

Guiding principles

8. In addressing concerns associated with aircraft engine emissions, CAEP is guided by the following principles:

- a) Measures to address emissions should take into account environmental need, technical feasibility and economic reasonableness.
- b) Measures to address emissions should also take into account any potential implications for safety, which must not be compromised, and for aircraft noise. Measures aimed at one type of emission (for example, CO₂) or one emission-related problem (for example, climate change) should take into account any potential implications for other types of emission or for other emission-related problems.
- c) Measures to address emissions should be developed on a harmonised world-wide basis, wherever possible.

The way forward

9. Further development of technology and related world-wide standards. In the early 1980s, ICAO adopted Standards for the control of aircraft engine emissions through an engine certification scheme (Volume II of Annex 16 to the *Convention on International Civil Aviation*). These Standards, which were originally designed to address concerns regarding local air quality rather than global concerns, establish limits for emissions of NO_x, carbon monoxide and unburned hydrocarbons from new engines during an aircraft's landing and take-off (LTO) cycle. CAEP is therefore:

- a) monitoring advances in technology that might help achieve further reductions in emissions through improved engine or airframe design, in consultation with aircraft and engine manufacturers, and government sponsors of related research and development:
 - ➔ for LTO emissions regulated by the present Annex 16 standards;
 - ➔ for greenhouse gas emissions, notably CO₂;
- b) further developing the ICAO Standards for NO_x to make them more stringent:
 - ➔ in 1993, the Council of ICAO reduced the permitted levels by 20 per cent for newly certificated engines, with a production cut-off on 31 December 1999 and in practice all production engine models are expected to meet this standard by that date;
 - ➔ in 1999, the Council of ICAO further reduced the permitted levels by an average of 16 per cent for engines newly certificated from 31 December 2003;
- c) exploring the further development of Annex 16 to specifically address emissions of global concern:
 - ➔ alternate emission methodologies are being developed that will encompass all phases of flight (climb and cruise emissions, as well as LTO cycle) and take into account fuel efficiency and productivity of the whole aircraft (time-frame: analysis of options and recommendations for further study by CAEP/5, early 2001);