



THE AVIATION ENVIRONMENTAL SYSTEM



IMPLEMENTATION AU TCHAD



ENGLISHPOINT MARINA HOTEL
MOMBASA, KENYA



ICAO



European Union

13/12/2018

SOMMAIRE

I. INTRODUCTION

II. CONTEXTE TCHADIEN

III. TRAITEMENT DES DONNEES

IV. RAPPORTS CO2 ET BASELINE

V. EXPERIENCES

VI. BESOINS D'ASSISTANCE

COORDINATEURS ET POINTS FOCaux AES/CORSIA TCHAD (2017)



HISSEIN CHIGATTOME



SADICK DOUGA



BRAHIM ADAM FADOUL

INTRODUCTION

2015

- Mise en place AES
- Remise de matériels
- Atelier de formation
- Désignation point focal

2016

- Pas de résultats

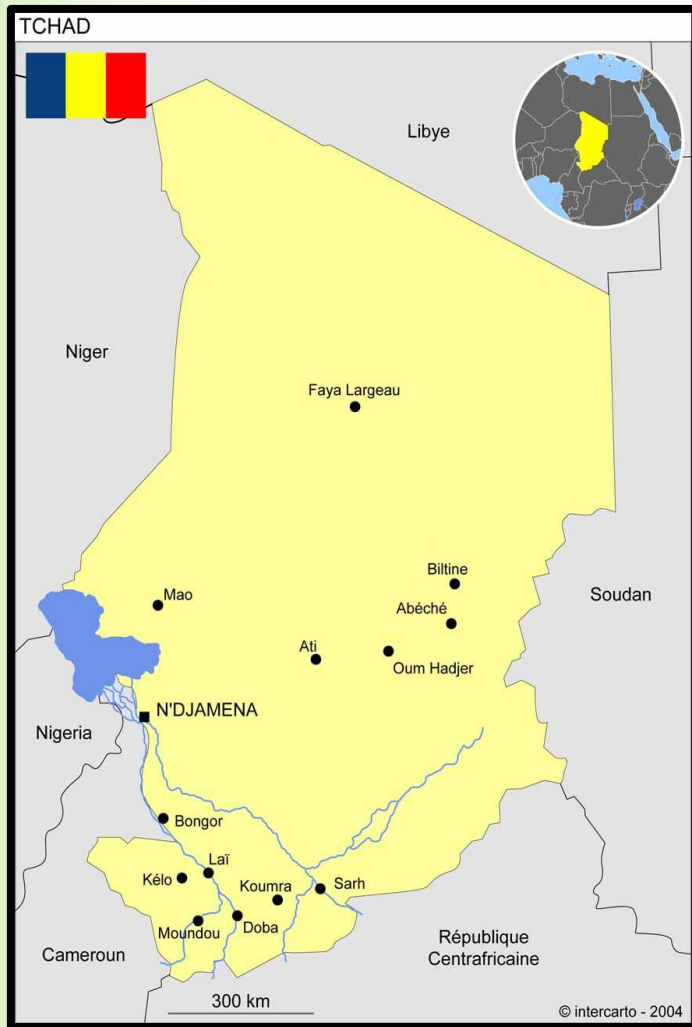
2017

- Visite du coordinateur
- Nouveaux points focaux
- Atelier de formation
- Transmission mensuelle rapport Co₂

2018

- Mise à jour AES
- Mise à jour BASELINE
- Transmission mensuelle rapport Co₂

CONTEXTE TCHADIEN



**Un seul aéroport international au Tchad:
l'aéroport international Hassan Djamous de N'Djaména**



CONTEXTE TCHADIEN



Gestionnaire aéroport et espace aérien



Handling monopole de THS



2004 - 2012



CONTEXTE TCHADIEN

COMPAGNIES ETRANGERES DESSERVANT L'AEROPORT DE N'DJAMENA



CONTEXTE TCHADIEN



Définition OACI
→
Non applicable



Méthode de calcul
→
IPCC/GIEC

Sources de données

↓
Manifestes de vols
THS

OACI

←
RAPPORT CO₂

AES

←
FORM ENVI

ICAO CARBON CALCULATOR

TRAITEMENT DES DONNEES

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ENVIRONMENTAL PROGRAMME
FORM ENVI

Date:
Last name: ELHADJ MADAM
First name: SEIDNA
Email: elhadjseidna@yahoo.fr
Data provider: THS

Flight number	Date of departure	Airline	Origin	Destination	Aircraft	Seats available	Passengers carried	Payload available	Freight carried (incl. express)	Mail carried	Scheduled	Fuel consumed	APU usage time	Taxi time
								(Kilogrammes)	(Kilogrammes)	(Kilogrammes)		(Liters)	(Minutes)	(Minutes)
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
ET939	01/11/2018	ETH	NDJ	ADD	B738	154	101	21300	0	0	1		0	5
ET938	01/11/2018	ETH	ADD	NDJ	B738	154	73	21300	0	0	1		0	5

TRAITEMENT DES DONNEES

© ICAO 2014

Establishing the Baseline

Method 3: To be used if only 1 year of historical data is available

1. Obtain historical annual data for fuel consumption (volume of fuel) and traffic (RTK)

2. Divide the fuel consumption by RTK to obtain the fuel efficiency

Year	CO2 (kg)	Fuel Burn (litres)	RTK	Fuel (in litres) per RTK (efficiency) <i>Calculated Automatically</i>
2018	33 066	13 080		#DIV/0!

TRAITEMENT DES DONNEES

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ENVIRONMENTAL PROGRAMME
FORM ENVI

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ET939	01/11/2018	ETH	NDJ	ADD	B738	154	101	21300	0	0	1	13080	0	5
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TRAITEMENT DES DONNEES

Aviation Environmental System

ICAO-EU Project | ICAO | European Commission

Menu | Import Data | Manage Data Providers | Export Data | Browse Database | Contacts | Profile | Help

Welcome To The Aviation Environmental System

Please choose your activity:

Import Data

Import historical or monitored data from Excel files supplied by Data Providers. Generate Excel template files for your Data Providers.

Profile

Manage your profile.

Manage Data Providers

View the profile, contact person and past submitted data of your Data Providers (national airlines and international airports).

Help

Consult the user manual.

Export Data

Output your data directly in Form M to submit to ICAO, generate a baseline spreadsheet (e.g. for the APER website) or generate custom reports.

Browse Database

For advanced users only: View your data directly in the database (flights, airlines, airports, imports) and manipulate your records.

Aviation Environmental System

ICAO-EU Project | ICAO | European Commission

Menu | Import Data | Manage Data Providers | Export Data | Browse Database | Contacts | Profile | Help

Import from File | Generate Templates

Import Data from File

Select data to import:

Select the Data Type: Monitored data (Form ENV1) Historical data (Form ENV2)

Select the file to import:

File selected:

Import data

Aviation Environmental System

ICAO-EU Project | ICAO | European Commission

Menu | Import Data | Manage Data Providers | Export Data | Browse Database | Contacts | Profile | Help

Monitored Data | Historical Data | ICAO Form M

Export Data

1. Select A Time Interval

From:
To:

Select a granularity:

2. Select A Scope

International Domestic Total

All 1 Airline:

3. Select the output data

Nb of Flights RTK (tkm) Net CO2 Emissions (kg) Fuel Consumption (L) Fuel Efficiency (L/tkm)

Display **Export to Excel**

DateDep	Flightsair	FlightsTot	RTKair	RTKTot	CO2air	CO2Tot	Fuelair	FuelTot
2014/04	21	39	1554514	3316790	224	269	95700	116400
2014/05	22	35	1550948	2800805	152	178	66780	80980
2014/06	20	30	1431904	2387478	148	168	64460	75510
2014/07	18	29	1222381	2307138	216	242	91550	105600
2014/08	21	30	1623320	2518733	224	242	95700	106050
2014/09	30	33	1497377	3761771	238	288	93480	107750
2014/10	16	25	1151486	2000559	142	160	61010	70910
2014/11	22	33	1566111	3408948	224	248	95700	108200
2014/12	22	33	1666088	3722607	155	177	68410	81060

Main contact: First name: Last name: Phone:

Airlines: All 1 Airline:

Airports: All 1 Airport:

Send reminder **Display**

Flights covered and reported by this Data Provider:

Flights reported by this Data Provider:

Flights reported by all Data Providers:

DateDep	Fligl	Pax	Fuel
12/2014	15	1722	31320
11/2014	14	1592	43840
10/2014	8	911	8150
09/2014	13	1489	42240
08/2014	12	1381	42490
07/2014	12	1377	42840
06/2014	11	1265	11150
05/2014	15	1716	15450
04/2014	18	2066	49390
03/2014	17	1943	33220

DateDep	Flightsair	FlightsTot	RTKair	RTKTot	CO2air	CO2Tot	Fuelair	FuelTot
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RAPPORTS CO2 ET BASELINE

ANNUAL AVIATION CO₂ REPORT

2017

Chad

State-level report - 1 reporting airline(s)
IPCC definition for international flights

MONTHLY REPORTS SUBMITTED



KEY METRICS FOR INTERNATIONAL AVIATION

FLIGHTS	RTK (tkm)	FUEL BURN (L)	CO ₂ EMISSIONS (t)	FUEL EFFICIENCY (L/tkm)
1 621	25 717 466	23 042 657	58 252	2,038

TRENDS

YEAR-TO-YEAR	2016	2017	TREND	% CHANGE
RTK (tkm)	33 926 656	25 717 466	↓	-24%
FUEL BURN (L)	21 111 334	23 042 657	↑	9%
CO ₂ EMISSIONS (T)	53 369	58 252	↑	9%
FUEL EFFICIENCY (L/tkm)	0,622	2,038	↑	228%

Revenue Tonnes Kilometers (RTK)



Fuel Burn and Efficiency



Fuel Burn Trends



Most Fuel Efficient Aircraft

Aircraft	Number of flights*	Fuel efficiency (L/tkm)
1 DASH8	28	0,55
2 DH8	153	0,557
3 A333	2	0,74
4 B734	6	0,773
5 AT45	2	0,83

* Only aircraft with at least 2 flights were considered.

Least Fuel Efficient Aircraft

Aircraft	Number of flights*	Fuel efficiency (L/tkm)
1 B744F	2	24,185
2 B777	11	22,472
3 B747F	9	14,572
4 B777F	14	14,196
5 B747-400	3	11,456

* Only aircraft with at least 2 flights were considered.

RAPPORTS CO2 ET BASELINE

MONTHLY AVIATION CO₂ REPORT

nov-18

Chad

State-level report 1 reporting airline(s)
IPCC definition for international flights

KEY METRICS FOR INTERNATIONAL AVIATION

FLIGHTS	RTK (tkm)	FUEL BURN (L)	CO2 EMISSIONS (t)	FUEL EFFICIENCY (L/tkm)
141	2 357 009	1 961 143	4 957	2,544

TRENDS

MONTH-TO-MONTH	nov-18	oct-18	% CHANGE	6 MONTHS TREND
RTK (tkm)	2 357 009	2 338 888	↑ 1%	
FUEL BURN (L)	1 961 143	2 098 697	↓ -7%	
CO2 EMISSIONS (kg)	4 957	5 305	↓ -7%	
FUEL EFFICIENCY (L/tkm)	2,544	1,765	↑ 44%	

YEAR-TO-YEAR	nov-18	nov-17	% CHANGE	1 YEAR TREND
RTK (tkm)	2 357 009	2 153 569	↑ 9%	
FUEL BURN (L)	1 961 143	2 014 413	↓ -3%	
CO2 EMISSIONS (T)	4 957	5 092	↓ -3%	
FUEL EFFICIENCY (L/tkm)	2,544	3,211	↓ -21%	

Revenue Tonnes Kilometers (RTK)

Fuel Burn and Efficiency

Efficiency of Mostly Used Aircrafts

Aircrafts	Flights	Fuel Efficiency (L/tkm)
1 A320	9	0,574
2 B735	5	0,593
3 A332	13	0,819
4 B739	8	0,929
5 A319	13	1,068

Fuel Burn Trends

Most Fuel Efficient Routes

Routes*	Flights	Fuel Efficiency (L/tkm)
1 FTTJ-HECA	9	0,574
2 FTTJ-HAAB	30	0,587
3 FTTJ-HSSS	5	0,593
4 FTTJ-LFPG	13	0,819
5 FTTJ-LTBA	8	0,929

* Only routes with at least 2 flights were considered.

Least Fuel Efficient Routes

Routes*	Flights	Fuel Efficiency (L/tkm)
1 FTTJ-HKJK	13	17,961
2 FTTJ-FKKD	50	1,357
3 FTTJ-GMMN	13	1,046
4 FTTJ-LTBA	8	0,929
5 FTTJ-LFPG	13	0,819

* Only routes with at least 2 flights were considered.

Routes with Highest Load Factors

Routes*	Flights	Load Factor
1 FTTJ-HSSS	5	0,725
2 FTTJ-HECA	9	0,617
3 FTTJ-LFPG	13	0,589
4 FTTJ-HAAB	30	0,577
5 FTTJ-FKKD	50	0,461

* Only routes with at least 2 flights were considered.

Routes with Lowest Load Factors

Routes*	Flights	Load Factor
1 FTTJ-HKJK	13	0,034
2 FTTJ-GMMN	13	0,347
3 FTTJ-LTBA	8	0,398
4 FTTJ-FKKD	50	0,461
5 FTTJ-HAAB	30	0,577

* Only routes with at least 2 flights were considered.

RAPPORTS CO2 ET BASELINE

SCENARIO DE REFERENCE				
Année	TPK international (tkm)	Carburant consommé International (L)	Emissions CO2 International (kg)	Rendement efficient de carburant
2014	61 078 707	38 007 076	96 081 888	0,62
2015	64 376 957	40 059 458	101 270 310	0,62
2016	67 853 313	42 222 669	106 738 907	0,62
2017	71 517 392	44 502 693	112 502 808	0,62
2018	75 379 331	46 905 838	118 577 959	0,62

PLAN D'ACTION DU TCHAD (2015)

SCENARIO DE REFERENCE				
Année	TPK international (tkm)	Carburant consommé International (L)	Emissions CO2 International (kg)	Rendement efficient de carburant
2017	25 717 466	23 042 657	58 252 135	0,62

RAPPORT ANNUEL 2017

EXPERIENCES

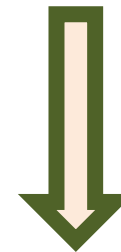
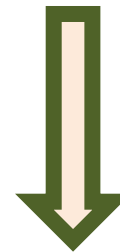
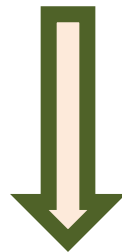
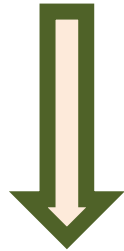
DEFIS

Collectes
données

Traitement
données

Pérenniser la
source
d'informations

Respect delais



SOLUTIONS

Manifestes de
vols +
CARBON
CALCULATOR

Formation
AES

Transmission
hebdomadaire

Répartition
des tâches

BESOINS D'ASSISTANCE



Vol inaugural : 01/10/2018

Flotte: 2 Bombardier Dash Q400



MISE A JOUR :

- Plan d'action
- Méthode de calcul

Quand ? Comment ?



ATOUTS:

- Moins d' énergie fossile
- Soleil 320j/an
- Température: 30 - 45 °C

- **ETUDE DE FAISABILITE**
- **EXPERTISE**

MERCI !

QUESTIONS ?