AECOM

WORKING SUSTAINABLY AND TACKLING THE CLIMATE EMERGENCY

THE AVIATION INDUSTRY AND CLIMATE CHANGE: A BALANCING ACT

Before recent events, the aviation sector's contribution to global warming had its fair share of time in the spotlight. But with most of the industry's carbon emissions associated with aircraft activity, **Robert Spencer** and **Craig Riley**, sustainability leaders in the UK and US respectively, ask what can airports really do to make a meaningful dent in the sector's CO2 emissions?

With 80 percent of global flights grounded and a $314 billion loss of revenue[1], the outbreak of coronavirus has had an unprecedented effect on the aviation industry. Recovery is forecast to be incremental and slow but, in a post-pandemic world, demand for air travel is still likely to continue.

Before recent events, many column inches were devoted to the aviation sector's contribution to global warming. Despite heightened public attention on climate change issues, global aviation traffic was nevertheless predicted to grow significantly over the next two decades, particularly in the developing world. As the world — and the industry — readjusts, meeting future demand is still likely to necessitate an increase in capacity and there are major airport expansion projects planned or in progress across the world — even if many are currently on hold.

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To avoid catastrophic consequences from climate change, significant effort to reduce emissions from all sectors, including aviation, is required over the next ten years. While new technologies and developments in aircraft design and sustainable aviation fuels are likely to make the biggest contribution to reducing emissions, most are still years from scalable deployment. The sector must therefore accelerate efforts in areas that can have an impact now: the design and operation of new and existing airports can play a big role.

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TOWARDS NET ZERO

In June 2018, the Airports Council International (ACI) Europe, which represents more than 500 airports across Europe, committed to net zero carbon emissions from airport operations by 2050 at the latest. In 2020, the ACI World organization intends to establish an ambitious long-term carbon reduction goal applicable for the air transportation sector at a global level. Airports in every geography are working to manage and reduce carbon, with the industry organizing around a common carbon management and reporting platform called Airport Carbon Accreditation (ACA). Many airports have their sights set on achieving net zero and pursuing carbon neutrality through the ACA program, with some airports seeking to go beyond neutrality to achieve carbon positive facilities and influence the carbon emissions of their business partners and travelers.

Achieving net zero is an ambitious challenge that requires a re-think in the approach to designing and operating airports. Designers, architects and airport owners will need to understand the wider context and implications of their design decisions, taking into consideration the impacts new facilities, upgrades and supporting infrastructure, such as ground transportation, will have on the environment and looking at ways to optimize efficiency across all elements of a project.

500

Airports Council International (ACI) airports across Europe, committed to net zero carbon emissions from airport operations by 2050 at the latest.

DESIGNING FOR THE FUTURE

Crucially, new facilities and upgrades must be designed with the future in mind. Designers need to be adept at planning for developments that are going to change the way we use airports in the future, enabling their implementation as soon as the technology and financial resources are available. Passenger travel to and from airports by car contributes a sizeable portion of an airport's total carbon footprint, indicating a real need to facilitate and encourage more journeys by public and other sustainable transport means.

With the increasing shift towards 'Mobility as a Service' (MaaS) ride-hailing apps like Uber and Lyft — which are not always the most climate-friendly option — car parking facilities required now might not be needed quite so extensively in the future. Designing terminals, landside access infrastructure or other ancillary buildings to be adaptive or relocatable as user requirements change can bring greater carbon efficiency and environmental benefits as shifts in personal mobility patterns unfold.

PHYSICAL AND TRANSITION RISKS

Airports can build resilience by better understanding and planning for climate-related physical and transition risks. Consideration of these risk factors is often driven at Board level by assessing the recommendations from the Task Force for Climate Related Financial Disclosures (TCFD) which is placing a stronger emphasis on how organizations such as airports understand and respond to the transition to a low carbon economy. Transition risks represent a material gap for many and have the potential to expose airports to increased pressure from investors, along with a range of issues related to legal liability, policy changes, market and technology shifts, and reputational damage. We're helping the industry address these challenges.

In 2019, alongside global law firm Baker McKenzie and environmental consultants Ndevr Environmental, we released 'Climate Change Risk and Opportunities: A Decision-makers' Practical Guide to Disclosure', a discussion paper on how business leaders can meet their legal obligations to assess and disclose the financial risks and opportunities linked to climate change.

CIRCULAR ECONOMY THINKING

Indeed, applying a wider circular economy approach to design and operations will help lower the carbon footprint of projects. However, many challenges constrain the ability to apply circular economy models to complex large scale infrastructure like airports. Greater collaboration is needed to fully embrace the circular economy in aviation, with designers, construction contractors, procurement and contract managers, and airport capital program teams working together to engage supply chains and develop a holistic approach to design and construction elements such as materials selection, water use and waste reduction. Specifying requirements and/or incentives for procurement are often among the most effective means of ensuring assets and resources are used more efficiently. These approaches send a clear signal to the market for innovation and alternative delivery models.

CARBON-OFFSETTING

Given the challenge of achieving net zero or carbon neutrality, more and more airports are turning to carbon offsetting to meet their climate targets. Over 60 airports globally have achieved carbon neutrality as reported on the ACA website. Airlines are also looking at carbon offsetting. The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is a global scheme for airlines, currently in pilot phase, that requires the purchase of carbon offsets to compensate for growth in CO_2 emissions.

CASE STUDY

SAN DIEGO INTERNATIONAL AIRPORT – CARBON NEUTRALITY

We were recently instrumental in helping San Diego International Airport (SAN) become the second airport in North America to achieve Airport Carbon Accreditation 'neutrality' through our sustainability plans. We helped develop the SAN Strategic Energy Plan (STEP) and Sustainability Management Plan (SMP) that together provide a portfolio of action plans to address the airport's primary areas of sustainability, which include carbon neutrality, sustainable energy, clean transportation, climate resilience, zero waste and biodiversity.

Our cross-functional team operationalized resource and cost-saving initiatives, allowing SAN's commitment to aggressive sustainability targets including 80 percent greenhouse gas emission reduction and a 67 percent increase in waste diversion. The STEP contains an action-focused roadmap leading to 30 percent energy cost reduction, 66 percent reduction in onsite greenhouse gases emissions, and ability to reduce reliance on grid energy by 70 percent. The plans serve as a model for the effective identification, management and communication of sustainability issues. Each plan sets an industry precedent, collectively establishing SAN's vision and roadmap for zero carbon, zero waste, and more resilient operations.

80%
SAN's sustainability targets: Greenhouse gas emissions reduction

67%
SAN's sustainability targets: Increase in waste diversion

30%
STEP action-focused roadmap: Energy cost reduction

66%
STEP action-focused roadmap: Reduction in onsite greenhouse gases emissions

70%
STEP action-focused roadmap: Ability to reduce reliance on grid energy

£25M

EasyJet fund to offset the emissions of their passenger air miles in the Europe, Middle East and Africa (EMEA) market.

Delta Airlines made news just recently with the commitment of $1 billion USD over the next 10 years to mitigate all emissions from its global business going forward, while EasyJet has announced similar measures and a £25 million fund to offset the emissions of their passenger air miles in the Europe, Middle East and Africa (EMEA) market.

While carbon credits purchased under CORSIA are typically generated by carbon reduction projects in developing countries, there are ongoing discussions about how airlines and airports together can influence mitigation efforts that are more closely aligned to air travel. For example, expanding an airport's 'net zero zone' through programs that generate carbon reduction within an airport's catchment would localize carbon emissions reduction while generating potential air quality co-benefits, thus bringing the carbon impact and offset benefit closer to the community in which the airport operates.

The aviation sector is in a difficult position on climate change, with the full value chain for air travel including aircraft manufacturers, airlines, airports and ground transportation providers contributing to carbon emissions. Far-reaching carbon reduction requires radical changes to aircraft activity but is still years from fruition. Accelerating new aircraft technology and sustainable aviation fuels are clearly priorities, but airports and their business partners are on the road to making airports themselves more carbon efficient now and making a bigger impact in the short term. Taken together, these measures represent some of the major opportunities facing the aviation sector's carbon emissions challenge.

CASE STUDY

SYDNEY AIRPORT – PHYSICAL AND TRANSITIONAL RISKS

We worked with Sydney Airport's leadership team to develop a climate adaptation plan responding to the physical and transitional risks of climate change. This adaptation plan is based on the development of a clear set of future climate and transition scenarios and draws on leading adaptation actions being implemented by airports globally.

The plan provides a pathway to strengthen the airport's approach to climate change risk management, including trigger points to embed climate resilience in decision-making and assist the airport in its climate-related financial disclosures through the Task Force on Climate Related Financial Disclosures. The results of this work featured in the Sydney Airport 2019 Sustainability Report. WL