Transition Pathway Initiative

TPI Explainer:

Interpreting TPI's emissions scenarios and benchmarks

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This is a TPI explainer, which is meant to help investors to better understand our Carbon Performance methodology and company assessments. In particular, it answers the following questions: How can an absolute emissions budget be translated into emissions intensity benchmarks? How do we measure company performance against those benchmarks?

The science of climate change tells us that global temperature increases in proportion to cumulative absolute emissions of CO2. This is why meeting the Paris Agreement temperature goals of well below 2°C, preferably 1.5°C, requires staying within an absolute CO2 emissions budget.

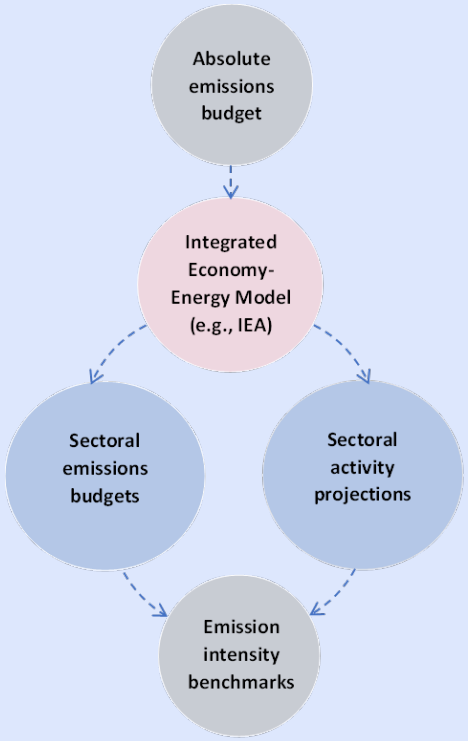
However, TPI measures company Carbon Performance based on emissions intensity, i.e. company emissions divided by an appropriate measure of company activity, such as megawatt hours of electricity generated or tons of crude steel produced. The main reason for normalising company emissions per unit of activity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

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

The Sectoral Decarbonisation Approach

The first part of the question – how can an absolute emissions budget be translated into emissions intensity benchmarks – has been addressed by the Sectoral Decarbonisation Approach (SDA), developed by CDP, WWF and the World Resources Institute in 2015. Crucially, the SDA starts with an absolute emissions budget. Using an integrated economy–energy model (usually from the International Energy Agency [IEA]), the SDA then divides the absolute, economy-wide emissions budget into sectoral budgets, e.g. for electricity and steel. From the same model, the SDA takes estimates of sectoral activity, e.g. megawatt hours of electricity generated and tons of crude steel produced, and then divides emissions by activity to obtain sectoral emissions intensity scenarios or benchmarks (see Figure 1). It is important to use a consistent estimate of sectoral activity, because the low-carbon transition implies changes not only to emissions but also to activity, e.g. modal shifts in transport.

Figure 1. Summary of the Sectoral Decarbonisation Approach



Assessing company pathways against the benchmarks

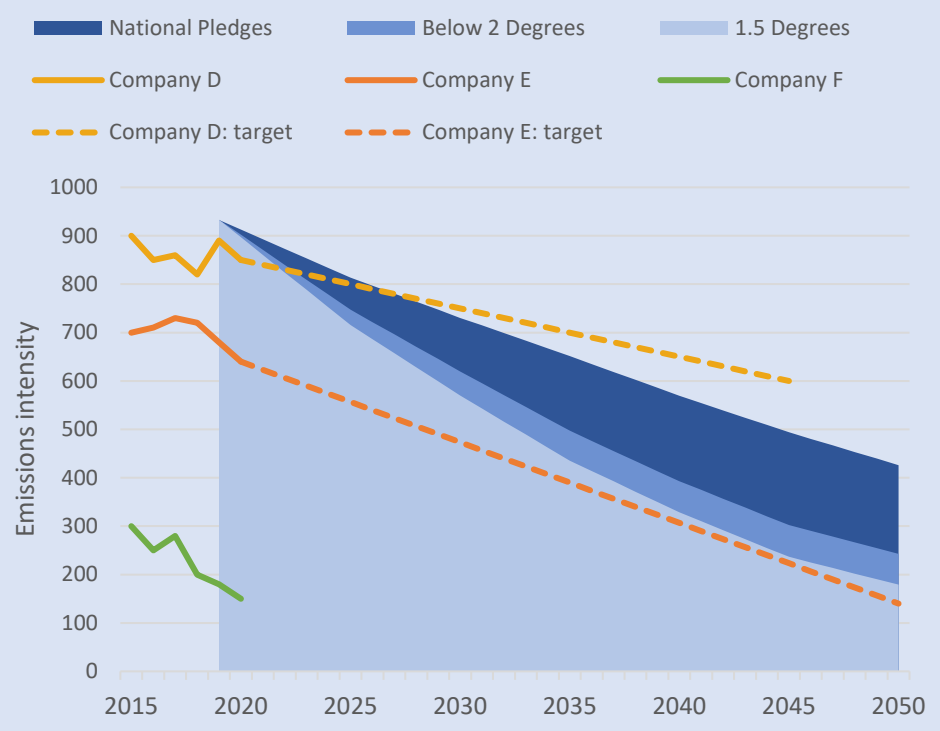
The second part of the question requires good judgement on the part of investors. If a company's emissions reduction pathway always lies above the Paris Agreement benchmarks, then clearly it cannot be described as Paris-aligned, and vice versa for a company whose pathway always lies below them. The difficult cases are those that lie in between (see Figure 2).

What happens if a company starts above the benchmarks but has set emissions reduction targets that would eventually bring it below the benchmarks? This is common because most companies are starting above the benchmarks, unless their business model gives them a cleaner starting point than their industry peers (something that occurs at times in shipping and steel, for instance). Unfortunately, there is no exact science here, because what is required of each individual company depends on what the other companies in the sector are doing and on how market shares are changing, something that cannot be systematically forecast. Since it is cumulative emissions that matter, the company's entire emissions pathway from today to 2050 matters, not just the endpoint. If a company is above the benchmarks until just before 2050 (i.e. backloading its emissions reduction efforts), it will have used up a disproportionate share of the sectoral emissions budget and the sector as a whole will be over-budget, unless other companies compensate. There is evidence of backloading in autos, cement and electricity, as discussed above.

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

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

Figure 2. Stylised representation of companies aligning with the different benchmarks at different stages, 2015–2050



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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