

# Fuel and CO<sub>2</sub> Benefits from ASBU Block 0

**Environmental Modelling Unit** 

**ICAO** Air Transport Bureau



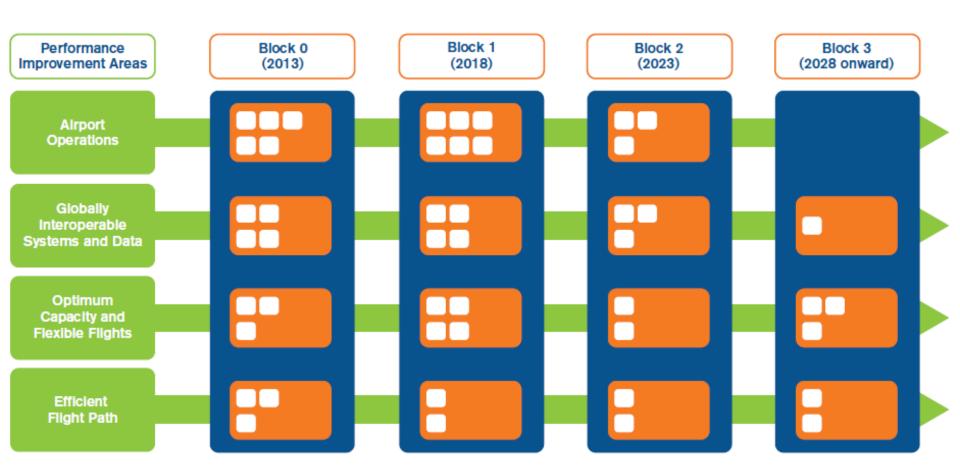








#### **Aviation System Block Upgrades**







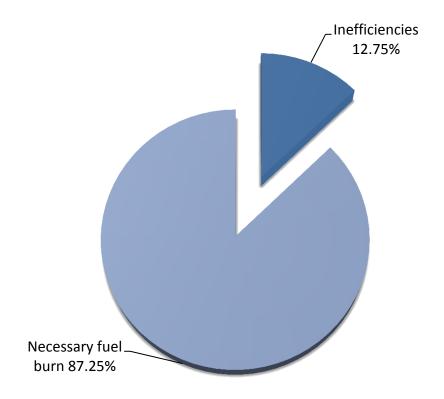






#### 2010 Global Air Traffic Management System Efficiency

In 2010, the global ATM system was between 87.25% and 89.75% efficient.



Source: IEOGG 2013





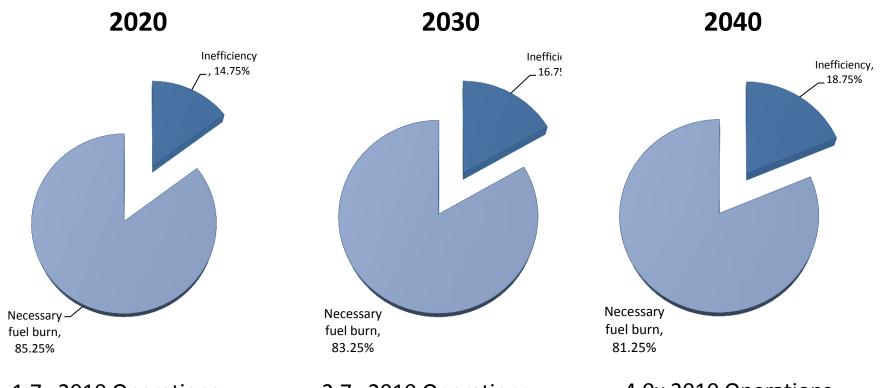






# Operational Efficiency in a Static ATM System up to 2040

If no ATM improvements are made, system efficiency will degrade by 2% every decade.



1.7x 2010 Operations

2.7x 2010 Operations

4.0x 2010 Operations

Source: IEOGG 2013 and CAEP/9 Forecast











# CAEP International Aviation Net CO<sub>2</sub> Emissions Trends



## **Analysis Overview**

Identify modules that may deliver fuel savings Identify existing studies related to those modules that quantified the savings

Turn those quantified esults into rules of thumb Gather implementation plans from States

Integrate with CAEP trends modelling to arrive at global estimate











#### Modules Selected for Initial Analysis

Module	Title	Benefits
B0-CDO	Continuous Descent Operations	Reduced fuel burn on arrival
B0-FRTO	Free Route Operations	Reduced in-flight fuel burn
B0-RSEQ	Runway Sequencing	Reduced airborne holding and taxi-out time
во-ссо	Continuous Climb Operations	Reduced fuel burn during climb
BO-NOPS	Network Operations	Reduced fuel burn in all phases of flight, including taxi
во-тво	Trajectory Based Operations	Reduced in-flight fuel burn
B0-WAKE	Wake Turbulence Separation	Reduced taxi-out time and reduced in-flight fuel burn
B0-ACDM	Airport Collaborative Decision Making	Reduced taxi-out time
B0-ASUR	Alternative Surveillance	Reduced in-flight fuel burn
B0-OPFL	Optimum Flight Levels	Reduced in-flight fuel burn



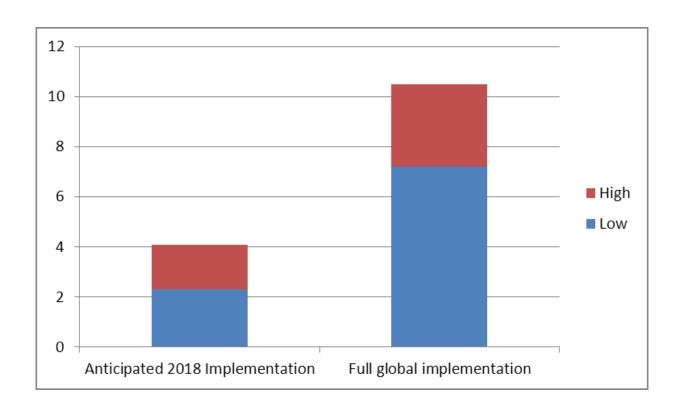








# Preliminary Results (1 of 2)



2018 Fuel Savings compared with 2013 Baseline (Mt)



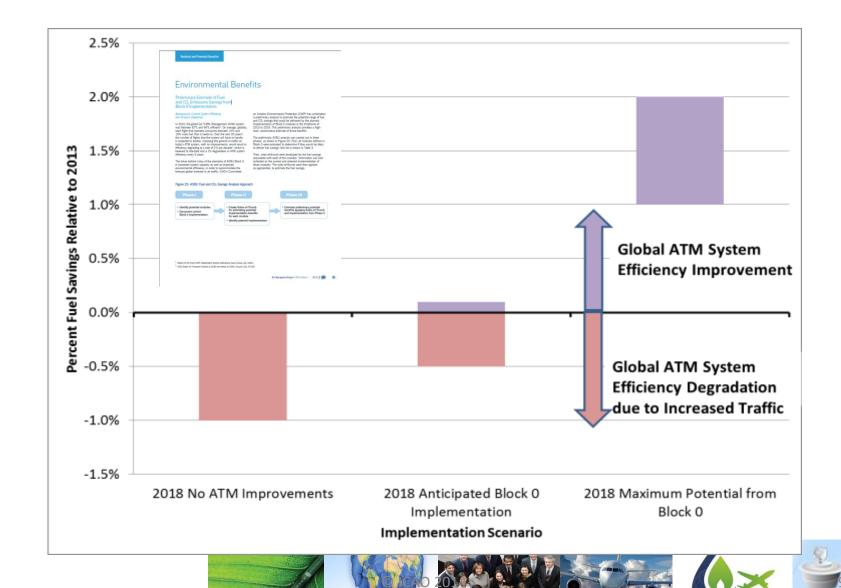








### Preliminary Results (2 of 2)



### **Preliminary Conclusions**



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 Assuming a 1% degradation in ATM system efficiency in the absence of any action during the 2013-2018 timeframe...





 The implementation of ASBU Block 0 concept would limit that degradation to 0.5% with the possibility to provide a net benefit in efficiency gains of 1.0 to 2.0% based upon full global implementation of the Block 0 modules.













- Robust analysis of Block 0 new modules added:
  - APTA (approach procedures including vertical guidance)
  - RSEQ (AMAN/DMAN)
  - SURF (A-SMGCS, ASDE-X)
  - FICE (increased efficiency through groundground integration)
  - DAIM (digital AIM)
  - AMET (Met information supporting enhanced) operational efficiency)
- Preparing for Block 1 evaluation





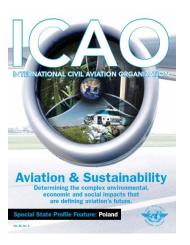


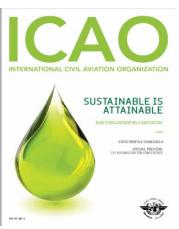


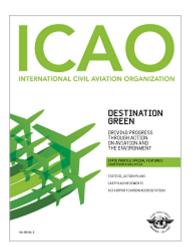




#### Additional information





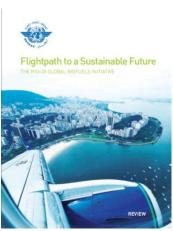




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