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# ICAO/UN-Habitat Pilot Project on Synergy between Airports and Urban Development for Sustainable Development Experts Group Meeting

“Environment and aircraft emissions”

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# Aircraft Noise

Annex 16 — *Environmental Protection*,  
Volume 1 — *Aircraft Noise* sets the  
Standards for noise certification of large  
subsonic jet and propeller-driven aircraft,  
small propeller-driven aircraft and  
helicopters



# Aircraft Noise

Aircraft noise is the most significant cause of adverse community reaction related to the operation and expansion of airports



# Aircraft Noise

Before an aircraft is permitted to operate, it must receive noise certification granted by the State of Registry.



# Aircraft Noise

Aircraft noise (“*noise at source*”) has been controlled since the 1970s by the setting of noise limits for aircraft in the form Standards and Recommended Practices (SARPs) contained in Annex 16 to the Convention on International Civil Aviation (the “*Chicago Convention*”)



# Aircraft Noise

## Sustainable development Goals





# CO<sub>2</sub> Emissions reduction

Annex 16 — *Environmental Protection*,  
Volume II — *Aircraft Engine Emissions*  
contains the Standards for the control of  
gaseous emissions through engine  
certification scheme.



# CO<sub>2</sub> Emissions reduction

Since the 37th Session of the ICAO Assembly in 2010, ICAO has encouraged its Member States to voluntarily submit their Action Plans for emissions reductions from international aviation. In 2013, the 38th Assembly decided to further encourage ICAO Member States to submit their Plans, to update those submitted in 2012, to share their content on the ICAO public website and to cooperate with other States for their submission in June 2015.





# CO<sub>2</sub> Emissions reduction

All of the ICAO Member States wanted to take action, but some were not sure how. ICAO has therefore put in place an integrated strategy to support the States willing to take action. This included developing and promoting guidance, technical material, and offering capacity-building to facilitate the development of State Action Plans on CO<sub>2</sub> emissions reduction activities. By June 2016, 94 ICAO Member States representing 88 per cent of international traffic voluntarily developed and submitted an action plan to ICAO, reaching the target of 50 per cent more action plans submitted in comparison with the last triennium



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

- Assembly Resolution A38-18
  - Para. 5. States and relevant organizations will work through ICAO to achieve a global **annual average fuel efficiency improvement of 2 per cent until 2020** and an aspirational global **fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050...**



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

- Assembly Resolution A38-18
  - Para. 7. ...collective medium term global aspirational goal of **keeping the global net carbon emissions from international aviation from 2020 at the same level...**



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

- Assembly Resolution A38-18
  - Para. 11. *Further encourages* States to submit their voluntary action plans outlining their respective **policies and actions, and annual reporting on international aviation CO<sub>2</sub> emissions** to ICAO;



# CO<sub>2</sub> Emissions reduction

Action plans are a planning and reporting tool for States to communicate information on their activities to address CO<sub>2</sub> emissions from international civil aviation to ICAO.



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

### – For States

- Opportunity to identify measures that will improve fuel efficiency and reduce emissions

### – For ICAO

- Allows future progress toward the global environmental goals to be assessed



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

### – Basket of measures, include

- Aircraft-related technology development
  - Improvements in aircraft technology to reduce fuel burn/CO<sub>2</sub>
  - Aeroplane CO<sub>2</sub> emissions standard - Annex 16 Vol. III
- Operational Improvements
  - More efficient ATM planning, ground operations, terminal operations (departure and arrivals), en-route operations, airspace design and usage to reduce fuel burn/CO<sub>2</sub>
  - Best practices in operations



# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

- Basket of measures
  - Sustainable Alternative Fuels
  - Market-based Measures (MBMs)
- Improvements in aircraft technologies to reduce fuel burn/CO<sub>2</sub>
  - Weight reduction
  - Aerodynamics improvements
  - Engine combustion changes
  - Others ...





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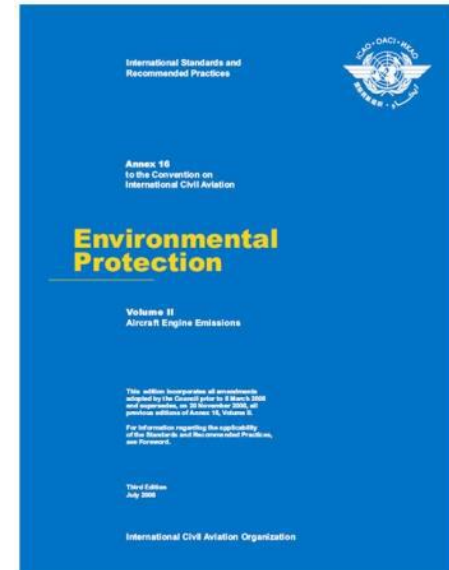
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# CO<sub>2</sub> Emissions reduction

## States Action Plans for CO<sub>2</sub> emission reduction

### – Basket of measures

- The aeroplane CO<sub>2</sub> emissions Standard will result in a new Annex 16 Vol. III

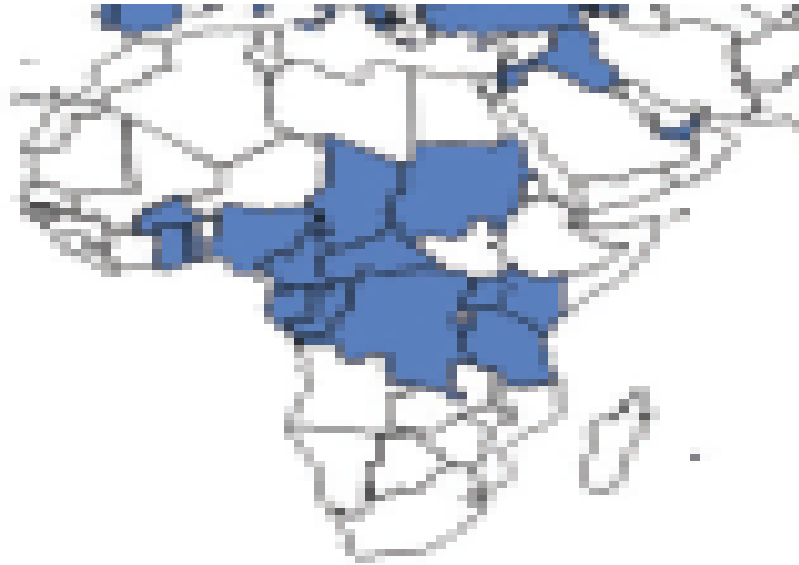




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# CO<sub>2</sub> Emissions reduction





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# CO<sub>2</sub> Emissions reduction

## Sustainable development Goals





# CO<sub>2</sub> Emissions reduction

## Environmental Toolkits

- ICAO Carbon Emissions Calculator
  - Allows passengers to estimate CO<sub>2</sub> emissions on their air travel
- ICAO Green Meetings Calculator
  - To support decision making in the minimizing CO<sub>2</sub> emission from air travel to attend meeting
- ICAO Fuel Savings Estimation Tool
  - To assist estimate fuel saving from operational improvement



# CO<sub>2</sub> Emissions reduction

The recommended Aeroplane CO<sub>2</sub> Emissions Certification Standard is a technology standard with the aim of encouraging more fuel efficient technologies into aeroplane designs



# CO<sub>2</sub> Emissions reduction

## ICAO Buddy Programme

- One of the key elements of the ICAO strategy is forming partnerships to facilitate the development of Member States' Action Plans to reduce aviation emissions



# CO<sub>2</sub> Emissions reduction

CO<sub>2</sub> for aircraft, amongst others;

- Is part of basket of measures
- Encourages the integration of fuel efficient technologies into aircraft design and development
- Ensures older aircraft models end in an appropriate timeframe
- More efficient operations
- Economic/market-based measures
- Regulatory measures/other
- Airport improvements

# CO<sub>2</sub> Emissions reduction

- Sustainable development Goals







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