



ICAO

International Civil Aviation Organization

The Seventh Meeting of the Asia/Pacific
Aerodrome Assistance Working Group (AP-AA/WG/7)

Bangkok, Thailand, 27 to 30 May 2025

Agenda Item 3: Aerodrome Certification and Safety Management System

▪ **Aerodrome safety vis-as-vis environmental protection**

ENVIRONMENT FRIENDLY SAFETY MITIGATIONS

(Presented by India)

SUMMARY

This paper explores the dynamic interplay between aerodrome safety and environmental protection, two essential, yet often conflicting aspects of modern aviation. While safety measures are crucial for ensuring seamless and risk-free aircraft operations, environmental initiatives focus on reducing the aerodrome's ecological footprint. The key challenge is to harmonize these priorities, achieving sustainable aviation growth without compromising operational safety.

1. INTRODUCTION

1.1 Airfield Environment Management Committee (AEMC) OF Kempegowda International Airport Bengaluru (KIAB) ensures aerodrome safety while promoting environmental sustainability. Key initiatives include wildlife hazard management, waste control, and community engagement to mitigate aviation risks. Proactive measures address Waste management, unauthorized fishing, quarry blasting, and light pollution. Additionally, structured water bodies support rainwater harvesting, groundwater recharge, and temperature regulation. Solar panel installations enhance energy efficiency, reducing reliance on conventional power and lowering costs. These efforts create a self-sustaining ecosystem, optimizing resources and minimizing environmental impact. By integrating safety and sustainability, KIAB sets a benchmark for responsible aerodrome management, Community development and long-term operational resilience.

2. DISCUSSION

Environment Management and Bird/Wildlife control

2.1 ICAO DOC 9184, Part II (Land Use and Environmental Management), under paragraph 1.3.2, outlines key measures for ensuring aerodrome safety, including:

- Managing habitats and accumulated solid waste that may attract wildlife, posing a hazard to arriving or departing aircraft.
- Eliminating light pollution or glint/glare effects that could interfere with a pilot's interpretation of navigational aids or hinder air traffic control personnel from visually monitoring aircraft.

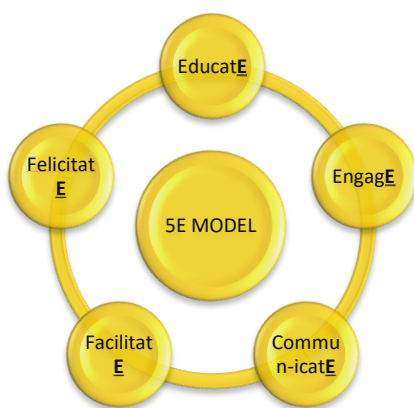
- Paragraph 4.6.5 on Solid Waste Management recommends that airport operators establish dedicated facilities to enhance solid waste management.
- Further, ICAO DOC 9137, Part III (Wildlife Control and Reduction) emphasizes the critical role of airport operators in forming a local committee responsible for developing and implementing an effective wildlife control program.

In alignment with ICAO recommendations, DGCA India, under Civil Aviation Regulation, Section 4, Series B, Part 1 – Aerodrome Design and Operation, mandates the establishment of an Airfield Environment Management Committee (AEMC) at aerodromes. The aerodrome operator/owner is required to take proactive measures to eliminate or prevent the presence of garbage disposal sites or other sources that may attract wildlife within or near the aerodrome unless a comprehensive wildlife assessment determines that they do not pose a hazard to flight operations.

In accordance with these regulations, the AEMC committee has been established at KIAB to implement measures for environmental protection and ensure aerodrome safety. A key aspect of this initiative is fostering a fully engaged community through structured collaboration between aerodrome authorities and local governing bodies.

Engagement Plan:

An effective community is fostered through a well-structured engagement plan, as outlined below



The 5-E model on community engagement and management plan

1. **Educate** – Training, Awareness and Workshops
2. **Engage** – Meetings, Committees, Workgroup formations and collaborative partnerships
3. **Communicate** – Posters, Circulars, Pamphlets, Videos, Journals
4. **Facilitate** – Resources, Feedback and Reports
5. **Felicitate** – Reward and recognition

AEMC Coverage:

- The Airfield Environment Management Committee (AEMC), in collaboration with local governing bodies, conducts a monthly survey covering a 10km radius to assess and address environmental concerns.
- A specialized Bird and Wildlife Hazard Management (BASHM) survey is conducted within a 13km radius to identify critical bird species, analyse settlement patterns, and monitor crossing behaviours around the airport.
- Proactive awareness campaigns are being implemented within the local community to highlight the hazards of laser light interference and its impact on flight safety.
- Measures are being proposed to regulate and control blasting activities in nearby quarries to ensure minimal disruption to aviation operations.

- Fishing activities in water bodies surrounding the airport are being monitored and reported to the appropriate authorities for necessary action.
- Awareness initiatives are being conducted to emphasize the importance of proper segregation and disposal of solid and liquid waste to prevent environmental hazards.
- Flight safety promotional posters have been strategically displayed around the airport to educate and engage the local community on aviation safety protocols.



Uniqueness:



Key Success areas:

- The AEMC team identified unauthorized fishing activities within an 8km radius and formally escalated the issue through the appropriate government authorities, leading to the cessation of such activities.
- Recognizing and rewarding the front-line staff of local governing bodies for their dedication and contributions, while highlighting their exemplary work to state authorities.



- Establishment of Solid Waste Management unit by BIAL to handle dry and wet waste generated out of airport and converting it to energy used for airport related activities.

2.2 Water bodies within aerodrome

Considering a tropical area, Bengaluru receives heavy rainfall each year and BIAL focuses on sustainable water resource management. This involves integrating water bodies within an aerodrome, which offered multiple environmental, operational, and sustainability benefits to the airport, the key positive outcomes include:

2.2.1 Rainwater Harvesting: Water bodies are designed to collect and store rainwater, reducing dependence on external water sources and ensuring a sustainable water supply for airport functions.

2.2.2 Groundwater Recharge: Effectively managed water bodies helped us replenish groundwater levels, benefiting both the airport and nearby communities.

2.2.3 Temperature Regulation: These Water bodies help to moderate local temperatures, reducing heat island effects and improving the overall climate within the airport.

2.2.4 Reduction of Unwanted Water Accumulation: Instead of allowing water to accumulate in unplanned areas, structured water bodies helped us manage stormwater effectively, minimizing the risk of waterlogging/flooding and wildlife hazards.

By implementing and integrating water bodies within the aerodrome, KIAB is creating a self-sustaining ecosystem that optimizes water usage, enhances renewable energy production, mitigates adverse environmental impact, and ensures long-term operational sustainability.

2.3 Solar panels within Aerodrome.

The installation of solar panels within KIAB offered significant advantages in terms of energy efficiency, environmental sustainability, and operational cost savings. As airports are high-energy-consuming infrastructures, harnessing solar power helped us transform them into more sustainable and self-sufficient entities. Below are the key benefits of integrating solar panels within KIAB:

2.3.1 Reduced Dependency on Conventional Power: Solar energy helped us decrease reliance on conventional power, making aerodrome operations more self-sufficient.

2.3.2 Lower Energy Costs: Generating electricity from solar panels has significantly cut down energy bills and reduced operational expenses in the long run.

2.3.3 Utilization of Unused Spaces: Solar panels were installed on terminal rooftops, unused landscapes and on slopes where regular maintenance challenging,

In addition, BIAL has engaged with external organizations to provide solar/wind generated power elsewhere through the power grids. These initiatives helped the airport maintain Environment and Aerodrome Safety hand in hand.

2.4 Conclusion

Balancing aerodrome safety with environmental sustainability is essential for the long-term growth of aviation. Through the initiatives led by the Airfield Environment Management Committee (AEMC) at KIAB, the airport operator not only enhances flight safety but also minimizes the ecological impact of aerodrome operations. By fostering community engagement and adopting sustainable practices, KIAB sets a benchmark for responsible aerodrome management, demonstrating that environmental stewardship and aviation safety can coexist to support a more sustainable future.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this paper; and
- b) Discuss any relevant matters as appropriate

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