Towards Climate-Adapted Airports

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Session 5: Climate adaptation and resilience
Climate Change Challenge for Airports

• Assumptions on climate and weather based on historical records but climate change means that past events are not necessarily indicative of future events.
• If climate change is not taken into account, expensive infrastructure could be inadequately designed for future needs.
• Airport could be under-prepared for extreme weather events and associated service disruptions, and other financial and operational planning efforts might not be optimized.
Example Climate Change Impacts on Airports

- Shifting averages and extremes in temperatures
  - Pavement deterioration may affect maintenance and capital expenditures
  - Increased frequency of extreme heat conditions may affect worker safety and delay construction schedules
  - Changes in weather-based tourism (e.g., skiing) may affect demand

- Frequent heavy precipitation events that stress drainage infrastructure, potentially causing flooding and damage

- Sea level rise may extend the reach of storm surge and chronic coastal erosion

- Changes in winter weather patterns may lead to adjustments in winter operations and equipment needs

- Water scarcity and drought could affect facility development and operational costs

Source: ACRP Project 02-74, Integrating Climate Change Risk into Airport Management Systems (under development)
Being Proactive with Climate Change

- Save on maintenance costs for pavement repair, drainage system maintenance, and other weather-related costs
- Improve safety and security for staff and passengers
- Avoid being caught unprepared for an extreme weather event
- Avoid underestimating infrastructure sizing requirements
- Maintain compliance with environmental, safety, and other regulations
- Improve reliability and customer service
- Maintain continuity of operations plan during an extreme event
- Improve ability to recover from an extreme event
Engage, assess, adapt, be adaptive

1. Engage – within airport & broader region
2. Assess – climate change & extreme weather vulnerability
3. Implement – resilience building & adaptive measures
4. Be adaptive – through engaged, adaptive management
1: Engage

- Likely some climate change assessments done before
- Ensures policy & regulatory compliance
- Recognizes airport’s critical regional role
- Accesses best practice
- Aids implementation
2: Assess

1. Historical extreme weather sensitivity
2. Short-term future extreme weather vulnerability
3. Long-term climate change vulnerability
4. Screen first; then focus in; then assess in detail
5. Many tools/techniques available
How can airports use their existing systems to manage climate risks?

- Strategic Planning
- Master Planning
- Asset Management
- Capital Planning
- Emergency Management
- Enterprise Risk Management
- Safety Management
How can airports and ports in Small Island Developing States (SIDS) adapt to climate variability and change?

Identification of key “operational thresholds” associated with climate sensitivities
3: Implement

1. You will not be alone!

Brisbane, Australia

4: Be adaptive

1. Monitor adaptive triggers & thresholds
2. Remain regionally engaged
3. Be agile to respond to opportunities
Triggers for Adaptation Response

1st Trigger Point 20xx

2nd Trigger Point 20xx

Period of Acceptable Risk
- Implement “no regrets”/resilience building actions
- Monitor and document local risk trajectory (frequency and intensity of events)
- Define what is the unacceptable impact sought to be avoided
- Set trigger points for future action

Risk Approaching Unacceptability
- Determine ‘best’ option to avoid or minimize impact
- Consult community about proposed response
- Implement response
- Avoid mal-adaptation

Unacceptable Impact/Consequence Has Occurred

Source: Fisk and Kay 2010
Thank you/Merci

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References

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