

Monitoring & reporting air transport emissions in the UK ETS

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Summary

- Aircraft operators have access to accurate fuel and operational data
- UK ETS experience demonstrates that airlines can meet ETS monitoring, reporting and verification requirements
- Based on actual historic fuel burn
- Air transport industry should propose an agreed calculation methodology for EU ETS

British Airways in the UK ETS

- UK ETS was a voluntary, multi-sector, national greenhouse gas emissions trading scheme
- Based on voluntary commitments to reduce CO₂ emissions over 2002 to 2006 using a 1998-00 baseline
- BA agreed a methodology for including air transport
 - definition of aircraft emissions sources
 - scope definition – geographical, emissions, management control
 - monitoring and reporting (M&R) methodology
- BA has successfully met all requirements of UK ETS

UK ETS relevant emissions for air transport

- Prerequisite to M&R is to define the relevant emissions
- UK ETS elements:
 - *emissions*: CO₂ (only relevant Kyoto gas)
 - *installation*: all flight ops by each wholly owned entity
 - *geographical scope*: all flights within the UK
 - *type of flight*: all types: scheduled, charter, positioning, diversion
 - *phase of flight*: on stand, taxiing, take-off, flight & landing

Definition of an air transport installation

- Installation definition has significant implications for M&R
- Air transport highly dynamic – operators continually change routes, frequencies and the fleets flying the routes
- To avoid continual baseline revisions and excessive administrative burden, installation was defined as all operations by each wholly owned entity in the BA Group
- BA had 2 air transport installations in the UK ETS

Calculating emissions

- BA used two emissions calculation methodologies
 - Method 1*: actual fuel consumption
 - Method 2*: estimated fuel consumption
- Data captured for each individual flight and route, allowing verification
- Data then aggregated for reporting purposes

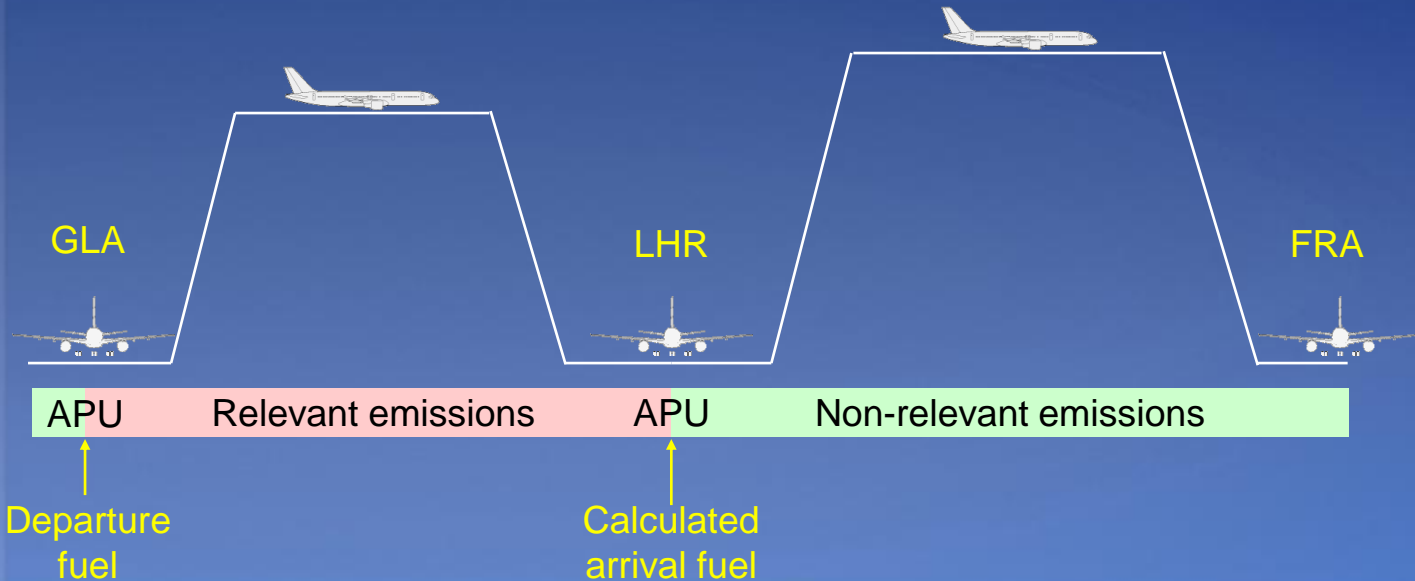
Verifying emissions

- UK ETS required independent data verification
- Data verified to same standard as ground installations
- The data source can be traced back to each individual flight, facilitating verification
- Calibration and metering accuracies are less of an issue than with ground sources, since high safety requirement

Method 1: relevant emissions

- Fuel burn for the relevant flight is calculated by:

Actual departure fuel minus calculated arrival fuel

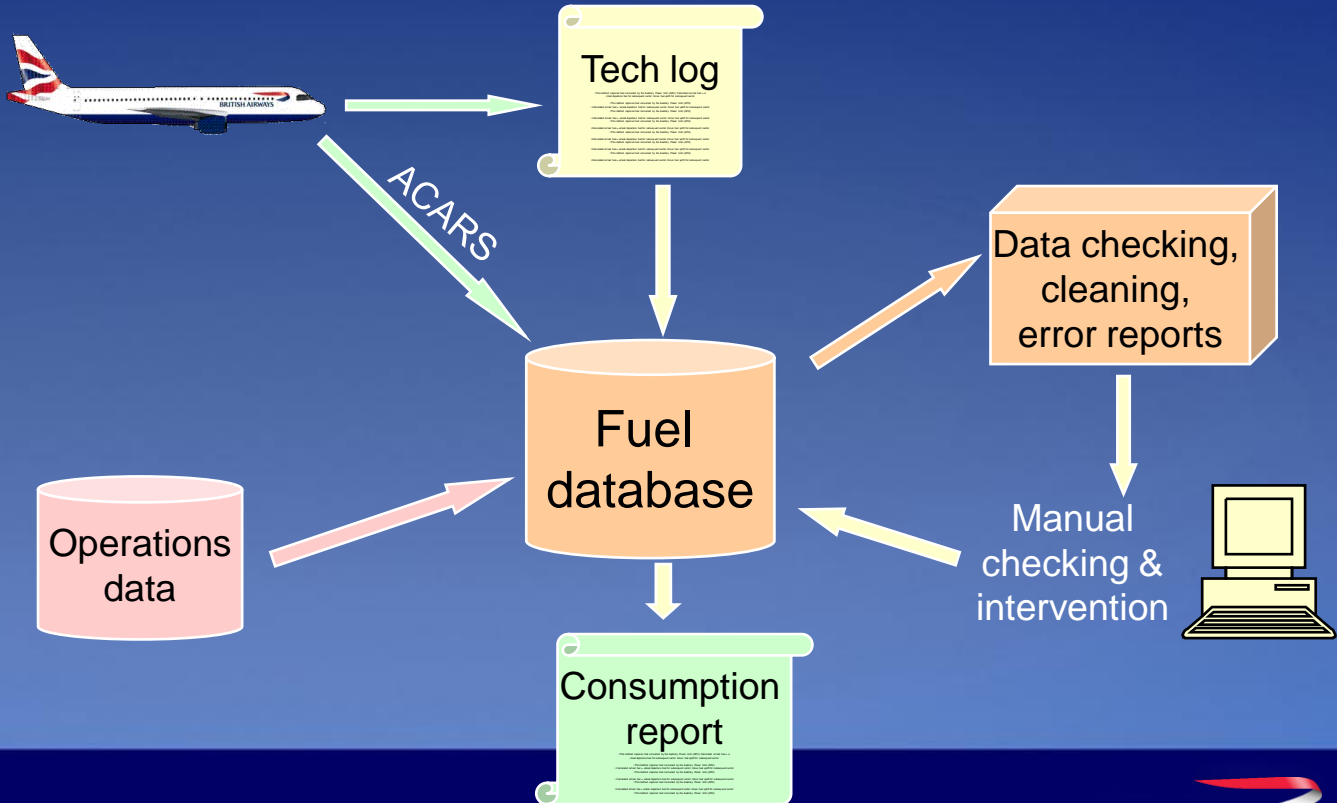


Method 1: formula

Fuel consumption for sector = Actual departure fuel
minus calculated arrival fuel

- Actual departure fuel = amount of fuel in aircraft tanks measured by aircraft gauges once fuel uplift for the sector is complete
- Calculated arrival fuel = actual departure fuel for subsequent sector minus fuel uplift for subsequent sector
- This method captures fuel consumed on stand by the Auxiliary Power Unit (APU) and engine running

Method 1: data management



Method 2: overview

- Method 2 calculates estimated fuel consumption where method 1 cannot be applied (e.g. subsidiary operators)
- Data relating to historical flights is collected from an operations database
- Fuel consumption is estimated for each aircraft type and sector combination (e.g. RJ100 BHX EDI)
- A tiered process was used to estimate fuel consumption based on the best information available

Method 2: tier steps

- The highest available tier is used in the Method 2 calculation
- **Tier A:** average historical consumption for the aircraft-sector combination
- **Tier B:** flight planning predicted consumption data for the aircraft-route combination
- **Tier C:** average historical burn rate for the aircraft type per hour or per nautical mile
- **Tier D:** generic manufacturers burn rate per hour or per nautical mile

Method 2: sector times or distance

- Tiers A & B have actual or planned sector times built in
- Tiers C & D require estimation of sector time or distance

(for tiers C & D) Fuel consumption for sector = burn rate multiplied by sector time or distance

- Sector flight times are taken from published timetables
- Where times unavailable, distance method is used
- Sector distance is either flight planned distance or great circle distance plus a factor to reflect the ATM environment

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Thank you

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