59th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

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AGENDA ITEM 4: AIR NAVIGATION

INTEGRATING THE USE OF UNMANNED AIRCRAFT SYSTEM IN AIRPORT EMERGENCY PLAN

(Presented by Republic of the Philippines)

SUMMARY

Asia-Pacific countries have experienced an average of six natural disasters per year over the past three decades—about twice as many as those in Latin America and the Caribbean, and roughly three times more than in sub-Saharan Africa. In 2022 alone, extreme weather events resulted in over 7,500 deaths, affected more than 64 million people, and caused economic damage estimated at US$57 billion.

Given the increasing frequency of disasters, the aviation sector is exploring innovative technologies to improve response and resilience. In this context, the international community fully supports the use of Unmanned Aircraft Systems (UAS) as a vital technological intervention. To enhance the rapid response capabilities of each airport, the usability of UAS during emergencies, disasters, and even during routine operations is being studied.

The Philippines, as a contracting state of the International Civil Aviation Organization (ICAO), has implemented several initiatives to mitigate the effects of emergencies and crises. These initiatives include the development of resilient infrastructure and the use of Unmanned Aircraft (UA) for humanitarian aid and disaster response.

INTEGRATING THE USE OF UNMANNED AIRCRAFT SYSTEM IN AIRPORT EMERGENCY PLAN

1. INTRODUCTION

1.1 Asia-Pacific countries have experienced an average of six natural disasters per year over the past three decades — about twice as many as those in Latin America and the Caribbean, and roughly three times more than in sub-Saharan Africa. In 2022 alone, extreme weather events resulted in over 7,500 deaths, affected more than 64 million people, and caused economic damage estimated at US$57 billion.[1]

1.2 In the latest World Risk Index 2024, the Philippines remained the most disaster-prone country for the 16th straight year, as it continues to face extreme natural events like typhoons, earthquakes and droughts. A high score means a country is most exposed to drought, earthquakes, tsunamis, cyclones, coastal and riverine flooding, and rising sea levels.[2]

1.3 Several climate change adaptation and mitigation programs has been identified and being implemented through the assistance of both sovereign and non-sovereign funding institutions including but not limited to the World Bank and the Asian Development Bank (ADB). In the Philippines, the World Bank has provided assistance through the following initiatives: GeoRiskPH, the government's central source of information for accurate and efficient hazard and risk assessment; PlanSmart, a web application that automates the creation of Rehabilitation and Recovery Plans using science-based information from the GeoRiskPH integrated system; and the Seismic Risk Reduction and Resilience Project with the Department of Public Works and Highways. [3]

1.4 In this context, the international community fully supports the use of Unmanned Aircraft Systems (UAS) as a vital technological intervention. Aligned with the United Nations Sustainable Development Goals (UN-SDG), the International Civil Aviation Organization's (ICAO) [4] Strategic Objectives are strongly linked to 15 of the 17 United Nations Sustainable Development Goals (SDGs). For instance, under SDG number 9 —focused on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation— ICAO's strategic objectives on safety, capacity and efficiency, security and facilitation, economic development, and environmental protection are directly aligned.

2. DISCUSSION

2.1. To enhance the rapid response capabilities of each airport, the usability of UAS during emergencies, disasters, and even during routine operations is being studied.

2.2. In conjunction with these efforts, airport emergency planning is the process of preparing an airport to manage emergencies that occur onsite or nearby the vicinity. The objective of airport emergency planning is to minimize the impact of an emergency, particularly in terms 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. [5]

2.3. The Philippines, as a contracting state of the International Civil Aviation

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[1] For Asia-Pacific, Climate Change poses and 'Existential Threat' of Extreme Weather, Worsening Poverty and Risks to Public Health, says UNDP report (UNDP, 2023) https://www.undp.org/asia-pacific/news/asia-pacific-climate-change-poses-existential-threat-extreme-weather-worsening-poverty-and-risks-public-health-says-undp-report

[2] Philippines is still most disaster-prone country for 16th straight year (Business Mirror, 2024) https://www.bworldonline.com/top-stories/2024/09/10/620230/philippines-is-still-most-disaster-prone-country-for-16th-straight-year/#:~:text=The%20Philippines%2C%20which%20faces%20an,with%20the%20highest%20risk%20scores.

[3] Towards a Comprehensive Disaster Risk Management System for the Philippines (World Bank, 2023) https://www.worldbank.org/en/country/philippines/brief/towards-a-comprehensive-disaster-risk-management-system-for-the-philippines

[4] https://www.icao.int/about-icao/aviation-development/pages/sdg.aspx

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

Organization (ICAO), has implemented several initiatives to mitigate the effects of emergencies and crises. These initiatives include the development of resilient infrastructure and the use of Unmanned Aircraft (UA) for humanitarian aid and disaster response.

2.4. The various use of UAS in airport operations can be leveraged during both "peak" and "off peak" periods. The following are the proposed use of UAS in airport operations:

Off-peak Scenario

1. Survey (e.g. aerodrome design and planning integrated with GIS/satellite image assessment);
2. Monitoring (e.g. supplementary safety and security, especially at night);
3. Wildlife identification (e.g. identification of wildlife per airport if exiting in air side for mitigation); and
4. Use of GIS as part of climate and disaster risk vulnerability assessments**.**

Peak Scenario

1. Pre-disaster Surveillance (e.g. typhoon, extreme flooding, ground shaking, tsunami)
2. Post-disaster Surveillance and Provision of Goods/Services
   a) Real-time aerial surveillance to assess the affected areas and monitor ongoing conditions
   b) Provision of communication signal/bandwidth to the affected communities;
   c) Delivery of medevac services and medicines to identified locations by the LGU and CAAP;
   d) Assessment of the extent of damage (e.g. extreme flooding, ground shaking, volcanic eruption, earthquake, tsunami) depending on the type of identified risk hazard per airport; and
   e) Immediate response for search and rescue operations, and use during accident / incident investigation.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) request ICAO to assess the viability of integrating the use of UAS as part of the compliance with Document 9137 Airport Emergency Plans (AEP);

b) encourage ICAO to formulate an appropriate framework for the use of UAS in airport operations (e.g. peak and off-peak seasons);

c) urge Member States to integrate UAS provisions into their respective regulations for emergency/crisis management operations, considering each State's capacity and capability;

d) adopt SARPs on the use of UAS, provided the safety and security of the flying public will not be compromised; and

e) establish communication protocols for the use of UAS during "peak" scenarios, integrated with available, reliable and secured IT infrastructure.

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