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ICAO: UNITING AVIATION ON CLIMATE CHANGE

# ICAO Colloquium on Aviation and Climate Change

## GHG Inventories at Airports

Xavier Oh

Airports Council International



ICAO Headquarters, Montréal, Canada, 11- 14 May 2010





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## Outline of Presentation

- Defining Airport vs Aviation Emissions
- Ownership vs Influence
- GHG Protocol
- Scope 1, 2 and 3 Emissions at Airport
- Mitigation and Certification



## Airport vs Aviation Emissions

- Aviation Emissions
  - Aircraft engine and APU emissions on ground and in-flight (equivalent to fuel loaded onto aircraft)
  - Kyoto Protocol excluded International Aviation
- Airport and Airport-Related Emissions
  - Terminals, aircraft and site maintenance, airside vehicles, GSE
  - Landside (off site) Ground Access Vehicles, trains
  - Aircraft - LTO, taxiing, queuing, APU, run-ups



## Ownership of Sources and Emissions

- Various stakeholders own different sources (varies by airport)
  - Airport Operator and its staff
  - Tenants – Airlines, Ground Handlers, Caterers, Concessions, Freight companies, Contractors
  - Other parties – General public, bus/train operators



## World Resources Institute GHG Protocol

- Scope 1 Emissions
  - from sources owned or controlled by airport operator
- Scope 2 Emissions
  - from the off-site generation of electricity purchased by the airport operator
- Scope 3 Emissions
  - from airport-related activities from sources not owned or controlled by the airport operator

# ACI Manual on GHG Emissions Management

- Subdivision of Scope 3 emissions

**Scope 3A** – Scope 3 emissions which an airport operator can influence, even though it does not control the sources.

**Scope 3B** – Scope 3 emissions which an airport operator cannot influence to any reasonable extent



## Airport Inventories

- Scope 1 Emissions
  - Power plant
  - Fleet vehicles
  - Airport maintenance
  - Airport-owned ground support equipment (GSE)
  - Fire practice





## Airport Inventories

- Scope 2 Emissions
  - Emissions at off-site power stations from the generation of electricity (or heat) purchased by the airport operator







## Airport Inventories

- Scope 3A Emissions
  - Aircraft engines during LTO (Landing/Take-off)
  - Aircraft engines during taxiing and queuing
  - Aircraft auxiliary power units (APU)
  - Tenant/Airline GSE and Airside vehicles
  - Airport company corporate travel
  - Construction



## Airport Inventories

- Scope 3B Emissions
  - Aircraft during cruise on flights to or from airport
  - Ground Access Vehicles (GAV) off airport site
  - Aircraft maintenance
  - Rail traffic
  - Off-site waste disposal



## Mitigation of Scope 1 and 2 Emissions

- Modernize power/heating plants
- Generate electricity from renewable sources (solar, wind, hydroelectric, biomass)
- Energy efficient buildings and lighting
- Fleet vehicle modernisation and use of alternative fuels/hybrid/electric
- Driver education and no-idling policy
- Solid waste management



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## Mitigation of Non-Aircraft Scope 3 Emissions

- Enhance public transport including bus and rail
- Hotel and car rental shuttle bus consolidation
- Alternative fuel or hybrid vehicle preferential taxi queuing and general parking
- Infrastructure for petrol alternatives
- Bicycle paths, stands and showers for staff



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## Mitigation of Aircraft Emissions

- Provide (and enforce) fixed electrical ground power (FEGP) and pre-conditioned air (PCA)
- Provide efficient taxiway and airport layout
- Departure management





# *Airport Carbon Accreditation*

Voluntary ACI scheme for airports to gain certification of achievements in GHG emissions management

## Four levels of achievement

**1: Inventory (Scopes 1, 2 and some 3)**



**2: Reduction of emissions (Scopes 1 and 2)**



**3: Optimisation – involving stakeholders (Scope 3)**



**3+: Carbon Neutrality (Scopes 1, 2 and some 3)**





## Reference Material

- ACI Guidance Manual for Airport GHG Emissions Management (2009) [www.aci.aero](http://www.aci.aero)
- [www.airportcarbonaccreditation.aero](http://www.airportcarbonaccreditation.aero)
- Airport Cooperative Research Programme (ACRP) Guidebook on GHG Emissions Inventories (2009)
- ICAO Document 9889
- WRI “GHG Protocol, a Corporate Accounting and Reporting Standard” (2004)



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## Thanks

Xavier Oh  
xoh@aci.aero



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