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ICAO Colloquium on Aviation and Climate Change

Operational Goals WP/12

**Independent Expert Operational Goals Group
(IEOGG)**

Montreal 12-14 may 2010



Background

Independent expert processes help ICAO-CAEP to understand performance and to set goals

Technology goals (e.g. Noise and NOx) have been addressed this way for several years

The Independent Expert Operational Goals Group (IEOGG) was tasked to start to develop proposed 'operational' environment goals for CAEP/8



IEOGG Terms of Reference

‘Based on the independent expert (IE) process, examine and make recommendations for noise, NOx and fuel burn with respect to air traffic operational goals in the mid term (10 years) and the long term (20 years)’:

2016 and 2026



IE 'Domains'

- **National Authorities**
- **Airline Trade Associations**
- **Airport Operators**
- **ANSP**
- **International Organisations**
- **Industry**
- **Academia**



Key Information Inputs

- **ICAO Global Navigation Plan**
- **SESAR Deliverables D4, D5 and D6**
- **NextGen Documentation**
- **CANSO ATM 'Global Environment Efficiency Goals for 2050'**
- **IATA CNS / ATM operating efficiency 1999-2007**
- **Performance Review Commission reports 2006, 2007 and 2008**



IE Process Constraints

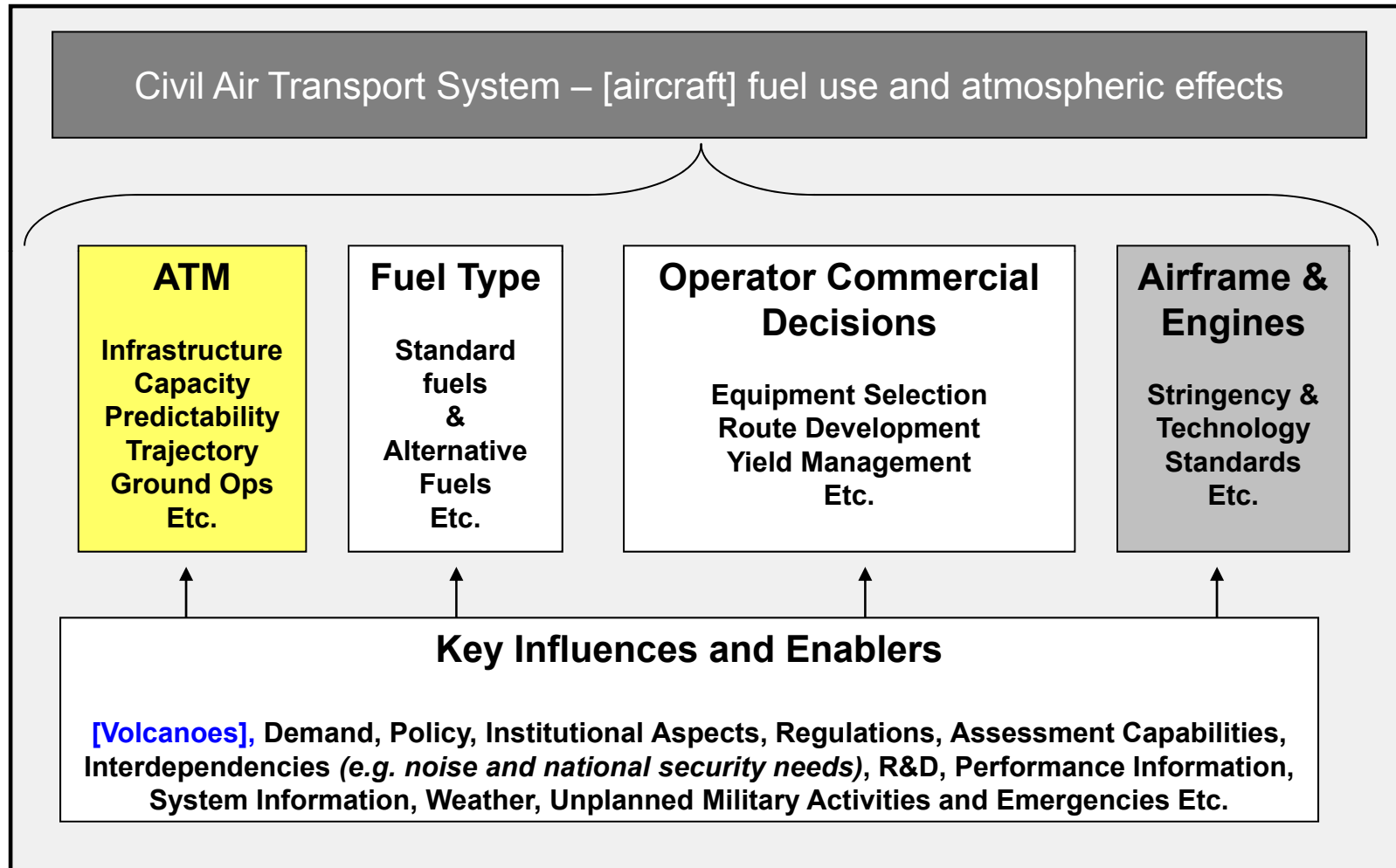
- **1st Meeting on 5 and 6 December 2008**
- **Goals agreed by end Feb 2009 – Modelling Task Force (MODTF)**
- **Final report to Working Group 2 in April 2009**

Therefore

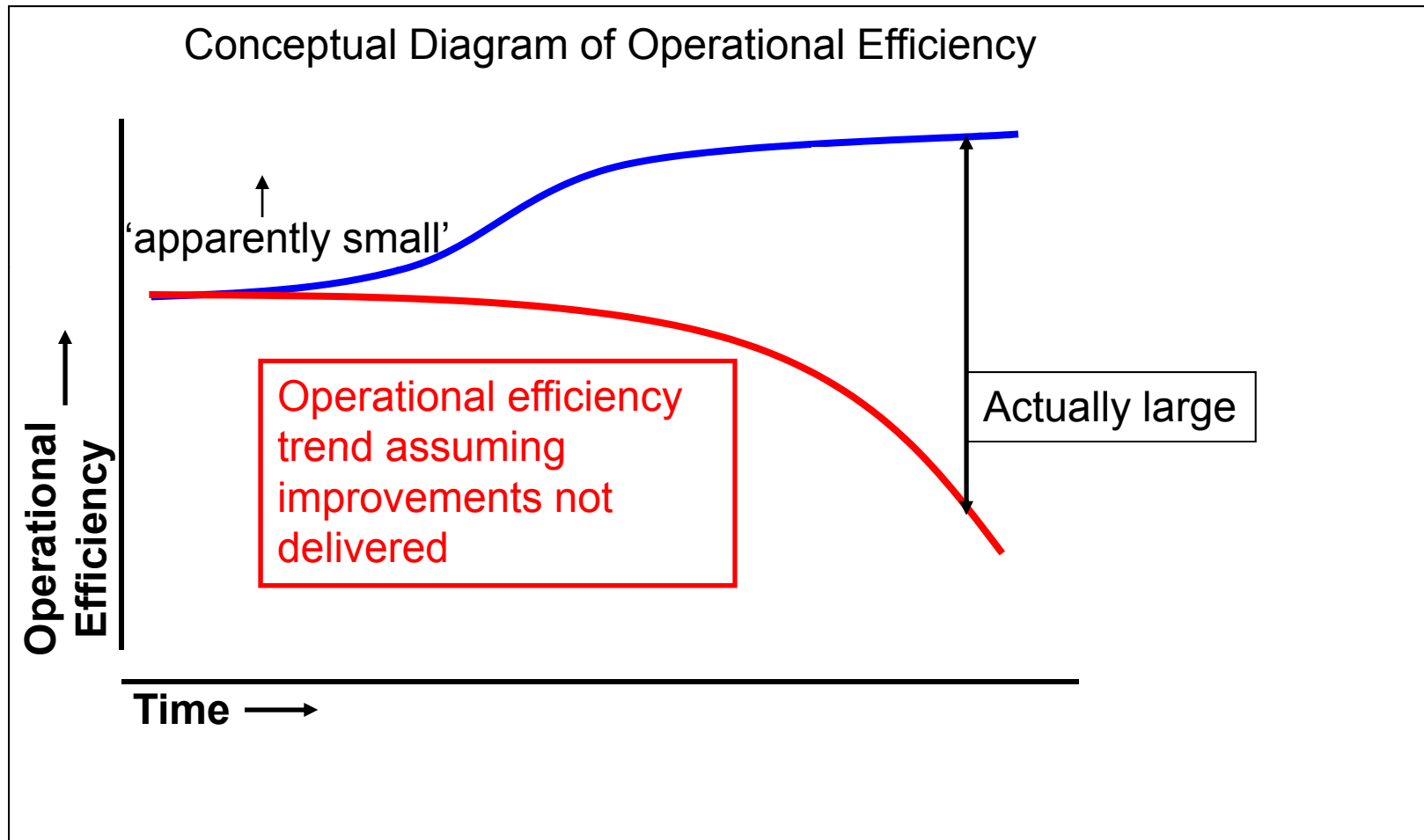
- **No new research possible**
- **Used readily available information**
- **‘Top Down’ approach taken**
- **‘Bottom up’ analysis was only used as validation/evidence**



Efficiency Goal - Key Findings (1)

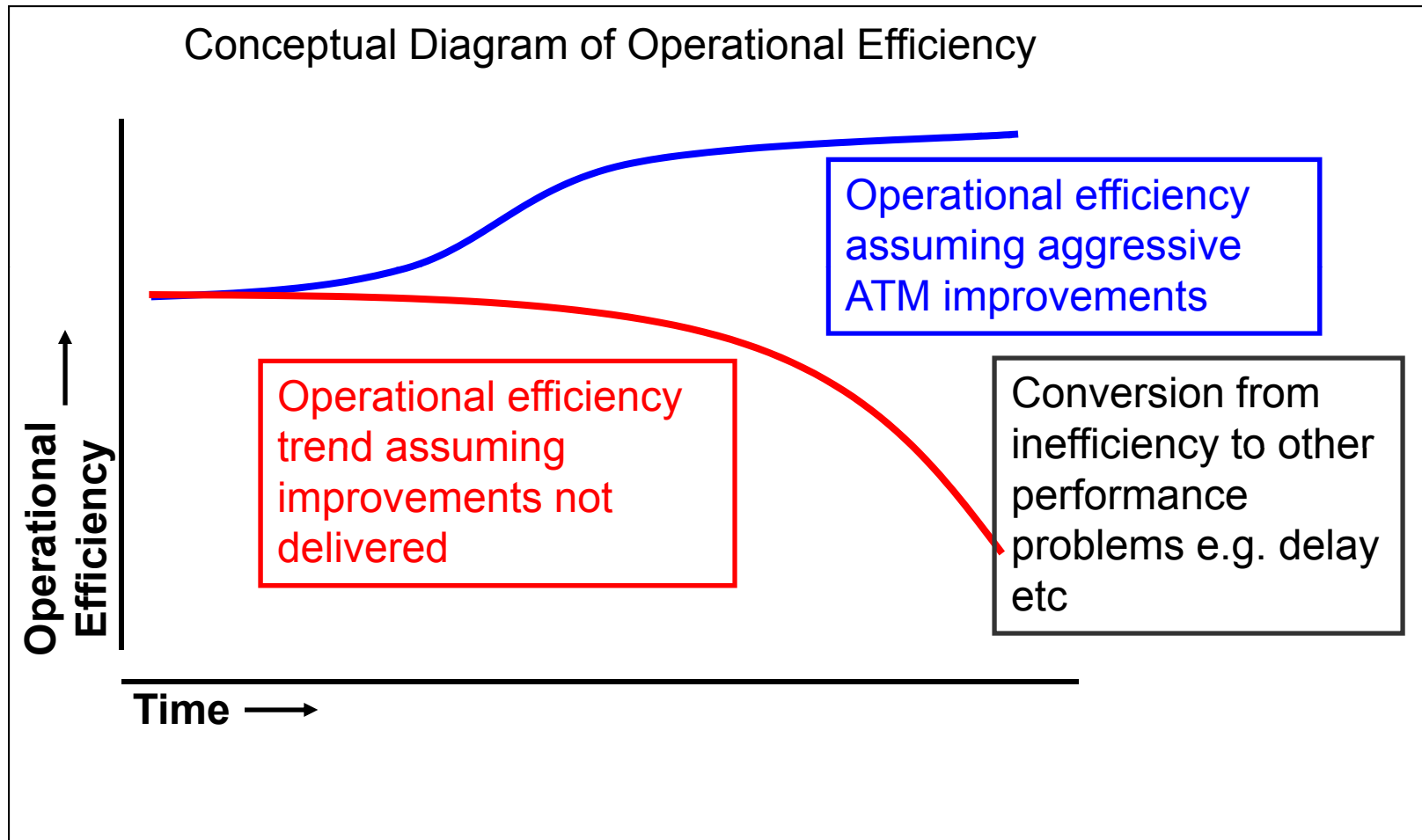


Efficiency Goal - Key Findings (2)



Original source: CANSO ATM Global Environmental Efficiency Goals for 2050 (December 2008)

Efficiency Goal - Key Findings (2)



Original source: CANSO ATM Global Environmental Efficiency Goals for 2050 (December 2008)



Operations (ATM) efficiency (great circle)

ICAO Region	% movements in 2006	Base Level	Ops Efficiency Goals	
		2006	2016	2026
	100%	92-94 %	92-95 %	93-95 %
	35%	92-93 %	92-94 %	93-94 %
N. America		92-93 %	92-94 %	93-96 % (1)
	28%	89-93 % (2)	91-95 %	92-96 % (3)
Europe		89-93 %	91-95 %	92-96 %
	37%	91-94 %	94-97 %	95-98 %
C America / Caribbean		93-96 %	94-97 %	95-98 %
South America		93-96 %	94-97 %	95-98 %
Middle East		92-94 %	94-97 %	95-98 %
Africa		90-93 %	94-97 %	95-98 %
Asia/Pacific		91-94 %	94-97 %	95-98 %



95% operational fuel efficiency by 2026

Note 1. This goal should not be applied uniformly to Regions or States;

Note 2. This is to be achieved whilst accommodating anticipated levels of growth in movement numbers in the same period;

Note 3. This ATM relevant goal does not cover air transport system efficiency factors that depend on airspace user commercial decisions (e.g. aircraft selection and yield management parameters etc);

Note 4. This operational efficiency goal can be used to indicate fuel and carbon dioxide reductions provided fuel type and standards remain the same as in 2008. The goal does not indicate changes in emissions that do not have a linear relationship to Fuel use (such as NOx); and

Note 5. This assumes the timely achievement of planned air and ground infrastructure and operational improvements, together with the supporting funding, institutional and political enablers.



Noise Goal

- **Where there is a policy to concentrate noise, dispersion about the centre line of departure noise routes could be reduced as follows:**
 - **Typical departure accuracy varies considerably even between SIDs at the same airport. However IEOGG estimated that for 2006 a notional accuracy of around +/- one nautical mile is reasonable;**
 - **+/- 0.1 nautical miles by 2016 for around 40% of departures; and,**
 - **+/- 0.1 nautical miles by 2026 for around 90% of departures.**
- **There is however no global plan to use this capability systematically for the noise mitigation purpose outlined above.**



NOx Goal

- **ATM is not presently driven by NOx related performance requirements**
- **IEOGG considered it did not have competence to assess goals for emissions not directly proportional to fuel efficiency.**
- **Recommends these are calculated as a consequence of operational efficiencies [goal] by the modelling community**



Example Data Gaps

- no global ‘bottom-up’ analysis of expected ATM improvements (NextGen recently; others?)
- unnecessary fuel upload for poor predictability not known
- potential from wind assisted performance not accommodated in the great circle – not known
- Selection and deployment of ATM capabilities for noise purposes is usually a local decision
- the ‘future do nothing’ scenario (the true base-case) is not fully understood



Some Conclusions

- **The significance of the apparently small anticipated operational efficiency gains increases when we take growth into account**
- **Some aviation environmental topics may not be addressed in existing CAEP goal setting processes**
- **Time-horizons and assumptions for each IE process should be harmonised**
- **The weaknesses in the available information should be addressed; chiefly:**
 - **The future do nothing scenario ‘base case’,**
 - **The bottom up evaluation of Ops Improvements**
 - **Non-great circle operational inefficiencies need to be quantified globally**



CAEP/8 Outcomes

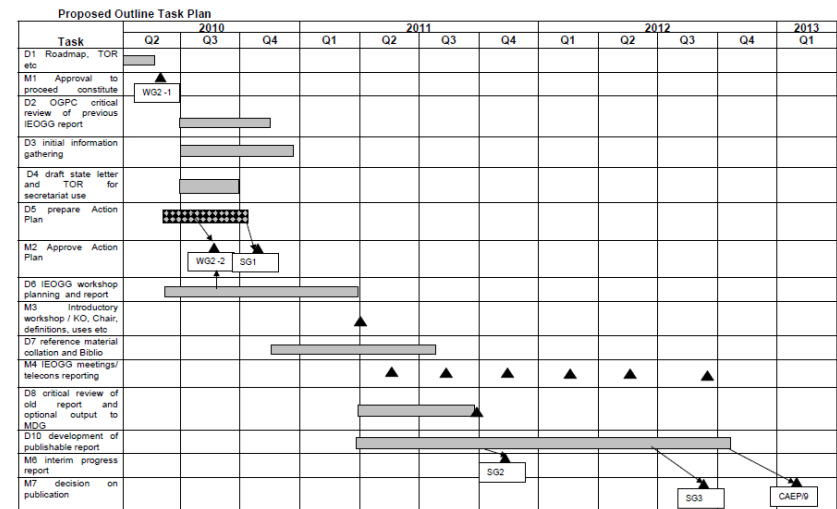
- **Members welcomed the report and confirmed work on Operational Environmental Goals should continue**
- **Members had concerns about the timescale and process used to formulate IEOGG report**
- **CAEP/8 Report is not to be widely published**
- **Activity to be further progressed for CAEP/9 based on CAEP/8 report but with complete review of process**
- **CAEP/9 Working Group 2 requested to form an IEOGG Planning Committee (OGPC)**
- **IEOGG Action Plan to go to CAEP Steering Group November 2010**



Draft Plan

(WG2 10 May 2010 agreed as basis for future development)

- *Operational Scope*
- *Action Plan*
- *Terms of Reference*



- April/May 2011 – Introductory workshop and 1st CAEP/9 IEOGG meeting
- Full co-ordination with the other IE goals processes is planned



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Thank you