EASA
European Union Aviation Safety Agency

ARISE+
Funded by the European Union and implemented by the European Union Aviation Safety Agency

Share of SUCCESS STORIES from THAILAND

CAAT work before the data management system and after

Pasavi RATCHAPONGSIRIKUL

Head of Aviation Environment Division
The Civil Aviation Authority of Thailand

Your safety is our mission.

An Agency of the European Union

Know your speaker

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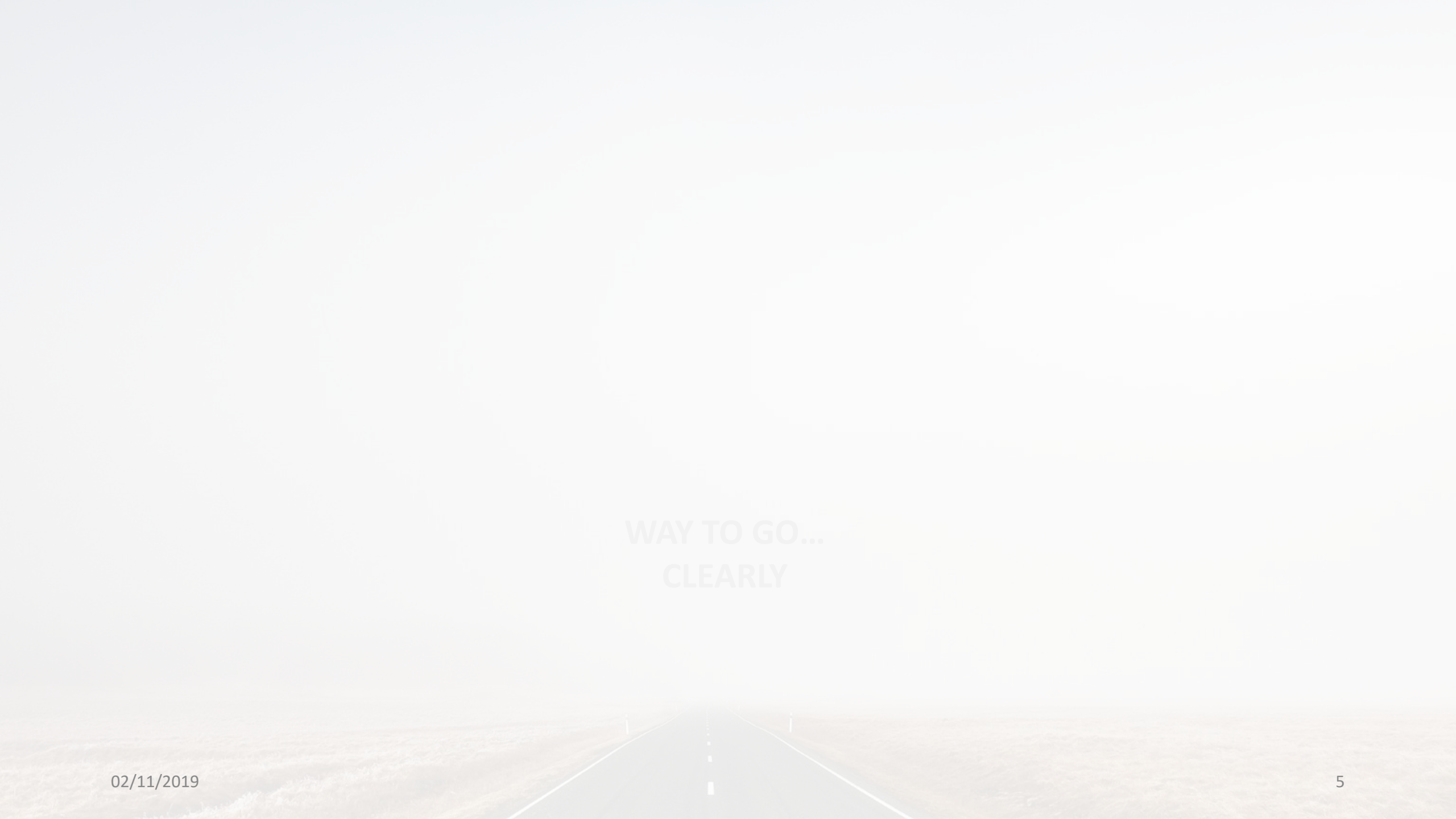
Data Management System

Aviation Emissions

The significance of data

Data

- No data– cannot do anything
- Have Data - At least you have
- Have Good Data – Have confidence
- Have Enough Good Data – Confident to make the right decision!!!


WAY TO GO…
CLEARLY

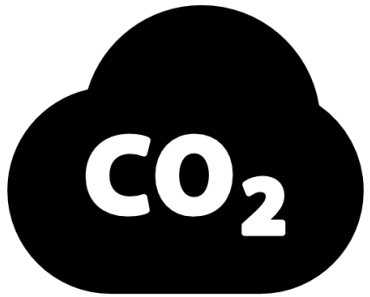
Know what will be happening in the future

Purposes

1. Significance of GHG data of Aviation Sector
2. Database as an effective tool to manage data
3. Thailand's Experience on how to manage GHG/Aviation Data by using database

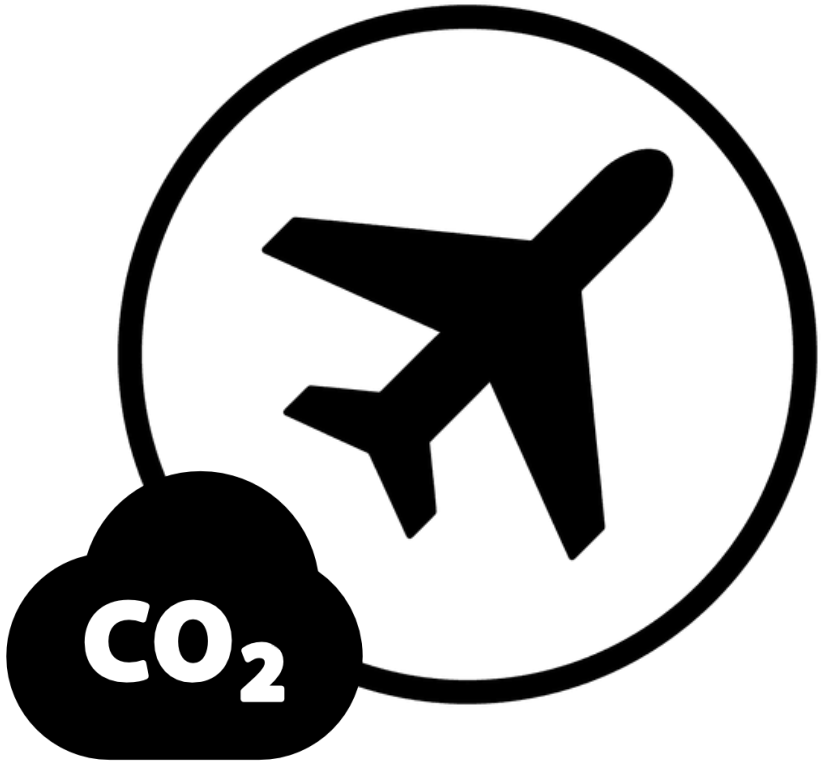
Greenhouse gases emissions data

- The significance of GHG data (aviation sector)
  - State's Action Plan
  - National report as per UNFCCC e.g. NC, BUR
  - CORSIA Management
  - others



- Greenhouse Gases Data comprises of:
  - Fuel consumption (Fuel uplift, Fuel consumed, Fuel sold..)
  - Available Tonne Kilometer : ATK
  - Revenue Tonne Kilometer : RTK
  - Etc.

Greenhouse gases emissions data

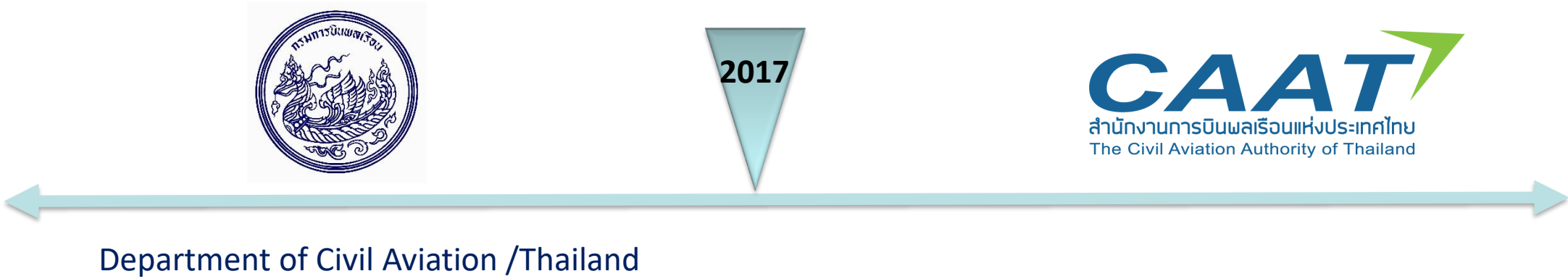


Implication

- Energy Consumption
- Traffic (ATK, RTK, PAX)
- Operation Efficiency
- Margin /Cost
- Performance

Aviation Fuel/ Emissions Data Reporting

- Thailand ‘s Aviation Fuel Consumption has been reported through :



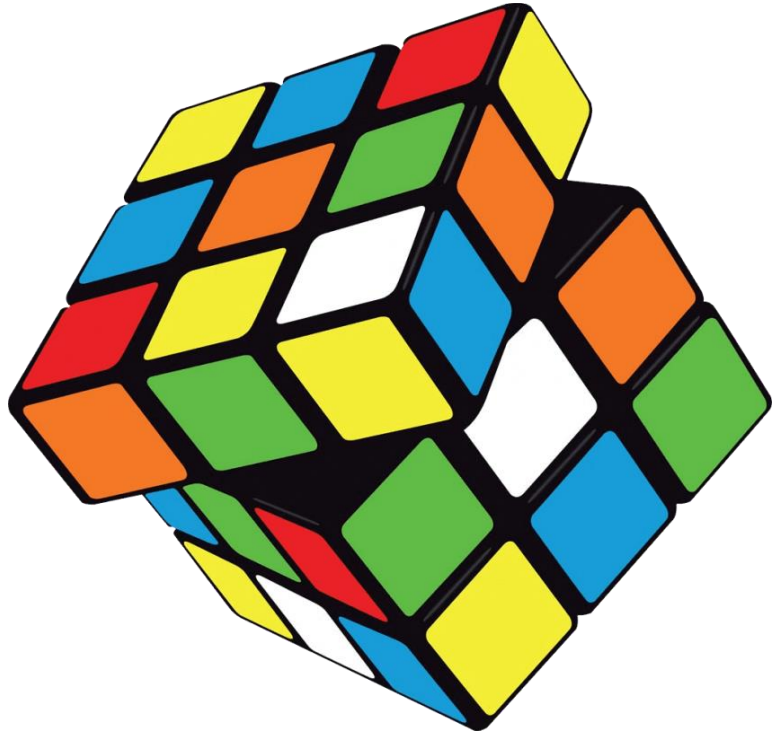
Aviation Emissions Data Management : DCA

- International Aviation Emissions Data
  - Fuel consumption, ATK, RTK and CO2 emissions
  - Forecasted data
  - In State Action Plan#1 (2013)
- Domestic Aviation Emissions Data
  - Fuel Consumption

BUT....

Challenges

- Reliability of data?
  - Verification?
  - QC/QA of data source?
  - Standard template used? (inter, Dom)
  - Definition of Fuel consumption
- Usability of data
  - Limit-because it is aggregated data
- Traceability of data
  - Unknown data source (what airline?, how many?)
- No Back Up Data



Development of Data Management System

- Est. in Oct 2016
- Thailand Participated CORSIA
- Emissions data → Important
- Aviation industry of Thailand is huge
- Aeroplane operators obliged to implement CORSIA > 12

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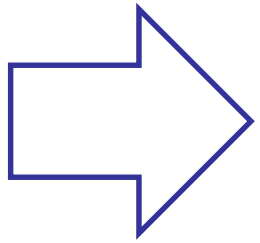
“SYSTEM”

Development of Data Management System

Reliability

Traceability

Usability



The new

Data Management

SYSTEM

International Support

- THAILAND EU: PDSF (2017)
  - Emissions Database Development (Phase I)
    - Expert: Mr. Thossaporn THOSSANSIN
- EU-SEA-APP through EASA (2019)
  - Emissions Database Development (Regional approach)
    - Expert: Mr. Thossaporn THOSSANSIN

EUROPEAN UNION

EASA
European Union Aviation Safety Agency

Working with EU expert , Mr. Thossaporn T.

Development of Data Management System

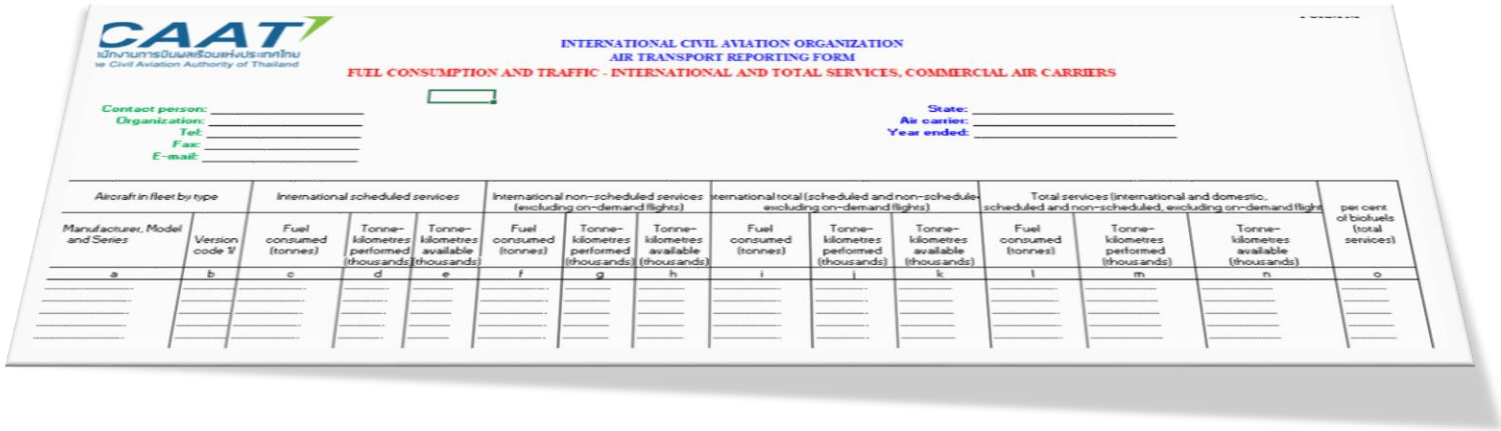
- Airline has to submit ICAO Form to State Authority*

  **CAAT start from this points*

- Standard template related to EMISSIONs Data
  - **FORM M**
  - FORM A
  - FORM C
- From: Paper→ Email with file attached→ Data Key-In & File uploaded through webpage
- Ensure data quality (cleanliness of the database) :Accept only reliable data

Development of Data Management System
Aviation Emission Data : Standard Template

- **Template : ICAO FORM M**
- **Parameter**
  - Fuel consumption
  - Available Tonne Kilometer (ATK)
  - Revenue Tonne Kilometer (RTK)
- **Operation type (Flights)**
  - International (Schedule)
  - International (non Schedule)
  - Total (Service , International)
- **Airplane operator has to submit FORM M to CAAT annually**



CAAT

INTERNATIONAL CIVIL AVIATION ORGANIZATION
AIR TRANSPORT REPORTING FORM
FUEL CONSUMPTION AND TRAFFIC - INTERNATIONAL AND TOTAL SERVICES, COMMERCIAL AIR CARRIERS

Contact person:
Organization:
Tel:
Fax:
E-mail:

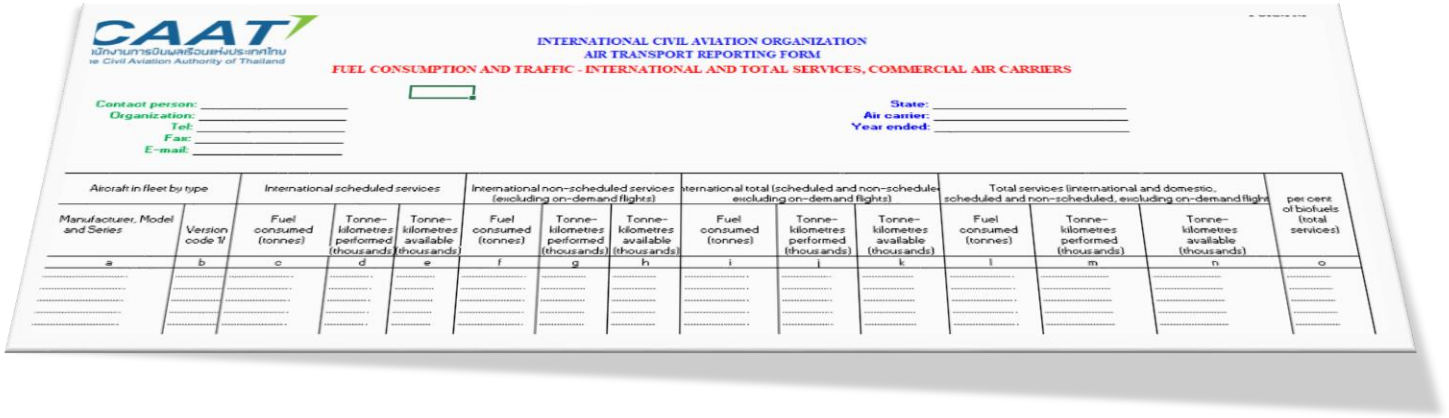
State:
Air carrier:
Year ended:

Aircraft in fleet by type		International scheduled services			International non-scheduled services (excluding on-demand flights)			International total (scheduled and non-scheduled, excluding on-demand flights)			Total services (international and domestic, scheduled and non-scheduled, excluding on-demand flights)			per cent of biofuels (total services)
Manufacturer, Model and Series	Version code 1/	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o

Development of Data Management System

- Airline has to submit form M to CAAT on yearly basis
  - but it is just International Aviation Data
- While CAAT still wanted to report **Domestic Aviation Emission**
- The most convenient and acceptable way……..????
- CAAT created the ASSUMPTION (obtaining domestic emissions from form M) which is agreed with
    - Ministry of Environment (UNFCCC National focal point)
    - Ministry of Transport (Sectoral focal point)

Obtaining Domestic Data



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e Civil Aviation Authority of Thailand

INTERNATIONAL CIVIL AVIATION ORGANIZATION
AIR TRANSPORT REPORTING FORM
FUEL CONSUMPTION AND TRAFFIC - INTERNATIONAL AND TOTAL SERVICES, COMMERCIAL AIR CARRIERS

Contact person: _____
Organization: _____
Tel: _____
Fax: _____
E-mail: _____

State: _____
Air carrier: _____
Year ended: _____

Aircraft in fleet by type		International scheduled services			International non-scheduled services (excluding on-demand flights)			ternational total (scheduled and non-schedule excluding on-demand flights)			Total services (international and domestic, scheduled and non-scheduled, excluding on-demand flight			per cent of biofuels (total services)
Manufacturer, Model and Series	Version code 1/	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	Fuel consumed (tonnes)	Tonne-kilometres performed (thousands)	Tonne-kilometres available (thousands)	
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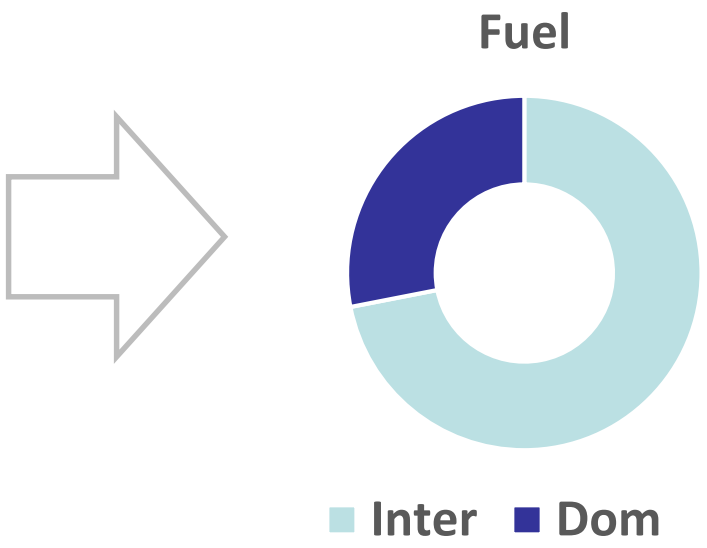


ASSUMPTION

on how to distinguish International/ Domestic Aviation

- **Total Service = Total International + Total Domestic**

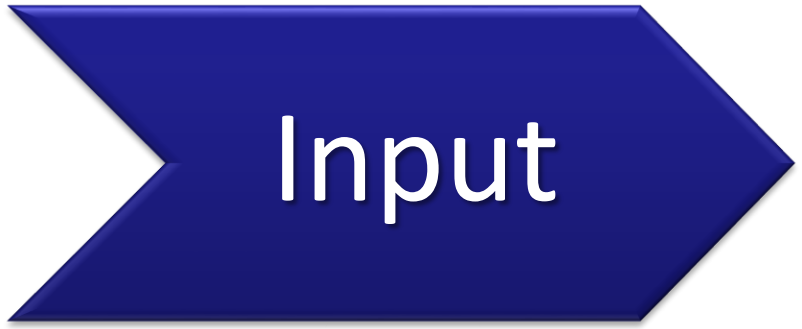
Aviation Emissions Database: Main Functions

SUBMISSION
VERIFYING DATA

PROCESSING
DATA
STORAGE/BACK UP

GENERATING
REPORT
Dashboard

Database : Input Data

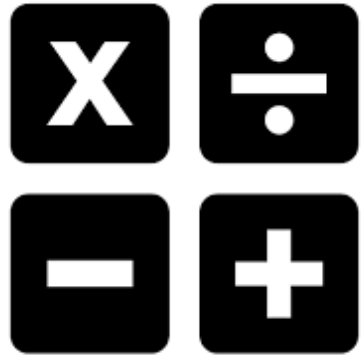


- Determined Standard Template—>CAAT form M
  - Uniformity
- Login Password→ Security
- Verification→ Data Quality to be proved with “the determined criteria”
  - Example: Consistency among data in the form

Database : Input Data

Process

- Automated Domestic Aviation Data Calculation
- CO_2 Emissions calculation
- Fuel Efficiency Calculation



Database : Input Data

Output

- Report
  - International Aviation Data (TOTAL/Overview)
  - Domestic Aviation Data (TOTAL/Overview)
  - Airline Dashboard (Fuel consumption/Emissions, Traffic)

BENEFIT

AEDS TH

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THAILAN ISSION DATA MANAGEMENT SYSTEM

- ENSURE data Quality from airlines' sides by VERIFICATION process.
- EASE domestic aviation reporting data
- Keep → Data Storage and Back up
- Data analysis and monitoring
- Create Official Report

- Tool for CORSIA management
  - CAAT is monitoring aeroplane operator closely
  - To help identifying which airline meeting CORSIA criteria
  - Facilitate “ Magnitude check”

Success of Data Management System Developed by CAAT under EU/EASA support can be indicated by

1. ***Thailand's Airlines Reporting Emissions Data***

2. ***Official Data of Aviation Sector***

1. Thailand's Airlines Reporting Emissions Data

THAI

THAI Smile

NOK AIR

Asia Atlantic Airlines

Bangkok Airways

Thai Lion air

K-MILE ASIA

AirAsia.com

AirAsia

nokscoot

NewGen Airways

Participation :

Number of Airlines reporting emissions data has been increasing→ Data quality is more reliable

1. Thailand's Airlines Reporting Emissions Data

Emission data reporting (2017-2018)

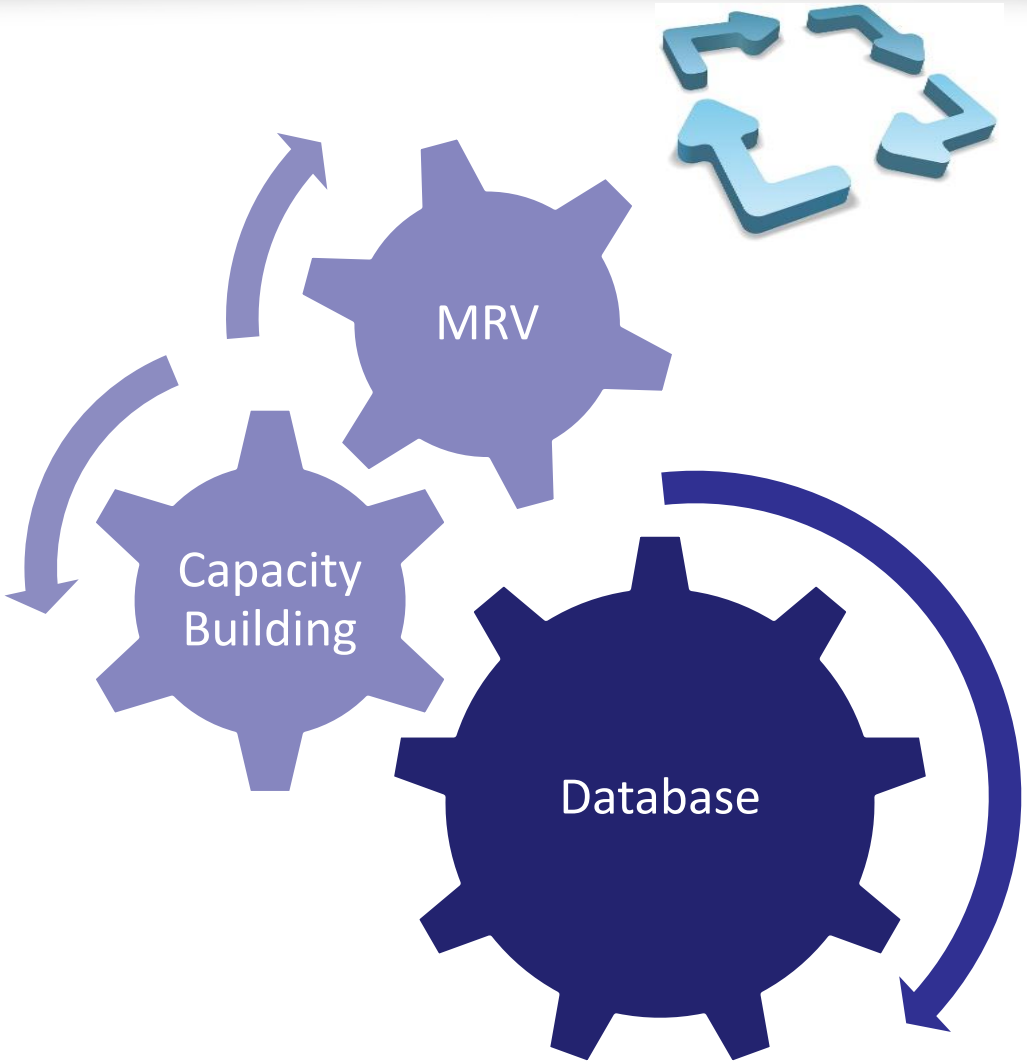
- *The ¾ of aircraft operators in Thailand had not experienced on FORM M reporting*
- *Training sessions were organized and given to aircraft operators since 2017*
- *In 2016: only **5 airlines** reported and submitted form M*

- *In 2017 : " EDMS" Database was developed since 2017 for CO2 emission reporting purpose (not fully operated)*
- *In 2018 about **10 airlines** submitted form M to CAAT (through email and EDMS)*
- *In 2019 : EDMS was upgraded to be AEDS where mitigation measure data collection and CORSIA data management have been included*
- *In 2019 about **10 airlines** submitted form M to CAAT **through AEDS***

2. Official Data of Aviation Sector

- Data has been approved by the Climate Change Committee of Aviation Sector
- CAAT's Annual Report (since 2017)
  - Served Ministry of Transport and Ministry of Environment Reporting National Report
- State Action Plan(version 2018)
  - Submitted to ICAO
  - To be updated in 2020
- To create policy and propose appropriate mitigation measures

INTEGRATED DATA MANAGEMENT



Only database can not make us to achieve in data management SUSTAINABLY

CAPACITY BUILDING

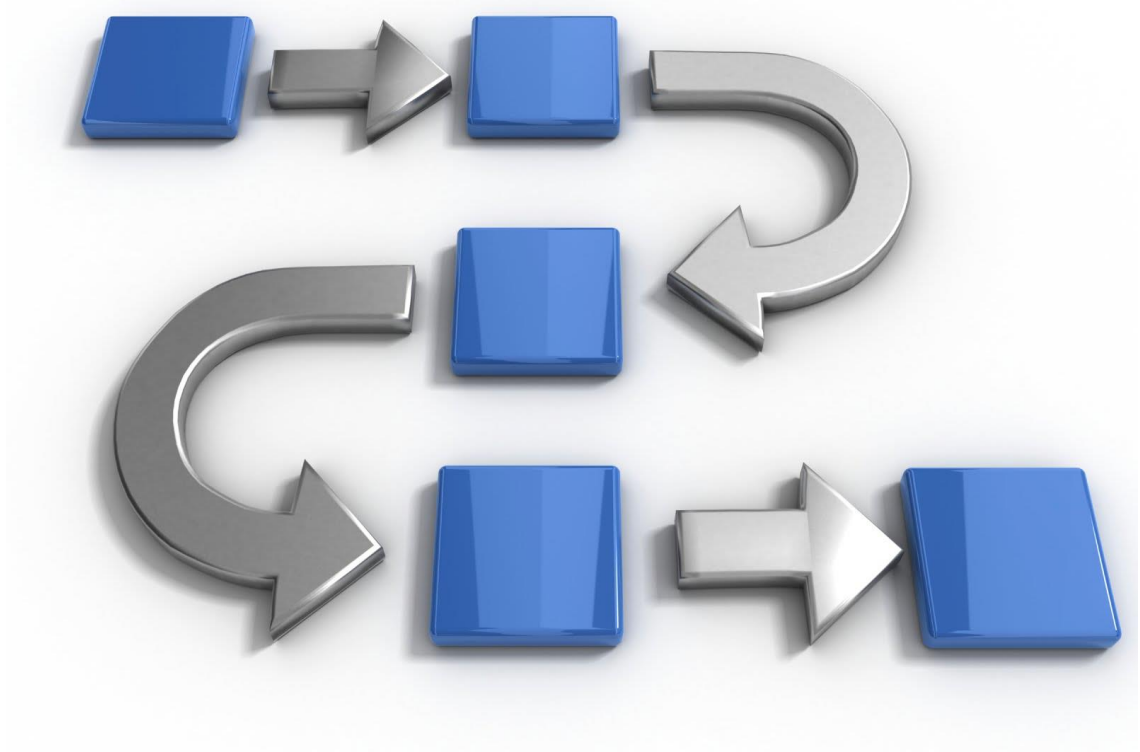
- CAAT has provided training to stakeholders since 2017
  - ICAO FORMs, Emissions Database, MRV….etc

CAPACITY BUILDING

CAAT has provided training to stakeholders since 2017

ICAO FORMs, Emissions Database, MRV….etc

MRV: Monitoring , Reporting and Verification



MRV system

- Monitoring , Reporting and Verification
- MRV= the system to obtain data and to ensure transparency of data
- MRV system has been determined
- MRV regulation will be in place

Conclusion

- **“ Equipment”**
  - Database as a tool
- **“Man”**
  - Competent personnel by training and engagement
- **“Software” or Driver**
  - MRV system/Regulation

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Thank you

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