all Management Quality criteria: there are not yet any 4* airlines.

There is no clear relationship between Management Quality and Carbon Performance in this sector. Easyjet, for example, is on Level 2 for Management Quality, while achieving the best Carbon Performance in the sample (see below).
## Management Quality: indicator by indicator

Most airlines do the basics; fewer take the more advanced steps. We see this general pattern in all TPI sectors.

Two thirds of airlines have set quantified emissions targets, a larger share than average. Some other airlines have set fuel efficiency targets instead; these are not included here, but we do take them into account in our Carbon Performance assessment. Half of the airlines disclose some form of long-term, quantified emissions target (either including or excluding carbon offsetting).

Compared with all companies in the TPI database, relatively few airlines have incorporated ESG issues into executive remuneration, climate risks and opportunities in company strategy, or undertake and disclose climate scenario planning.

At the date of assessment, no airline had disclosed an internal carbon price. However, a few airlines have done so in their latest recent CDP responses.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Number of companies scored as Yes (blue) and No (red)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L0</td>
<td>1. Acknowledge?</td>
</tr>
<tr>
<td>L1</td>
<td>2. Explicitly recognise as risk/opportunity?</td>
</tr>
<tr>
<td>L1</td>
<td>3. Policy commitment to act?</td>
</tr>
<tr>
<td>L2</td>
<td>4. Emissions targets?</td>
</tr>
<tr>
<td>L2</td>
<td>5. Disclosed Scope 1&amp;2 emissions?</td>
</tr>
<tr>
<td>L3</td>
<td>6. Board responsibility?</td>
</tr>
<tr>
<td>L3</td>
<td>7. Quantitative emissions targets?</td>
</tr>
<tr>
<td>L3</td>
<td>8. Disclosed any Scope 3 emissions?</td>
</tr>
<tr>
<td>L3</td>
<td>9. Had operational emissions verified?</td>
</tr>
<tr>
<td>L3</td>
<td>10. Support domestic and intl. mitigation?</td>
</tr>
<tr>
<td>L3</td>
<td>11. Process to manage climate risks?</td>
</tr>
<tr>
<td>L3</td>
<td>12. Disclosed use of product emissions?</td>
</tr>
<tr>
<td>L4</td>
<td>13. Long-term emissions targets?</td>
</tr>
<tr>
<td>L4</td>
<td>14. Incorporated ESG into executive remuneration?</td>
</tr>
<tr>
<td>L4</td>
<td>15. Climate risks/opportunities in strategy?</td>
</tr>
<tr>
<td>L4</td>
<td>16. Undertakes climate scenario planning?</td>
</tr>
<tr>
<td>L4</td>
<td>17. Discloses an internal price of carbon?</td>
</tr>
</tbody>
</table>
Results: Carbon Performance of Airlines
We benchmark airlines on the basis of CO₂ emissions intensity. We cannot yet account for non-CO₂ effects on warming.

Most large publicly owned airlines have a CO₂ emissions intensity that is below the TPI benchmarks at present. Up to 2020, this is set to remain the case. Three quarters of airlines have an emissions or fuel efficiency target for 2020 and most of those airlines will have a CO₂ emissions intensity below the benchmarks in 2020.

In the longer term, none of the 20 airlines provides a 2030 target that would clearly reduce its emissions from flight operations. Instead, many airlines use an industry-wide long-term target based on net emissions reductions, which relies on the purchase of carbon offsets from other sectors.

Top Carbon Performers are Easyjet and Alaska Air. Easyjet is the only airline with a CO₂ emissions intensity below the TPI 2C benchmarks after 2020. Wizz Air discloses a very low emissions intensity, but we are currently unable to verify it.

<table>
<thead>
<tr>
<th>Company</th>
<th>Emissions intensity of flight operations (gCO₂/passenger kilometre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air China</td>
<td>111</td>
</tr>
<tr>
<td>Alaska Air</td>
<td>94</td>
</tr>
<tr>
<td>American Airlines</td>
<td>119</td>
</tr>
<tr>
<td>ANA Group</td>
<td>137</td>
</tr>
<tr>
<td>China Southern</td>
<td>114</td>
</tr>
<tr>
<td>Delta</td>
<td>118</td>
</tr>
<tr>
<td>Easyjet</td>
<td>82</td>
</tr>
<tr>
<td>IAG</td>
<td>125</td>
</tr>
<tr>
<td>IndiGo</td>
<td></td>
</tr>
<tr>
<td>Japan Airlines</td>
<td>140</td>
</tr>
<tr>
<td>Jetblue</td>
<td>101</td>
</tr>
<tr>
<td>Korean Air</td>
<td>188</td>
</tr>
<tr>
<td>LATAM</td>
<td>108</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>127</td>
</tr>
<tr>
<td>Qantas</td>
<td>104</td>
</tr>
<tr>
<td>Singapore Airlines</td>
<td>138</td>
</tr>
<tr>
<td>Southwest</td>
<td>102</td>
</tr>
<tr>
<td>Turkish Airlines</td>
<td>107</td>
</tr>
<tr>
<td>United</td>
<td>107</td>
</tr>
<tr>
<td>Wizz Air</td>
<td></td>
</tr>
<tr>
<td>2D (High Efficiency)</td>
<td>129</td>
</tr>
<tr>
<td>2D (Shift-Improve)</td>
<td>129</td>
</tr>
<tr>
<td>International Pledges</td>
<td>129</td>
</tr>
</tbody>
</table>

Key

- Aligned with 2C (High Efficiency)
- Aligned with 2C (Shift-Improve)
- Aligned with Internat'l Pledges
- Not aligned
### Key factors affecting flight emissions intensity

<table>
<thead>
<tr>
<th>Factor</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of fleet</td>
<td>Fuel efficiency of new commercial jet aircraft improved by around 10% between 2000 and 2014 (ICCT, 2015). Airlines that have invested in newer aircraft will have lower carbon emissions intensities than airlines with older fleets (other things equal).</td>
</tr>
<tr>
<td>Aircraft seat density/passenger load factor</td>
<td>The greater the number of passengers transported on a flight, the lower will be the fuel burn and carbon emissions per passenger kilometre. Thus airlines with a high proportion of premium class seating or low passenger load factors will have poorer Carbon Performance than average. In contrast, low-cost carriers tend to have lower emissions intensity than full-service airlines.</td>
</tr>
<tr>
<td>Freight transported</td>
<td>TPI’s measure of airline activity is passenger kilometres, which effectively allocates all carbon emissions to passenger transport rather than freight. Consequently, in our analysis, airlines with larger-than-average freight businesses will have relatively higher carbon intensities.</td>
</tr>
<tr>
<td>Mix of long haul and short haul operations</td>
<td>Fuel burn per passenger kilometre is determined by distance flown. The most fuel-intensive stages of a flight are landing and take-off. Thus, while the total fuel burn will be greater for long haul than for short haul, the fuel (and emissions) per passenger kilometre will be greater for short haul. As our analysis is based on an airline’s total flight emissions per passenger kilometre, airlines with relatively more short haul operations may have relatively higher CO₂ intensities.</td>
</tr>
</tbody>
</table>
Airline sector intensity benchmarks

For any sector, emissions intensity = \( \frac{\text{Emissions}}{\text{Activity}} \)

**Emissions**

For the airline sector, the measure of emissions used by TPI is ‘Tank-to-Wheel’ (TTW) CO\(_2\) emissions from jet fuel combustion.

TTW emissions represent the majority (around 84%) of lifecycle emissions from jet fuel.

We calculate the sector’s TTW emissions using IEA figures for final energy consumption from jet fuel and then applying the standard combustion emissions factor from the Intergovernmental Panel on Climate Change (IPCC) for jet kerosene.

In line with UN guidelines and industry practice, we assume TTW emissions from low-carbon alternative fuels (e.g. biofuels) are zero; that is, we assume that negative emissions upstream offset the emissions from combustion. In any case, these fuels represent only a small proportion of airlines’ energy demand until 2030.

**Activity**

For airlines, the measure of transport activity used by TPI is passenger kilometres – the number of passengers multiplied by the distance flown (PKs).

This is a widely used metric in the sector and the IEA’s transport model also provides projections that can be used for benchmarking.

Passenger transport contributes around 90% of the total carbon emissions of the airline sector.

**Airline sector emissions intensity**

Thus, the measure of emissions intensity used for airlines is:

\( \text{Tank to Wheel CO2 emissions (from conventional jet fuel) in grams per passenger kilometre} \)
Deriving each airline’s emissions intensities

Current and historic intensities

TPI calculates recent and current emissions intensities for an airline using its reported TTW emissions and passenger kilometres.

Airlines generally report their TTW (or ‘flight only’) emissions separately within Scope 1. These jet fuel emissions represent around 98% of an airline’s total Scope 1 and 2 emissions.

Future intensities

Most airlines have adopted an industry-wide target to improve fuel efficiency by an average of 1.5% per year to 2020. Where necessary, TPI uses this as a proxy for a carbon intensity target, applying the percentage to an airline’s current emissions intensity, in order to estimate an intensity target for 2020.
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