

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGION**

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AGENDA ITEM 3: AVIATION SAFETY

**RESILIENT AIRPORT OPERATIONS FROM CLIMATE CRISIS AND
DISASTER RISK**

(Presented by the Republic of the Philippines)

INFORMATION PAPER

SUMMARY

The global aviation industry is a critical enabler of interconnectivity; however, it faces significant operational and structural challenges which is driven by the growing impacts of climate change globally. Currently, the leading hazards for Asia-Pacific include extreme precipitation, and extreme storms and winds. These are anticipated to have a relatively similar impact in the future. Moreover, severity of impacts of hazards such as extreme heat and drought are expected to increase significantly in the coming years. Other hazards anticipated to result in more severe impact include flooding, geological hazards, and third-party equipment/systems failures.¹

Critical infrastructure such as airports have been affected by multiple powerful typhoons that have hit the Philippines in the recent decade. Some of them experienced economic loss of not less than 10 million PhP per airport (including other indirect economic loss), communication failures and the need to re-establish air transport services - post disaster. For example, Super Typhoon Yolanda (Haiyan) in 2013 with 13-ft storm surge destroyed the Tacloban terminal as well as tower with limited aviation transport to medevac, military and humanitarian for weeks.

¹ Understanding the Current State of Practice of Disaster Risk Management and Resilience (CDRI, 2023)
<https://dymez6ioe12by.cloudfront.net/media/wp-content/uploads/2025/05/23050426/global-study-on-disaster-resilience-of-airports-phase.pdf>

RESILIENT AIRPORT OPERATIONS FROM CLIMATE CRISIS AND DISASTER RISK

1. INTRODUCTION

- 1.1 The global aviation industry is a critical enabler of interconnectivity but faces significant operational and structural challenges driven by the growing impacts of climate change globally. Currently, the leading hazards for Asia-Pacific include extreme precipitation, and extreme storms and winds. These are anticipated to have a relatively similar impact in the future. Moreover, severity of impacts of hazards such as extreme heat and drought are expected to increase significantly in the coming years. Other hazards anticipated to result in more severe impact include flooding, geological hazards, and third-party equipment/systems failures.²
- 1.2 In the latest World Risk Index 2025, the Philippines remained the most disaster-prone country. This scenario was exacerbated by the exposure to extreme weather events, natural phenomena such as typhoons, earthquakes and droughts. Extreme weather events are not only increasing in frequency, but are also increasingly exceeding the capacities of existing protection systems.³ For the Philippines, with a high reliance on air transport for tourism, trade and disaster response, climate adaptation is not a future option, but an immediate operational mandate for survival. The air transport contributes around 20.3B USD⁴ to the national GDP further supports 1.9million in jobs. The economic costs of climate-related disruptions have historically eroded percentages of national GDP and now threaten the economic baseline of the region.
- 1.3 Critical infrastructure such as airports have been affected by multiple powerful typhoons that have hit the Philippines in the recent decade. Some of them have economic loss of not less than 10 million PhP per airport (including other indirect economic loss), communication failures and the need to re-establish air transport services - post disaster. For example, Super Typhoon Yolanda (Haiyan) in 2013 with 13-ft storm surge destroyed the Tacloban terminal as well as tower with limited aviation transport to medevac, military and humanitarian for weeks.
- 1.4 As continuing effort to address these, airports in the Philippines are currently implementing several initiatives such as but not limited to: (1) Mactan – Cebu International Airport’s Kybernetics and Injunctions During Lightning and Thunderstorm (KIDLAT), a data-driven climate adaptation system that uses an automated network of lightning detection sensors and real-time early warning algorithms⁵, (2) Get Airports Ready for Disaster (GARD), prepares airports as logistics hubs in the event of disaster by assessing airport capacities to manage the influx of humanitarian aid and personnel in disaster response situations; training airport staff and disaster responders on how to manage this influx; and helping authorities to develop an action plan to increase the response capacity and guide response operations at the

2 Understanding the Current State of Practice of Disaster Risk Management and Resilience (CDRI, 2023) <https://dymez6ioe12by.cloudfront.net/media/wp-content/uploads/2025/05/23050426/global-study-on-disaster-resilience-of-airports-phase.pdf>

3 ibid

4 The Value of Air Transport to the Philippines (IATA, 2023) <https://www.iata.org/en/iata-repository/publications/economic-reports/the-value-of-air-transport-to-the-philippines/>

5 Green Airports Recognition 2026 Climate Change Adaptation (ACI, 2026) [https://www.aci-asiapac.aero/f/library/9759/GAR%202026%20publication-21may.pdf#:~:text=In%20response%2C%20Mactan%2DCebu%20International%20Airport%20\(MCIA\)%20implemented.by%20enabling%20proactive%20management%20of%20lightning%2Drelated%20hazards.](https://www.aci-asiapac.aero/f/library/9759/GAR%202026%20publication-21may.pdf#:~:text=In%20response%2C%20Mactan%2DCebu%20International%20Airport%20(MCIA)%20implemented.by%20enabling%20proactive%20management%20of%20lightning%2Drelated%20hazards.)

airport⁶; and (3) ongoing vulnerability assessment on other airports in the country.

2. DISCUSSION

- 2.1 To further support and capacitate each airport relative to its resilience and addressing vulnerabilities, it is critical to conduct scenario planning, data driven forecasting using technology-based systems (e.g. use of lidar and UAV for spatial assessment), strengthen the business continuity management, integrate the climate related scenarios in the airport emergency planning as well as improve both inter-agency and stakeholder relations.
- 2.2 Airport emergency planning is the process of preparing an airport to cope with an emergency occurring at the airport or in this vicinity. The objective of airport emergency planning is to minimize the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations. The airport emergency plan sets forth the procedures for coordinating the response of different airport agencies (or services) and those agencies in the surrounding community that could be of assistance in responding to the emergency.⁷
- 2.3 In the Philippines, the operationalization of resilience in aviation climate crisis response is manifested in the incorporation of systematic risk assessments in the planning of civil aviation infrastructure and emergency preparedness activities. The ongoing mapping of physical, operational and geographical vulnerabilities of important air transport nodes will allow the State Authority to detect potential single sites of failure prior emergence of the crisis.

3. ACTION BY THE CONFERENCE

- 3.1 The Conference is invited to note the information contained in this Paper.

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⁶ Get Airports Ready for Disaster <https://www.undp.org/geneva/projects/get-airports-ready-disaster-guard>

⁷ Chapter 1 General Need for Emergency Planning Procedures. ICAO Document 9137. Airport Emergency Planning part 7.2nd Edition 1991