



DIRECTORS GENERAL OF CIVIL AVIATION-MIDDLE EAST REGION

Seventh Meeting (DGCA-MID/7)
(Riyadh, Saudi Arabia, 19 – 20 May 2024)

Agenda Item 6: Environmental Protection

ACI GUIDANCE DOCUMENTS TO ADDRESS CLIMATE CHANGE

(Presented by Airports Council International)

SUMMARY

This paper presents two ACI guidance documents aimed at helping airports mitigate climate change and adapt its infrastructure and operations to the impact of climate change: namely [Airport Solar Photovoltaic Implementation Guidance Document for Asia-Pacific and Middle East Airports](#) and [Tendering Guideline for Climate Resilience Planning for Asia-Pacific and Middle East Airports](#). Both documents are available free online.

The meeting is invited to note the information contained in this paper.

REFERENCES

[Airport Solar Photovoltaic Implementation Guidance Document for Asia-Pacific and Middle East Airports](#)

[Tendering Guideline for Climate Resilience Planning for Asia-Pacific and Middle East Airports](#)

1. INTRODUCTION

1.1 In light of latest scientific evidence from the Intergovernmental Panel on Climate Change (IPCC), rapid action is required now from all sectors to reduce anthropogenic CO₂ emissions. Defining and monitoring the achievement of ambitious goals for aviation to contribute to addressing climate change is a priority. For aviation, all stakeholders must take significant action and ensure that no country is left behind to address the climate impacts of international aviation through development and implementation of globally harmonized policies and frameworks, SARPs and guidance toward the achievement of global aspirational goals – net-zero carbon dioxide (CO₂) emissions from aviation by 2050.

1.2 ACI continues the promotion and support of airports' response to climate change through guidance and actively developing services to support airports setting long term carbon goals and roadmaps. This paper presents two recently published ACI guidance documents to help airports in the region to mitigate climate change and adapt its infrastructure and operations to climate change.

2. DISCUSSION

Mitigation of climate change:

2.1 Under a 2050 business as usual scenario, the projected decarbonisation of the electricity grid will not be sufficient to offset the growth in demand and associated increased energy requirements of airports in the region. This will result in an increase of approximately 67% in total emissions in carbon dioxide. The various enhancements of energy efficiency, including fuel switching for on-site heating appliances and electrification measures, is critical to achieving a global carbon goal and could reduce total emissions under 6 Mt (Megatonnes) of CO₂ emissions by 2050. More aggressive national grid decarbonisation policies and on-site renewable energy initiatives could bring emissions below 1Mt CO₂ emissions¹, then further gap will require carbon removal initiatives to achieve the goal.

2.2 Airport operators are recommended to: integrate mitigation measures into airport master planning, operations planning, facilities design; enhancing management of greenhouse gases through programs such as electrification of currently fossil fuel powered equipment (GSE, airside passenger bus, APUs alternatives) coupled with on-site renewable energy infrastructures; and establishing long term carbon goal and roadmap.

2.3 Solar is one of the most convenient sources of renewable energy for airports. The plain topography, presence of flat building roofs and nature of airport operational requirements favors solar photovoltaic (PV) as compared to other sources of renewable energy. Solar PV projects are also a viable means to demonstrate the implementation of environmental policies.

2.4 PV systems are one of the top applicable renewable energy opportunities for airports. They have been installed at well over 100 airports worldwide and are well-suited for many existing airports designs due to the vast horizontal surfaces on which they can be installed. They can be mounted on terminal buildings or placed on unused or otherwise unproductive airport properties and lands. For many airports, PV systems constitute an economically and technically feasible way to increase the share of renewables in the energy supply and save costs.

2.5 However, for many airports, developing solar PV also leads to challenges in terms of planning and implementation due to lack of adequate knowledge and guidance. Developing PV systems in airports also requires special considerations and studies to be carried out to address some of the unique aviation challenges such as solar glare, compliance to operational requirements, safety implications etc.

2.6 Hence ACI has developed the [Airport Solar PV Implementation Guidance Document for Asia-Pacific and Middel East Airports](#) to help airports in the region to determine technical and economic feasibility and in the implementation of solar PV projects within their airport.

2.7 This guidance document lays out the project development process as a series of tasks namely: demand estimation, site selection, technology evaluation and plant design, financial viability assessment, selection of developer/supplier, plant construction, plant commissioning, and operation and maintenance. Some project development activities may happen in parallel. It is up to individual airports to oversee the activities and ensure they are coordinated and synchronised appropriately to achieve the desired outcome.

¹ [ACI World Long Term Carbon Goal Study Report 2021](#)

Adaptation to Climate Change:

2.8 Airports bear a significant risk from a changing climate which are likely to become more severe and dangerous in the future. The negative impacts caused by climate change are disruptive and have serious potential consequences for airport safety, asset management and operational resilience. Climate change impacts range from an increase in frequency of extreme weather events to heatwaves and public health concerns. The specific impacts on each airport will depend on the actual changes in climate experienced, for example, higher temperatures, droughts and flood, which will vary from place to place.

2.9 Climate change adaptation is the process of preparing for, and adjusting proactively to, climate change – both negative impacts as well as potential opportunities. As airports are dynamic systems that face unique climate impacts, their adaptation must be location specific and tailored to local circumstances. The recommended starting point in managing risks and building long-term resilience for an airport is to gain an understanding of its exposure and sensitivity to a given set of anticipated impacts through a climate risk assessment, in order to develop responsive measures and investments that address these vulnerabilities.

2.10 Airport operators are recommended to: perform climate change risk assessment for airport infrastructure and establish adaption plans; and include adaptation to climate change in airport master plans.

2.11 Conducting a climate risk assessment could be highly technical and resource-intensive, and it is likely that airport operators may require collaboration with external experts or consultants to perform the task unless the airport is well-resourced with sufficient in-house technical expertise and capacity, hence ACI has developed the [Tendering Guideline for Climate Resilience Planning for Asia-Pacific and Middle East Airports](#) to help Airport Sustainability Managers to become more informed as they commence the process of climate risk assessment.

2.12 While the focus of the guideline is to provide tendering guidance to support airports to commission their own climate risk assessment for climate resilience planning, further information has been provided in each section to educate Airport Sustainability Managers on the climate risk assessment process.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper.