



ICAO Carbon Emission Calculator

Methodology And Tool



Background

- Public concern needed to be addressed
- Support UN Climate Neutral Initiative
 - UN operations and international meetings
- Reference for aircraft carbon emission calculations



The Methodology

- Developed and discussed with aviation experts, manufacturers, and airlines
- Approved by CAEP
- Available to general public
- Customizable
 - UN bodies
 - Airlines
 - Airports
 - Others



Basic Elements

- Distance based (GCD + correction factor)
- Only CO₂ (RFI=1)
- Only Pax, not cargo (as first step)
- Equivalent aircraft + market share
- Fuel burn figures from CORINAIR
- Cabin class factor

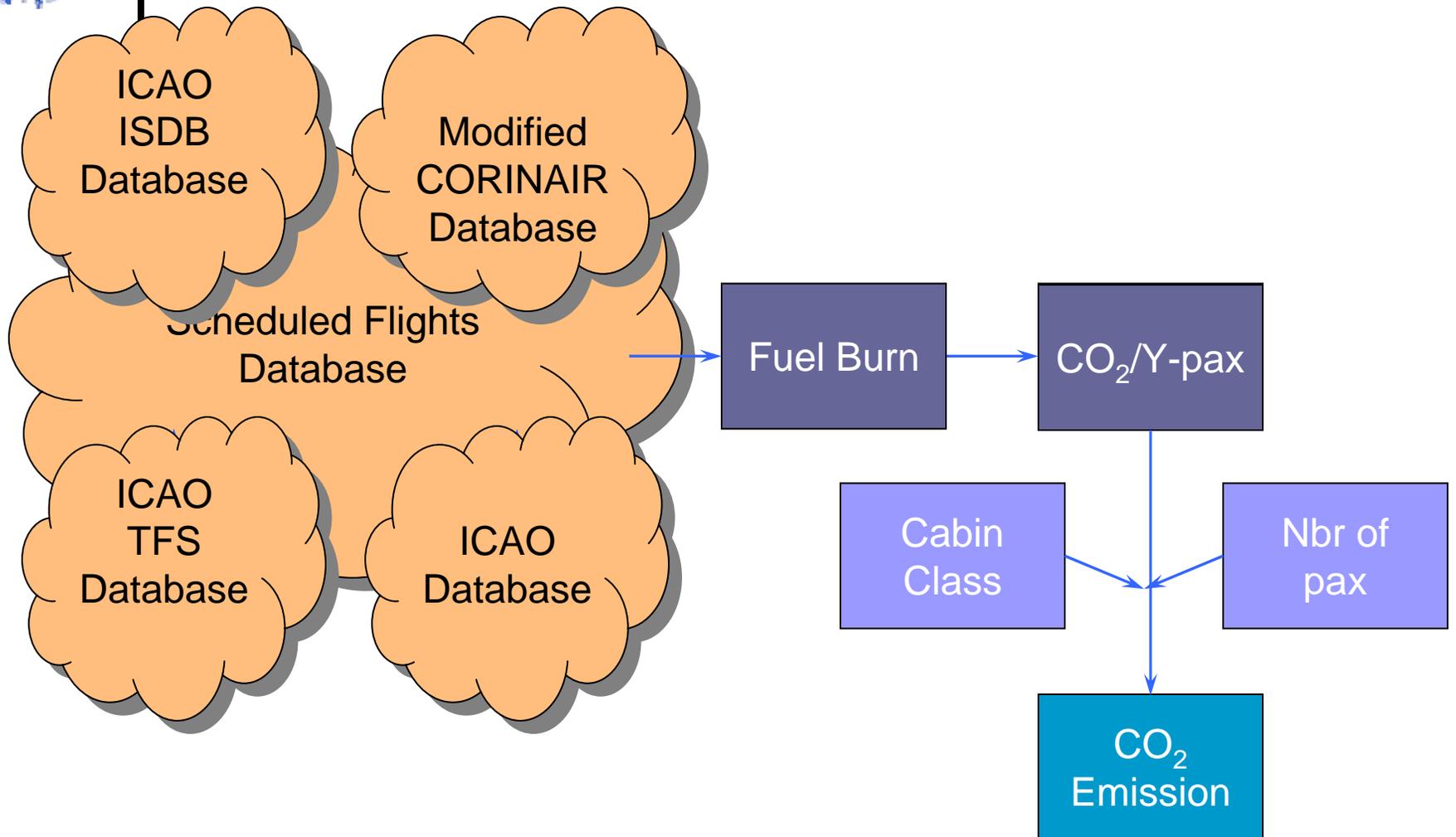


Basic Elements

- Pax Load Factor based on route groups
 - ICAO TFS data
- Pax to Cargo Ratio based on reported data
 - ICAO Statistical data
 - Pax weight = 100 Kg
- Number of seats based on all economy configuration
- $\text{CO}_2/\text{Fuel} = 3.16$

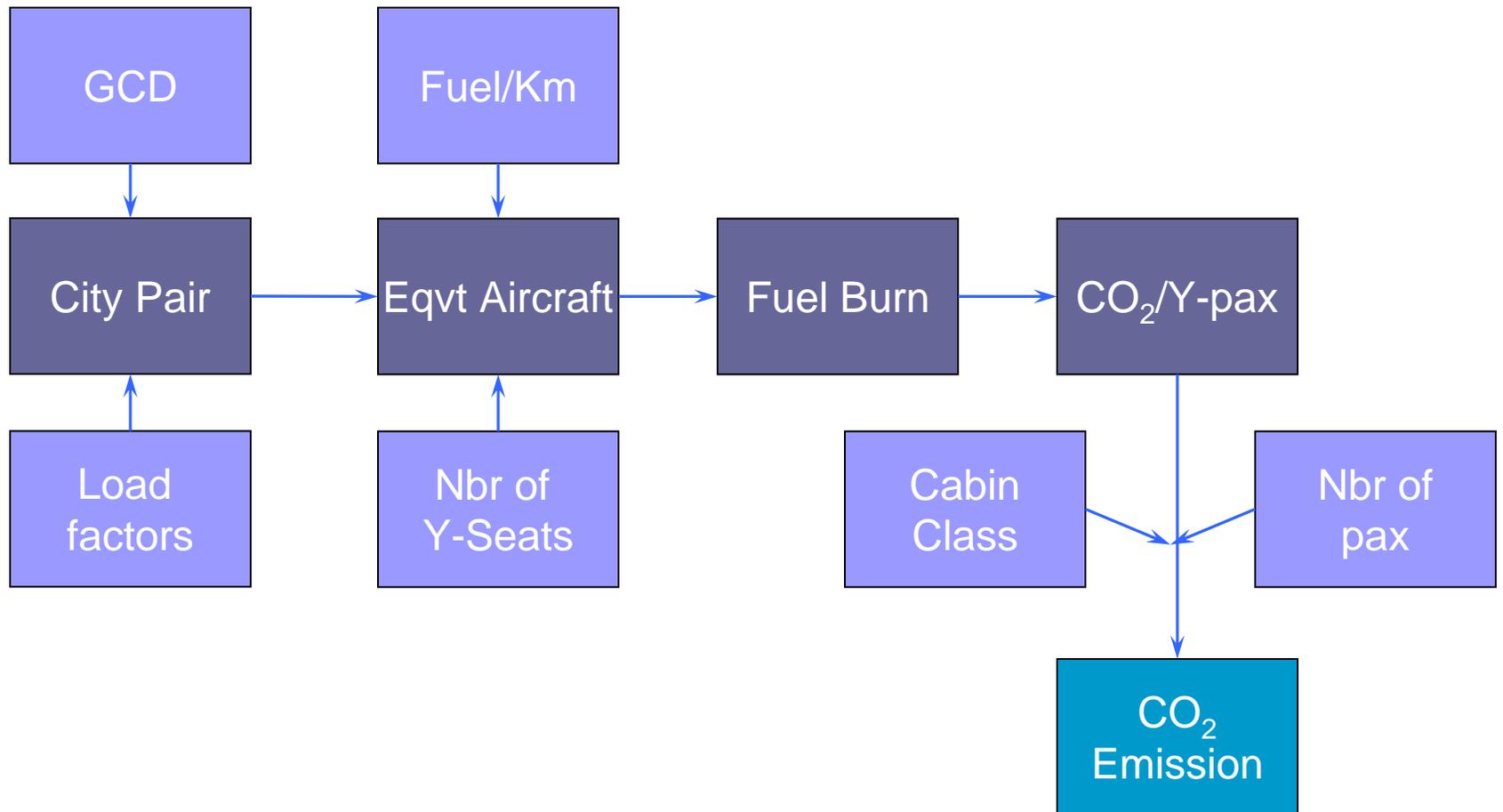


The Math





The Math





The Tool

- Available at ICAO public site (<http://www.icao.int>)
- Transparent
- Flexible



International Civil Aviation Organization

ICAO CARBON EMISSIONS CALCULATOR

ICAO has developed a methodology to calculate the carbon dioxide emissions from air travel for use in offset programmes.

The ICAO Carbon Emissions Calculator allows passengers to estimate the emissions attributed to their air travel. It is simple to use and requires only a limited amount of information from the user.

The methodology 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.

For additional information, please see the accompanying methodology to the ICAO Carbon Emissions Calculator.

You can find your carbon footprint by entering your city of origin and destination



From: To:

My ticket is: Economy Class Premium Class (Economy Premium, Business, or First)

Number of passengers:

[Click here to read the ICAO Methodology](#)

[Help us to improve the calculator](#)



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From: To:

My ticket is: Economy Premium, Business, or First) Economy

Number of passengers:

Class of service:

Click here to read the ICAO Methodology

Help us to improve the calculator

- CHIang Mai (CNX)
- CHIang Rai (CEI)
- CHIayi (CYI)
- CHibougamau (YMT)
- CHicago, Il (GYY)
- CHicago, Il (MDW)
- CHicago, Il (ORD)
- CHicago, Il (PWK)
- CHicken, Ak (CKX)
- CHiclayo (CIX)
- CHico, Ca (CIC)
- CHifeng (CIF)
- CHIgnik, Ak (KCG)
- CHIgnik, Ak (KCL)
- CHIgnik, Ak (KCQ)



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From: To:

My ticket is: Economy Class Premium Class

Number of passengers:

[Add a Flight](#)

[Click here to read the ICAO Methodology](#)

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- Acapulco (ACA)
- Aguascalientes (AGU)
- Akron/Canton, Oh (CAK)
- Albany, Ny (ALB)
- Albuquerque, Nm (ABQ)
- Alexandria, La (AEX)
- Allentown/Bethlehem, Pa (ABE)
- Amman (AMM)
- Amsterdam (AMS)
- Anchorage, Ak (ANC)
- Appleton, Wi (ATW)
- Aruba (AUA)
- Aspen, Co (ASE)
- Atlanta, Ga (ATL)
- Austin, Tx (AUS)



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You can find your carbon footprint by entering your city of origin and destination



From: CHICAGO, IL (ORD)

To: AMMAN (AMM)

My ticket is: **Economy Class** **Premium Class (Economy Premium, Business, or First)**

Number of passengers: 1

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You can find your carbon footprint by entering your city of origin and destination

From: CHICAGO, IL (ORD) To: AMMAN (AMM)

From: AMMAN (AMM) To:

My ticket is: Economy Class Premium Class

Number of passengers: 1

Calculate Add a

[Click here to read the ICAO Methodology](#)

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You can find your carbon footprint by entering your city of origin and destination



From: CHICAGO, IL (ORD)	To: AMMAN (AMM)
From: AMMAN (AMM)	To: DETROIT, MI (DTW)

My ticket is: Economy Class Premium Class (Economy Premium, Business, or First)

Number of passengers: 1

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International Civil Aviation Organization

ICAO CARBON EMISSIONS CALCULATOR

Here is your footprint

1 passenger, flying from CHICAGO, IL (ORD) to AMMAN (AMM) to DETROIT, MI (DTW) (19,724 Km), in Economy Class, generates about **1.57 tons** of CO₂

[More Details](#)

[New Calculation](#)

[Help us to improve the calculator](#)

Disclaimer

This calculator uses aggregated modelled data to estimate the typical emissions associated with a given route between any airport pair. As this data is indicative only and is not representative of any particular airline, flight, or aircraft type, it is not suitable as a comparison tool.



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[Less Details](#)

[New Calculation](#)

More information for you:

Route: from CHICAGO, IL (ORD) to AMMAN (AMM)
(10,007 Km)

- This itinerary is served by the following aircraft:
340
- Each flight consumes an average of 75,107 tons of fuel
- The average number of seats per flight is 295
- The average CO₂ emitted per passenger is 0.80 tons

Route: from AMMAN (AMM) to DETROIT, MI (DTW) (9,717 Km)

- This itinerary is served by the following aircraft:
340
- Each flight consumes an average of 72,631 tons of fuel
- The average number of seats per flight is 295
- The average CO₂ emitted per passenger is 0.77 tons



Next Steps

- Improve fuel data sources
- Improve aircraft equivalency
- Interface allowing customization
- Promote discussion, among scientific community, about a multiplier factor



Contact

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