AIRPORTS AND THE ENVIRONMENT

www.aci.aero

Environmental stewardship at airports is becoming as important as safety and security. As well as potentially reducing operating costs, sound environmental practice is needed to mitigate adverse community pressure and avoid regulation from local authorities. ACI has a role to promote best practice and share knowledge between airports, especially those in regions where environmental management practices are low priority.

Sustainability

Environmental management falls under the broader umbrella of Sustainability, a term that encompasses the concept of meeting the needs of the present without compromising the ability of future generations to meet their needs. The three pillars of Sustainability are economic, social and environmental. For an enterprise such as an airport to sustain itself over the long-term it must maintain positive economic benefits to invest in its activities and for its stakeholders, it must develop positive impacts broadly across society both in its community and in communities affected by its activities, and it must participate in maintaining a healthy environment.

Aircraft Noise

Noise remains the most clearly identifiable impact on local communities and the environmental issue most likely to mobilize local residents against airport infrastructure or capacity expansion, often giving rise to operational restrictions and constraints. Accordingly ACI provides a dedicated Position Brief on Airports and Aircraft Noise. [ref…]

Climate Change and Greenhouse Gas Management

Climate Change is seen as the most important environmental challenge ever faced by mankind. Aviation is a small but growing contributor to man's anthropogenic emissions and airports are a key aviation stakeholder. As well as facilitating the reduction of aircraft fuel burn, airport operators must address their own non-aircraft emissions and those from other airport related activities. ACI provides a dedicated Position Brief on this issue.

Local Air Quality

Noise management primarily addresses mitigating adverse response from noise-affected communities.   In contrast, the management of airport local air quality (LAQ) and the relevant emissions is fundamentally targeted at achieving and maintaining compliance with local regulation on permissible levels of pollutant concentrations. An airport with a history of non-compliance with LAQ regulations can be subject to pressure from regulators and communities when planning permission for infrastructure expansion is needed.

Assessment of LAQ Situation

Starting with the relevant national and regional LAQ regulations, an airport operator should assess compliance for each pollutant species and determine which emissions sources are contributing to any non-compliance. This assessment can include the following:

- Monitoring LAQ pollutant concentrations at locations on and near the airport
- Conducting an inventory of the emissions that affect LAQ pollutants including current and projected future activities
- Conducting dispersion modelling using computer calculations to predict LAQ from an emissions inventory, topographical, weather and other information.

Such an assessment should indicate the relative importance of various emissions sources and activities at airports including aircraft (LTO, APU, taxiing), ground support equipment (GSE), fleet vehicles, power and heating plants and ground access vehicles

ACI has adopted the following key environmental policies on behalf of the world's airports.
- Minimize or mitigate the adverse effects of aircraft noise on people.
- Minimize or mitigate the adverse effects of aviation related air pollution.
- Minimize or mitigate the impact of aviation on climate change.
- Promote sustainability by improving the environmental performance during airport development and operation.
- Improve environmental awareness, training and sharing of information among world airports.
- Promote understanding, cooperation and collaboration with stakeholders.

(GAV). An assessment of projected activities will be required for Environmental Impact Assessments (EIA) for project planning.

Mitigation
Addressing LAQ problems is fundamentally achieved by reducing emissions, however not all sources are in the control of an airport operator. Aircraft emissions are reduced by fleet modernization, auxiliary power unit (APU) replacement with fixed ground power, and minimizing taxiing and queuing. Mitigating GSE and fleet vehicle emissions is achieved by fleet modernization, use of zero or low emissions alternatives (e.g. electric vehicles) and achieving operational efficiencies. GAV emissions can be reduced by public transit, shuttle bus consolidation and the like. ACI supports the practice of using landing fees or rewards to provide incentives for stakeholders to reduce emissions. Nearly all initiatives that reduce LAQ emissions also reduce fuel burn and greenhouse gas emissions.

Given the strict Swiss regulations, Zurich Airport has one of the most comprehensive airport LAQ management programmes including monitoring, modelling, inventory, aircraft APU restrictions, and landing fees with a NOx emissions component.

Resource Use and Waste Management
Resource use collectively addresses environmental policy aimed at reducing the use of resources such as water and land (or soil). (Fuel, electricity and air are included but these are addressed in the sections on LAQ and GHG management.) Waste management addresses the consequences of resource use, so in combining these, this section addresses most of the remaining airport environmental issues. The Waste Hierarchy – Reduce, Reuse, Recycle – provides a framework for these issues. The starting point should be reducing resource use, then, where possible should be reused or recycled. Disposal is the last resort.

Water Use
Potable water use can be reduced by modern plumbing practices including low flow taps and showers, detector controlled toilet flushing, maintenance and leak detection. Much potable water use can be replaced with water from other sources including rain water from roofs and tarmac, treated waste water and recycled cooling water. Landscape planting should use native or arid zone plants needing little water. Brisbane Airport achieved a potable water use reduction of 72% in a 4 year period, a reduction equivalent to 24,000 households.

Storm Water and Waste Water
Storm water can be collected from roofs, tarmac and landscaped areas. Depending on the collection, storage and possible contamination, the water may require treatment ranging from settling ponds to a proper water treatment plant. Use will depend on water quality and could range from landscaping through to vehicle and building washing, and toilet flushing. A crucial task of storm water management includes keeping water with tarmac residues from contaminating surface water courses.

De-Icing and Anti-Icing Fluids
Glycol-based aircraft and pavement de-icing fluids can pollute open water bodies and kill aquatic life, and their management is usually well regulated. Best practice will depend on the quantities of glycol used annually. Aircraft de-icing pads may be needed to collect and recycle the chemicals. Some processing may be required before run-off water can be discharged.

Soil and Land Management
Soil and surface and ground water can be contaminated by storm water run-off, fuel spills, de-icing fluids and other spill incidents. Spill prevention and reaction to incidents are operational and environmental responsibilities. Poorly planned land management can provide habitat that attracts a bird and wildlife hazard.

Solid Waste
There are many streams of solid waste at an airport including municipal waste from concessions and passenger areas, waste from airfield operations and maintenance such as derelict equipment, pallets and hazardous material like paint thinners, deplaned waste that might require incineration, and debris from construction and demolition. Some are regulated, some materials can be recycled, and some can generate income.

Environmental Management Systems
Airports need a systematic approach to setting environmental objectives and targets, achieving them and demonstrating that they have been achieved. A properly structured and implemented Environmental Management System, integrated throughout the airport organization, should be an integral part of the organizational culture and daily operating activities. Internationally recognized standards include International Standards Organization ISO 14001.

Training and Seminars
Training and the dissemination of best practice are a key policy of ACI. Environmental training can start with ACI's Online Learning Centre which has a 14- to 20-hour 7 module course on the basics of airport environmental management. The material in this brief and those on Noise and GHG management are address in greater detail. More detailed classroom and online courses are also available.

ACI's Policy and Best Practice Handbook devotes 30 pages to environment issues and ACI's World Environment Standing Committee has conducted several 2-day environmental management seminars in developing countries.