



ICAO Carbon Emissions Calculator (ICEC)

2026 ICAO APAC Online Training on
State Action Plan (SAP) to Reduce
CO₂ Emissions from International
Aviation

Bangkok, 29 – 30 July 2026

**INTERNATIONAL
CIVIL AVIATION
ORGANIZATION**



ICAO Carbon Emissions Calculator (ICEC)

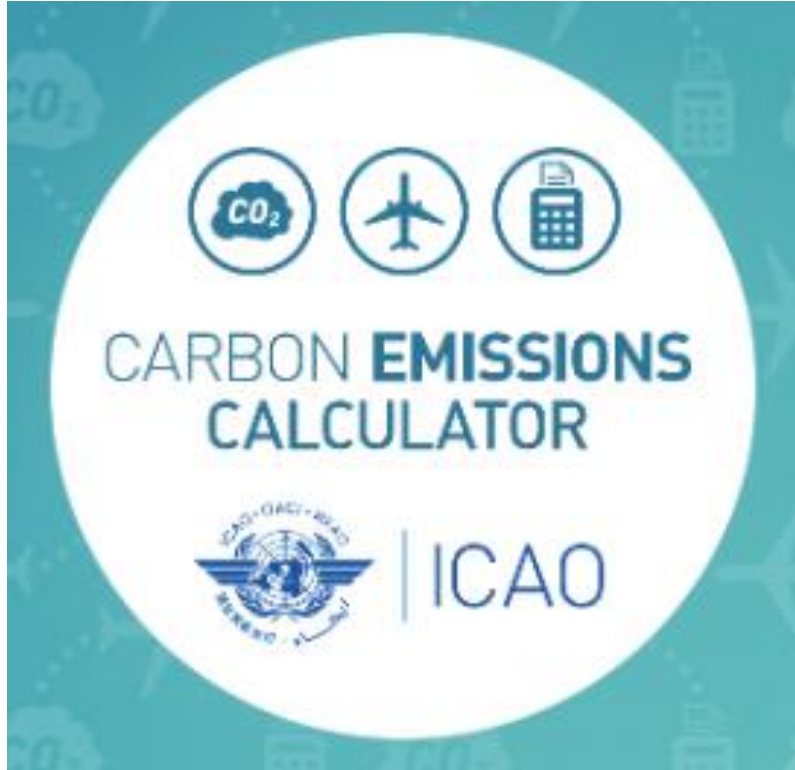
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A teal-colored banner for the ICAO Carbon Emissions Calculator. The text is white and centered. The background features faint, stylized illustrations of a hand holding a pen on the left and a circular dial with 'CO2' and 'LOW EMISSIONS' on the right.

**ICAO  CARBON
EMISSIONS CALCULATOR**
THE OFFICIAL UN TOOL TO QUANTIFY AIR TRAVEL CO₂ FOOTPRINT

ICAO Carbon Emissions Calculator (ICEC)

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- a methodology to calculate the carbon dioxide emissions from air travel for use in offset programmes
- applies the best publicly available industry data to account for various factors such as aircraft types, route-specific data, passenger load factors and cargo carried

[ICAO Carbon Emissions Calculator](#)

ICAO Carbon Emissions Calculator (ICEC)

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- allows passengers to estimate the emissions attributed to their air travel. It is simple to use and requires minimal user information
- approved tool to estimate carbon emissions from air travel

[ICAO Carbon Emissions Calculator](#)

THE METHODOLOGY USED

CO2 Emissions per passenger consider the load factor and are based only on passenger operations (i.e., fuel burn associated with belly freight is not considered). ICEC incorporated complex and regularly updated databases on scheduled flights, passengers/cargo load factors and aircraft fuel burn.

The steps for the estimation of CO2 emissions per passenger:

STEP 1: Estimation of the aircraft fuel burn

STEP 2: Calculation of passenger's fuel burn based on the load factor

STEP 3: Calculation of the passenger's fuel burn based on a passenger cabin class occupancy from operating airline aircraft configuration.

STEP 4: CO2 emissions per passenger cabin class = [Total fuel (kg)] * [Passenger load factor] / [Total CabinSeat factor] * 3.16.

- ***Getting Started***

1. Extract all of the files from the zip archive into the same directory. It is important that the .xls (or .xslm) and .mdb files be in the same folder.
2. Open the .xls file and enable macros (select “Enable this content”) if you are using Excel 2003 or Open the .xslm file and enable macros (select “Enable this content”) if you are using Excel 2007 or newer.
3. Read and accept the terms of the license agreement
4. Enter your operational data

State Interface Quick Start Guide v2.7

Entering your data

To compute emissions at the aircraft level (such as for Action Plans)

1. *Select the tab “Flight Emissions”*
2. *Starting in Cell A15, begin entering either airport pairs (using 3-letter IATA codes separated with any character e.g. YUL/LGA) or the distance travelled in km*
3. *For each pair/distance entered, specify the number of flights and the aircraft type used*
 - *The aircraft type must be specified using one of the codes listed in the “Available Aircraft Types” tab*
4. *Press the Click to Compute CO2 button*

State Interface Quick Start Guide v2.7

To compute emissions at the passenger level (for organization-level inventories / offsetting)

1. *Select the tab “Passenger Air Travel”*
2. *Starting in Cell A15, begin entering the route of flight (using 3-letter IATA codes separated with the character specified in Cell F10 e.g. YUL/LGA)*
3. *For each route entered in Column A, specify the class of service flown in Column B*
4. *Press the Click to Compute CO2 button*

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Available Aircraft Types

1	Aircraft Code	Manufacturer	Model
2	100	Fokker	100
3	141	BAe	146-100
4	142	BAe	146-200
5	143	BAe	146-300
6	146	BAe	146
7	310	Airbus	A310
8	312	Airbus	A310-200
9	313	Airbus	A310-300
10	318	Airbus	A318
11	319	Airbus	A319
12	320	Airbus	A320-100/200
13	321	Airbus	A321-100/200
14	330	Airbus	A330
15	332	Airbus	A330-200
16	333	Airbus	A330-300
17	340	Airbus	A340
18	342	Airbus	A340-200

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ICAO Carbon Emissions Calculator (Entire Flight)

Version 2.7

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Click to Compute CO₂

Results

Total CO₂ (tonnes): 966.4

Total flights: 11

Remarks:
Run complete 12-Nov-2025 09:21

Insert schedule data below this row					
Airport Pair or Distance in km	Number of Flights	Aircraft Code	CO ₂ (kg)	Messages	
HIR/NAN	1	330	61,602		
SIN/NAN	1	330	190,420		
NAN/HKG	1	330	188,970		
NAN/HIR	1	733	27,398		
HIR/VLI	1	320	19,500		
HKG/NAN	1	330	188,970		

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ICAO Carbon Emissions Calculator (ICEC)

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ICAO Carbon Emissions Calculator (Passenger)

Version 2.7

For use by Government Agencies of ICAO member States only

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Database version: 7.0 Official

Schedules date: 31-Dec-2016

Load factors date: 31-Dec-2015

Class of Service Column:

Route Column:

☒ Compute CO2 for all rows

☐ Compute CO2 only if the CO2 field is blank

Click to Compute CO₂

Results

Total number of passengers	Total number of premium class passengers	Total number of kilometers traveled	Total Tonnes CO ₂
5	1	21,781	1.35

Uncertainties

Low CO ₂ (Value)	Low CO ₂ (Δ%)	High CO ₂ (Value)	High CO ₂ (Δ%)
1.35	0%	1.35	0%

Remarks:

Run complete 12-Nov-2025 09:22

Economy Class Codes: YSBHKLMNQTVX

Premium Class Codes: FAPRCJDIZWE

Airport Field Separators: /-

↓ ↓ ↓ ↓ ↓

Insert travel data below this row

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Route	Class	CO ₂ (kg)	Trip Distance (km)	Uncertainty (low) (kg)	Uncertainty (high)	Messages
HIR/NAN	F	155.2	2,091			
SIN/NAN	Y	472.4	8,301			
HKG/NAN	Y	467.7	8,214			

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Thank You

