Global Aviation Dialogues (GLADs)
on Market-Based Measures to address Climate Change

Market-Based Measures

Environment, Air Transport Bureau
International Civil Aviation Organization (ICAO)

Nairobi, Kenya - 14 April 2015

Common Dilemmas

- “Will MBMs impact aviation growth or can we continue to grow under a global MBM scheme?”
- “Will MBMs really reduce emissions or are we just paying to pollute?”
- “Will MBMs slow down action in other areas (technology, operations, innovation) or can it even facilitate actions?”
- “Is the development of an MBM too complex and too difficult to be achieved by 2016?"

Introduction

What?

MBMs are policy tools that are designed to achieve environmental goals at a lower cost and in a more flexible manner than traditional regulatory measures.

Source: ICAO Assembly Resolution 35-5

Why?

- MBMs are one of the measures in the "basket of measures" that can respond quickly to the need for emissions reductions to fill the gap
- MBMs can reduce the costs of achieving the aspirational goal of CNG 2020 by complementing a broader package of measures (including aircraft technology and operational improvements)

Types of MBMs

In the aviation context, three types of MBMs have been considered

- Levies
- Emissions trading scheme (ETS)
- Offsetting

Levies: ICAO Definitions

A **charge** is a levy that is designed and applied specifically to recover the costs of providing facilities and services for civil aviation.

Example: airport and navigation services (Chicago Convention, Article 15)

A **tax** is a levy that is designed to raise national or local government revenues which are generally not applied to civil aviation in their entirety or on a cost-specific basis.

Example: customs, fuel (Chicago Convention, Article 24)

Source: ICAO (2000), ICAO's Policies on taxation in the field of international air transport, 3rd edition, Doc. 8632

Levies

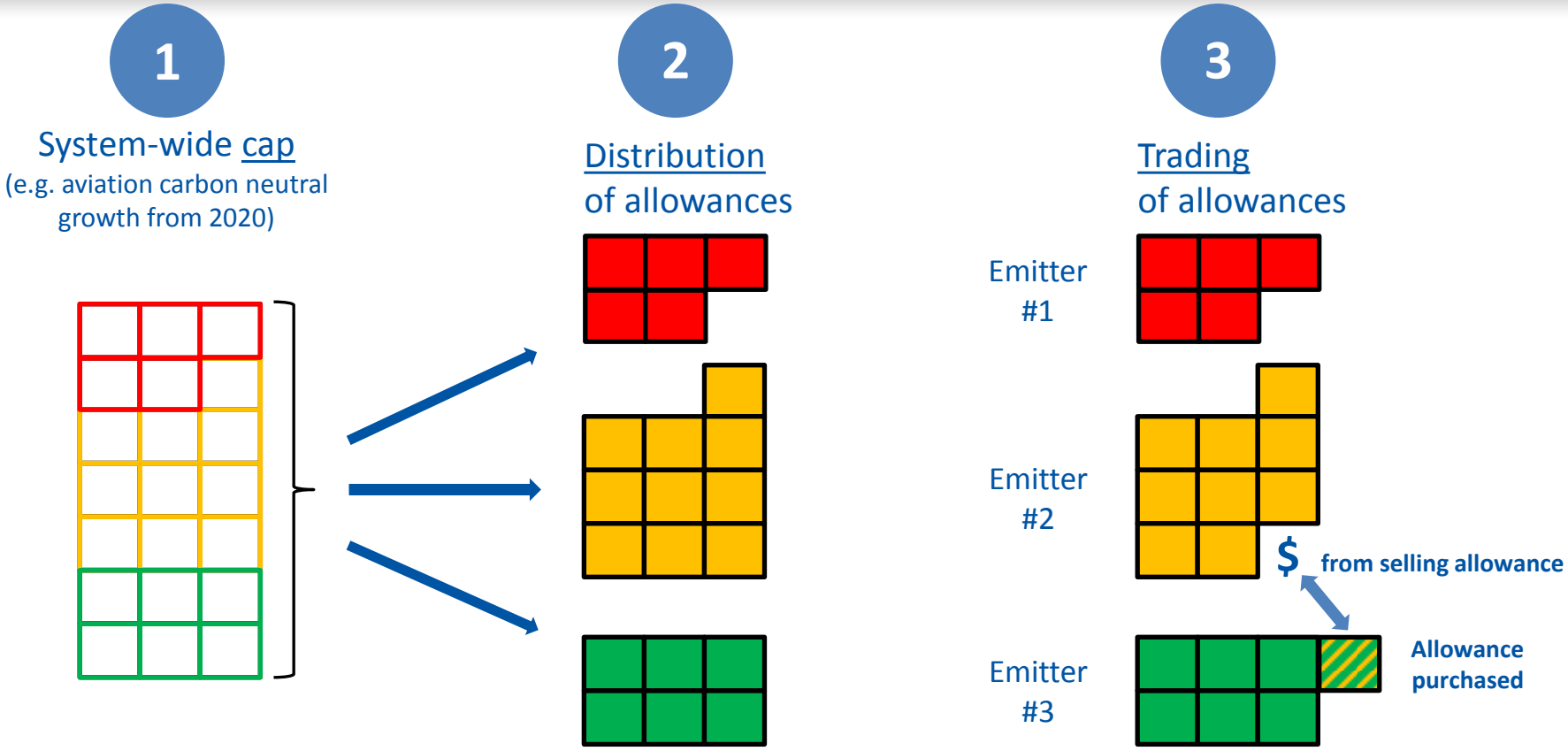
- Although a global levy seems attractive for the sector because of its simplicity and familiarity with taxes and charges, previous work on levies in ICAO has identified various challenges associated with this concept:
  - Using a levy to achieve the desired environmental outcome will require a level of pricing which could impact the growth of the sector, contrary to the Chicago Convention
  - Uncertainty to achieve the desired environmental outcome
  - No guarantee on the use of revenues for emissions reductions
  - Article 24 of Chicago Convention, related ICAO policies and bilateral air service agreements (> 4,000) do not permit taxes and charges on fuel used in international aviation
  - Uncertainty of legal capacity to collect and transfer levies related to fuel/CO_2

Source: ICAO (18 September 2014), A study on the advantages and disadvantages of a global fuel levy for international aviation

ETS: What it is

- A cap (i.e. maximum limit or target) is placed on all emissions within a country, a sub-national jurisdiction, a sector, etc.
- This cap is measured in tonnes of CO_2
- "Allowances" are created equal to the tonnes under the cap
  - 1 tonne of CO_2 = 1 allowance
- These allowances are distributed to emitters
- Emitters must surrender allowances equal to their emissions
- Emitters who emit more than the allowances distributed to them can purchase allowances from other emitters that emit below their allowances
- ETS generate an incentive to reduce where reductions are more efficient

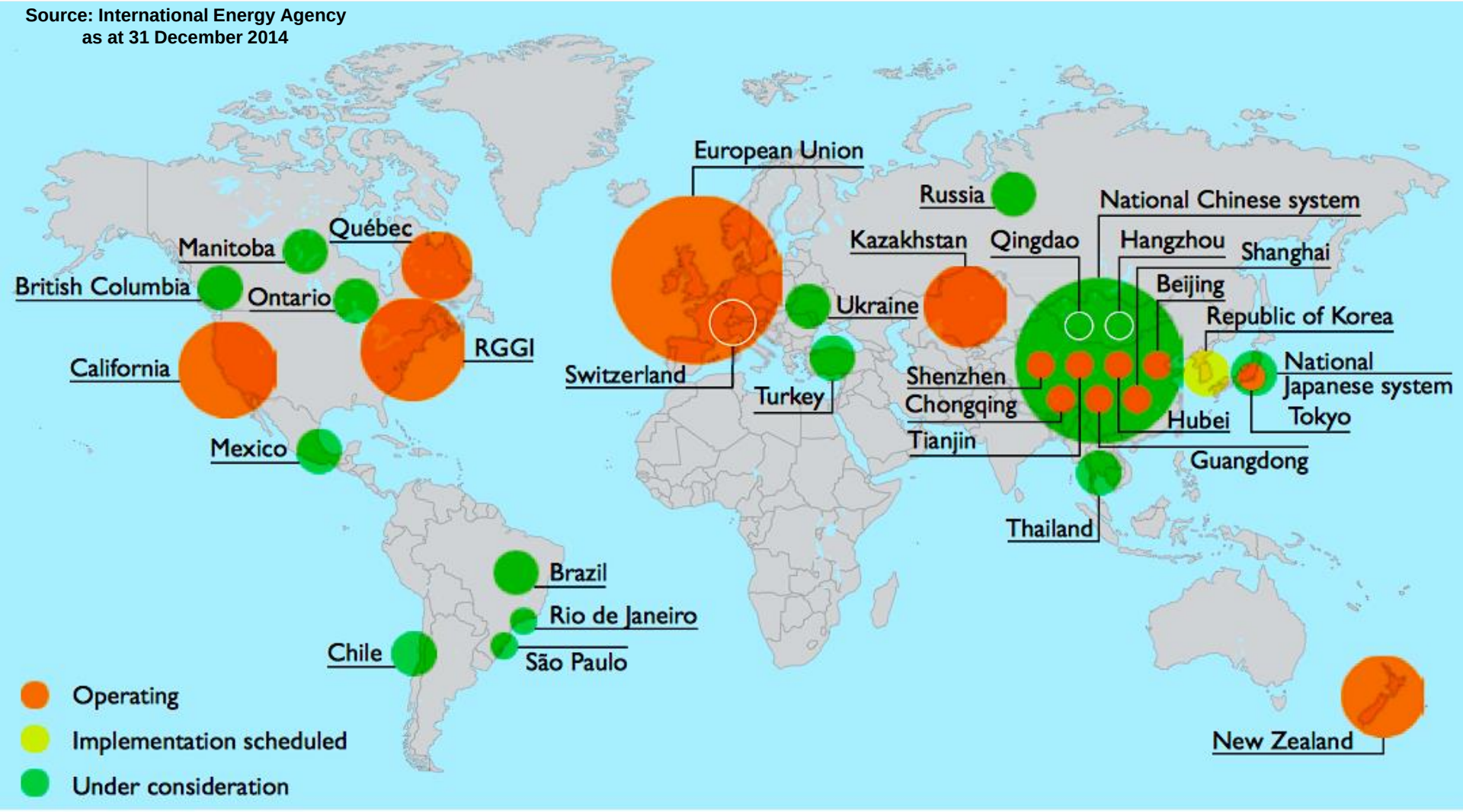
ETS: How it works



- A cap is a limit on the total amount of emissions that entities (emitters) operating under a cap may emit during a defined period of time; each square represents one emissions unit
- In step 1, the system-wide cap is calculated and allowances are issued equal to the cap
- In step 2 the allowances are distributed among the emitters under the ETS
- In step 3 allowances can be bought, sold or traded among emitters

ETS: Examples

Source: International Energy Agency
as at 31 December 2014



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

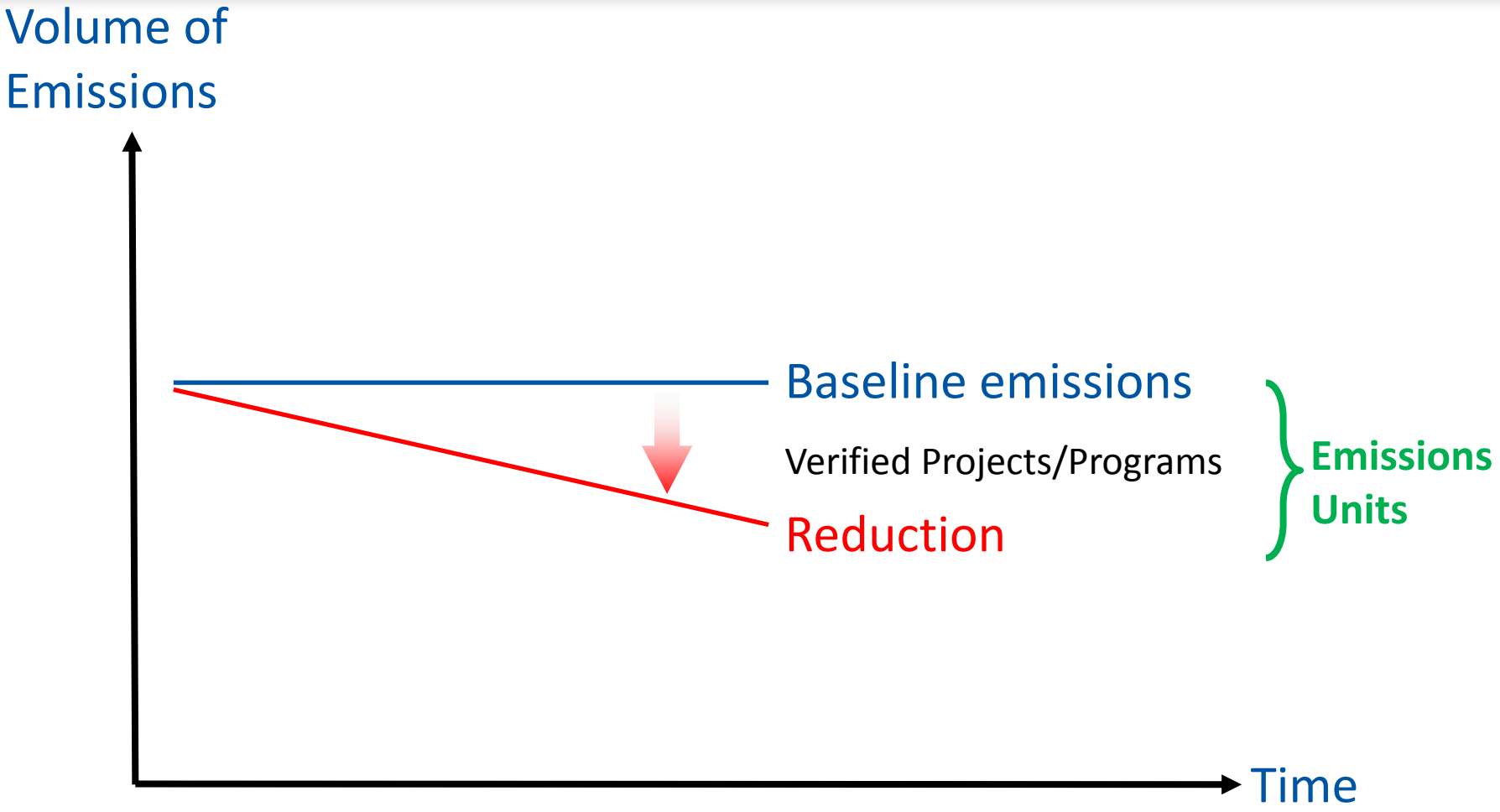
Note: The size of each circle is approximately proportional to GHG emissions covered.

Source: Adapted from country sources and ICAP (International Carbon Action Partnership) (2014), "ETS Map", https://icapcarbonaction.com/ets-map.

Offsetting: What it is

- Offsetting compensates emissions from one sector through the reduction of emissions elsewhere
- Offsetting involves the concept of 'emissions units':
  - 1 tonne of CO_2 = 1 emissions unit
- For example, aircraft operators could compensate for the growth of their international aviation emissions through the purchase of emissions units arising from reductions of emissions elsewhere (e.g. power, agriculture, waste)
- Emissions reductions have to be ensured by verification and certification and, once used, shall be cancelled

Offsetting: Creating Units



Adapted from UNFCCC

Offsetting: Example of Supply

Hubei Eco-Farming Biogas Project, China (Registered under the UNFCCC Clean Development Mechanism (CDM))

- The projects consists of substituting the use of coal/wood by biogas as energy source in 33,000 households = 165,000 people
- Replaces carbon-intensive traditional domestic fuels, such as firewood, coal and coke by biogas digesters using animal waste to generate gas for use in domestic heating, lighting and cooking
- Total CO_2 reductions = 217,184 emissions units
- Other benefits include lower fuel costs, improved health, time/labour savings

UNFCCC

Antoni Raj

Offsetting: How it would work for an Operator

1. An operator is aware of the quantity of emission it is required to offset (*n* tonnes of CO_2)

2. The operator acquires a number of emissions units equivalent to this obligation; Each emissions unit corresponds to one tonne of CO_2 that was reduced by another project or program

3. The operator surrenders these emissions units to the regulatory authority

4. The regulatory authority records that the operator surrendered these emissions units, thereby fulfilling its obligation

Offsetting and ETS

Similarities

- One tonne CO_2 = one emissions unit
- Need to monitor, report, and verify emissions
- A global objective for the scheme

Differences

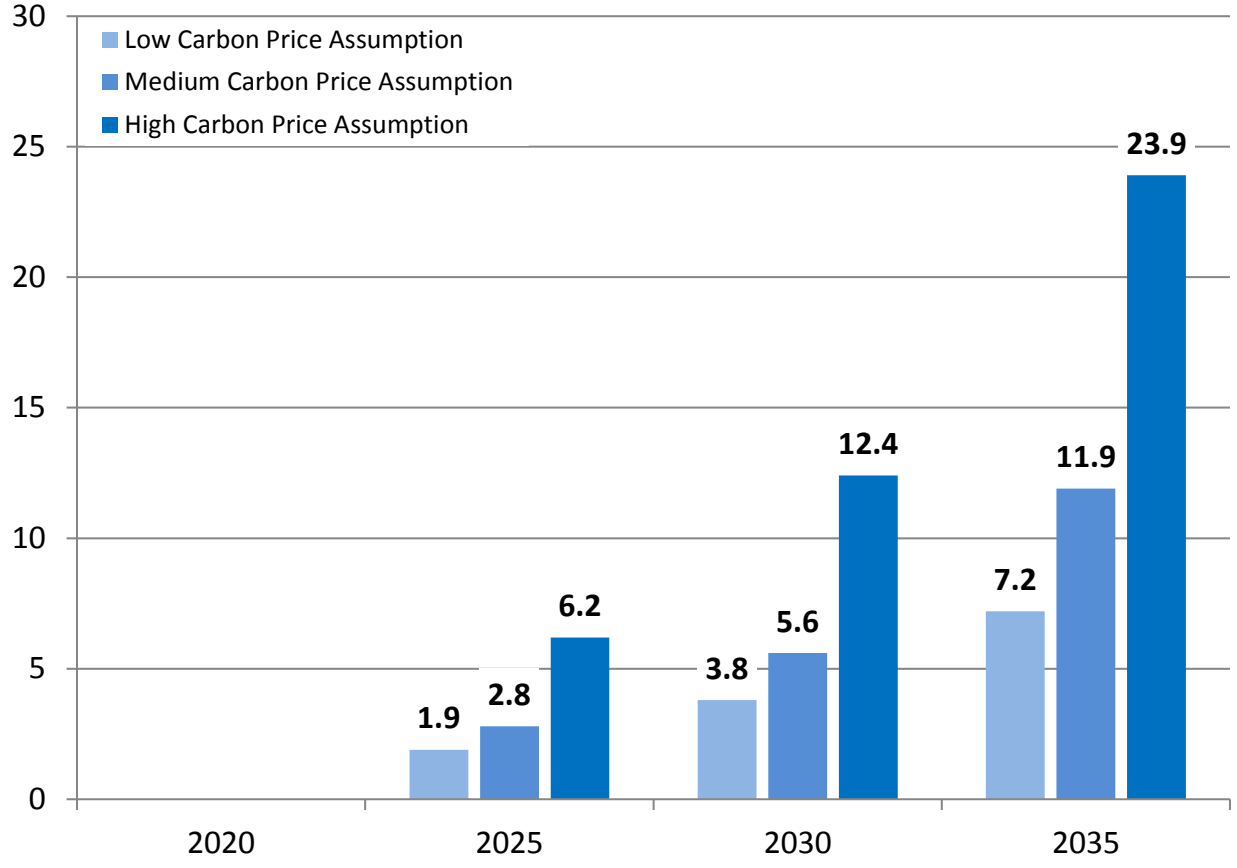
- Allowances are issued in a mandatory ETS and tradable only with linked ETS
- Offsets are generated by projects that respond to demands rather than regulations
- Administration of scheme more complex for ETS

Past Work on MBMs

- MBM analysis (from 2001)
  - See ICAO Environment Report 2007
  - Part 4: Global Emissions, Chapter on MBMs
- ICAO guidance material (2007-2010)
  - Guidance on the Use of Emission Trading for Aviation (Doc 9885)
  - Scoping Study of Issues Related to Linking Open Emissions Trading Systems Involving International Aviation (Doc 9949)
  - Report on Voluntary Emissions Trading for Aviation (Doc 9950)
  - Offsetting Emissions from the Aviation Sector (Doc 9951)
- Post-A37 Assessment of MBMs (2011-2013)
  - Report of the Assessment of Market-Based Measures (Doc 10018)
- Post-A38 Technical Analyses (from 2014)

CAEP Analysis for EAG/7

Cost of offsets to reduce CO_2 emissions from international aviation (USD billion)

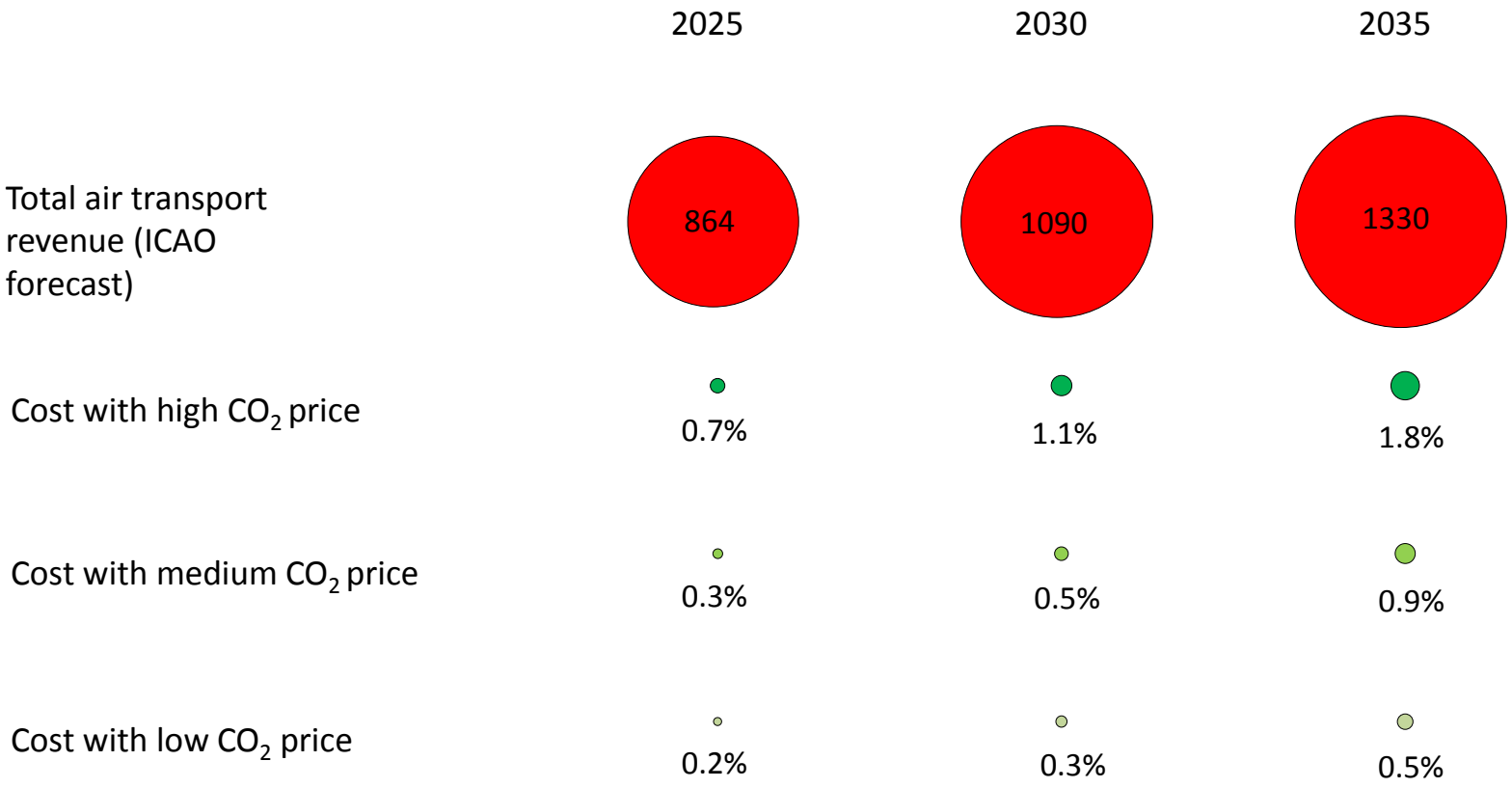


Carbon Price Assumptions	2020	2030	2035
Low ($/tonne)	6	10	12
Medium ($/tonne)	8	15	20
High ($/tonne)	20	33	40

Source: ICAO Environment Advisory Group Meeting (EAG/7), October 29-30, 2014, less optimistic scenario (scenario 2)

CAEP Analysis for EAG/7

Costs to address emissions relative to revenue (USD billion)



Source: ICAO Environment Advisory Group Meeting (EAG/7), October 29-30, 2014, less optimistic scenario (scenario 2)

Summary

- MBMs reduce emissions wherever it is less expensive to do so
- MBMs can respond quickly to achieve the desired environmental outcome in the short-term
- Offsetting offers a simple and practical option for the sector