

In brief: The milestones to decarbonize aviation

The great decoupling

In a recent article entitled “The great decoupling” the European Environment Agency (EEA) notes: “Technological breakthroughs and social innovations have enabled an extraordinary decoupling of GDP growth from adverse environmental impacts.” Importantly, the concept of decoupling does not sacrifice one goal—essential climate protection—in favor of another, prosperity and social cohesion. This makes decoupling particularly valuable for aviation, which is hard to abate because of its dependence on fossil fuels but at the same time indispensable to global prosperity and social cohesion.

The financial community recognizes its prominent role in assisting effective sustainability strategies in aviation. Airlines, aircraft and production facilities for alternative fuels as well as new technologies and renewable energies have to be financed. In lease and loan contracts clear sustainable development criteria (“covenants”) are becoming increasingly indispensable to complement financial covenants.

The principle of milestones

The milestones concept bridges the gap between sustainability measurements and covenants. Milestones are independent of benchmarks (which are prone to adjustments). They are developed in three consecutive steps:

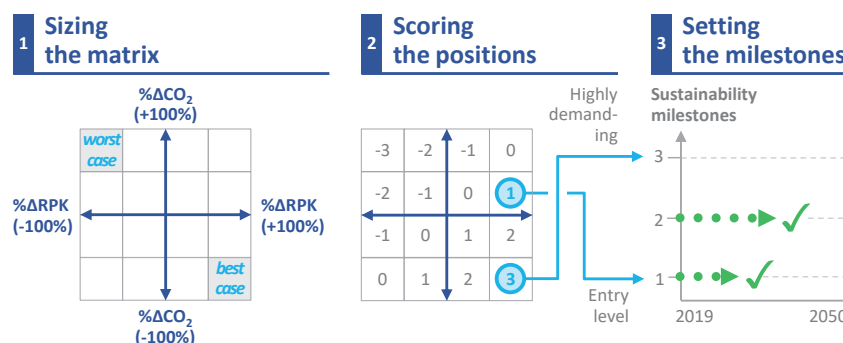


Figure 1: Left: Plotting percentage changes in CO₂ and RPK, relative to the base year 2019. Center: Converting positions in the coordinate system to a sustainability score. Right: Sustainability scores are used as increasingly demanding thresholds in a milestone system.

Step 1: Sizing the matrix

Following the concept of decoupling, CO₂ and capacity (RPK) percentage changes are plotted in a two-dimensional coordinate system, in which an airline's shrinkage or growth is shown on the horizontal axis and CO₂ increase and reduction on the vertical axis. The worst possible category would be the top left, the most attractive position is bottom right. While changes are measured relative to 2019 by default, earlier years than 2019 could be agreed upon at the request of individual airlines.

Step 2: Scoring the positions

The coordinate system is overlaid with a grid of categories, with each category assigned a value. Each category represents a specific progress—or regression—in terms of RPK and CO₂ development, measured as a percentage change from 2019. Airlines whose CO₂ emissions are tightly coupled to capacity development are sorted on the diagonal from bottom left to top right, receiving a "0" as value. The values of the other categories are incremented by 1 the further to the right (capacity growth) or down (decarbonization) they lie. For positions to the left (contraction) or above (expansion of emissions), increasingly negative points are assigned accordingly. In this way, the "best case" category at the bottom right receives the highest value, and the "worst case" category at the top left receives the lowest score.

Step 3: Setting the milestones

There are limitations to using forecasts as a reference point in credit or loan contracts. The need to regularly adjust forecasts means that financing agreements must be renegotiated on a regular basis too. So, why not compensating potential flaws of unstable forecasts with just a few simple thresholds of decarbonization progress, some of which are easy to achieve, some moderately challenging, and others ambitious? And why not use the sustainability scores just described to define the thresholds? An entry-level score of 1, for example, requires no more than that CO₂ emissions grow less than capacity. This would not yet be decarbonization, but it would at least be a step forward compared to the tight coupling of CO₂ development to that of capacity. At the other end of the scale, if an airline receives 3 points in the conceptual example shown, it has obviously achieved the best possible combination of CO₂ reduction and capacity growth. It is then important for an airline to exceed as many of the thresholds as possible as early as possible in order to take full advantage of any incentives.

Relative and absolute decoupling

A division into only four steps on the CO₂ and four steps on the RPK axis is obviously insufficient to capture anything beyond the most significant developments. Thus, for progress to become visible, we suggest a matrix of 16 * 16 categories for the detection of even small steps in the right direction reliably and at an early stage.

The boxes colored white in Figure 2 represent situations in which CO₂ emissions worsen compared to capacity growth. Categories on the diagonal from lower left to upper right, marked as dark gray, denote situations in which CO₂ emissions are tightly coupled to capacity growth. These positions do not receive positive scores. The boxes marked light gray denote situations in which CO₂ emissions are still increasing, but at least the tight coupling to capacity growth has been broken. The categories colored blue indicate situations in which true decarbonization is taking place, i.e., a decrease in CO₂ emissions, regardless of how much the airline's capacity grows, or "absolute decarbonization".

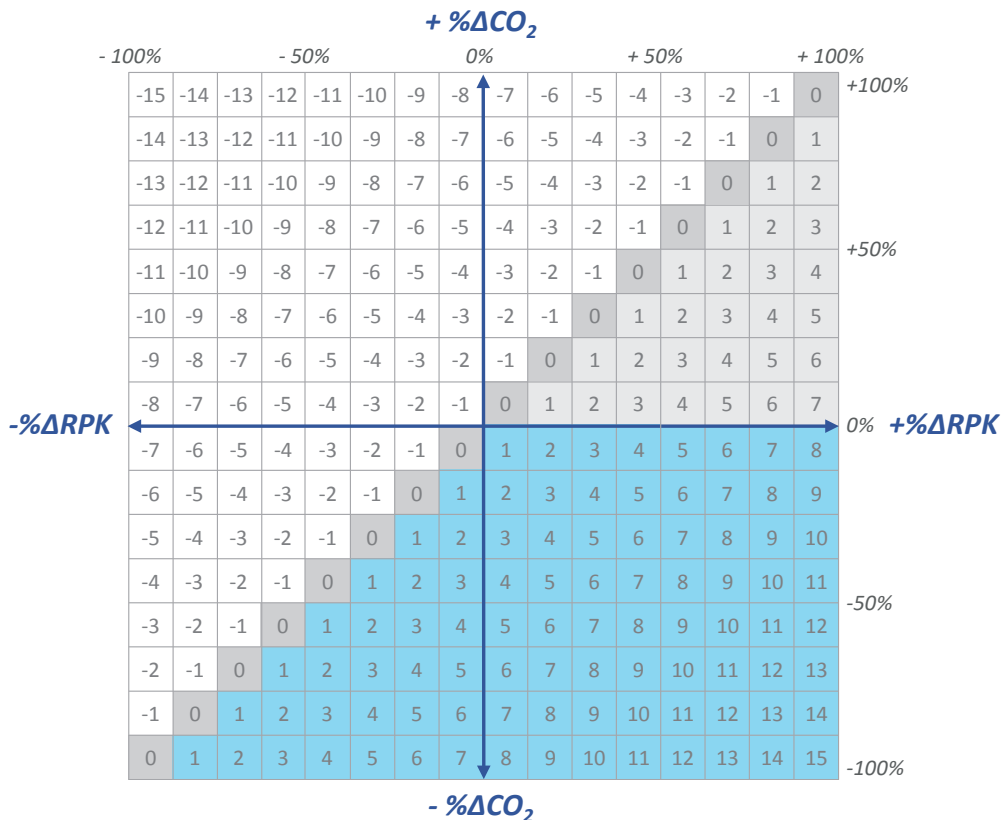


Figure 2: The conceptual 4*4 matrix on Fig 1 is expanded to 16*16 categories on each axis to measure smaller development steps. White: Not eligible for incentives. Dark gray: Tightly coupled, hence not eligible for incentives. Gray: Relative decoupling. Blue: Absolute decoupling.

Time based competition:

The earlier airlines accumulate points and the earlier they achieve absolute decoupling, the earlier and more permanent the incentives. The race to net zero is all about time advantages. And the incentive system must reward advantages in this time-based competition

- If sufficient technologies are not available in 2030 to enable at least initial steps toward absolute decoupling, the net zero target for 2050 will be hard to achieve. So, at the end of 2030, the points achieved through relative decoupling are to be frozen at their current levels. They will not be lost, but higher value points will only be awarded for absolute decoupling from then onward, i.e. actual CO₂ reductions relative to the underlying base year (e.g., 2019).
- The matrix presented in Figure 2 does reward growth, but only up to a maximum of 100%. Any growth beyond 100% relative to 2019 is treated the same as 100%. The intention is to build increasing pressure in the direction of sustainable growth, not growth for growth's sake.

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