

# GIACC Working Group 4: Goals Development

## Terms of Reference

- a) For the short term global aspirational goal for fuel efficiency, review available data to determine whether the 2% per year indicative figure supported at GIACC/3 is the most appropriate.
- b) Progress the development of possible medium and long-term global aspirational goals based upon fuel efficiency in consultation with CAEP and on consideration of available data on industry trends and relevant forecasts.
- c) Assess the scope for additional goals and statements to indicate a strong ambition for addressing emissions, including [in the form of] carbon neutrality.
- d) Review other goals provided by industry and others with respect to level of ambition for addressing emissions from international aviation.

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**GIACC/3:** GIACC acknowledged the principles of non-discrimination and equal and fair opportunities to develop international aviation set forth in the Chicago Convention, as well as the principles and provisions on common but differentiated responsibilities and respective capacities under the UNFCCC and the Kyoto Protocol. ICAO and its Contracting States will strive to limit or reduce the impact of aviation greenhouse gas emissions from international aviation on the global climate.

GIACC recommends a strategy based on global aspirational goals. Agreement was reached to pursue goals in the form of fuel efficiency. Further consideration will be given in GIACC/4 to the scope for additional goals and statements to indicate a strong ambition for addressing emissions, including goals for carbon neutrality.

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## FUEL EFFICIENCY

Baseline: 2000 or 2005

Metric:  $\text{Volume}_{\text{fuel}}/\text{RTK}$

	<b>Goal: Efficiency Improvement</b>	<b>Target Dates</b>
<b>Short Term</b>	2% annual improvement	2012
<b>Medium Term</b>	2.0%-2.5% annually starting 2012	2020 or 2025
<b>Long Term</b>	2%-3% annually starting 2020 or 2025	2050

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## OPTIONS: GOALS TO INDICATE STRONGER AMBITION

**Baseline: 2000 or 2005**

**Metric: Net CO<sub>2</sub> Intensity**

	<b>Goal</b>	<b>Date</b>
<b>Medium Term</b>	Carbon Neutral Growth	2020 or 2025
<b>Long Term</b>	Reduction: Global sector represents same percentage of emissions as in 1990	2050

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## “Net CO<sub>2</sub> Intensity Metric”: a metric for more ambitious goals

### Discussion

- WG/4 agreed with WG/1 regarding “Fuel Efficiency Metric”
  - Based on volume to reflect fuel reporting practices
  - Denominator is *RTK*
- WG/4 considered CO<sub>2</sub> goals & metric
  - A CO<sub>2</sub> factor is needed to account for benefits of alternative fuels
  - A fuel density conversion factor is also needed because CO<sub>2</sub> factors are typically mass-based
- WG/4 considered ambitious CO<sub>2</sub> goals
  - Carbon neutral growth and carbon neutrality
  - Ambitious goals require metric that accounts for market-based-measures to offset aviation sector growth

### Resulting Formula

“Fuel Efficiency Metric” =  $\left( \frac{Vol_{fuel}}{RTK} \right)$

“CO<sub>2</sub> Metric” =  $\left( \frac{Vol_{fuel}}{RTK} \right) \cdot \left( \frac{Mass_{CO_2}}{Mass_{fuel}} \right) \cdot \left( \frac{Mass_{fuel}}{Vol_{fuel}} \right)$

“Net CO<sub>2</sub> Intensity Metric” =  $\left( \frac{Vol_{fuel}}{RTK} \right) \cdot \left( \frac{Mass_{CO_2}}{Mass_{fuel}} \right) \cdot \left( \frac{Mass_{fuel}}{Vol_{fuel}} \right) - \left( \frac{MBM CO_2 Reductions}{RTK} \right)$

Labels in the diagram:
 

- CO<sub>2</sub> Factor:  $\left( \frac{Mass_{CO_2}}{Mass_{fuel}} \right)$
- Fuel Density:  $\left( \frac{Mass_{fuel}}{Vol_{fuel}} \right)$
- Market-Based Measures:  $\left( \frac{MBM CO_2 Reductions}{RTK} \right)$

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### Issues Involved in More Ambitious Goals

- “Bouquets” or ranges of goals
- “Triggers” to indicate a threshold to seek to achieve more ambitious goals.
- Assistance to Developing Countries: central to the overall successful implementation of GIACC’s recommendations.