REPORT

Off Track: Reckless expansion plans blow past European airports carbon limits

The case for rejecting airport expansion on climate and legal grounds

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Executive summary

Europe's airports cannot expand as currently planned if countries are to stay inside their national climate limits. We tested the announced expansion plans and traffic forecasts at 20 of Europe's biggest airports across 10 countries against a Paris-aligned 1.7°C carbon budget. The results are clear: all of them are set to overshoot, and clean aviation technology cannot close the gap.

Airlines and airports tell governments they can expand and fly more passengers, and still meet Europe's climate targets, on the promise that cleaner fuel and more efficient aircraft will cut enough emissions. Policymakers rarely see that promise tested against a hard limit. This report therefore attempts to do so. We did not measure each expansion against a distant 2050 net-zero target, which can make an airport appear compliant while its emissions increase. Instead, we defined a clear carbon budget to keep global warming within 1.7°C. A budget achieves something an annual target cannot, as it converts a volume of emissions into a date, and tells us the year the sector runs out of room to emit.

Every airport we tested overshoots its fair-share 1.7°C carbon budget, even after SAF uptake and more efficient aircraft are accounted for - a sign that technological advancement is not a panacea.

On current plans, each of these airports will overshoot its budget by two to three times, by 2050. Lisbon and Porto have the biggest overshoots, at 2.8 times the budget, followed by Dublin at 2.6. Most airports will have used up their entire carbon budget by the 2030s, which is decades ahead of the 2050 target. Málaga runs out in just eight years. To stay within budget, the airports facing the steepest challenge, Lisbon and Porto, would have to cut emissions by around 12% every year from now on, rather than expanding.

Increasing traffic volume cancels out any benefits from more efficient aircraft and cleaner fuel. No plausible improvement in fuel or engines can close the gap in time. Overall, planned expansions would add 225 million tonnes of CO_2 to today's emissions.

Among the results are four particularly worth highlighting. The United Kingdom (UK) has the largest absolute increase: cumulative extra emissions from a third Heathrow runway between 2035 and 2050 would be equivalent to a full year of emissions from Croatia's entire economy.

Ireland shows the biggest relative rise in emissions, at more than 65% a year in Dublin, as the country appears to be moving backwards on its decision about the expansion of the airport. It previously had a legal cap, but is now legislating to remove it while also writing in a clause to prevent it from ever returning.

Spain is carrying out the largest airport expansion programme, with work planned at 12 airports, with its four biggest airports already emitting twice their fair share.

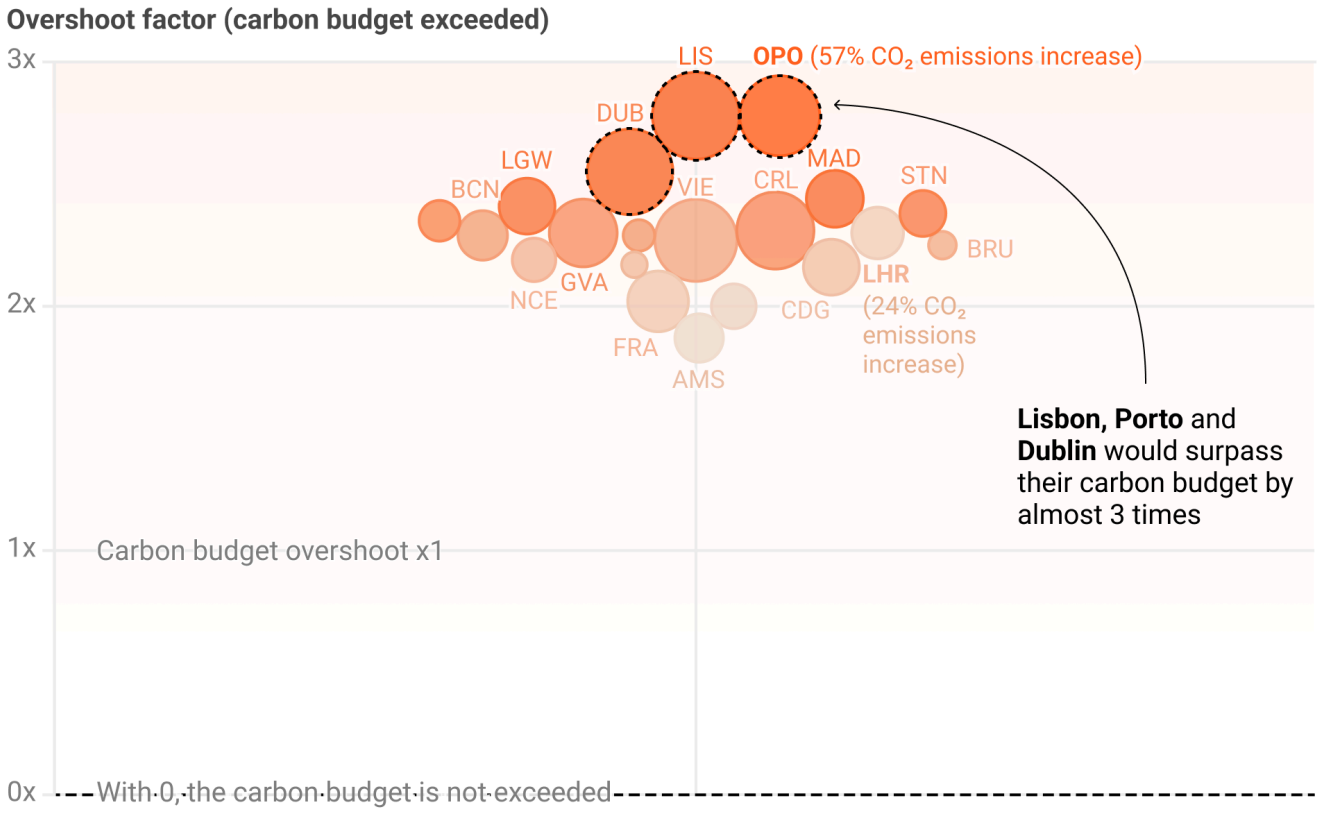
Set against its own economy, Portugal shows the biggest increase: an extra 18 million tonnes of CO_2 from a single new airport in Lisbon, which is equal to half a year of emissions from the entire Portuguese economy.

Planned airport expansions would push Lisbon, Porto and Dublin to nearly triple their carbon budgets

Ranked by overshoot, every planned airport expansion exceeds its carbon budget by between 1.9 and 2.8 times

Size of the circle: Increase in annual CO_2 emissions

Ranking of cities that surpass more or less their carbon budget 1º 20º



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

This issue extends beyond aviation. Since emissions come from a shared national budget, if one sector overspends, another must save. Every additional tonne that an airport uses above its share demands extra efforts from other sectors, such as industry, farming or heating. There is a growing legal risk too. Courts across Europe are now holding governments accountable for their climate obligations, and a government that approves airport expansion beyond budget exposes itself to legal action.

The economic case for expansion no longer holds either. Our previous study with the New Economics Foundation found that air connectivity drives economic growth in only 37% of European regions, mostly in Eastern Europe, while in a majority of regions, air transport growth appears instead to be a response to increasing GDP per capita. Where air tourism grows, it is local renters and low-income households, rather than visitors, who bear the cost through higher rent prices. The case for expansion rests on benefits the evidence no longer supports, while the costs to the climate, health and housing keep mounting.

Aviation's tax exemptions are exacerbating aviation's growth problem: untaxed fuel, VAT-exempt tickets and flights that are only marginally covered by the European carbon markets.

Governments do not need to invent a new methodology to fix this. Three of the countries in this report have already developed one. The United Kingdom and France show that a country can define a national aviation carbon budget or decarbonisation pathway that also covers international flights. The Netherlands goes even further, defining a national carbon ceiling for aviation with caps at the airport level. These decisions convert 2050 targets into binding, actionable limits that airports must comply with. The methodology is settled and there to be applied.

We recommend three actions.

01	**Governments should reject airport expansions that exceed the fair-share budget** and set a carbon budget for each airport that is compatible with the Paris Agreement.
02	**To keep traffic within budget, slot allocation and taxation measures should be used to reduce the number of flights that carry the most carbon for the least societal value, while ensuring that aviation is properly priced** through a fuel tax, a value-added tax on tickets, and full coverage under the ETS.
03	**Governments should redirect public money**, including from the European Investment Bank and state aid, **away from airport capacity and towards clean alternatives,** giving rail priority on every route where it can realistically replace a flight. Public money raised through these measures must stop funding the problem.

Section 1

Airport expansion is incompatible with Europe's carbon budgets

Europe's airports cannot expand as currently planned if countries want to stay within their national climate limits. This report shows why, testing each expansion against a fixed carbon budget rather than a distant net-zero target. Each country with airport expansion plans overshoots, and clean aviation technology cannot close the gap. So one question remains: do policy makers have credible plans to reduce aviation and national emissions whilst continuing to expand airports?

The claim under test

Airlines and airports tell governments they can expand and fly more passengers, and still meet Europe's climate targets. They base this on two key anticipated developments affecting the industry: the uptake of cleaner fuel and the use of more efficient aircraft. Build the runways and terminals, the argument goes, and technology will take care of the emissions.

Policymakers rarely see that promise tested against a hard limit. The aviation debate focuses on distant 2050 net-zero targets and annual goals. It seldom asks the tough question: how much carbon can this airport still emit within remaining national budgets, and does the expansion fit within that amount?

We seek to answer this question. This report measures major airport expansion plans and traffic forecasts in Europe against a fixed carbon budget. We test two claims. First, whether the announced growth fits within the budget. Second, whether cleaner fuel and better aircraft close the gap in time.

What a carbon budget is and why it settles the argument

The concept of a carbon budget is simple. The world can emit only so much carbon dioxide (CO_2) before it breaches a safe global temperature limit. That remaining amount is the budget. Once we spend it, it is gone.

A budget does something an annual target cannot. It converts a volume of emissions into a date. It tells us the year a country runs out of time to emit. A date carries more weight in a debate than a percentage target set decades away.

Each country and sector is responsible for a share of emissions. Therefore, every country takes responsibility for its share of the budget. Within that country, the aviation sector then gets its own share. This is the cascade shown from the global carbon budget to a single sector. It traces the full chain from the global total to a single domestic industry. It can even go as far as an airport.

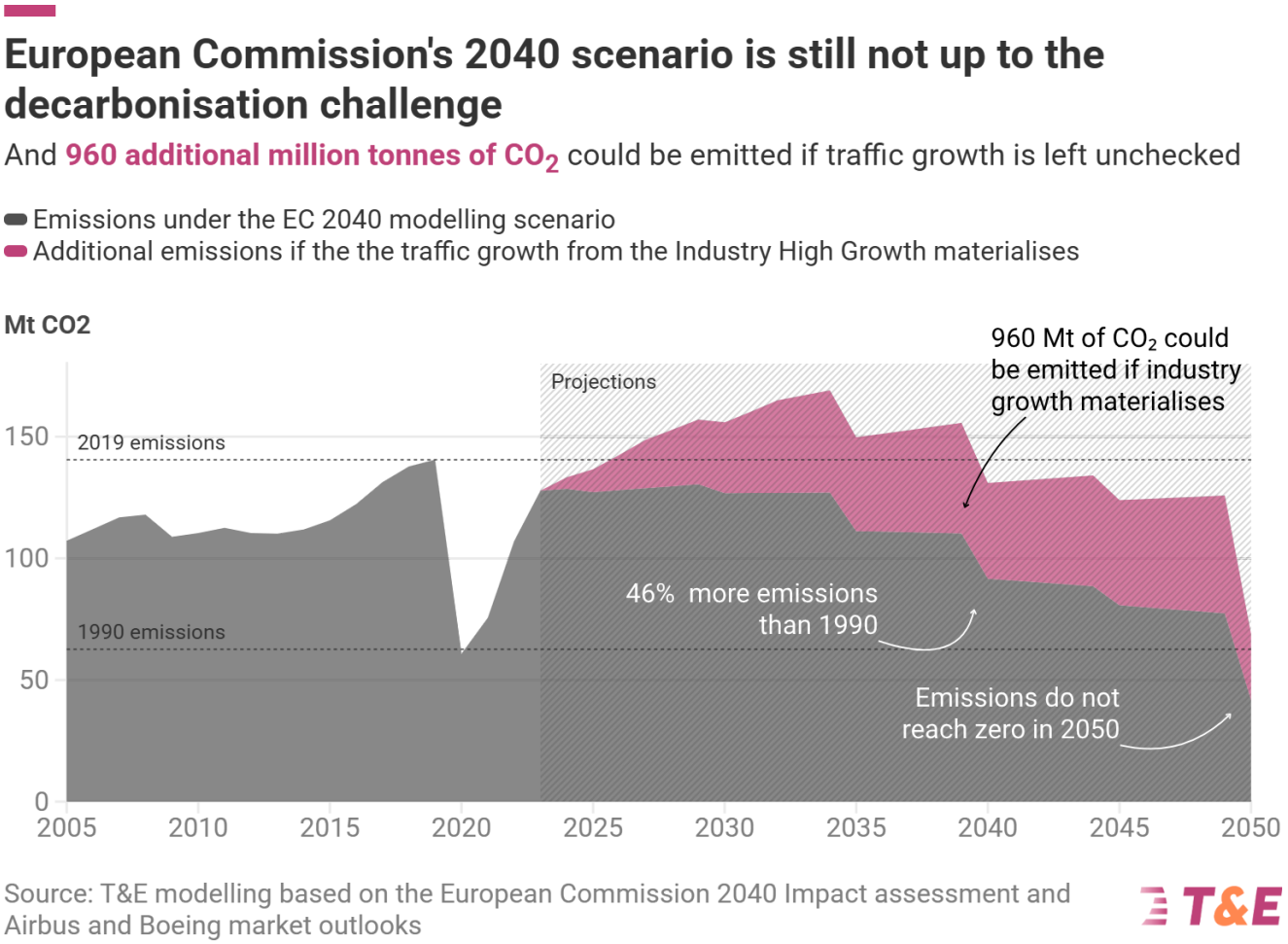
We report three numbers for each country-airport pair in our analysis. The overshoot factor shows by how much the airport exceeds its budget by 2050. A value above one means it emits more than the budget allows. The budget exhaustion year is when cumulative emissions surpass the budget. The required annual cut is the yearly reduction in emissions needed to keep the airport within its budget. Together, these factors answer three basic questions: by how much? by when? and how to align?

Airport	**Airport emissions 2025** ($Mt\ CO_2$)	**Airport carbon budget** ($Mt\ CO_2$)	**Overshoot factor**	**Budget exhaustion year**	**Annual reduction to stay in budget**
Porto	1.0	8	2.8	2034	12%
Lisbon	3.7	31	2.8	2034	12%
Dublin	3.0	27	2.6	2035	11%
Madrid	8.2	73	2.4	2035	11%
London Gatwick	4.0	42	2.4	2036	9%
London Stansted	2.1	22	2.4	2036	9%
Málaga	1.7	15	2.4	2034	11%
Charleroi	0.6	6	2.3	2035	10%
Geneva	1.4	13	2.3	2035	10%
Zurich	4.4	44	2.3	2035	10%
Barcelona	4.1	36	2.3	2035	11%
Vienna	2.8	29	2.3	2036	9%
Brussels	3.2	32	2.3	2035	10%
London Heathrow	18.7	194	2.3	2037	9.5%
Nice	0.9	10	2.2	2036	9%
Palma de Mallorca	1.5	14	2.2	2035	11%
Paris-Charles de Gaulle	12.6	133	2.2	2036	9%
Frankfurt	12.3	147	2.0	2037	8%
Munich	4.7	56	2.0	2037	8%
Amsterdam	10.7	123	1.9	2037	9%

What we already know

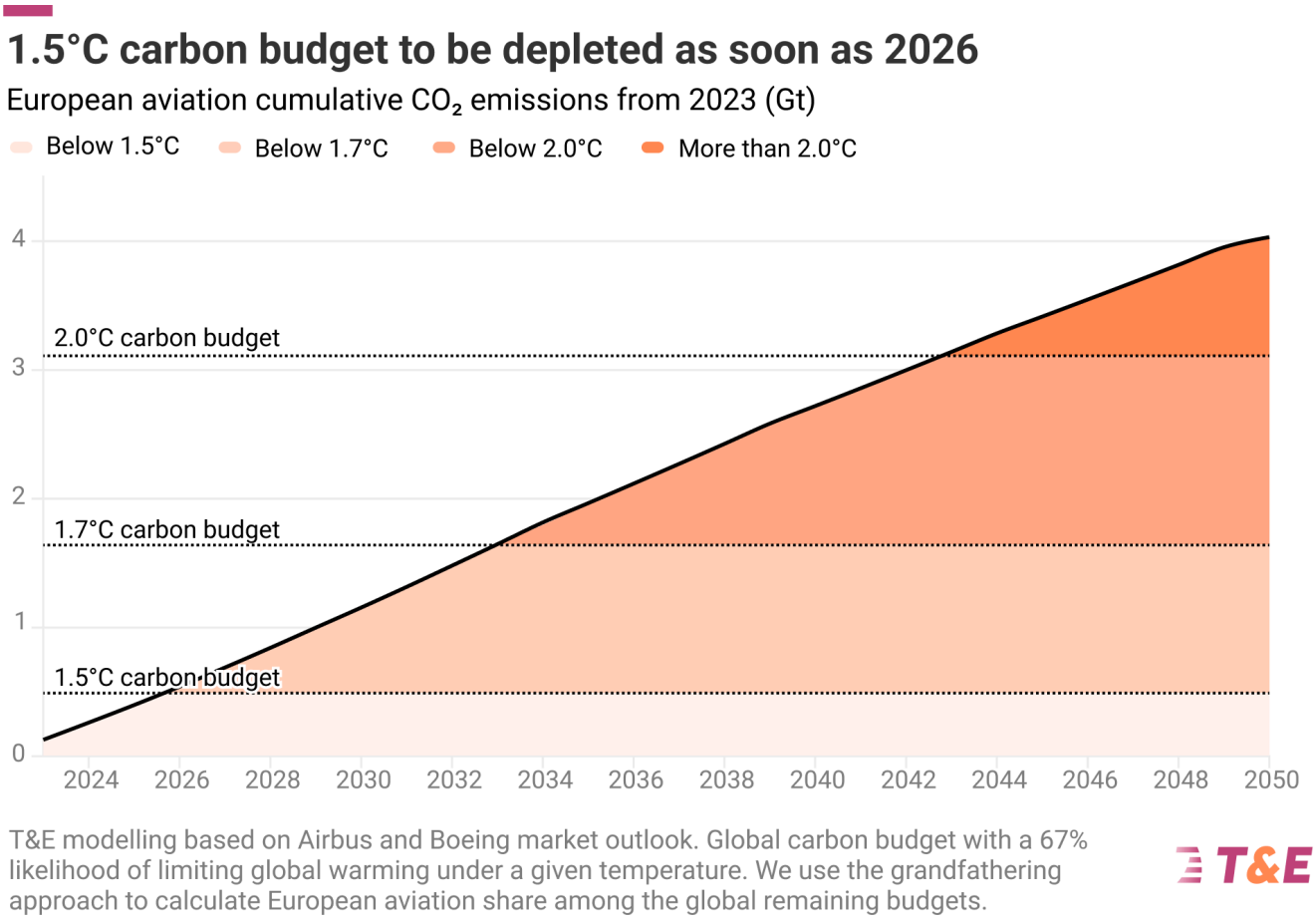
Air transport has an emissions problem. Today, Europe produces 24% of the world's airport CO_2 and is home to four of the twenty highest-emitting cities as reported in our Airport Tracker. For example, London ranks worst on every pollutant measured, from CO_2 to NOx to fine particles. The same flights that break the carbon budget also pollute the air and cause noise, disturbing people who live nearby.

Looking beyond, the aviation sector plans to double passenger numbers between 2019 and 2050. This rapid growth raises serious concerns about the sector's growing energy demands and climate impact.



Our Down to Earth analysis revealed that growth cancels out the sector's own decarbonisation plans. Aircraft leaving European airports will burn nearly 60% more fuel in 2050 than in 2019, because rising traffic outruns every efficiency gain. Even with the ReFuelEU sustainable aviation fuel (SAF) mandates, emissions in 2049 will be less than 3% below their 2019 level. On current growth plans, European aviation is set to exhaust its 1.5°C carbon budget this year and its 1.7°C budget by 2033.

These dates show that **European aviation will exhaust its carbon budget within years, not decades**. Sustainable fuels alone cannot reduce emissions fast enough, because genuinely sustainable feedstocks do not exist in the volumes the sector needs.

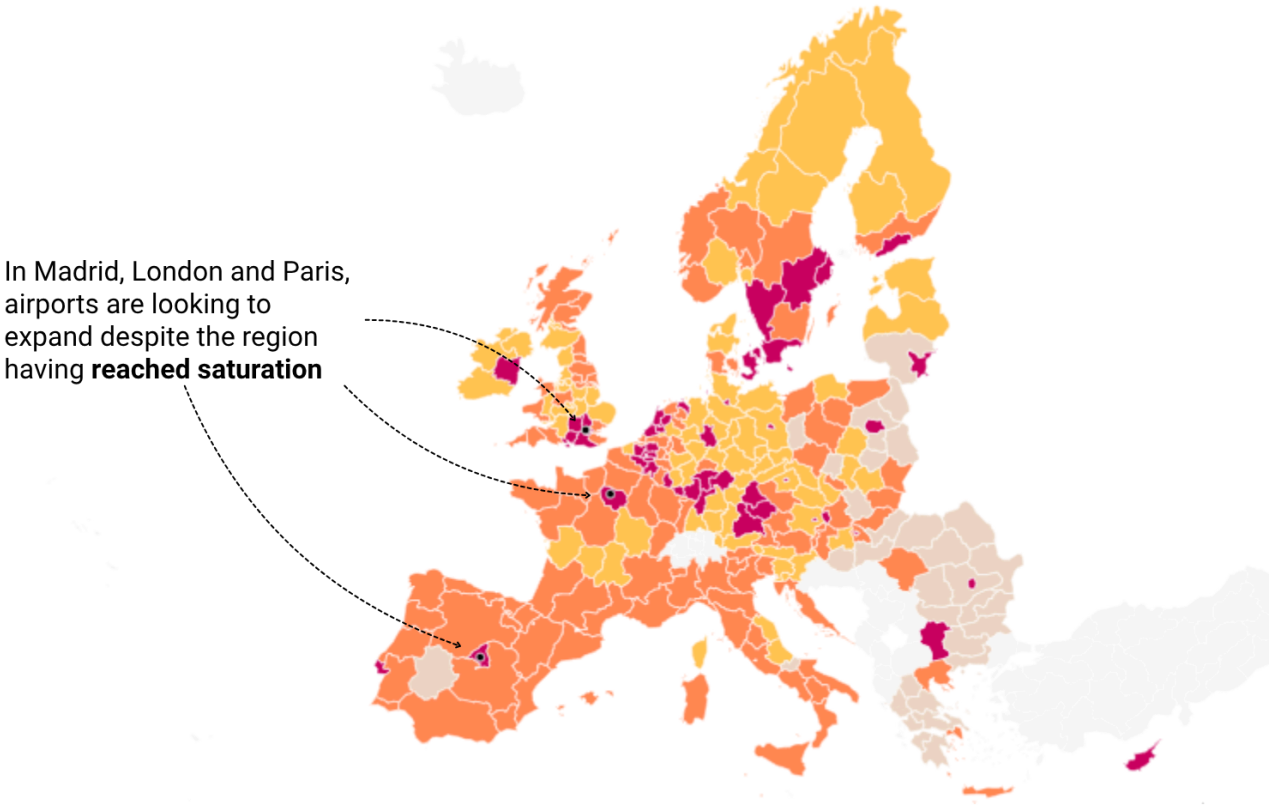


T&E modelling based on Airbus and Boeing market outlook. Global carbon budget with a 67% likelihood of limiting global warming under a given temperature. We use the grandfathering approach to calculate European aviation share among the global remaining budgets.

At the same time, **the claim that more flights mean more prosperity no longer holds**. The industry presents expansions as economic gains and plays down what it costs the climate. A recent New Economics Foundation (NEF) study, commissioned by T&E, found that air connectivity drives economic growth in only 37% of European regions, mostly in Eastern Europe. In a majority of regions, air transport growth appears instead to be a response to increasing GDP per capita. Across much of northern and western Europe, business travel has reached saturation, and rising incomes now drive travel growth rather than the other way round.

Air passenger transport - economy relationship across European regions

- Cluster 1: Business travel demand, lower income
- Cluster 2: Tourism-dependent. Benefits undermined by declines in quality tourism*
- Cluster 3: Low business travel demand, high outbound tourism
- Cluster 4: High income / connectivity, facing saturation



Source: New Economic Foundation, The Economics of Air Transport in Europe • NUTS 2016
Tourism value could be improved via land transport, longer stays and local accommodation, rather than quantity of air arrivals

Another important consideration is who benefits from and who pays for airport and traffic growth plans. The second part of the study shows that air tourism growth transfers wealth to property and capital owners. It pushes up rents for low-income households and diverts investment away from productive economic sectors. The ones that actually create jobs and economic growth. The report singles out Ireland and Spain, where the Dublin and Barcelona expansions stand to make housing pressure worse.

We are in a context where major airport expansions are underway or have been announced or approved in large European cities such as Frankfurt, Paris, Dublin, Brussels, Lisbon, Madrid and London. **The expansion case relies on benefits that the evidence no longer supports, while the costs to the climate, health and housing keep mounting.**

This study scrutinises assumptions underpinning policy decisions on airport expansion.

What this report adds

The missing piece is airport-level specificity. The previous work addresses the sector as a whole. This report breaks it down further, examining individual countries and airports against their actual expansion pipelines rather than a generalised sector average.

Across 10 countries, the busiest airports plan to expand past their carbon budgets

Cumulative extra CO_2 emissions 4 Mt 40 Mt

Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks

Our scope is 20 airports across 10 countries. Seven of those countries have live expansion projects. These include the United Kingdom, France, the Netherlands, Spain, Portugal, Belgium, Ireland. In the other three, no headline project is planned, yet sustained traffic growth alone is enough to exceed the budget. These are Germany, Switzerland and Austria. This contrast highlights the fact that the problem extends more broadly to projected capacity, not just the infrastructure.

We divide the aviation budget between countries using a 'grandfathering' approach, whereby each country receives a share based on how much it flew in the past. This system rewards the countries we study, all of which fly more than their corresponding share of population. We have chosen this methodology deliberately. If expansion exceeds this generous budget, the finding still holds under the industry's most favourable accounting. Alongside it we show a population-share split, which gives everyone an equal claim. The gap between the two reveals the question of fairness.

The idea that Europe can expand its airports while meeting its climate targets can be tested. The chapters that follow show where this promise falls short, by how much, and what governments can do instead.

Section 2

The expansion pipeline, airport by airport

We tested the busiest airports in ten European countries against a Paris-aligned carbon budget. The results are clear: all of them will overshoot. The difference lies in how much the announced expansion adds to the budget on top of today's capacity, and how quickly the budget is depleted. This section sets out, for each country, the extra emissions each expansion would create and the measure that would stop it.

Each section that follows tests one country's airports against its national carbon budget. We start from the airport's fair share of a Paris-aligned carbon allocation, set to limit global warming to 1.7°C with a 67% probability. A 1.7°C budget is more generous than a 1.5°C one, so the exhaustion years fall later here than under stricter models. Even so, the budget still runs out well before 2050.

The budgets in this report include international flights. This is not (only) a modelling choice. It reflects recent legislative trends. The UK has already legislated for it: under the Climate Change Act 2008 (International Aviation and International Shipping) Regulations 2026, the UK's share of international aviation and shipping emissions will count as domestic emissions from the 2033-2037 carbon budget period onwards. Therefore, what airlines emit when taking off from Heathrow is now Britain's responsibility.

In France, under the Code de l'environnement as modified by the Loi n° 2019-1147 relative à l'énergie et au climat, international aviation and shipping is subject to a specific indicative carbon budget in the Strategie Nationale Bas Carbone (SNBC 3) as of the current 2024-2028 period. Other governments will have to follow, both because legal analysis has shown that all aviation emissions are included in the Paris Agreement - and therefore must be reflected in Nationally Determined Contributions (NDCs) -, and because a budget that ignores international flights is clearly not representative of the true climate cost of aviation.

Throughout this section, we only count CO_2 emissions. Aviation also contributes to climate warming through non-CO_2 warming effects such as contrails and nitrogen oxides. These effects are known to more than double aviation's contribution to global warming. These are not modelled here. Including them would reduce every budget even further, so each overshoot reported can be seen as lower bound estimates.

We then project emissions under three scenarios up to 2050. The first scenario keeps capacity where it is today. The second adds the announced expansion. The difference between the two scenarios represents the additional emissions that the expansion would generate, and this is the most important figure for the decisions that governments face now. A third scenario allows demand to grow without any capacity limits, on the basis that operational efficiency (larger

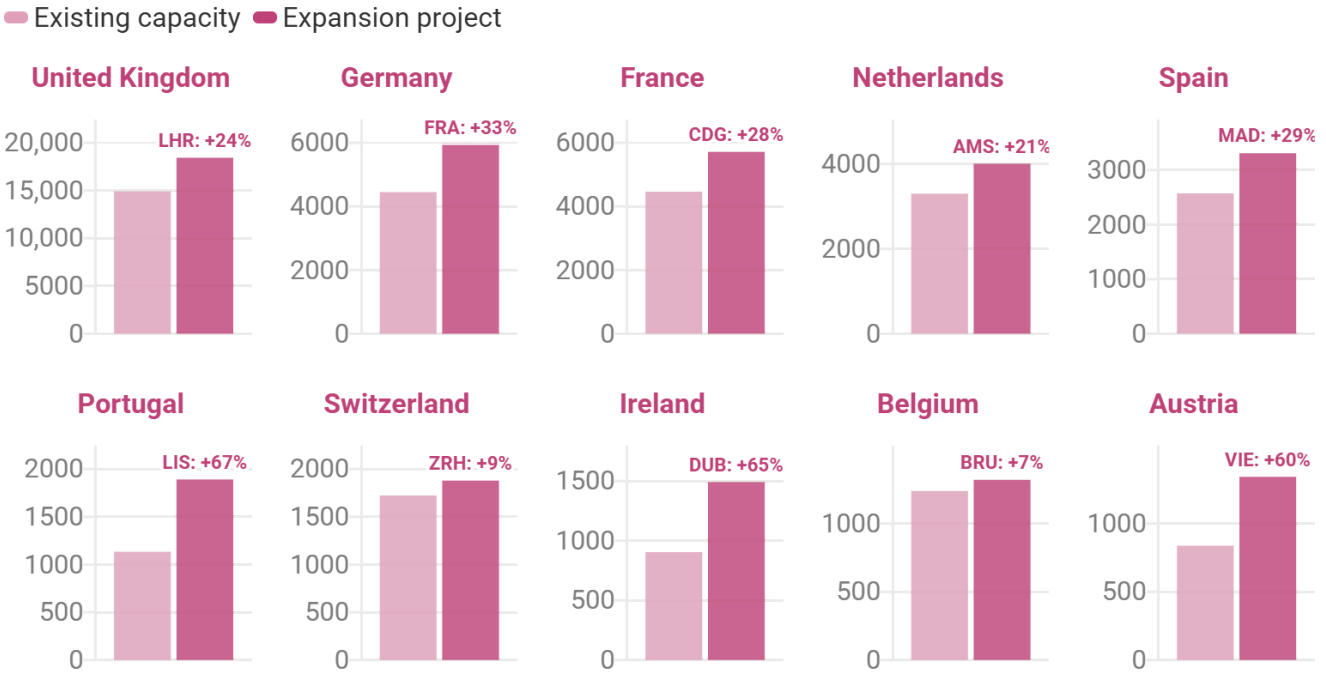
aircraft and more efficient terminals) and future airport expansion plans will be able to cope with the demand. We only report this scenario where a country is dismantling its limits rather than raising them, as in the case of Ireland.

We report the results as a series of numbers. The first is the additional CO_2 the expansion adds on top of today's capacity, as this is the cost of the decision in front of governments. The second is the overshoot factor, which measures how much more than its fair share the airport will emit by 2050. The third is the budget depletion year. We also give the annual cut needed to stay within budget. This measures how fast emissions would have to fall, every year from now on in order to stay within the budget. The decarbonisation path rewards early action: the longer a country waits, and the more it expands, the wider the gap it opens, and the steeper and costlier the cuts it will have to make later.

All projections assume cleaner fuel and more efficient aircraft, in line with the ReFuelEU SAF mandates in the EU and the UK power-to-liquid (PtL) mandate. We apply the same energy efficiency improvements as those in the European Commission's impact assessment on Europe's 2040 climate target to all scenarios. So where an airport overshoots, it does so after technology has already been accounted for.

By 2050, expansion adds up to ⅔ more CO_2 each year on top of the current airport emissions

In 14 of 20 airports, capacity expansion plans add a fifth to two-thirds more CO_2 in 2050



Source: T&E modelling on OAG, Eurocontrol, Eurostat, UK CAA, DfT HENPS, Airbus/Boeing market outlooks

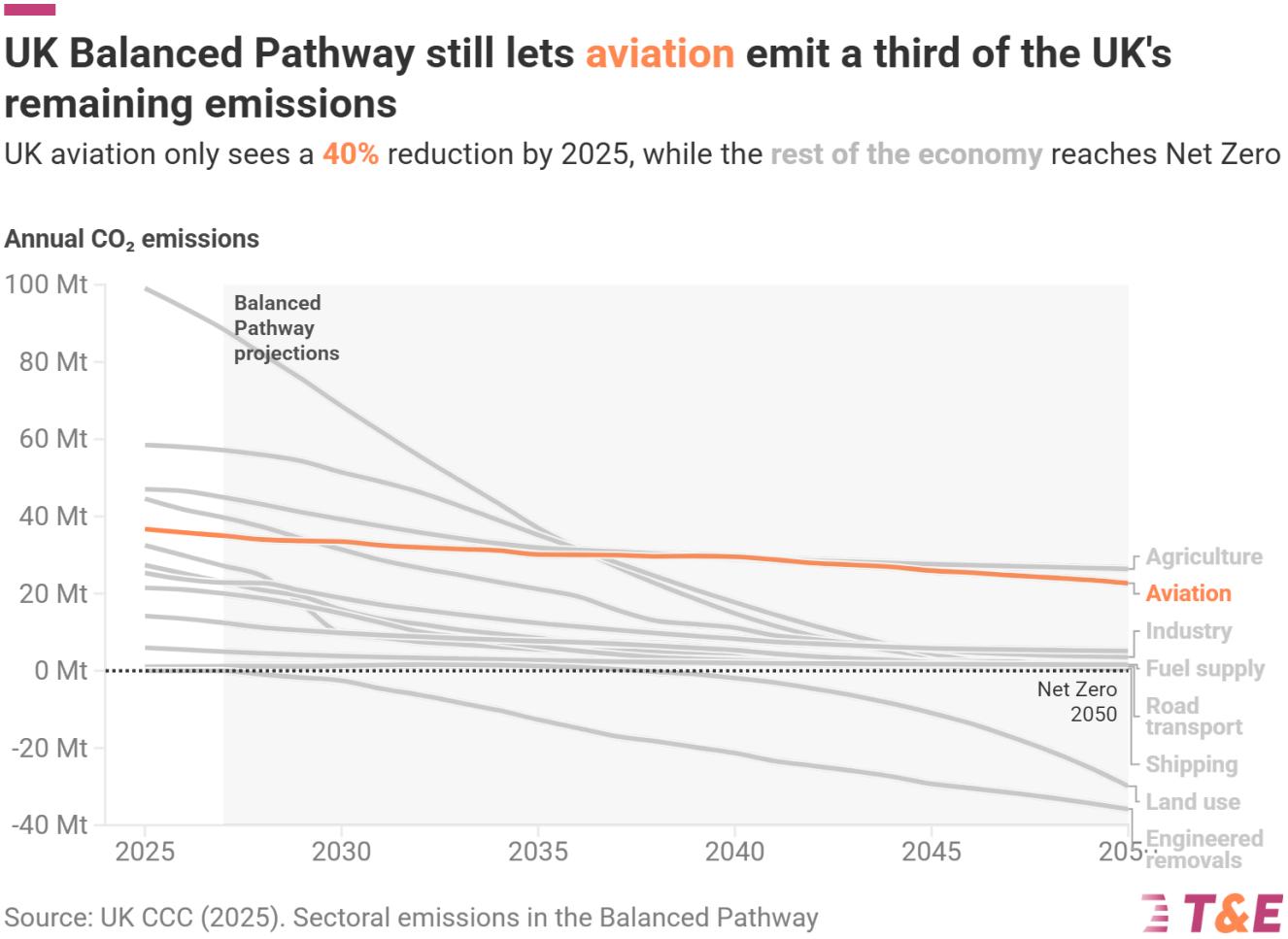
United Kingdom: what about the Balanced Pathway?

Britain has the most detailed aviation carbon budget in Europe, but its three busiest London airports will breach it.

In the UK, the Climate Change Act (2008) sets the framework for domestic action to address climate change mitigation and adaptation, requiring the government to propose regular, legally binding milestones on the way to achieving net zero greenhouse gas emissions. The Climate Change Committee publishes carbon budgets for the entire economy and outlines, for each sector, how far emissions must fall in the Balanced Pathway.

For aviation, the objective is less ambitious than for other sectors. In the sixth and seventh carbon budgets, in-sector emissions for aviation are not projected to reach zero in 2050: the Balanced Pathway takes every other sector close to net zero by 2050 yet still lets aviation emit over a third of the emissions the UK has left. The remaining emissions are compensated by carbon removals (still at an early stage of proven effectiveness), and land carbon sinks.

Still, this framework provides the country with a clear domestic objective. Yet London's airports are set to cross it.



Heathrow is the largest, busiest airport in the UK and in Europe. It handled about 84.5 million passengers in 2025 across 476,000 movements. Now runs at 99% of its runway capacity against a legal cap of 480,000 movements a year. The cap, operational since 2008, was established by a

Terminal 5 planning condition to manage the seasonal scheduling process. The government now wants a third runway open by 2035. That plan lifts Heathrow to 756,000 flights (+57%) and 150 million passengers a year by the mid-2050s with phased capacity increases.

Gatwick flew 42.8 million passengers and approximately 280,000 flights in 2025. In September 2025, the Secretary of State for Transport approved the northern runway scheme. This project will enable the second runway to become operational; currently, it is only used as a taxiway when the main runway is out of use. This will enable the airport to handle 80 million passengers and around 389,000 flights per year by the late 2030s, with dual-runway flights beginning in 2030 as per the current schedule.

In 2025, Stansted surpassed 30 million passengers for the first time. It already has planning permission for 43 million passengers per year, and the local council has approved an increase to between 48 and 51 million by 2040. Although there is no second runway, larger aircraft can carry more passengers and fuel on the same runway, according to Manchester Airports Group, the site's owner.

We estimate that these three airports accounted for almost three-quarters, or 72%, of the country's total departing emissions in 2025.

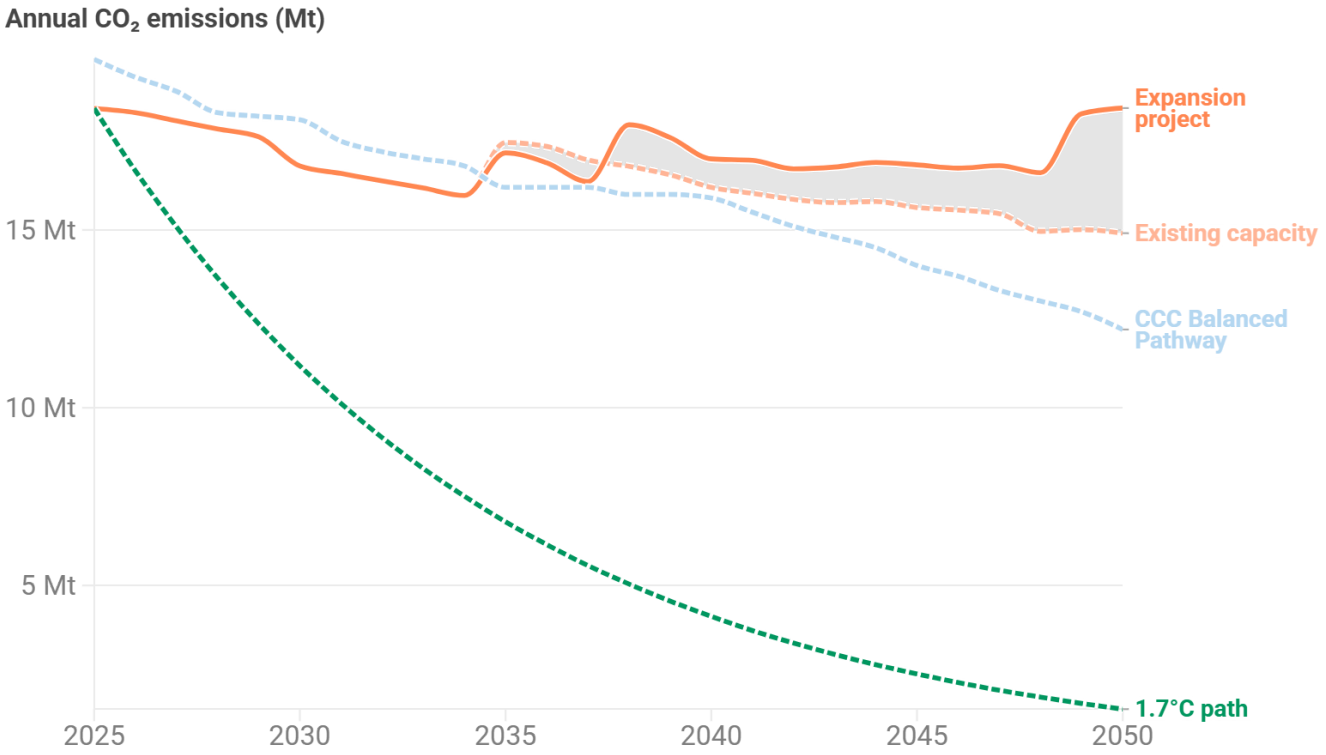
According to data from the UK Department for Transport's Heathrow Expansion National Policy Statement, a third runway at Heathrow would increase the airport's annual emissions by 24% by 2050. This would produce cumulative emissions of 17.7 million tonnes of CO_2 on top of the emissions already produced by current capacity, within just 15 years after the completion of the project. This is a substantial deviation, especially against the backdrop of the Climate Change Committee's net zero target.

To put these numbers in perspective, with the expansion, annual emissions would reach almost 4 million additional tonnes of CO_2 every year by 2050, on the scale of a small country such as Albania. London Heathrow's cumulative total of about 18 Mt during 2035-2050 is comparable to a full year of emissions from a Member State like Croatia.

This expansion will take Heathrow twice as far beyond its fair-share budget of 194 Mt. Likewise, Gatwick's northern runway and Stansted's higher-capacity plan will result in a third more annual emissions by 2050. By mid-century, both airports will have spent more than 2.5 times their estimated 1.7°C carbon budget. This reflects the ambition gap between a 1.7°C budget and the Balanced Pathway.

On the contrary, to stay inside budget, each London airport would have to cut emissions by about 9.5% every year, starting now. None of these airports are even close to that.

A third runway raises Heathrow's annual emissions by 24% by 2050

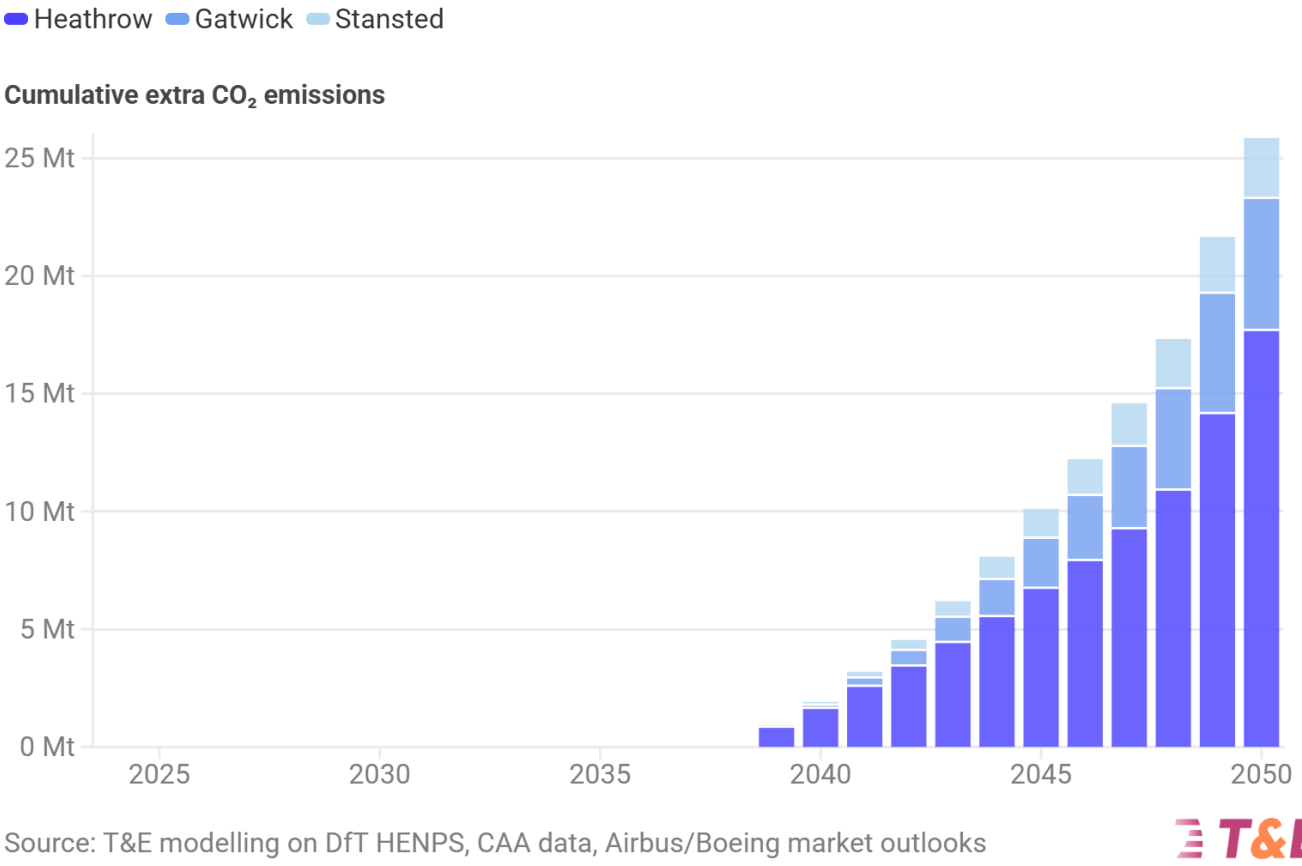


Source: T&E modelling on DfT HENPS, CAA data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

Today's traffic already exceeds these budgets, so expansion is a critical decision which governments can still refuse. **Approving every new runway widens an already too-wide gap and locks it in place for decades**.

The climate case does not stand alone here. London ranks worst in Europe for every pollutant measured by our Airport Tracker, from CO_2 to NOx to fine particles, and Heathrow exposes more people to aircraft noise than any other airport on the continent. On the economics, our recent study by NEF places the UK among the regions where business travel has reached saturation point and extra flights no longer drive growth. **More capacity at these airports adds noise and dirty air for little economic return**. The low level of return has since been assessed by the government at 90% less than initially stated (0.05% GDP growth, instead of 0.5%).

London airports' expansion adds 25 million tonnes of extra CO_2



The UK government and its new Prime Minister must **reconcile these approvals with the UK's sixth and seventh carbon budgets, or refuse them**. The Heathrow third runway is the clearest example.

A budget the government cannot meet is not a credible budget. Approving a runway that breaks it abandons the pathway the Climate Change Committee has already set.

France: growth by the back door

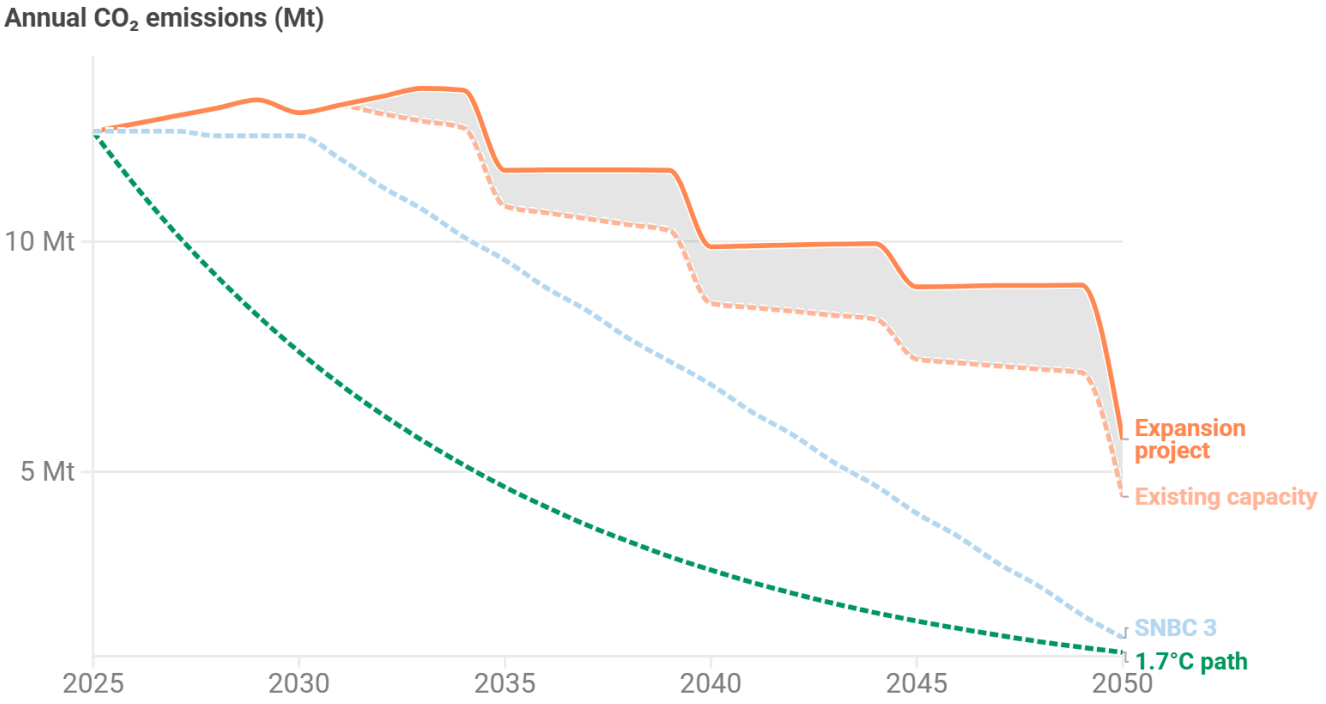
France previously scrapped Charles de Gaulle's new airport terminal plans on climate grounds. Now, however, it is allowing the growth to go ahead through the back door.

France has a plan on paper. Its national decarbonisation strategy sets aviation on a path to cut emissions by about 9% by 2030 against 2019. In the long-term, the national low-carbon strategy (SNBC3) sets ambitious decarbonisation targets for international air and maritime transport. Projected residual bunker emissions in 2050 are expected to amount to just 2-3 Mt CO_2.

The country has already shown it can act on that plan. In February 2021 it cancelled Terminal 4 at Paris-Charles de Gaulle, a project that would have allowed the airport to fly up to 40 million extra passengers a year. This decision was explicitly made on environmental grounds. France has also banned short domestic flights where the same journey could be made by train in under two-and-a-half hours. When it comes to demand-side measures, France is a leader in Europe.

Nonetheless, traffic plans tell a different story. In 2025, Charles de Gaulle carried 72 million passengers, up 2.5% on the previous year. Its declared capacity is 82 million. The airport operator, ADP, now plans nearly 90 million passengers by 2035, rising to 105 million by 2050. To achieve this, they submitted a major infrastructure project, €6 billion between 2027 and 2034, to increase the capacity of the airport, including the construction of new wide-body aircraft parking spots and boarding areas. The French government has the power to stop the project, as its approval is required for the project to proceed this autumn. France should exercise this possibility, as any additional traffic generated in this way would contribute to exceeding the carbon budget.

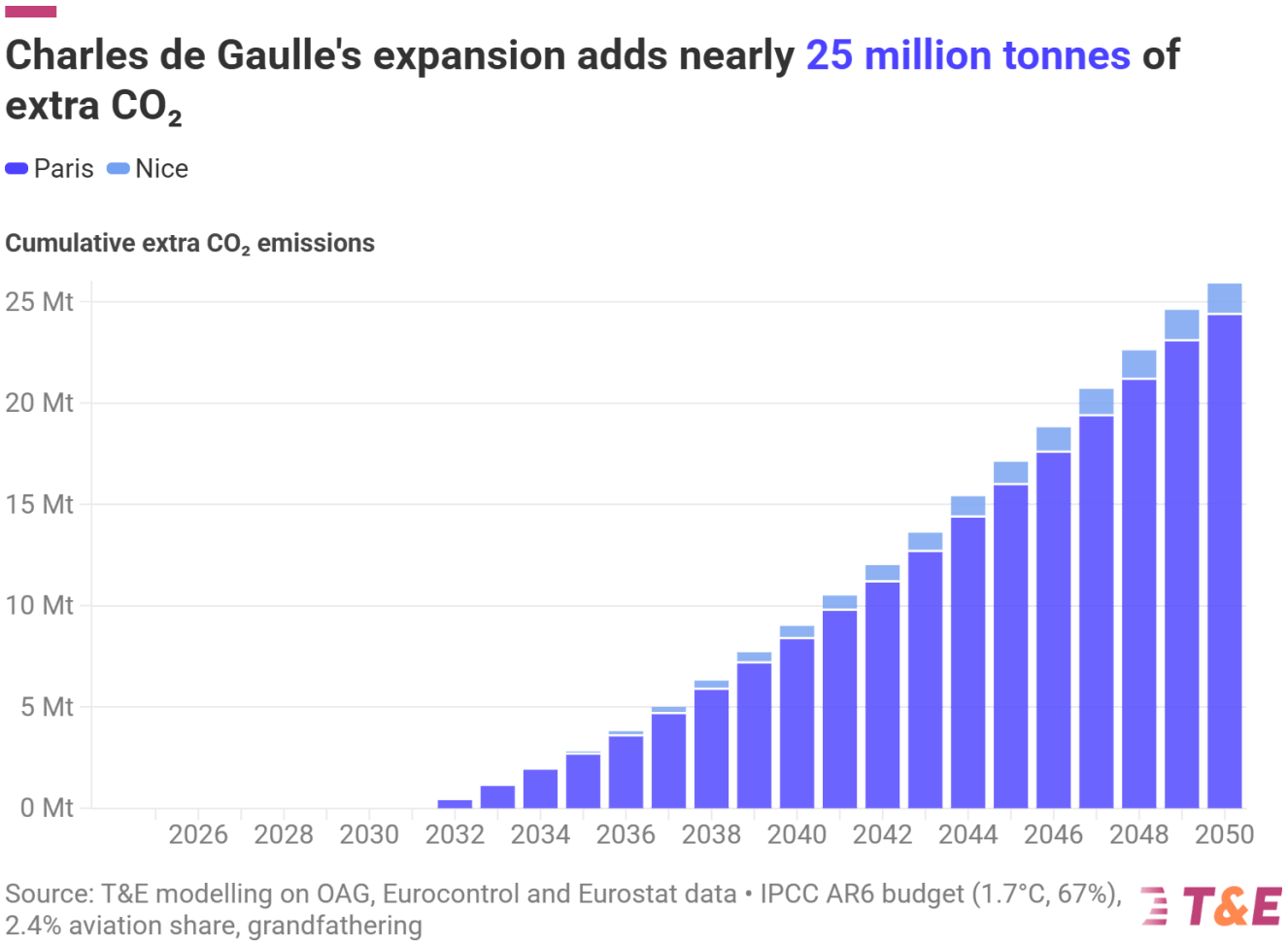
Charles de Gaulle expansion pushes the sector even further away from its 2050 target



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

Our analysis shows the true cost of the operator's growth plan. Based on the existing capacity and traffic levels, Charles de Gaulle is on course to emit 263 million tonnes of CO_2 between now and 2050. Running traffic up to the operator's own 2050 projection, the airport will generate an additional 25 million tonnes. This means that the project alone will produce the equivalent of one third of the annual emissions of all combustion engine cars in France.

The carbon budget problem is not only in the medium to long run, but also in the short term. By 2030, Charles de Gaulle airport will use up 76 million tonnes of its 133 Mt remaining carbon allocation. That is more than half of its allowance for the next 25 years.



Overall, the expansion project lifts the airport to over 6 million tonnes of CO_2 a year by the mid-2050s, a 28% increase on a no-expansion path. To put this figure into context, we estimated that the carbon budget for Charles de Gaulle airport is 133 million tonnes of CO_2. By contrast, the cumulative total from 2025 to 2050 is at least 287 million tonnes of CO_2 - more than twice the budget. In fact, we estimate that the airport's carbon budget will run out by 2036 due to the airport's continued growth.

Nice Airport tells a similar story on a smaller scale. The operator follows the same growth strategy. Last year, it handled 15.2 million passengers, up 3.2% from the previous year. A terminal expansion completed in 2023 lifted its capacity to 18 million. Now the airport aims to reach more than 21 million by the early 2030s.

With the expansion project, the airport will produce approximately 20% more emissions a year by the 2040s. By 2050, the airport's cumulative emissions reach about 21 million tonnes of CO_2. Eventually, Nice will use up twice its remaining budget.

These considerations are important for the entire French aviation sector, as these two airports accounted for around two thirds of the country's total departing emissions in 2025. Therefore, this reversal is national, not local.

France's own low-carbon strategy assumes that aviation emissions will fall by 2050. We demonstrated that **Charles de Gaulle and Nice's expansion pushes the sector even further away from its 2050 goal.**

To hold the line, each airport would have to cut emissions by about 9.3% every year between now and 2050. It becomes even less attainable with the traffic expansion projects.

The damage extends beyond the climate. In terms of local air pollution caused by takeoffs and landings, our Airport Tracker estimates that Parisian airports - first among which Charles de Gaulle - generated more than 6,300 metric tons of nitrogen oxides (NOx), which can cause respiratory diseases. In 2023, the combined emissions of Paris's four airports were higher than the city's own emissions.

The French government and its aviation regulator must close the gap they have left open. France set a European precedent by banning short domestic flights. The next step follows from the same logic: **cap capacity at Charles de Gaulle and Nice airports in line with the national decarbonisation strategy**, rather than approve the traffic growth the operators forecast.

The Netherlands: the struggle that led to a world-first cap

The Netherlands worked out how many flights its climate targets would allow, as it prepared a plan to establish a national CO_2 ceiling that would set caps for each airport. This was meant to implement the targets agreed in the Aviation Policy Memorandum 2020-2050, whereby 2005 aviation emissions are not exceeded in 2030, and are reduced by 50% by 2050. Then the country changed governments, and political momentum stalled.

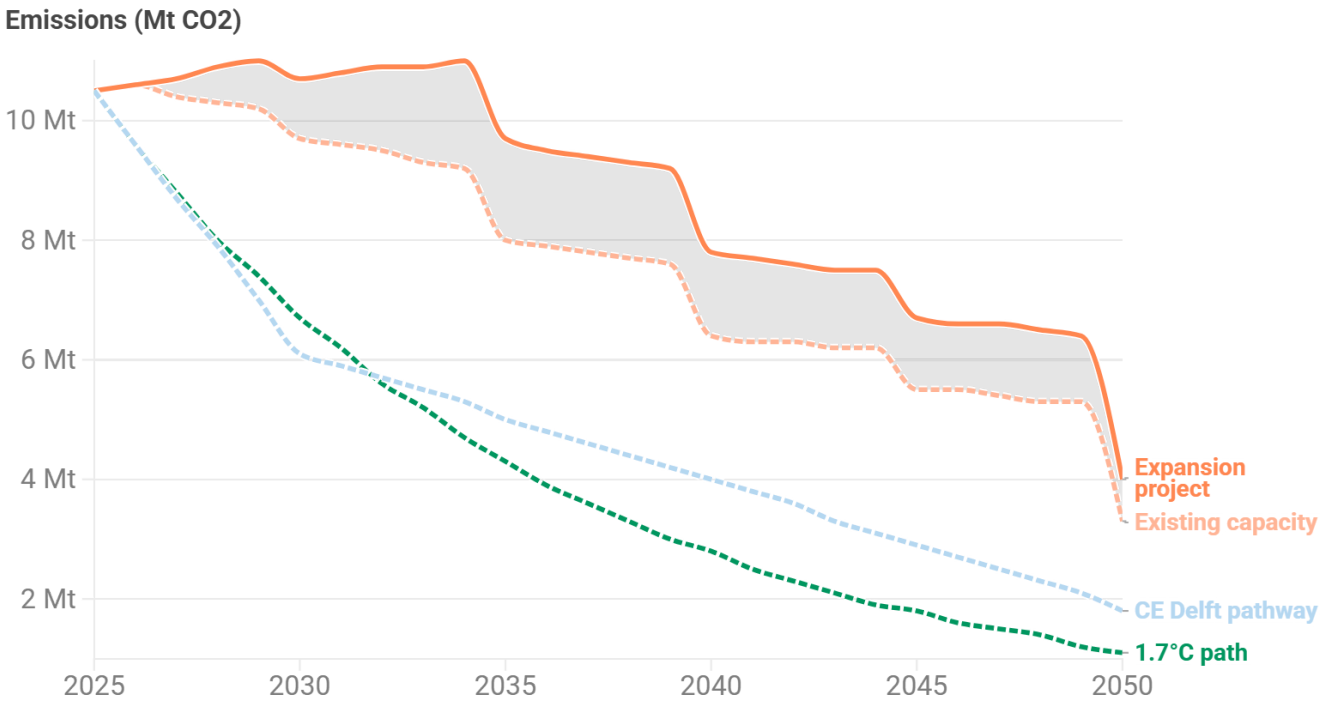
In March 2026, the Dutch Supreme Court scrapped a government decision to cap flights at 478,000 a year at Amsterdam's Schiphol airport, one of Europe's busiest hubs. The decision was made in an effort to reduce noise pollution. However, the court ruled that the government did not sufficiently show that the cap as defined would lead to the required reduction in noise exposure. Annual flights remain limited while the government works toward an effective revision of the rules under the Airport Traffic Decree in 2026.

Schiphol Airport is the main hub for departing flights from the Netherlands, with the majority of flights departing from this airport. In 2025, it flew 68.8 million passengers across 477,552 flights and produced 95% of the Netherlands' aviation emissions. As Schiphol grows, so does Dutch aviation.

And growth is what it plans to pursue . The airport is approaching its declared capacity of 70 million passengers. According to Schipol CFO, flights will settle at around 480,000 a year. The airport plans to increase passenger numbers faster, from 70 million towards 85 million in the coming years, by filling each slot with larger aircraft. To carry the extra passengers, a new pier and an expanded main terminal are due by 2035.

Based on the remaining carbon budgets for Dutch aviation aligned with the Paris Agreement, as estimated by CE Delft and commissioned by Royal Schiphol Group, Schiphol's 2025 remaining carbon budget up to 2050 is about 117 million tonnes of CO_2.

Schiphol plans to emit nearly twice the carbon budget it commissioned



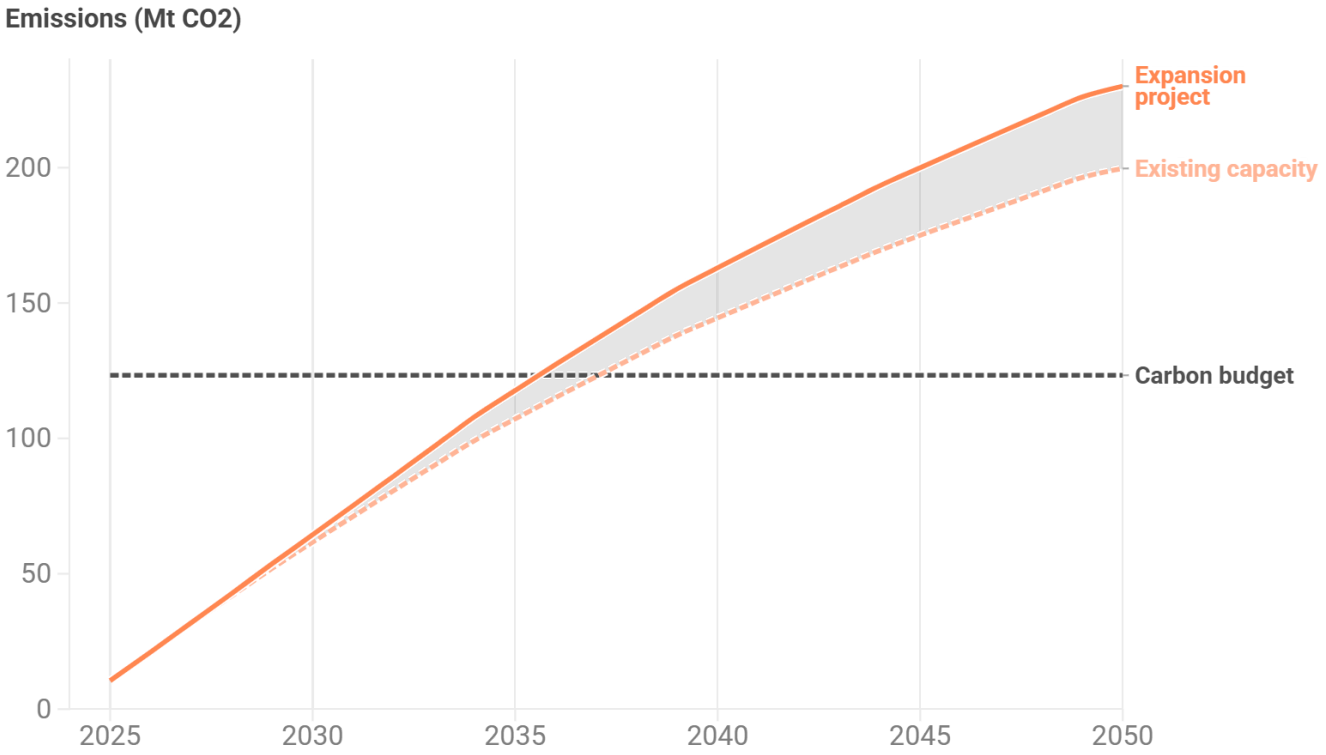
Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

The planned passenger growth adds around 30 million tonnes of CO_2 between now and 2050, taking cumulative emissions to 230 million tonnes, close to twice Schiphol's remaining budget. These additional 30 million tonnes are equivalent to three years' worth of emissions from the Dutch aviation sector (all departing flights).

Thus, the budget matters now more than ever, because the court's decision has called into question the limit that was holding it back.

From here on out, sticking to a budget would mean cutting emissions by around 9% each year. However, if the airport pursues its expansion plans, it is on course to use up its own estimated carbon budget by 2037.

With the cap gone, Schiphol's carbon budget runs out in 2037



Source: T&E modeling based on OAG/Eurocontrol method, Eurostat air passenger data • IPCC carbon budget, 2.4% TTW aviation share and grandfathering approach.

The Netherlands has the tool it needs. However, it has thus far chosen not to use it. **The Dutch government must reinstate and enforce an effective cap on flights at Schiphol**, set to the identified carbon budget. It should also move ahead with its stalled planning for a national CO_2 ceiling to enforce agreed sector targets in law.

Spanish aviation: fastest-growing emitter has decided to go all in on airport expansion

Spain's aviation emissions are climbing faster than in any other major European market. The country's main airport operator is seeking to expand its busiest airports, 12 in total, at the same time.

Spanish aviation emissions rose above their pre-pandemic level by 2025, marking the fastest increase among European markets.

The plan is now to speed up, expanding capacity to drive tourism growth. The airport manager Aena is responsible for a national master plan, which currently involves expanding several airports under its administration including Madrid, Barcelona, Palma and Málaga. These four airports accounted for 66% of Spain's departing emissions in 2025. Expanding them is not just a minor adjustment to Spanish aviation - it is expanding the bulk of it.

Madrid-Barajas is the centrepiece of this plan. In 2025, it set a new record of 68.2 million passengers, approaching its operational ceiling of 70 million. Aena's plan involves investments of €4.8 billion to expand terminals 4 and 4S, adding a new passenger building, and refurbishing the older terminals. This is expected to increase capacity to 90 million passengers per year by the early 2030s, which local groups have assessed to have serious environmental impacts.

In 2025, Barcelona-El Prat carried similarly high volumes of passengers: 57.4 million passengers, which was already above its design capacity of 55 million. In June 2025, the Catalan government and Aena approved a €3.2 billion expansion project. Construction is to begin in 2030 and will be completed by 2033, increasing the airport's capacity to 70 million passengers per year according to plans. Regional analysts projected an even higher figure.

With 33.8 million passengers, Palma de Mallorca is approaching, if not already exceeding, its design capacity. The DORA III plan aims to increase this to 35.7 million by 2031. Meanwhile, Málaga-Costa del Sol has surpassed 26.7 million passengers and is also approaching its terminal capacity limits. Consequently, Aena is expanding the T3 terminal to accommodate more than 31 million passengers by 2031.

The picture is consistent: a single national plan pushes Spanish aviation well beyond its budget, and its aim is to generate more tourist arrivals. Based on current capacity, each of these airports already emits twice its fair share.

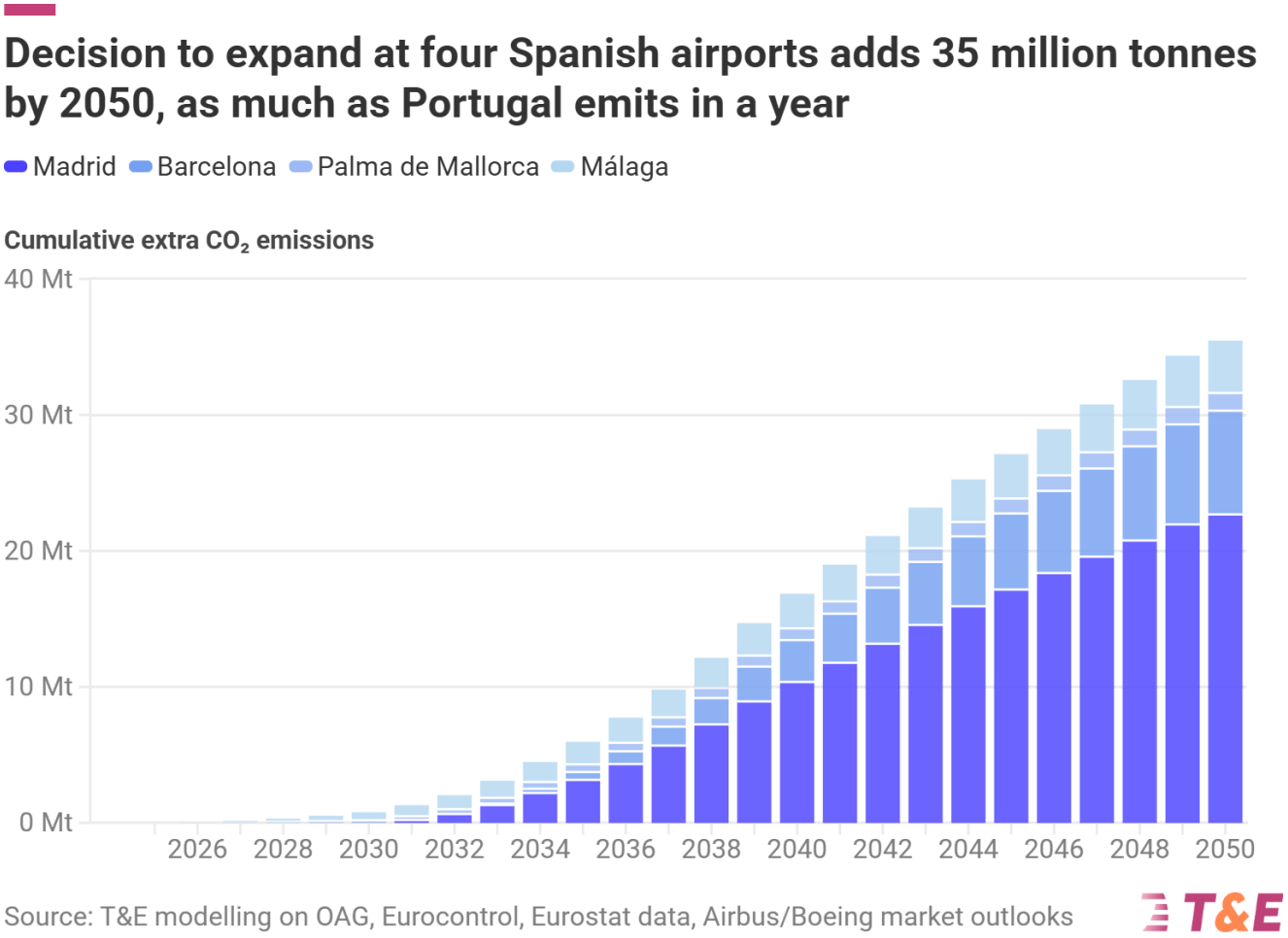
We estimated Madrid's remaining carbon budget at 73 Mt CO_2. The sector is already operating beyond that target, the result of a policy choice to expand for tourism. The expansion would directly generate a third more annual emissions by the 2040s for a total of 23 million tonnes additional CO_2 emissions between now and 2050.

For scale, the 23 Mt of additional emissions, even though distributed over a 25-year period, amount to more than the total emissions of the entire Spanish aviation sector in 2025. This is what Madrid's expansion alone will add. At more than twice the budget, the airport's expansion increasingly narrows the room for any other sector to emit.

Similarly, the expansion in Barcelona will result in an additional 20% of annual emissions. By 2050, the airport's cumulative emissions will reach an estimated 82 million tonnes of CO_2, exceeding its remaining carbon budget of 36 million tonnes. Once again, the airport will exceed its carbon budget.

Palma and Málaga contribute smaller increments with the same effect on their overshoot factor: both airports will use up twice their remaining allocation.

All these projects will result in an additional 35 million tonnes of CO_2. For illustrative purposes, it's like adding the yearly emissions from Portugal's entire economy. As a consequence, each airport will deplete its entire remaining carbon budget by early 2030s, almost 20 years in advance.



In our projections, **each airport would need to cut emissions by around 11% a year to stay within budget**. Aena is planning otherwise.

The cost will hit the hardest where tourism is booming. Spain is one of the most tourism-dependent economies in Europe where our study by the NEF found the most significant impact on housing: an increase in air arrivals pushes up house prices and rents, and it is local renters rather than visitors who bear the burden. Palma and Málaga illustrate this clearly. Both serve regions that are already struggling to cope with seasonal peaks, where residents are faced with unaffordable housing and a hospitality sector that pays below the national average. More summer flights exacerbate a situation that air tourism has already created.

The Spanish government and Aena must set the capacity of these four airports in line with Spain's estimated carbon budget and abandon the expansion plans that would push emissions further beyond it. Where demand approaches the limit - as is already the case in Madrid and Barcelona where Aena has implemented limits to spread flights over peak and non-peak periods -, the allocation of slots must favour cleaner operations and essential routes over increased capacity. Spain is the best example of whether a national airport plan can be reconciled with a national climate commitment.

Ireland: about to remove its last brake

Dublin is already flying over its legal limit. In response, Ireland is abolishing the limit and banning any future ones.

Ireland has set a hard cap before. In 2007, An Bord Pleanála, the Irish planning authority, imposed a limit of 32 million passengers per year as a planning condition tied to the expansion of Terminal 2 at Dublin Airport. The government is now lifting this binding restriction. It was set to contain road congestion but now more than ever also relevant for limiting carbon emissions, air pollution and noise. The growth that it was supposed to control is now the reason given for removing it.

Dublin Airport handled around 36.4 million passengers in 2025, in breach of the existing legal cap. The cap was suspended by the High Court while legal questions have been referred to the Court of Justice of the European Union, whose ruling is expected in autumn 2026.

The government is now moving to erase the cap completely. In February 2026, the Cabinet approved the priority drafting of the Dublin Airport (Passenger Capacity) Bill 2026. The act allows the Minister for Transport to raise or remove the 32 million passenger limit and to prevent any future cap. The Bill was signed into law in July 2026.

The new legislation requires An Coimisiún Pleanála to carry out an environmental impact assessment, as required under EU law, before any order to remove the cap is issued. The cap is expected to be lifted by late 2026 or early 2027, following environmental reviews.

A separate planning application to Fingal County Council seeks to lift the cap to 40 million, through incremental expansion of the two existing terminals. Beyond that, the operator and the Ministry of Transport suggested that Dublin's two runways can handle up to 60 million passengers a year, almost doubling the current limit. In practice, the position is clear: there is no government-set ceiling, and soon there will be no legal ceiling either.

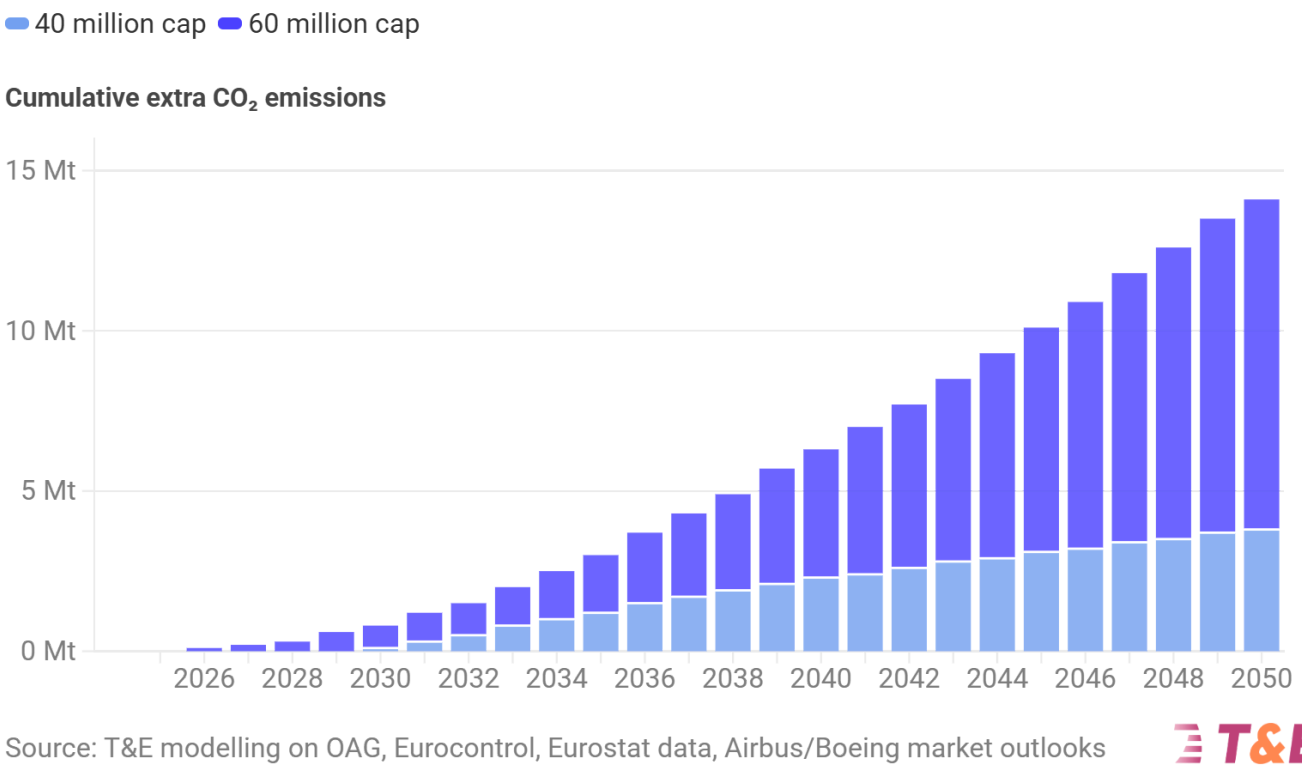
This is not just a Dublin problem. It is an Irish problem. In 2025, the airport produced 88% of the country's departing emissions.

Our analysis shows how little room there is left once the cap is removed. Dublin's fair share carbon allocation by 2050 is 27 million tonnes of CO_2.

A cap of 40 million passengers adds about 4 million tonnes of CO_2 on top of what today's capacity will produce. Raising the cap to 40 by 2030 and then 60 million passengers by 2050 - the ceiling the operator says the runways can take - would add about 14 million tonnes. That is close to half of Ireland's total annual CO_2 emissions in 2024. The difference of about 10 million tonnes between those two scenarios is the carbon cost of how high the government could allow the cap to rise.

Lifting Dublin's cap to 60 million passengers nearly quadruples the additional CO_2 emissions

How high the government raises the passenger cap decides how much carbon Dublin adds



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks

As a result, the airport will deplete its budget in 2034, with annual emissions going up by more than 65%.

The fact that Ireland is not just loosening a cap is noteworthy. It is eliminating the prospect of having one at all.

Most other countries covered in this report lack a binding limit, so we are calling for one to be established. Ireland had a limit and is legislating to remove it, while also writing in a clause to prevent it from returning.

The cost is not just environmental. According to the NEF study, Ireland shows the largest absolute rise in house prices fuelled by air tourism of any country examined, which feeds a projected average annual rent increase of roughly €250 over the next five years. Dublin's growth is pushing an already overburdened housing market further out of reach. Irish renters, and particularly low-income households, face costs that Irish air passengers do not.

Instead of eliminating its existing cap on Dublin Airport, the Irish government should keep the cap, bring it into alignment with the carbon budget and retain the power to enforce it.

Belgium: expansion dressed as maintenance

Brussels Airport calls its capacity work “runway maintenance”. Charleroi wants a new permit to nearly double its passengers. Both push past their carbon budgets.

Belgium shows how expansion can occur without ever being labelled as such. Brussels Airport carried 24.4 million passengers in 2025, up 3.3% from the previous year, against a capacity of about 30 million. Work is now underway on a new transport hub, an expanded terminal and major runway upgrades. The airport presents the runway work as maintenance rather than the capacity increase it is. However, the plans also involve changing intersections and making other adaptations that will increase capacity. Completion is scheduled for 2032, and traffic is forecast to reach 32 million passengers by that year.

Charleroi grows by a different route. Belgium's second airport serves as a primary operating base for Ryanair. It handled 11.2 million passengers in 2025, which is already above the 10 million capacity that Terminal 2 was built for. However, it is now approaching a hard physical limit of around 120,000 flights per year, set by its single runway and environmental permit. It will reach 98% of that ceiling by late 2026. Ryanair’s response was not long in coming: not more flights but bigger ones. Higher-density aircraft can carry more passengers within the same movement capacity, which pushes traffic towards the 12 million mark in the short term.

But that's only a quick fix. Charleroi's operator now wants the cap to be lifted. A proposed new permit would increase the number of commercial flights from 77,000 to 83,000 per year and the number of passengers from 10 million to 16 million by 2045. This would require the construction of new boarding gates and a link between the two terminals. The permit would also regularise Terminal 2, which has been operating without valid planning permission since the Council of State annulled it in 2020. Belgium is being asked to approve past growth and authorise much more.

Our analysis shows that the capacity work is not just cosmetic. The additional capacity at Brussels Airport will result in an extra 3 million tonnes of CO_2 emissions over the next two decades, the same order of magnitude as what the airport emits every year.

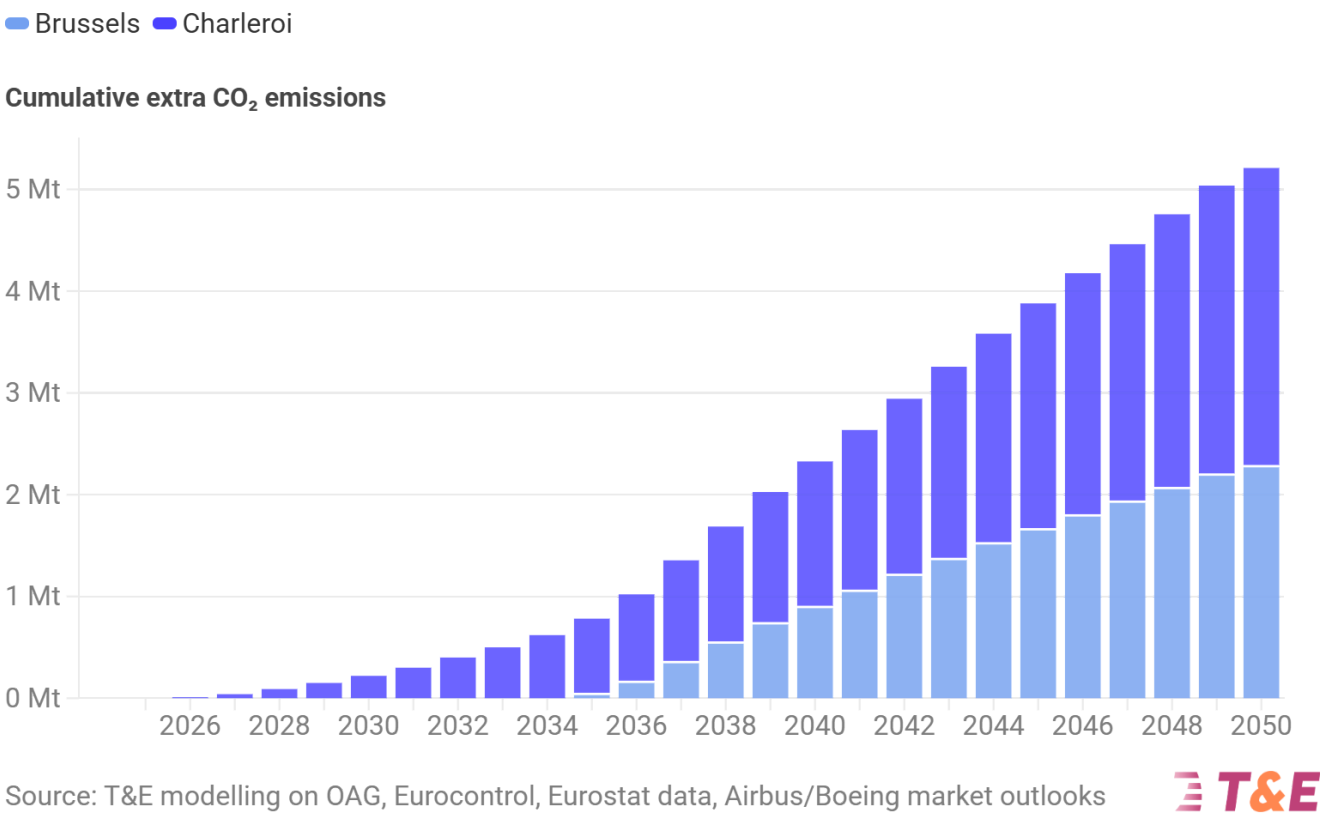
The airport is set to emit 73 million tonnes of CO_2 by 2050. This is 2.3 times its carbon budget of 32 million tonnes.

At Charleroi, we are witnessing a different story but the same outcome. The proposed permit would increase annual emissions by around 50%, adding a total of 3 million tonnes of CO_2 in the next 25 years. For comparison, this is about twice what another EU Member State like Malta emits in a year.

If the permit is approved and capacity grows as planned, Charleroi nearly doubles its annual emissions by 2050.

In either scenario, the traffic expansion plans at the second Belgian airport will result in emissions that are double its carbon allocation (overshoot in the range of 2.3-2.4), leaving little room for other sectors of the economy to emit if the country aims to meet its Paris commitments.

Brussels calls it maintenance and operational efficiency, emissions say expansion



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks

This is precisely why the permit currently under public inquiry is so important.

There are two cases, national and local. At a national level, both the Belgian federal government and the regional governments must ensure that the capacity at Brussels and Charleroi airports remains within their carbon budgets. In practice that means **refusing the Charleroi permit as it stands and treating the Brussels runway work as the expansion it is, not maintenance**.

The local case focuses on the consequences of further traffic. In particular, on noise. Brussels Airport is located in a densely populated area, and aircraft noise over the capital has been a contested political and legal issue for years, cutting across the federal government and the Brussels and Flemish regions. Charleroi's permit is being decided through a public inquiry precisely because it is the residents who live with the consequences of more traffic. This allows Belgian politicians to make a case: capacity limits protect residents from noise and dirty air, as well as addressing the issue of climate change.

Portugal: a brand-new airport built to triple capacity, not just to replace the old

Portugal is aiming to take airport expansion to a whole new level. Lisbon Airport is operating at full capacity and its city-centre location brings heavy noise and air pollution costs to citizens' health. The government's answer is not a smaller replacement in a more adequate location but a new airport designed to nearly triple capacity.

Portugal is coming off the back of a decade of some of the sharpest growth in Europe. Over the last ten years, its passenger numbers have risen faster than most other EU countries, while its air tourism-driven rent increases have been among the steepest on the continent. That expansion has now hit a limit, because Lisbon is full.

Lisbon's Humberto Delgado airport handled 36.1 million passengers in 2025 and is operating at full capacity. The country's answer is to build a new one from scratch. In May 2024 the government confirmed the Luís de Camões airport at Alcochete, about 30 km from the city. It is due to open in 2035 with room for 56 million passengers a year, via two runways. These are expandable to four, with phased expansion planned to accommodate up to 85 million in subsequent decades.

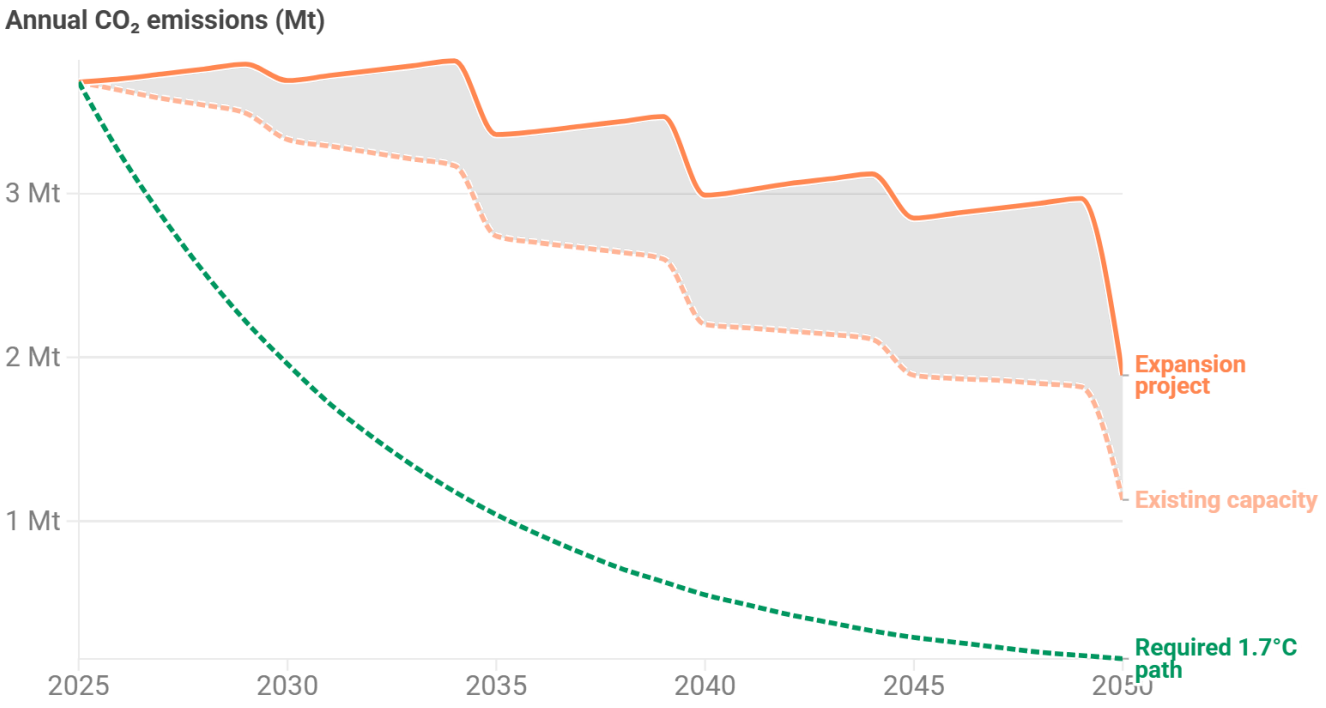
To call this a replacement would be an understatement. The new airport is a de facto expansion project, sized to almost triple Lisbon's current traffic levels. For this reason, we treat the new airport in Alcochete as an extension of Lisbon's current airport, which is slated to close once the new airport is fully operational.

Our analysis found a wide gap between current and projected emissions. By 2050, the new airport will emit two thirds more each year than if capacity stayed at today's saturated level. In cumulative terms, the new airport will emit more than 86 million tonnes of CO_2 over the next 25 years.

The extra 18 Mt, which come purely from the decision to expand Lisbon's airport capacity, are roughly the same as half a year of emissions from Portugal's whole economy.

Comparing the aggregated emissions and the estimated carbon allocation (31 Mt of CO_2), we see that the airport's total emissions will almost triple its carbon allocation.

By 2050 Lisbon's new airport emits two-thirds more than the current one

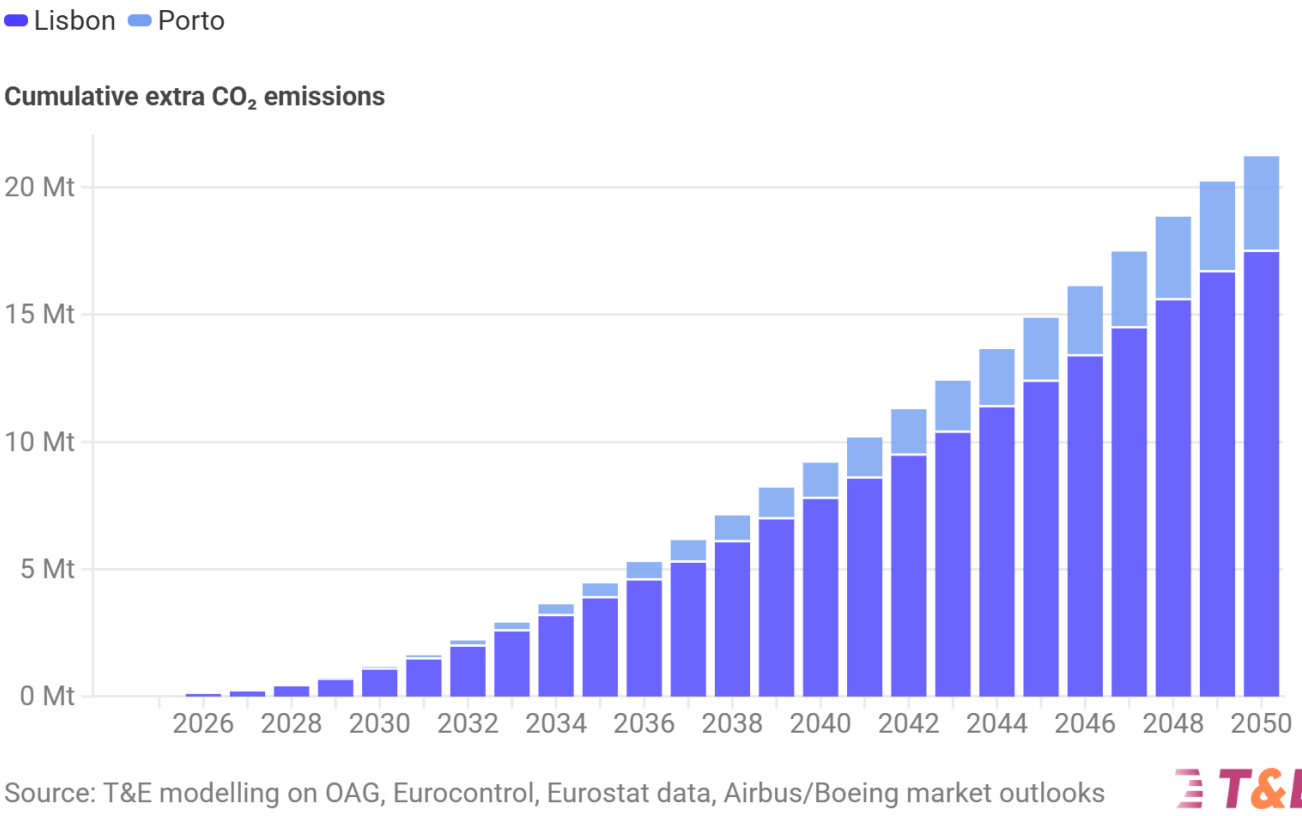


Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

Lisbon is not the only city in Portugal looking to attract more passengers. Porto is close behind. Francisco Sá Carneiro Airport carried 16.9 million passengers in 2025, an increase of 6.3% from the previous year. Its master plan involves expanding the terminal with the aim of reaching the ambitious target of 30 million passengers a year.

Its decision to expand will increase emissions by around 4 million tonnes compared to the current projections. Similar to Lisbon, the airport will emit three times its carbon allocation (overshoot factor of 2.8), and its annual emissions in 2050 are estimated to be nearly 60% higher than in a 'business as usual' scenario.

The decision to expand Portugal's main airports comes at the cost of an extra 21 million tonnes by 2050



The cost is not only related to the climate. The effects are already visible in the Portuguese housing market. Analysis by the NEF found Portugal to be among the countries in Europe with the sharpest tourism-driven increases in rents, with prices rising fastest in areas with the highest concentration of air arrivals.

Residents of Lisbon and Porto are already feeling this pressure today. The construction of a new airport designed to handle triple the current volume of traffic will cement decades more of the pressure that has already forced locals out of their own cities.

The magnitude of the new airport is the easiest expansion to stop, because it has yet not been built and its size is still being decided. The Portuguese government must scale the Lisbon capacity to the carbon budget rather than to a 100 million passenger ambition. It must also keep Porto's growth within the same boundaries. To stay on budget, both airports would have to cut emissions by about 12% every year, starting now.

Germany: terminal expansions push traffic past the budget

Germany is in a key position because its existing infrastructure accounts for a large share of Europe's aviation emissions, so what its airports do has a significant impact on the European total, as with the United Kingdom or France.

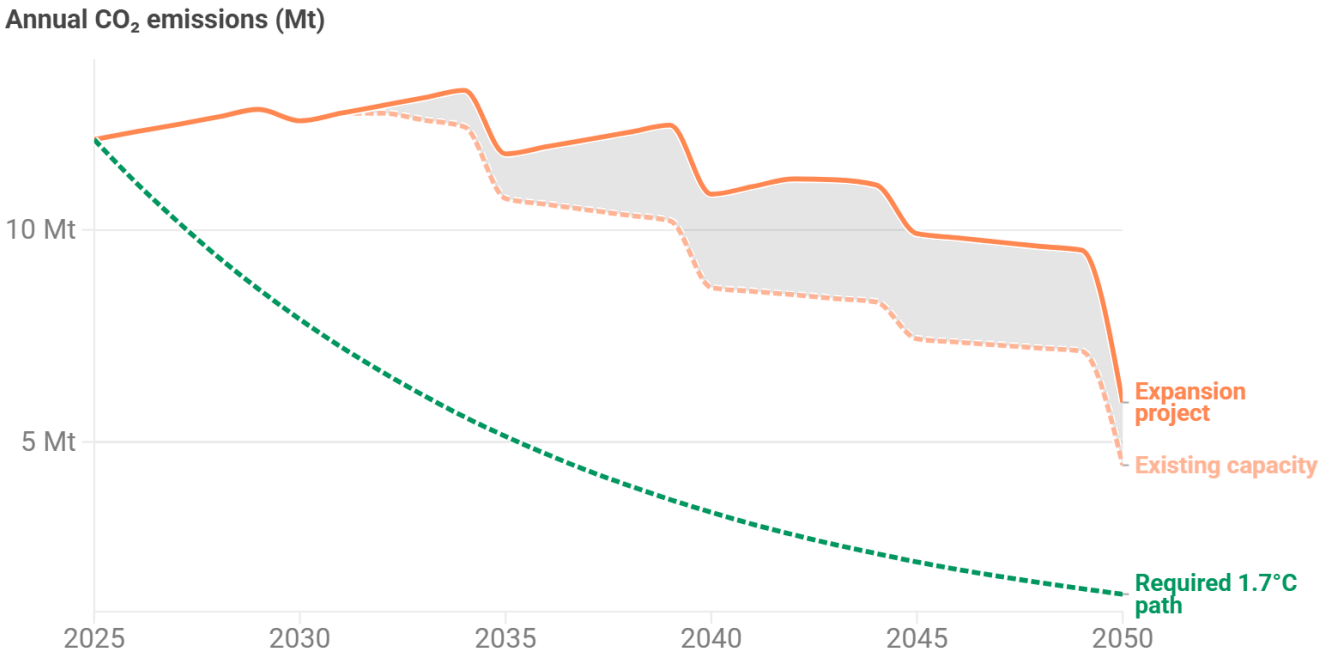
Germany is not building new runways for its two major airports, Frankfurt and Munich (~70% of Germany's total departing emissions in 2025). Despite this, both Frankfurt and Munich are adding terminals and filling them with more flights, which is expansion in all but name. Neither airport needs a new runway to break its carbon budget, their existing runways already do.

Frankfurt is the largest airport in the country. In 2025, it served 63.2 million passengers, representing a 2.6% increase. Its new Terminal 3 opened in April 2026, providing future capacity for an additional 25 million passengers per year. Once the renovated Terminal 2 reopens in the mid-2030s, the airport will be able to handle between 90 and 100 million passengers per year, more than its competitors Paris or London today and similar to expansion plans at Charles de Gaulle, though less than plans at Heathrow. The existing four-runway system absorbs the extra flights while the new terminals handle the extra passengers.

We estimate Frankfurt's carbon budget at 147 million tonnes of CO_2, the second-largest airport budget in this report. Its new terminal will generate an extra 36 million tonnes of CO_2, taking cumulative emissions to 298 million tonnes over the next 25 years.

Frankfurt is not up to the decarbonisation challenge, yet it has decided to expand traffic

...and annual CO_2 emissions will increase by **one third**

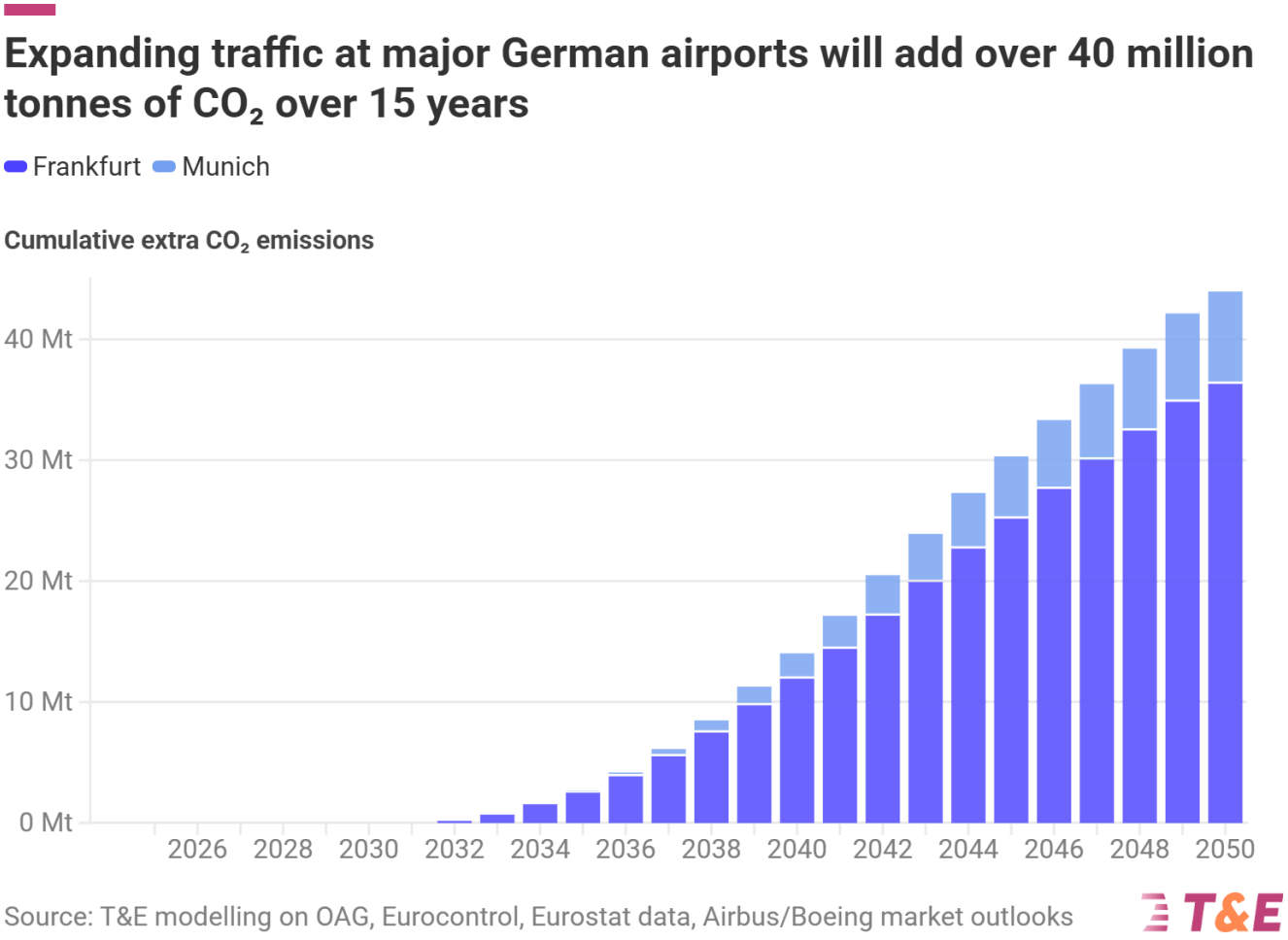


Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

Munich presents a similar picture. It served 43.4 million passengers in 2025, an increase of 4.4%, against a capacity of 56 million. A new pier at Terminal 2 is due to open in 2035, which will increase capacity by an extra 10 million passengers a year. The airport will emit twice its carbon allocation.

Expansion of Munich's Terminal 2 pier adds a further 7.5 million tonnes of CO_2, for a total 112 Mt in the period 2025-2050 against an estimated budget of 56 Mt.

Here is the telling figure: to stay on budget, Frankfurt and Munich would need to cut emissions by about 8% a year. Both airports are moving in the opposite direction. To put this in perspective, **the combined additional traffic from these two airports will produce roughly what all Germany's heavy goods vehicles emit in a year**.



The German government must set a binding carbon ceiling on its aviation sector, using a combination of measures including pricing and slot allocation to hold traffic beneath it. A country that grows its two largest airports towards 100 million and 66 million passengers respectively, with no plan to cap the emissions, has decided to overshoot its budget by default. In this case, the government should spell out which other sectors need to compensate, via greater reductions, for the emission budget overshoot granted for aviation.

Switzerland: forecasts push traffic past the budget

Switzerland presents its airport plans in terms of safety and efficiency rather than growth. Already in 2024, Zurich's voters approved two runway extensions on that basis. However, the airport is linking the work to future demand, and the government's own forecasts for its two main airports show planned traffic exceeding capacity.

In 2025, Zurich handled a record 32.6 million passengers. Yet, the government projects around 44 million passengers by 2030 and 46 million by 2040, above current capacity. On top of that, the runway extensions now under public review, with construction as from 2030, are billed by the airport as safety measures but linked to supporting future capacity for more and bigger planes. In other words, more passengers.

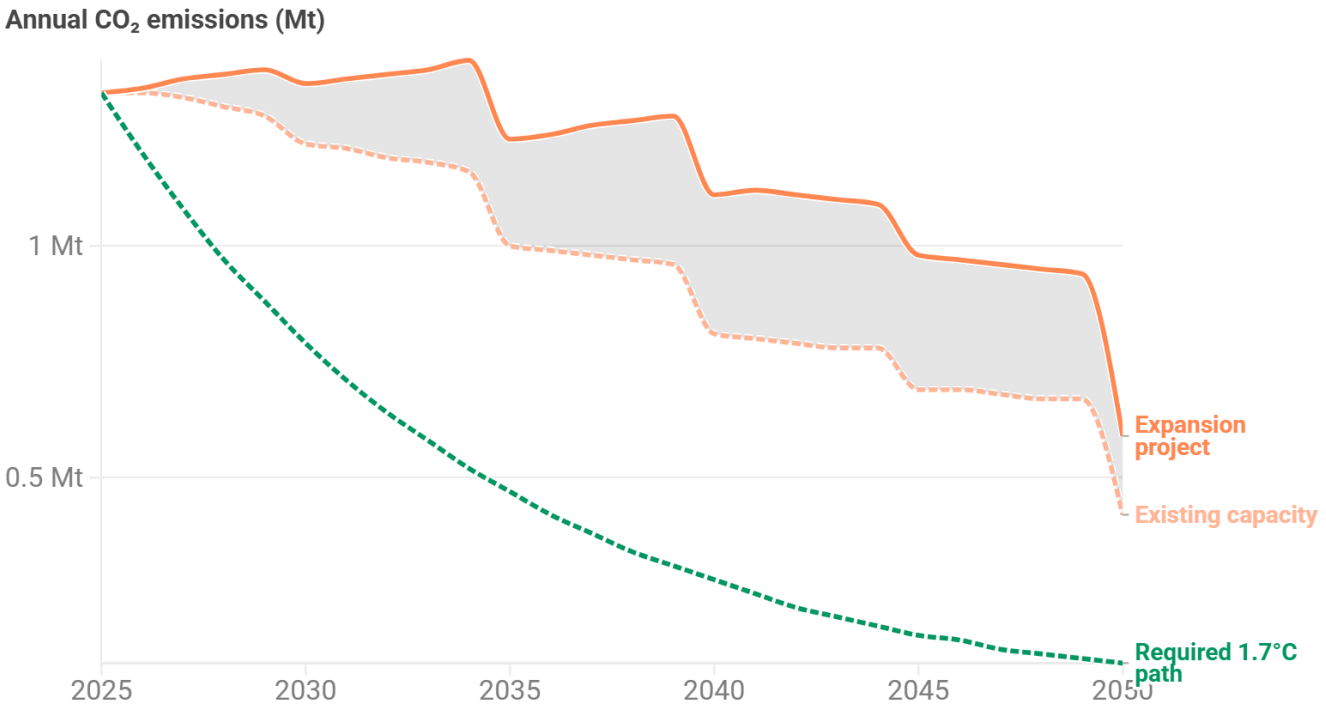
According to these traffic projections, the airport will generate roughly 10% extra annual emissions each year by the 2040s, for a total of 100 million tonnes of CO_2 between now and 2050.

We estimate Zurich's Paris-aligned remaining carbon budget at 43.5 million tonnes of CO_2. Therefore, the airport is on course to emit 2.3-2.4 times that allocation. On the contrary, sticking to this budget from now on would require cutting emissions by around 10% each year.

The gap is even more starkly evident in Geneva. It carried 17.8 million passengers in 2025, close to its 18 million capacity. Yet, the same government forecast puts traffic at 24.1 million by 2030, a third higher even though no new infrastructure is currently planned.

Swiss government forecast makes Geneva overshoots its budget

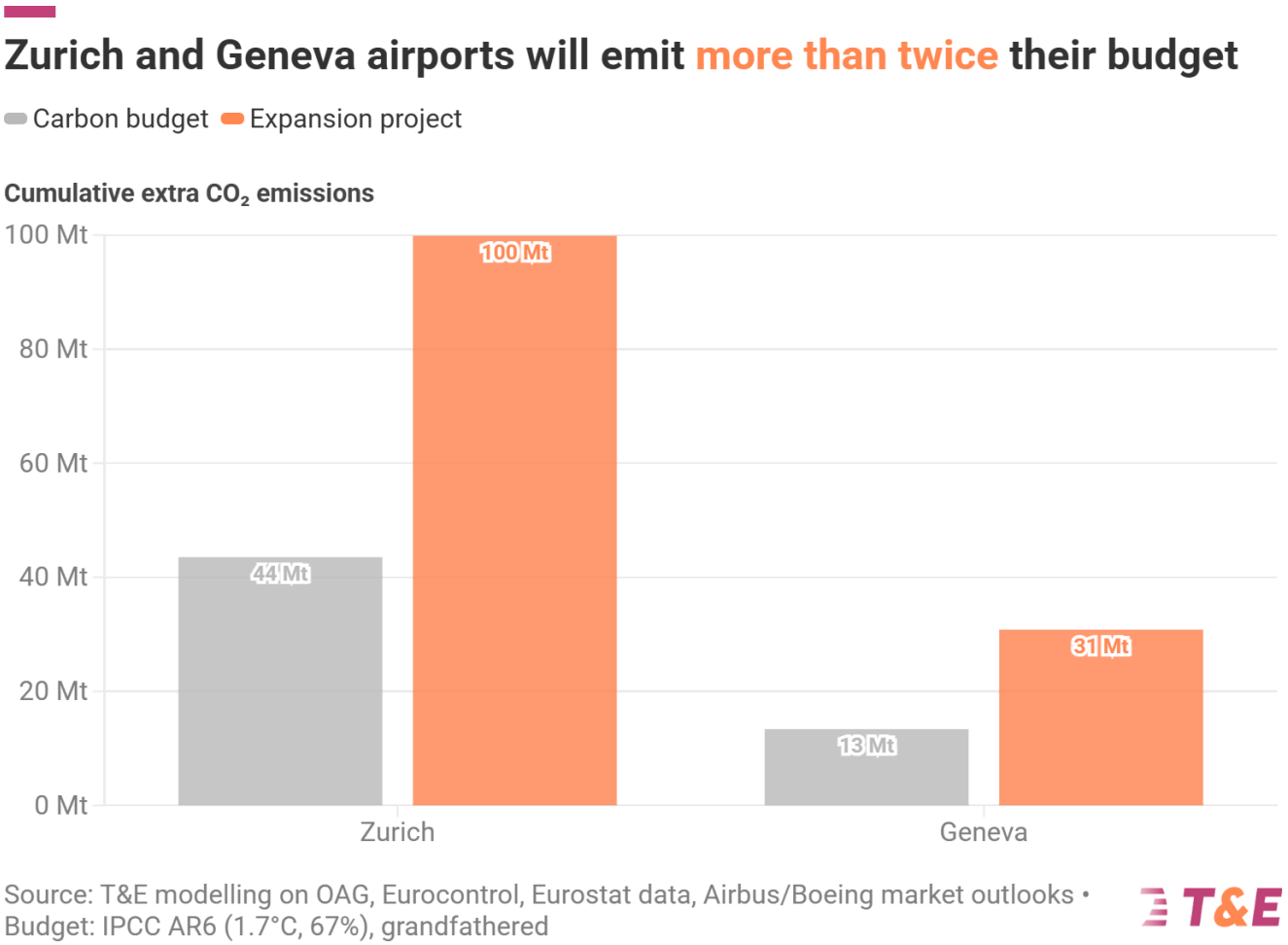
...and annual CO_2 emissions will increase by **40%**



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

With the forecast traffic expansion, the airport's cumulative emissions reach 31 million tonnes of CO_2 in 2050. This is roughly 2.3 times the estimated carbon budget of 13 million tonnes. In other words, if traffic increases as planned, annual emissions will be approximately 40% above the current projections.

To put all these numbers in perspective, the extra traffic at Zurich and Geneva alone will produce roughly as much CO_2 between now and 2050 as an entire economy the size of Slovenia emits in a year.



Switzerland has already been told as much in court. In 2024, the European Court of Human Rights found it breached its citizens' rights by failing to meet its emissions targets and, pointedly, by not quantifying its remaining emissions such as with a carbon budget. An airport ceiling tied to that budget is the kind of limit that would be in line with the ruling. On the basis of our analysis, to stay on budget, both Zurich and Geneva would need to cut emissions by about 10% a year. Both airports are moving in the opposite direction from that path.

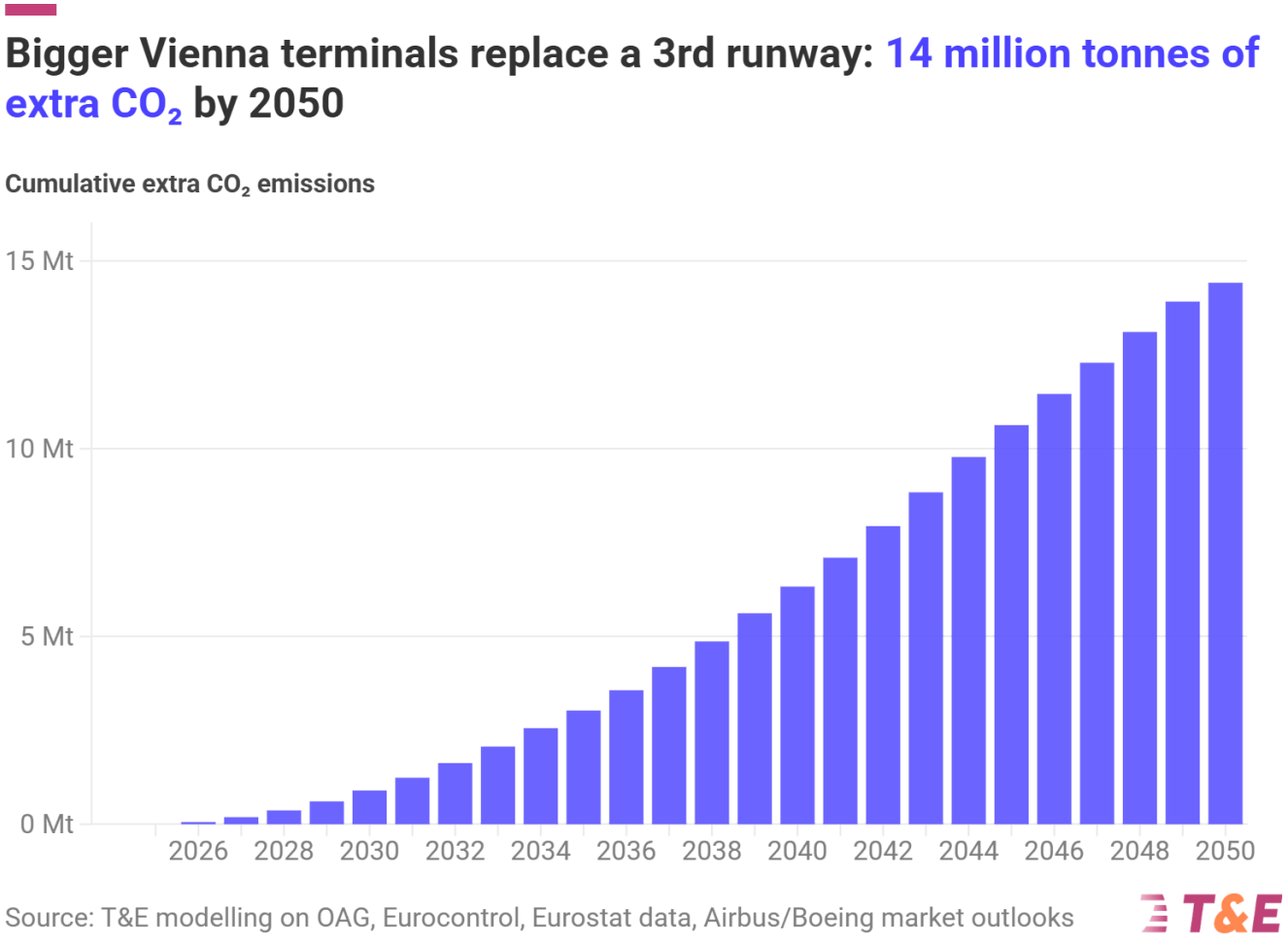
The pattern is clear: higher numbers of larger planes will result in rising passenger numbers and traffic that will breach the country's climate commitment. Switzerland must hold Zurich and Geneva to a climate-aligned capacity set by its carbon budget. Its own demand forecasts should serve as a warning, not a target to build towards.

Austria: the new runway is gone, the overshoot is not

In 2025 Vienna cancelled its plans for a third runway. Its passengers still fly past the carbon budget on the two runways in place.

Austria is proof that refusing a major airport expansion project while still planning for traffic growth is not enough. While Vienna's third runway has been ruled out, in 2025 the airport served 32.6 million passengers, an annual increase of 2.6% and already above its designed capacity of 30 million.

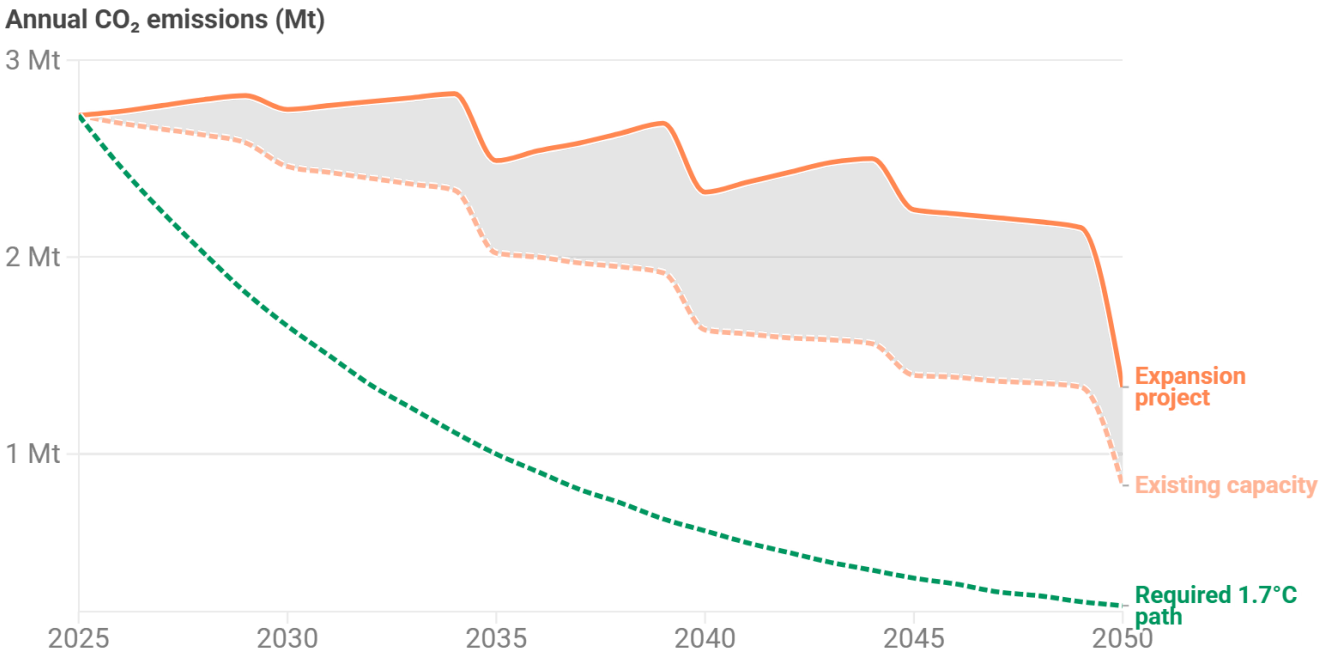
Instead, the airport now plans to expand its terminals, with the aim of reaching 40 million passengers by 2035 and, according to the operator, up to 52 million once all the planned terminal investments have been completed. According to the forecast, the two intersecting runways can handle this increase in traffic.



The terminal plan adds about 14 million tonnes of CO_2 by 2050, close to 30% more emissions than current projections. Put differently, that is as much as putting around 10 million extra cars on the road for a year based on average CO_2 emissions estimates. By 2050 the airport emits around 60% more each year than it would have without the expansion, and it burns through its 29 Mt budget by 2036. To stay on budget, we estimate that Vienna would need to cut emissions by around 9.5% annually.

Even without a third runway, Vienna's traffic expansion misses the path

...and annual CO_2 emissions will increase by **two thirds (60%)**



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

The Austrian government must set a binding emissions ceiling for aviation and hold Vienna's traffic within this limit, despite what the terminal plans may allow. Cancelling the runway only bought time.

Recommendations

How to keep aviation within budget

Every airport expansion we tested overshoots its fair-share carbon budget and we showed that technology cannot close the gap in time. This section sets out the actions that governments should take to change course: rejecting expansion that exceeds the budget, using slots and taxation to limit air traffic, and supporting clean alternatives.

Key data points

20 airports 10 countries	Every airport we tested overshoots its fair-share 1.7°C carbon budget, even after SAF uptake and more efficient aircraft are accounted for.
2x - 3x	On current expansion plans, airports are set to emit two to three times their budgets by 2050. Most airports exhaust their entire carbon budget in the 2030s, decades ahead of 2050.
+225 Mt	In total, expansion adds 225 million tonnes of CO_2 on top of today's capacity.

The gap technology cannot close

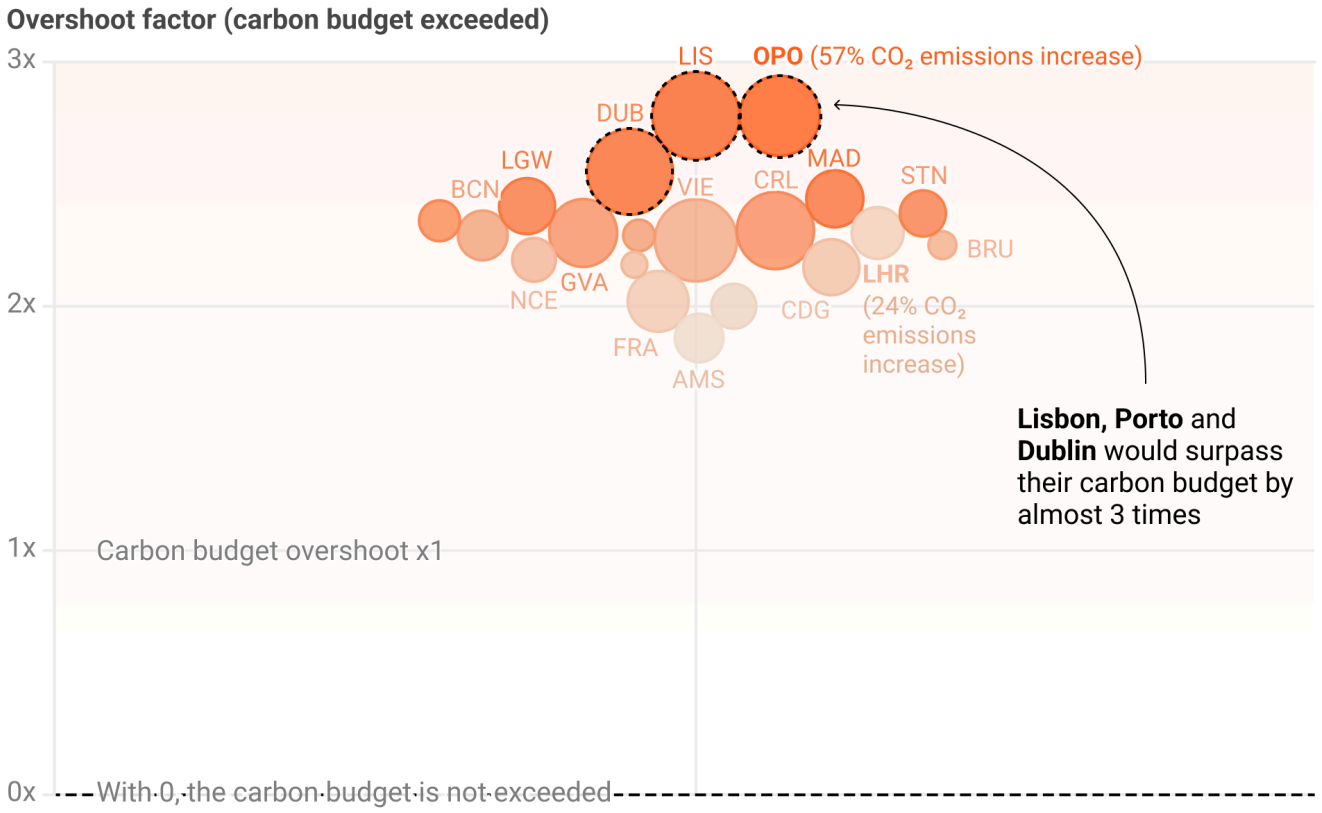
The results are consistent across all ten countries. Every airport that we tested overshoots its fair-share 1.7°C carbon budget. What changes is how much of the budget is depleted and when this happens. These results already factor in the uptake of sustainable aviation fuels and the development of more efficient aircraft that the sector is promising. The gap is what is left after those technological improvements. No plausible advance in fuel or engines will close it in time. The main option left is how much we fly.

Planned airport expansions would push Lisbon, Porto and Dublin to nearly triple their carbon budgets

Ranked by overshoot, every planned airport expansion exceeds its carbon budget by between 1.9 and 2.8 times

Size of the circle: Increase in annual CO_2 emissions

Ranking of cities that surpass more or less their carbon budget 1º 20º



Source: T&E modelling on OAG, Eurocontrol, Eurostat data, Airbus/Boeing market outlooks • Budget: IPCC AR6 (1.7°C, 67%), grandfathered

The timing is the most important part. The path to a 1.7°C reduction rewards early action: the sooner the sector starts cutting emissions, the easier the later cuts will be. Expansion does the reverse. Each additional flight increases the difference between the target and actual emissions, meaning that widening the gap now demands steeper, costlier cuts later on.

This issue extends beyond aviation. Since emissions come from a shared national budget, if one sector overspends, another must save more in order for the country to remain within its budget. Every additional tonne that an airport uses above its share demands extra efforts from other sectors, such as industry, farming or heating.

For countries, there is also a growing legal risk to consider. Courts across Europe are now holding governments accountable for their climate obligations. For example, the European Court of Human Rights ruled that Switzerland had violated its citizens' rights by failing to cut emissions

enough, achieving only 11% against a 20% target. The court also singled out Switzerland's failure to set a carbon budget.

The Dutch Urgenda case established the same principle: a government's climate obligations can be enforced in court. In Ireland, legal advice on the Dublin cap-repeal Bill states that the government is bound to protect health, meet its climate targets and take responsibility for the emissions of projects it approves. Removing a cap to allow an airport to expand would contravene all three of these duties. **A government that approves expansion beyond budget is not just missing a target. It is also exposing itself to legal action.**

What governments must do

Governments do not need to invent a new paradigm. Three of the countries featured in this report have already adopted one. For example, the United Kingdom legislates for economy-wide carbon budgets through its Climate Change Act, and now includes international aviation within them. France sets an aviation emissions pathway within its national decarbonisation strategy.

The Netherlands goes furthest in its approach, while still awaiting confirmation in national law. It models a Paris-compatible carbon budget for its main airport using an approach developed by CE Delft and commissioned by Royal Schiphol Group itself. This methodology takes a global temperature limit and translates it into a fixed cumulative emissions ceiling for a specific airport. The result is transparent, replicable, and detailed enough to test any expansion plan against. We use the same logic throughout this report.

This matters because a distant net-zero target allows an airport to appear compliant while its emissions increase, whereas a fixed budget makes overshooting the target visible and provides a deadline for addressing it. The Dutch figure has an additional advantage. Royal Schiphol Group commissioned the research, meaning the figure must be taken as a serious, well-founded reference in the current situation where the airport continues to breach the budget.

Every government featured in this report must set a carbon budget for aviation that is compatible with the Paris Agreement at the level of the individual airport. Setting EU-wide thresholds to aviation emissions in line with aviation climate budgets is also key to limit volume-based growth of the sector. Aviation emissions should be grounded in a sectoral climate budget consistent with the European Climate Law.

This budget must be set using an independent and published methodology. In this regard, the methodology developed for Schiphol Airport is an excellent example. Governments should then treat that budget as the ceiling for capacity decisions rather than a figure to be revisited once growth has been approved. The evidence clearly demonstrates that expansion must be halted or refused where it exceeds the fair-share budget. In these cases, **airport growth and a country's climate commitments are incompatible**.

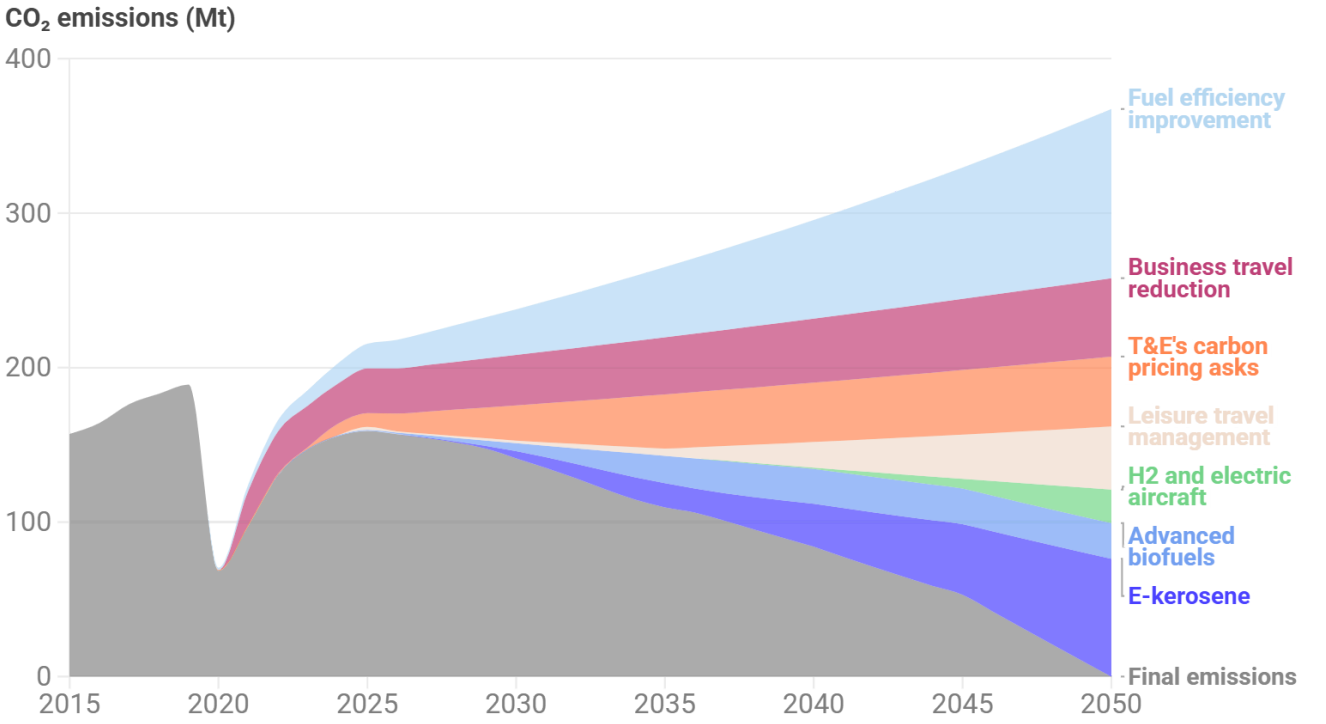
This 'no expansion where' test also applies beyond climate considerations, to economic concerns. There should be no expansion where air connectivity is saturated and offers little economic benefit, nor where tourism is saturated and its costs are borne by local residents while its gains flow to capital holders. Our research with the New Economics Foundation shows that these conditions are already being met in numerous locations across Europe.

Where airport capacity exceeds the requirements of carbon budgets, slot allocation and flight restrictions are the quickest tools at the disposal of governments. Capacity declarations must be aligned with carbon limits, and slots for non-essential flights should be withdrawn. In practice, this means cutting flights that carry the most carbon for the least societal value, such as short-haul flights with a rail alternative, repeated daily frequencies on the same route, private jets and frequent long-haul leisure trips. The aim is to achieve the greatest possible connectivity and fairness from the airport network while minimising environmental impact.

Capacity limits are most effective when used alongside taxation as they tackle the same issue from two different angles. One limits the number of flights; the other sets their price. Our Down to Earth report shows that technology alone cannot hold emissions down while traffic keeps climbing. This finding underpins every conclusion here.

Roadmap to climate neutral aviation in Europe

Why "flying less" offers the best path to sustainable aviation



Source: T&E (2022). Roadmap to climate neutral aviation in Europe

Our Tax Gap analysis showed the revenue side of the fix: by introducing a fuel tax on departing flights, applying VAT to tickets and ensuring that departing flights are fully covered by the EU Emissions Trading System. Aviation's tax exemptions are what make this growth possible in the first place.

Public money raised through these measures must stop funding the problem. **Governments should redirect public money,** including from the European Investment Bank and state aid, **away**

from airport capacity and towards clean alternatives such as e-kerosene and zero-emission and hybrid aircraft technologies.

This must work hand in hand with cleaner transport alternatives. Rail must take priority on every route where it can realistically replace a flight. This highlights the need for a unified vision of European mobility that considers aviation, high-speed rail and other clean modes together, rather than expanding airports as if other options did not exist.

The choice is still open

The question facing policymakers is not only whether airport expansion can be reconciled with the environment. Rather, it is a question of whether the expansion fits within the budget that the country has committed to under law, with government failures to meet these increasingly being challenged in court. Judging by the evidence here for twenty major European airports in ten countries, it does not. Rather than viewing airport and air traffic expansion as a way of achieving environmental conciliation, policymakers should consider it a question of feasibility and compliance with national legal obligations for climate action and the protection of citizens' basic rights.

Annex

Methodological note

This annex outlines how we calculate an aviation carbon budget for each of the 20 airports analysed in the report, and how we assess announced expansion plans and sustained traffic growth against these budgets.

Scope and purpose

We start with a Paris-aligned carbon budget for each airport, set to limit global warming to a specific temperature threshold. This budget represents the total amount of carbon dioxide (CO_2) that an airport can emit before 2050 before it breaches a safe global temperature limit. The budgets in this report include not only emissions from domestic flights, but also those from international aviation, in line with the recent legislative trends.

Next, we project the emissions that each airport would produce if it expands or if it holds current capacity. The gap between the budget and the projection is the result we report.

We also model a third case of unconstrained traffic. In this case, traffic grows without any capacity ceiling, based on the assumption that capacity is no longer a constraint. This could occur if operations become efficient enough to carry more passengers through the same infrastructure, or if a future expansion increases capacity. We only report on this case where a country is removing its limits entirely rather than raising them.

We studied ten European countries in which airport expansion is a topical issue: the United Kingdom, France, the Netherlands, Spain, Portugal, Belgium and Ireland. We also consider Germany, Switzerland and Austria, where traffic is growing despite the lack of major infrastructure works. We assess the busiest airports and any announced expansions in each country, for a total of twenty airports. These airports account for the majority of their countries' departing emissions.

Throughout this section, we only count CO_2 emissions. Aviation also contributes to climate warming through non-CO_2 warming effects such as contrails and nitrogen oxides. These effects are known to more than double aviation's contribution to global warming. These are not modelled here. Including them would reduce every budget even further, so each overshoot reported can be seen as lower bound estimates.

Estimating airport carbon budgets

We allocate the budget for each airport in four steps, working down from the global total to the individual airport. At each stage, we allocate a fixed proportion of the previous stage. These shares remain constant over time, as set out in the 'grandfathering' logic below.

First, we consider the remaining global carbon budget for our temperature target. For our main scenario, we use the all-sector global budget for the period 2023 to 2050, consistent with limiting warming to 1.7°C with a 67% probability. This is set out in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

We then subtract the emissions that have already been produced in 2023 and 2024, as reported by the United Nations Environment Programme. The result is the global all-sector budget for the period from 2025 to 2050.

We then take aviation's share of the global budget. We multiply the remaining global budget by aviation's share of global emissions in 2019. CE Delft estimated that the 2019 share of aviation in global CO_2 emissions was 2.4% (Tank-To-Wing emissions from fuel burned during flight).

We used 2019 rather than a later year to avoid the impact of the pandemic distorting the share. This estimate is in line with the estimates from the International Energy Agency. We keep this share constant, meaning that aviation's claim on the global budget does not increase or decrease.

The aviation budget can be allocated to different countries. There are different ways of distributing it. Our main approach is grandfathering. It means that each country receives a share of the aviation budget proportional to its share of global aviation emissions in 2019. Consequently, countries with mature aviation markets in 2019 receive larger budgets. We hold each country's share constant to 2050.

The alternative approach allocates the budget according to population size, using the latest figures from the World Bank. Each country receives a share equivalent to its proportion of the world's population. This means that no country is rewarded for having flown more in the past. Such an approach would benefit European countries at the expense of those with larger populations.

We use the grandfathering principle. Not because it is the fairest approach. Our aim is to demonstrate that countries and airports exceed their budgets even when using the most favourable approach.

In the final step, each airport is given a share of the national aviation budget based on its share of national aviation emissions in 2025, the most recent year. As before, this share remains constant until 2050.

We estimated the emissions of each airport based on OAG's scheduled-flight data. We calculated the fuel burned on each flight using Eurocontrol's method and applied the kerosene emission factor to convert the fuel into CO_2. OAG records only scheduled commercial flights, so it misses some cargo flights as well as charter, military, government or humanitarian flights. Therefore, our flight counts run below figures from sources such as Eurocontrol. However, the emissions from these missing flights are small and leaving them out does not significantly affect an airport's total.

Projecting emissions to 2050

We calculate each airport's emissions based on three factors: traffic volume, average distance travelled, and carbon output per passenger kilometre. We then run projections for three scenarios: two main scenarios (existing capacity and the announced expansion) and an unconstrained growth scenario.

Traffic

We project passenger numbers from each airport's most recent actual figures, using 2025 volumes where available and 2024 where they are not. These figures include both arriving and departing passengers, and are taken from Eurostat.

We then model airports' traffic increasing at a constant annual rate. Our central rate is derived from our Down to Earth analysis, which estimated growth of 3% between 2025 and 2050, based on the central value projections of Airbus and Boeing.

We do not apply a single European rate to all countries. Instead, we adjust the rate according to the rate at which each country's air traffic is expanding. We measure national growth in flight movements under instrument flight rules by capturing scheduled commercial air traffic, as taken from Eurocontrol's flight forecast. We calculate the growth rate of these movements for each country from 2025 to 2050, and then compare it with the European average over the same period. If a country's flights grow faster than the European average, its air traffic will also grow faster, and vice versa. We then scale the European rate up or down by that difference to give each country its own rate, which is applied to all its airports.

This is based on the assumption that revenue passenger kilometres per flight movement grow at the same pace across Europe. In other words, aircraft size, load factors and average trip length are all changing at a similar rate everywhere in Europe. Any differences in traffic growth between countries would then only come from differences in the number of flights. We consider this to be a credible assumption which does not significantly affect the results.

Capacity

Capacity sets an upper limit on traffic. If traffic reaches the maximum capacity at a given time, it will level off until the capacity increases again. If today's traffic exceeds the declared capacity, we use today's level as the reference point instead. This is the case in Dublin and Vienna, for example, where capacity is already above the reported cap today.

A third scenario allows demand to grow without any capacity limits, on the basis that operational efficiency (larger aircraft and more efficient terminals) and future airport expansion plans will be able to cope with the demand. We only report this scenario where a country is dismantling its limits rather than raising them, as in the case of Ireland.

We compiled the current and planned capacity of each airport in millions of passengers per year from the airports' published figures and national planning documents. Current capacity represents the maximum number of passengers that an airport can serve today. Planned capacity is the figure that an expansion is designed to reach.

There are two ways in which expansions can raise capacity. A stepwise expansion allows traffic to grow freely until it reaches the new capacity, which it then maintains. In contrast, a linear expansion gradually increases capacity from the current level to the planned target during the project's construction period.

As emissions are proportional to distance flown rather than number of passengers, we convert passengers into passenger-kilometres. We use our OAG data to find the average flight distance for each airport in the base year. We then assign half of this distance to each departing flight, as

the cruise emissions of a flight are split between its origin and destination. We only count the half that belongs to the departure airport.

Carbon intensity

Carbon intensity is defined as the amount of CO_2 produced per passenger kilometre. This figure falls over time as aircraft and fuels become more efficient.

Aircraft and operations become less energy-intensive. We use the assumptions from the European Commission's impact assessment for Europe's 2040 climate target for this. The energy intensity is projected to decrease by 27% in 2040 and 34% in 2050 compared to 2015. This corresponds to an average yearly decrease in energy intensity of 1.25% between 2015 and 2040, and 1.00% between 2040 and 2050. On average over the 2015-2050 period, it means a yearly decrease of energy intensity of 1.18%. We model a yearly decrease of energy intensity of 1.25% between 2023 and 2040, and 1.00% between 2041 and 2050.

At the same time, the ReFuelEU SAF mandate increases the proportion of sustainable aviation fuel from 2% in 2025 to 6% in 2030, ultimately reaching 70% by 2050. For UK airports, we applied the UK power-to-liquid (PtL) mandate. This covers synthetic kerosene produced using renewable electricity, and it will account for 2% of fossil jet fuel in 2025, rising to 10% in 2030 and 22% in 2040. We assume that the mandated fuel reduces lifecycle greenhouse gas emissions by 85% compared to fossil kerosene and apply this saving to the mandated share.

We anchor the whole calculation to each airport's measured carbon intensity in its base year, which is obtained by dividing its emissions in 2025 by its passenger-kilometres in the same year.

We calculate annual emissions by multiplying the carbon intensity by the number of passenger-kilometres for each year. We then add up the totals for each year to get the cumulative totals. From this, we produce three trajectories. The existing-capacity trajectory caps traffic at current capacity levels. The projected-expansion trajectory caps traffic at the higher capacity that the expansion would enable. The unconstrained traffic trajectory applies no cap.

Comparing emissions with the budget

For each airport, we compare the cumulative trajectory with the estimated budget. We calculated the overshoot factor as the ratio of cumulative emissions over the whole period to the budget. A value above one means the airport emits more than its budget allows.

The budget exhaustion year is the year in which cumulative emissions first pass the budget, converting a volume of carbon into a date.

The required annual reduction rate is the steady yearly fall in emissions needed to keep the airport within its budget until 2050. In practice, we find the constant rate. This brings cumulative emissions down to exactly the budget over the period. Then we plot the decarbonisation path it implies. We do this against the three scenarios. As a rough estimate, this rate is close to the first year's emissions divided by the budget.

Some countries have already set out a decarbonization path. The United Kingdom and France show that a country can define a national aviation carbon budget or decarbonisation pathway that also covers international flights. The Netherlands goes even further, defining a national

carbon ceiling for aviation with caps at the airport level. For these countries, we plot the national targets at the airport level using the airport share of emissions in 2025 as a proxy.

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