



Destination Green

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ICAO Noise Standards

Neil Dickson,
Environment Branch, ICAO



This presentation...



- ICAO Environmental Goals and CAEP
- Background to the ICAO Noise Standards
 - Principles of the noise Standard
 - Noise certification procedure
 - History
- Updating the ICAO Noise Standards
- The Outcome of CAEP/9
- The way forward



ICAO Environmental Goals



Limit or reduce the impact of aviation GHG emissions on global climate

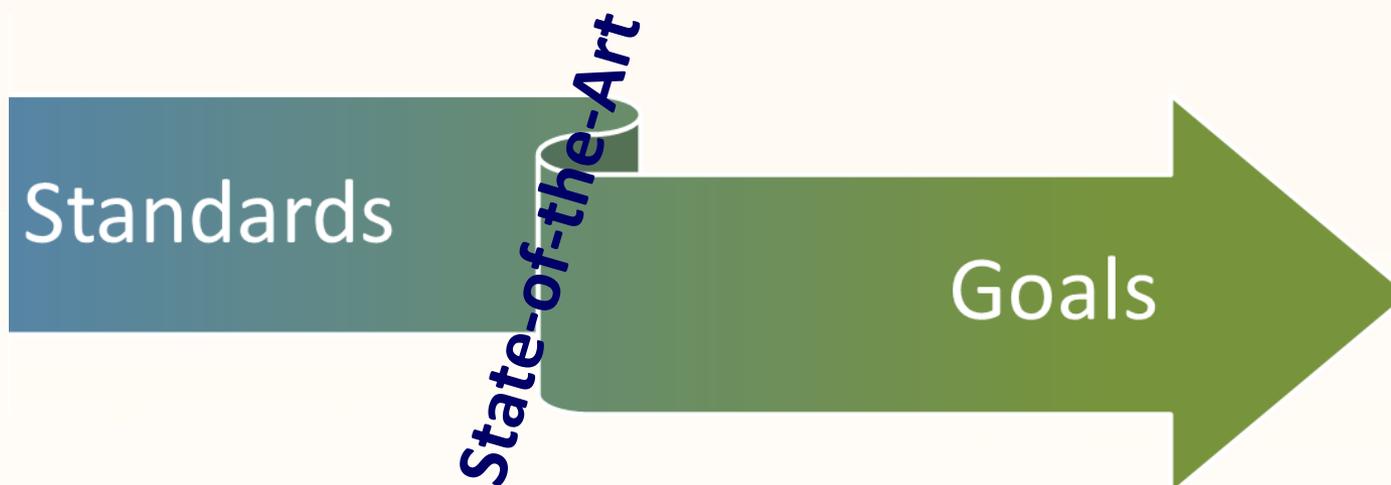
Limit or reduce the number of people affected by significant aircraft noise

Limit or reduce the impact of aviation emissions on local air quality

Quantify and Mitigate



Noise Standard principles



Establishing Technology Standards

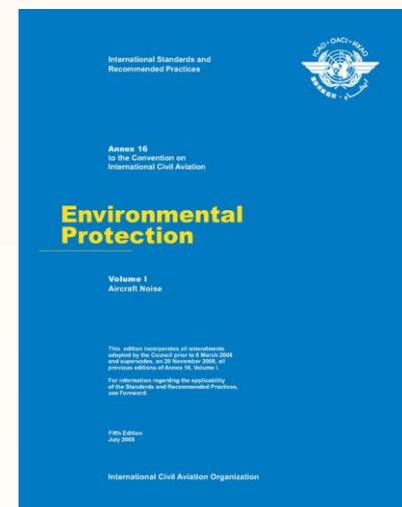


Noise Standard principles



“The prime purpose of noise certification is to ensure that the latest available noise reduction technology is incorporated into aircraft design demonstrated by procedures which are relevant to day to day operations, to ensure that noise reduction offered by technology is reflected in reductions around airports.”

The seventh meeting of the Committee on Aviation Environment Protection (CAEP/7), 2007

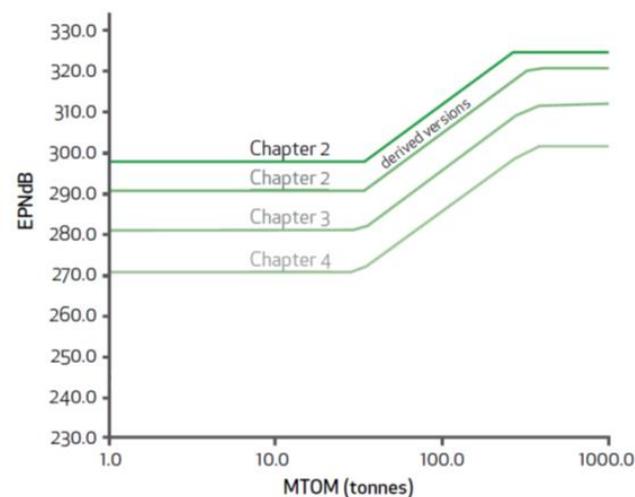
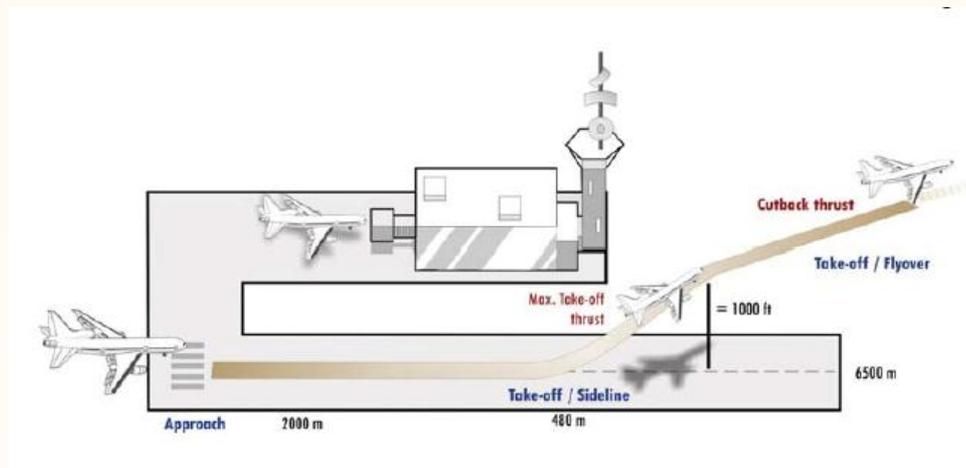


Noise Certification Reference Points

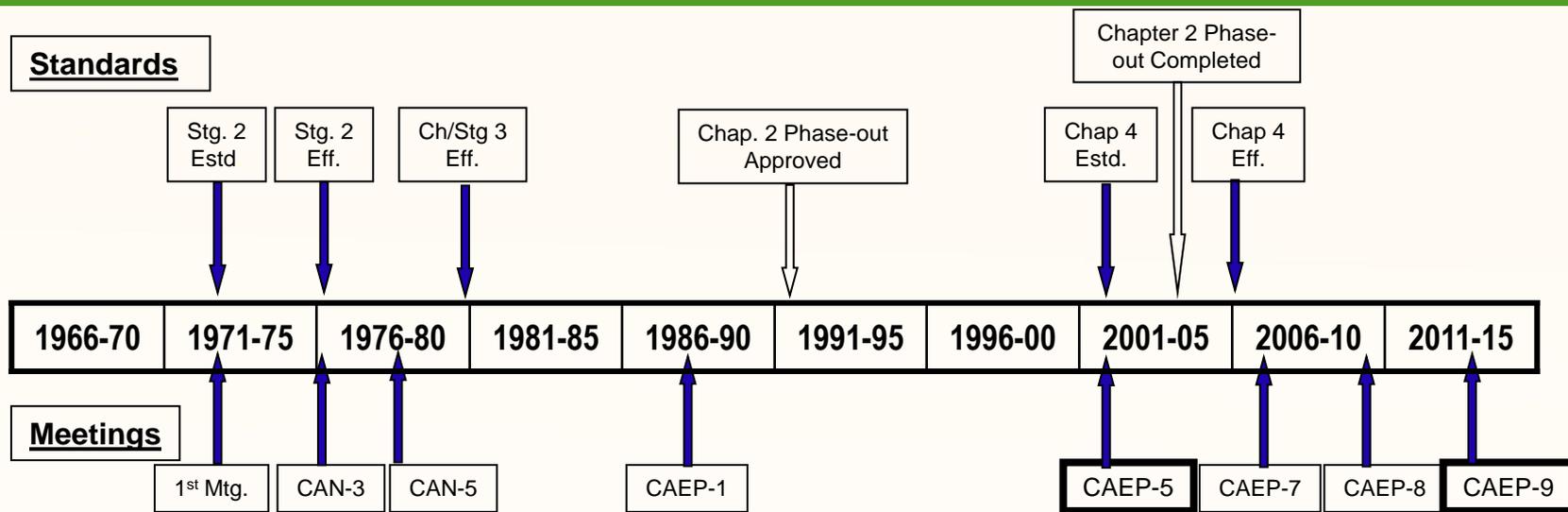
In noise certification, aircraft noise levels are measured at three certification points:

- **Fly-over:** 6.5 km from the brake release point, under the take-off flight path;
- **Sideline:** the highest noise measurement recorded at any point 450 m from the runway axis during take-off;
- **Approach:** 2 km from the runway threshold, under the approach flight path.

Cumulative levels are defined as the arithmetic sum of the certification levels at each of the three points.



History of the Noise Standards



CAN Committee on Aircraft Noise
CAEP Committee on Aviation Environmental Protection

Chapter	Applicable Year	Cum Margin (EPNdB)
2	1972	Ch. 3 --16
3	1978	0 (Ref)
4	2006	Ch. 3 +10

New noise Standard



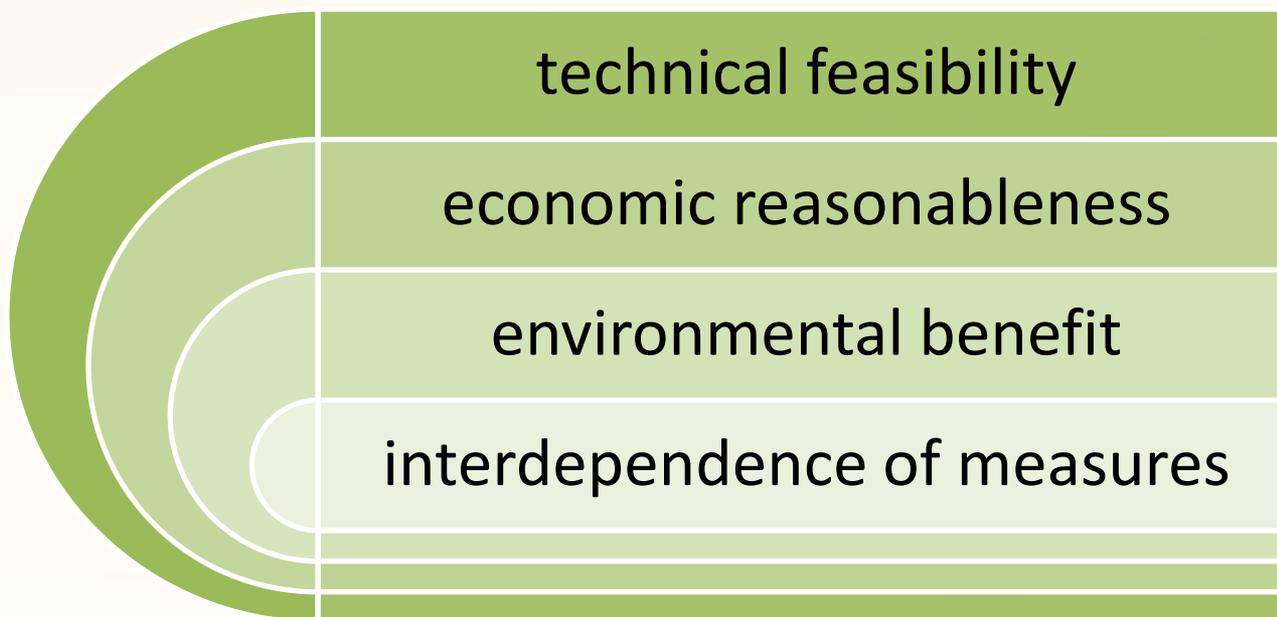
CAEP/9 – Updating the Noise Standard



- The work technical work is conducted by CAEP through Working Group 1 (WG1 – Noise Technical), with the aim:
 - To keep ICAO noise certification standards (Annex 16, Volume I) up to date and effective, while ensuring that the certification procedures are as simple and inexpensive as possible.
- Supported by significant cost benefit analysis of noise Stringency options.



CAEP/9 – Updating the Noise Standard



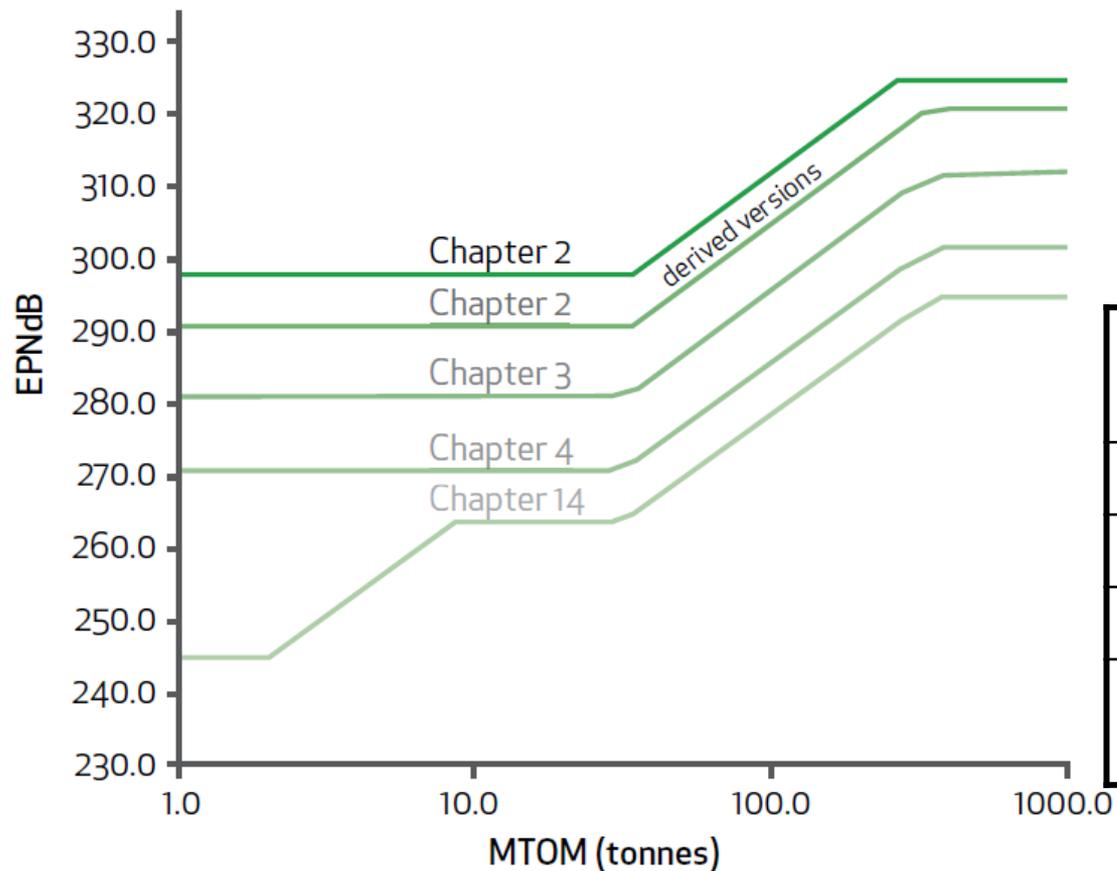


CAEP/9 – The outcome



- CAEP agreed to recommend an amendment to Annex 16, Volume I (New Chapter 14):
 - Increase in stringency of 7 EPNdB (cumulative) relative to the current Chapter 4 cumulative levels
 - Applicability to new types submitted for certification on or after 31 December 2017 (31 December 2020 for aircraft <55 tonnes)
 - Supplementary condition of not less than 1.0 dB below Chapter 3 limits at each certification point.
 - Change in the noise limits applicable to subsonic jet aeroplanes with take-off masses <8,618kg

CAEP/9 – The outcome



Chapter	Applicable Year	Cum Margin (EPNdB)
2	1972	Ch. 3 --16
3	1978	0 (Ref)
4	2006	Ch. 3 +10
14	2017 & 2020	Ch. 3 +17 (Ch. 4 +7)



CAEP/9 – The outcome



- General updates and maintenance to Annex 16, Vol. I, including:
 - Harmonization of the noise certification equipment calibration Standards.
- Recommendation for a new Noise Standard for Tilt-rotor aircraft.
- The CAEP/9 recommended Annex 16 amendments will go to the ICAO Council for consideration.



Future work - noise standards



- CAEP (through WG1) will continue to maintain and work towards updating Annex 16 during this CAEP cycle.
- Work on interdependencies related to noise and emissions standards.
- Continue to work on noise certification standards for supersonic aircraft.
- Develop a new certification scheme for supersonic flight.
 - Monitor and report on research to characterize, quantify and measure sonic boom.



Future work - noise technology



- Monitor research and report on various national and international research programmes.
- Review progress towards the achievement of the Independent Expert technology goals.
- Review data on emerging Subsonic technologies.
- Monitor and report on the status of Supersonic Transport projects.



For more information on ICAO activities on
environmental protection

ICAO Web Page

www.icao.int/

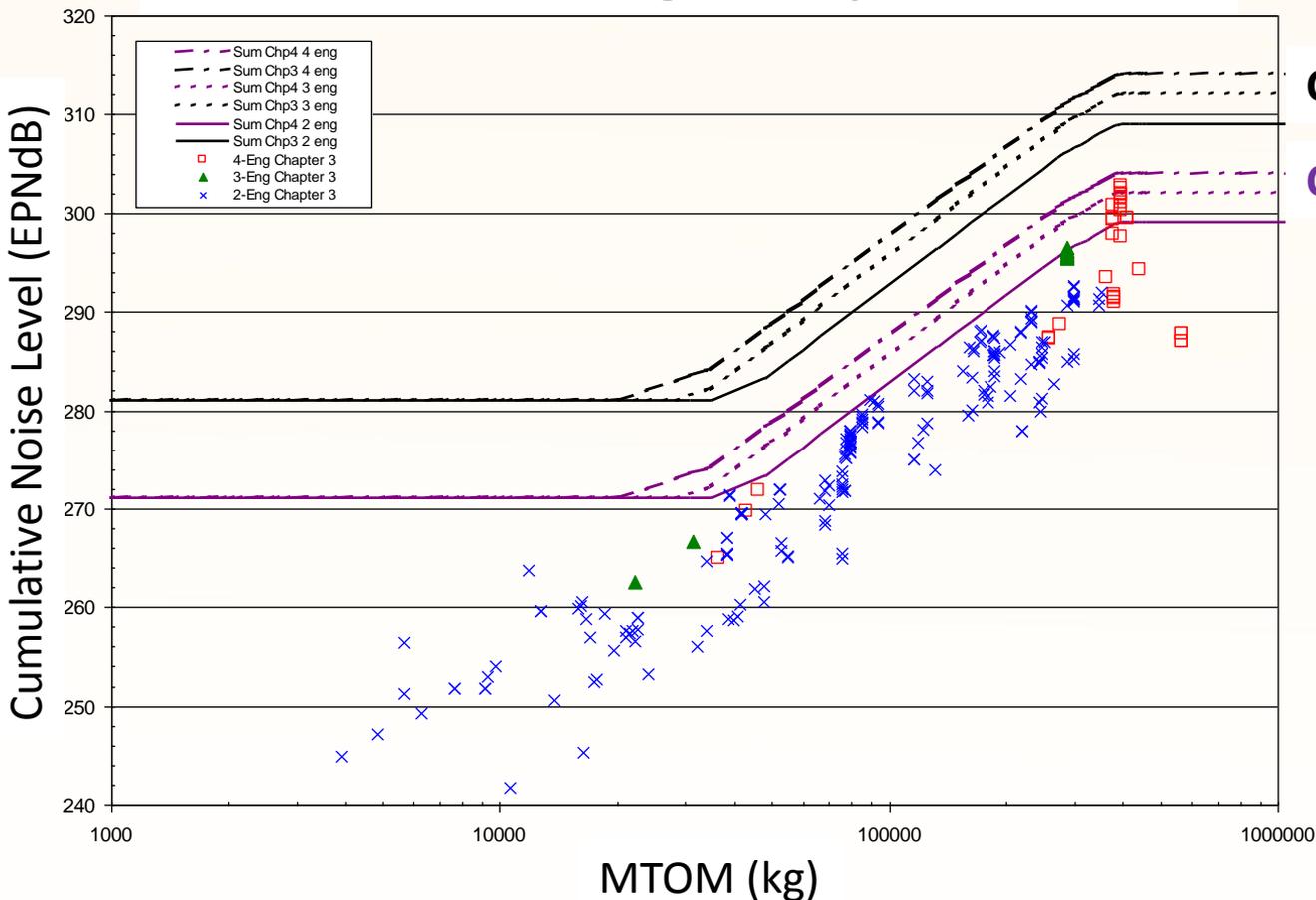
THANK YOU



ICAO Technology Standards for Noise



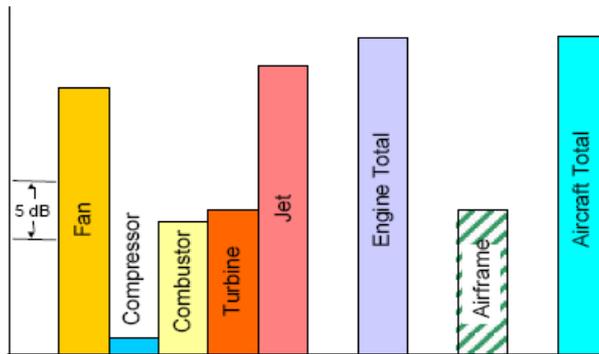
Cumulative Noise Levels of Best Practice Aeroplanes (2, 3 and 4-Engine Aeroplanes)



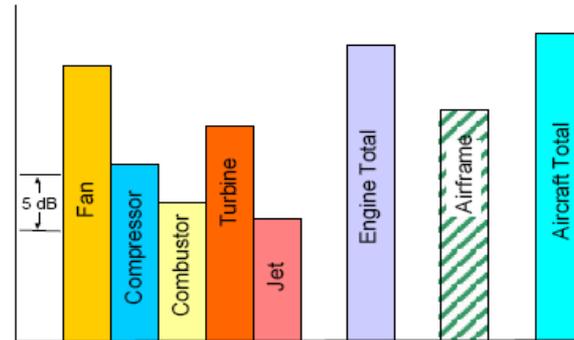
Chapter 3

Chapter 4

Source Noise Component Contributions



Typical Departure Noise Distribution



Typical Arrival Noise Distribution