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# Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)





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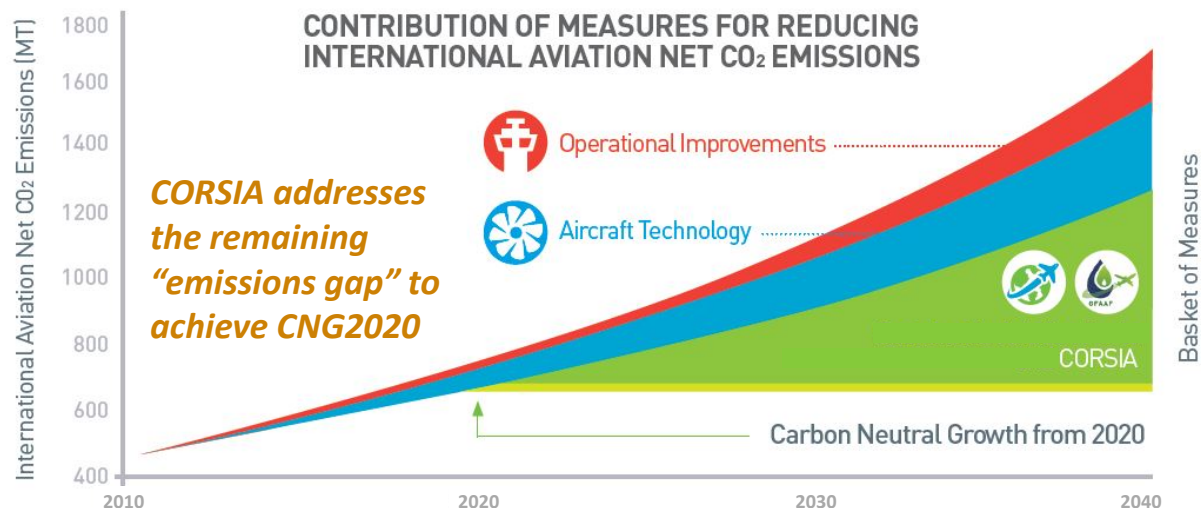


# CORSIA

Adopted through Assembly Resolution 39-3 and is the **first global MBM scheme** for any industry sector

To achieve ICAO's global aspirational goal of carbon neutral growth from 2020 (CNG 2020), CORSIA is one complementary element in the basket of measures to:

- aircraft technology
- operational improvements
- sustainable aviation fuels





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# Developing a framework for CORSIA implementation



## ICAO Policy



**Chicago Convention**  
**ICAO Assembly Resolutions A39-1, A39-2 and A39-3:**  
 Consolidated statement of continuing ICAO policies and practices related to environmental protection

## ICAO Standards and Recommended Practices (SARPs)



**Annex 16 - Environmental Protection:**  
**Volume I**, Aircraft Noise  
**Volume II**, Aircraft Engine Emissions  
**Volume III**, Aeroplane CO<sub>2</sub> Emissions  
**Volume IV**, CORSIA **NEW**

## ICAO Guidance Documents



**Various guidance on noise, LAQ and climate change, e.g.:**  
 Environmental Assessment of Proposed ATM Operational Changes (Doc 10031)  
**Environmental Technical Manual Volume IV (Doc 9501) NEW**



## CORSIA Package

### 1. Standards and Recommended Practices (SARPs)

#### Annex 16, Volume IV

- Mandatory actions by States and operators (the “what” and “when”) to implement CORSIA
- Adopted in June 2018



### 2. Environmental Technical Manual (ETM) Volume IV

- Guidance on the process (the “how”) to implement CORSIA



### 3. Implementation Elements

- Directly referenced in Annex 16, Volume IV, and essential information for the implementation of CORSIA





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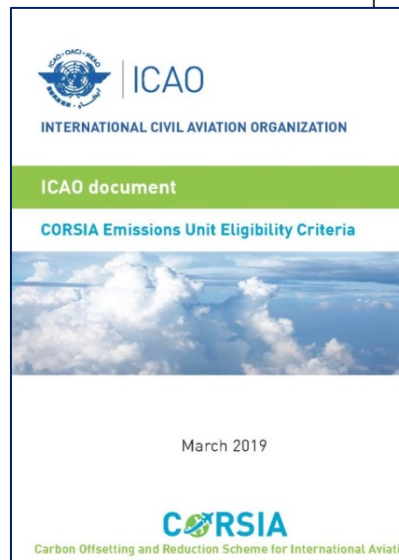
## 5 Implementations Elements

CORSIA States for Chapter 3 States Pairs  
ICAO CERT  
CORSIA Eligible Fuels  
CORSIA Eligible Emissions Units  
CORSIA Central Registry CCR

Reflected in 14 ICAO documents

Directly referenced in Annex 16, Vol. IV

Will contain material approved by the ICAO Council  
for publication by ICAO to support the  
implementation of CORSIA





## Assembly Resolution A39-3

- Key design features of CORSIA:
  - Phased implementation (A39-3 paragraph 9)
  - Emissions coverage: route-based approach (A39-3 paragraph 10)
  - Offsetting requirements (A39-3 paragraph 11)
  - New entrants (A39-3 paragraph 12)
  - Technical exemptions (A39-3 paragraph 13)
  - Review mechanism (A39-3 paragraphs 9g and 18)
- CORSIA implementation features:
  - Monitoring, Reporting and Verification (A39-3 paragraphs 15, 20a and 20b)



## Phased Implementation

81 States  
intend to  
voluntarily  
participate in  
CORSIA from  
2021



Second phase  
participation criteria:

- 90% of global RTK
- 0.5% of RTK

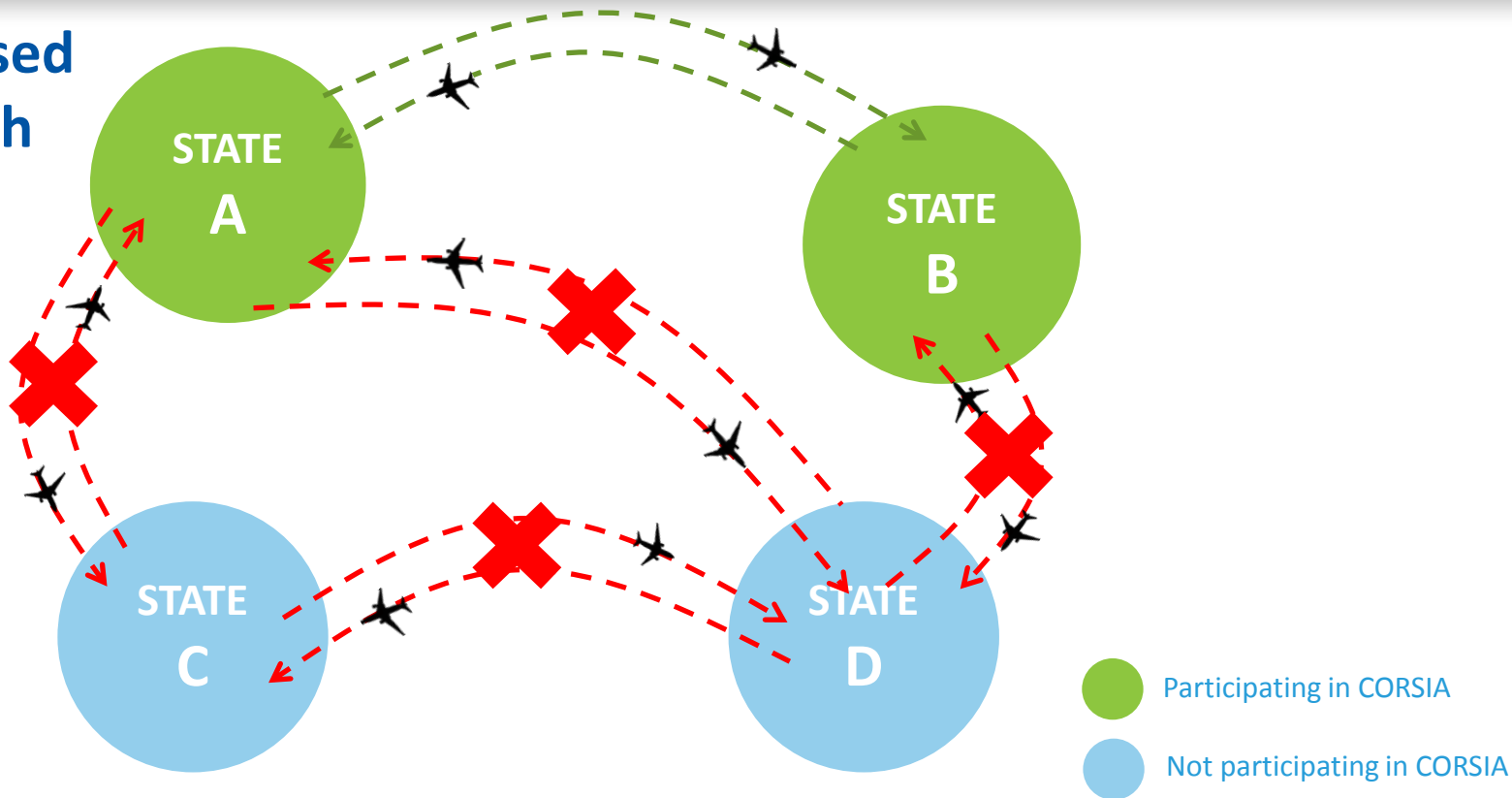
Exemptions:

- LDCs, LLDCs, SIDS

**All Member States are encouraged to participate  
in the pilot and first phase of the CORSIA**



## Route-based approach



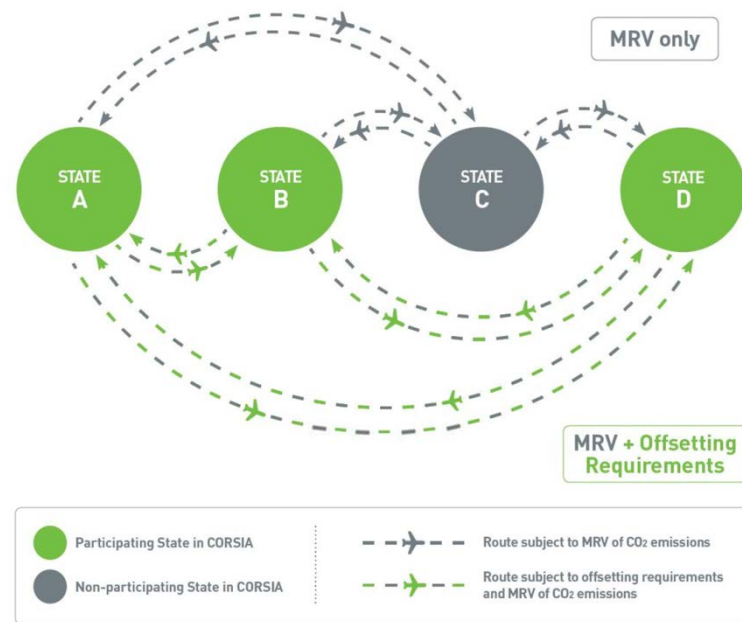


**Monitoring, Reporting and Verification (MRV)** is the backbone for the successful implementation of CORSIA, which requires:

- Reliable information on CO<sub>2</sub> emissions and on offsetting requirements

**ALL ICAO MEMBER STATES with aeroplane operators conducting international flights are required to monitor, report and verify CO<sub>2</sub> emissions from these flights every year from 2019, independent of their participation in CORSIA.**

**ICAO MEMBER STATES PARTICIPATING IN CORSIA offsetting need to ensure that their aeroplane operators comply with the CORSIA offsetting requirements every three years (starting in 2021), in addition to annual CO<sub>2</sub> MRV.**





## Technical exemptions:

- Emissions from aeroplane operators emitting less than 10 000 metric tonnes of CO<sub>2</sub> emissions from international aviation per year
- Emissions from aircraft with less than 5 700 kg of Maximum Take Off Mass (MTOM)
- Emissions from humanitarian, medical and firefighting operations

## New entrants:

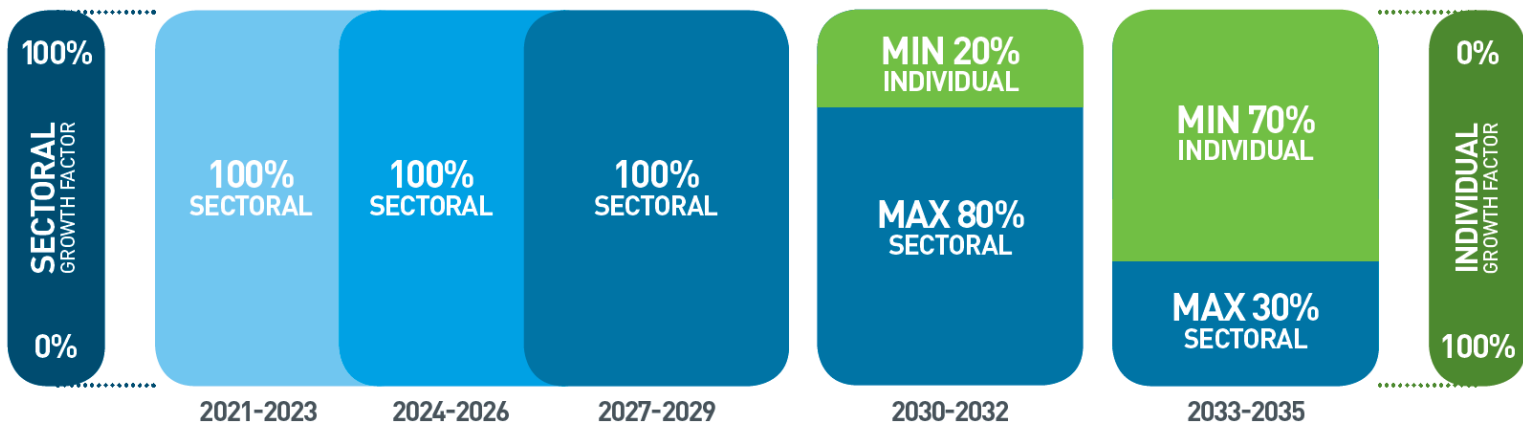
- Exempted for the first 3 years or until their annual emissions exceed 0.1% of total 2020 CO<sub>2</sub> emissions from international flights, whichever comes first.



## Offsetting requirements

Operator's annual emissions **X** Growth Factor = **CO<sub>2</sub> offsetting requirements**

The Growth Factor changes every year taking into account both the sectoral and the individual operator's emissions growth. The Growth Factor is the percent increase in the amount of emissions from the baseline to a given future year, and is calculated by ICAO.





## Periodic Review mechanism

- Periodic review of the CORSIA every three years starting in 2022
- 2022 review will allow the Council to make informed recommendations to the Assembly on whether it is necessary to make adjustments to the next phases of the scheme
- Special review by the end of 2032 on termination of the scheme, its extension or any other improvements of the scheme beyond 2035

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Phases	Pilot Phase (voluntary, 3 years)			First Phase (voluntary, 3 years)			Second Phase (all non-exempted States, 9 years)								
Compliance cycles	Cycle 1 (3 years)			Cycle 2 (3 years)			Cycle 3 (3 years)			Cycle 4 (3 years)			Cycle 5 (3 years)		
Periodic reviews		Review 1			Review 2			Review 3			Review 4	Special		Review 5	
Assemblies		A41			A42			A43			A44			A45	



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<https://www.youtube.com/watch?v=D0tAy0apYII>



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# Start of CORSIA implementation (2019-2020)

[www.icao.int/corsia](http://www.icao.int/corsia)



## MRV system

- Implementation of the MRV system from 1 January 2019 for all international flights is essential to establish CORSIA's baseline (2019-2020 average)
- Purpose of MRV is to collect information on international aviation CO<sub>2</sub> emissions on an annual basis and compare emissions from 2021 against the baseline emissions

### Monitoring

**Monitoring of CO<sub>2</sub> emissions is either based on a Fuel Use Monitoring Method, or the use of the ICAO CORSIA CERT.**

### Reporting

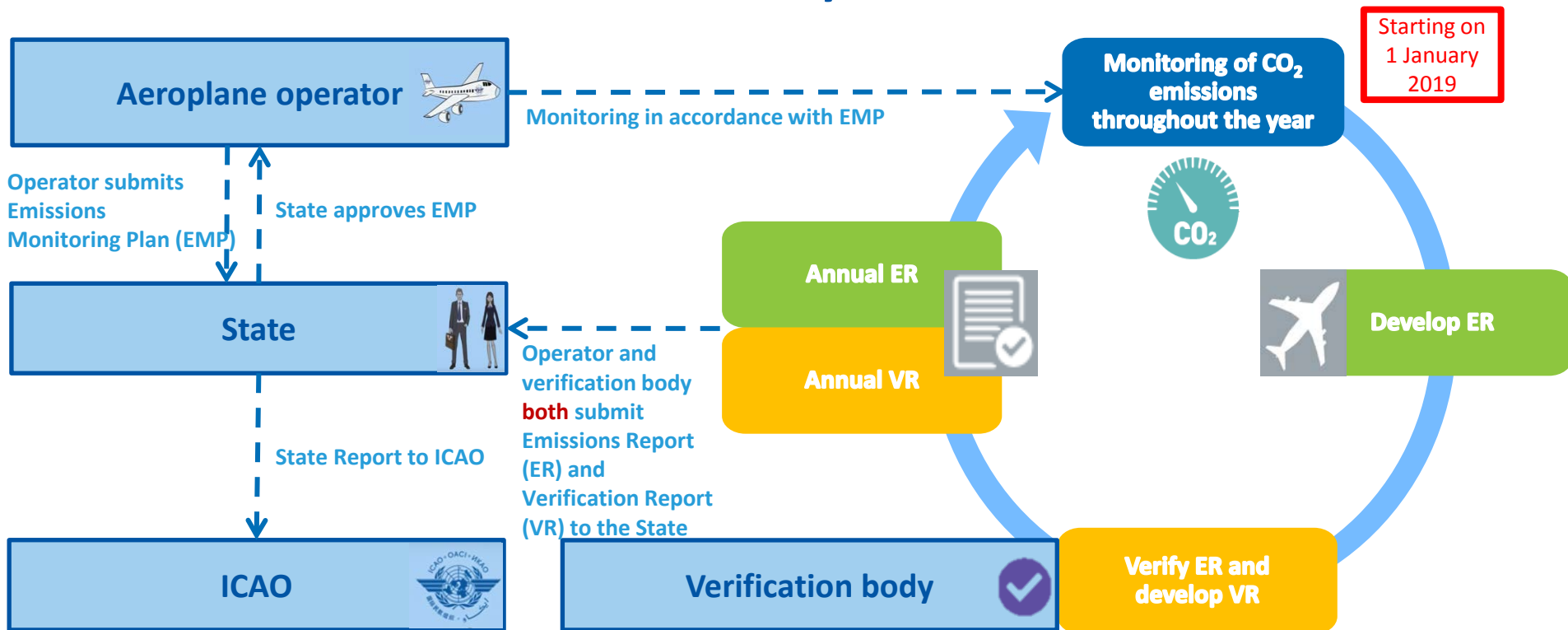
**CO<sub>2</sub> emissions will be reported from aeroplane operators to their State Authority, and from States to ICAO.**

### Verification

**CO<sub>2</sub> emissions information is accurate and free of errors.**



## Annual MRV cycle





## Monitoring of CO<sub>2</sub> Emissions – Emissions Monitoring Plan

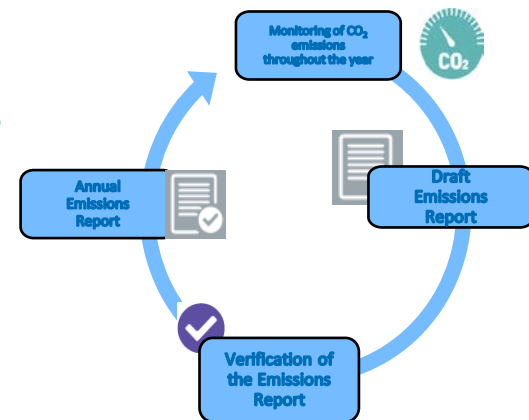
- An Emissions Monitoring Plan (EMP) is a **collaborative tool between the State and the aeroplane operator**.
- The EMP identifies how to monitor and report CO<sub>2</sub> emissions information which the State requires.
- An aeroplane operator shall submit an EMP to the State to which it is attributed for approval.
  - Operator to submit an EMP to State by 28 February 2019
  - State to approve the EMP by 30 April 2019
- The State and aeroplane operators should maintain clear and open communication during the development and review of an EMP

Reference: Annex 16, Volume IV, Part II, Chapter 2, 2.2.2



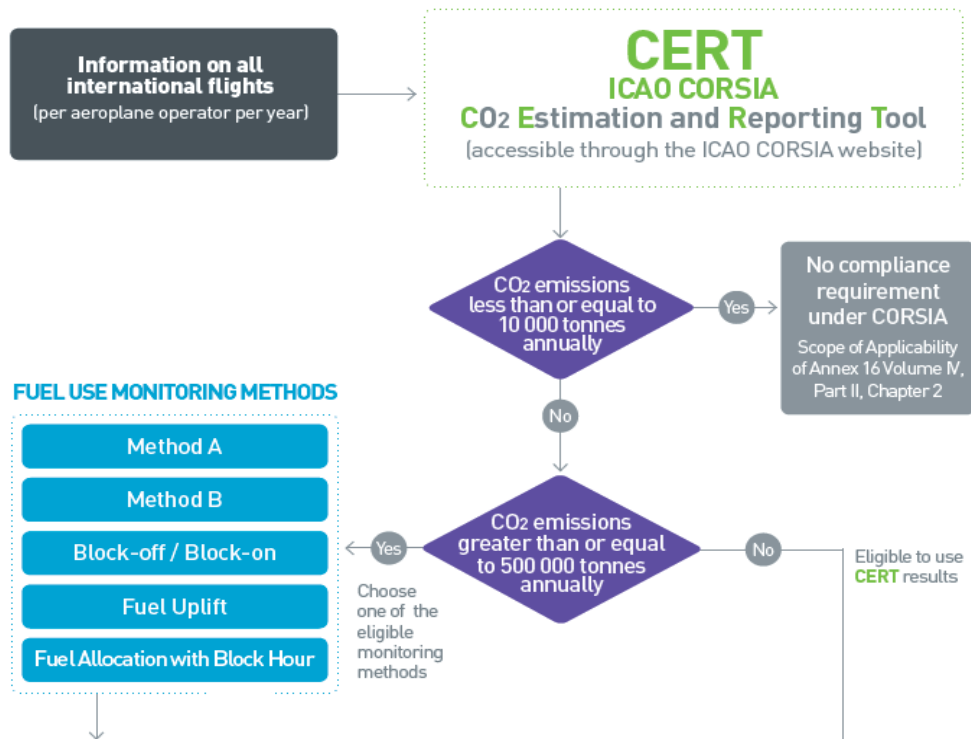
## Emissions Report (ER)

- A means to communicate CO<sub>2</sub> emissions data from aeroplane operator to State
- Purpose of the Emissions Report:
  - Communication mechanism between operator and State for CO<sub>2</sub> emissions data and other info
  - Key document within the CORSIA MRV as it includes all relevant CO<sub>2</sub> emissions related data as described in Annex 16, Volume IV, Appendix 5
  - Basis for calculation of operator's offsetting requirements from 2021 onwards





## Emissions Monitoring Options (for 2019 & 2020)



*If the aeroplane operator's annual CO<sub>2</sub> emissions increase above the threshold of 500 000 tonnes during year 2019, the State can permit the aeroplane operator to continue to use the already chosen monitoring method chosen during 2020.*



## Reporting of CO<sub>2</sub> Emissions

- CORSIA requires aeroplane operators conducting international flights<sup>(\*)</sup> to report on related CO<sub>2</sub> emissions information
  - First reporting year: **2020** (for data related to 2019 international flights)
  - Frequency of reporting: on an annual basis
  - Reporting format: **Emissions Report**
  - Reporting recipient: State

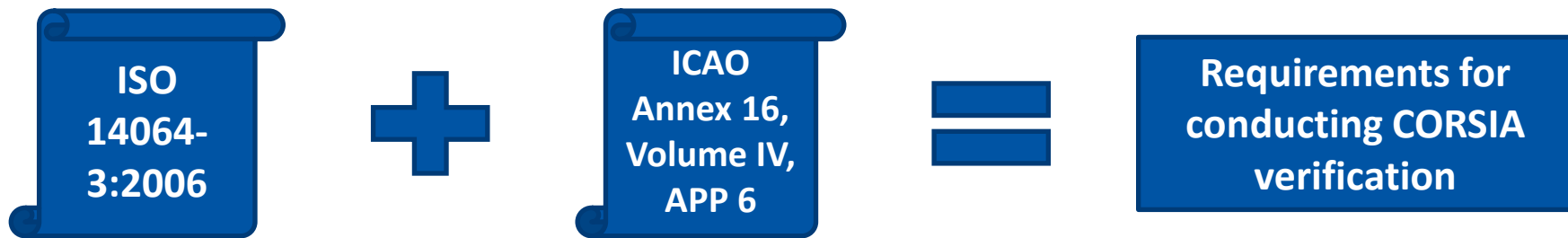
(\*) aeroplane operators that produce annual CO<sub>2</sub> emissions greater than 10 000 tonnes from international flights conducted by aeroplanes with a maximum certificated take-off mass greater than 5 700 kg (with the exception of humanitarian, medical and firefighting flights)

Reference: Annex 16, Volume IV, Part II, Chapter 2, 2.3.1



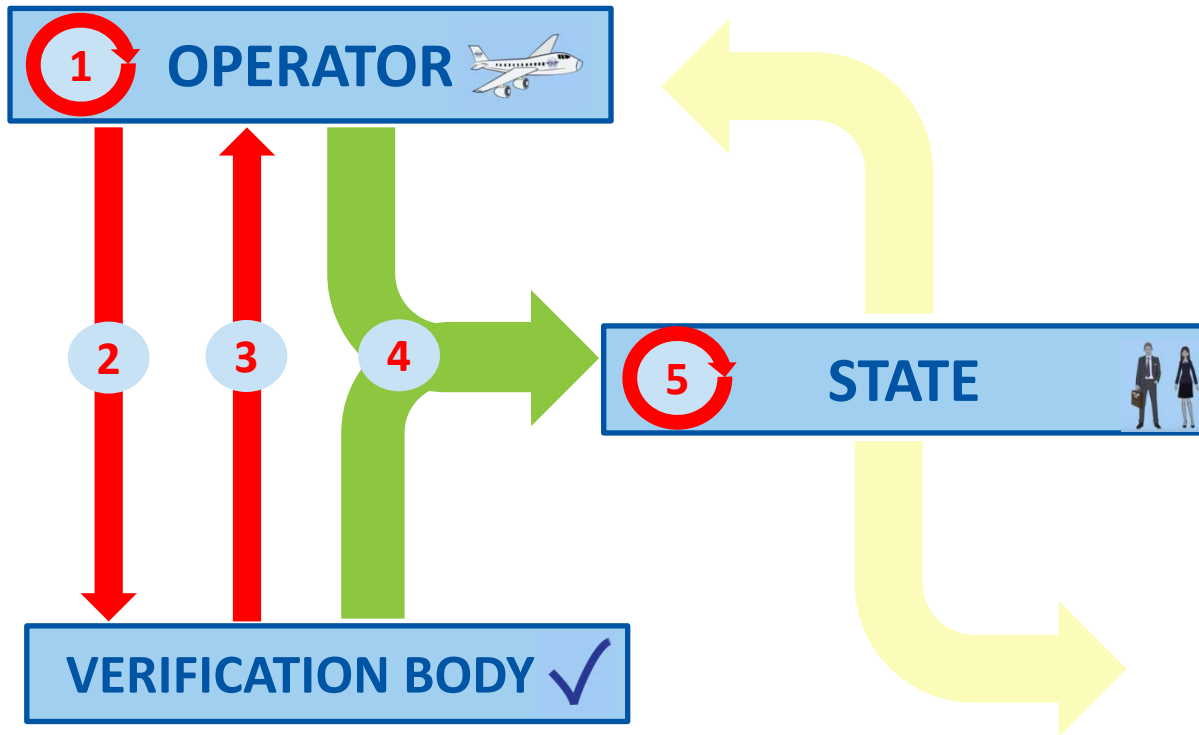
## Verification process in CORSIA

- The aeroplane operator shall engage an accredited verification body for the verification of its annual Emissions Report
- A verification body shall conduct the verification according to ISO 14064-3:2006, and the CORSIA-specific requirements described in Annex 16, Volume IV, Appendix 6





## Verification of CO<sub>2</sub> Emissions



- 1 Internal pre-verification
- 2 Aeroplane operator submits Emissions Report to an accredited verification body
- 3 Verification body produces Verification Report
- 4 Aeroplane operator and verification body submit Emissions Report and Verification Report to State
- 5 State's order of magnitude check of Emissions Report



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# Supporting States in CORSIA implementation: capacity-building activities



## Progress on Capacity Building

### ICAO events related to CORSIA since 39<sup>th</sup> Assembly

- 2017 ICAO Regional Seminars on CORSIA (5 seminars, March – April 2017)
- 2017 ICAO HQ Seminar on CORSIA (Montréal, 10-11 May 2017)
- Additional CORSIA seminars, with support by AFCAC (Nigeria and Zambia, August 2017)
- ICAO Seminar on Carbon Markets (Montréal, 7-9 February 2018)
- 2018 ICAO Regional Seminars on CORSIA (5 seminars, March – April 2018)
- 2018 ICAO HQ Seminar on CORSIA (Montréal, 2-3 July 2018)
- 2019 ICAO Regional Seminars on CORSIA (5 seminars, March – April 2019)



## ACT-CORSIA

- The ICAO Council endorsed a plan to provide direct and tailored assistance on CORSIA implementation to States around the world
- The ICAO **Assistance, Capacity-building and Training on CORSIA (ACT-CORSIA)** programme – Launched on 2 July 2018!





## ACT CORSIA

- ACT-CORSIA ensures ICAO's leadership for **“coordinated” support**, and avoids proliferation of “uncoordinated” initiatives
- ACT-CORSIA ensures that the **same quality of assistance** be provided to Member States, focused on **Emissions Monitoring Plans and national regulatory frameworks**
- **98 States** have received assistance under the **ACT-CORSIA Buddy Partnerships** established in the programme's First Phase





ACT >>> CORSIA Phase I Assistance, Capacity-building and Training on CORSIA	
<b>AUSTRALIA</b>	<b>JAPAN</b>
1. BRUNEI DARUSSALAM	1. AFGHANISTAN
2. INDONESIA	2. BANGLADESH
3. NAURU	3. BHUTAN
4. PAPUA NEW GUINEA	4. CAMBODIA
5. SRI LANKA	5. MALAYSIA
6. THAILAND	6. MYANMAR
<b>CANADA / FRANCE</b>	<b>KENYA</b>
1. BURKINA FASO	1. RWANDA
2. CAMEROON	2. SEYCHELLES
3. CHAD	3. SOUTH SUDAN
4. COMOROS	4. UGANDA
5. CONGO	
6. COTE D'IVOIRE	<b>MEXICO / SPAIN / USA</b>
7. D. R. OF CONGO	1. BELIZE
8. DJIBOUTI	2. COSTA RICA
9. GABON	3. EL SALVADOR
10. HAITI	4. GUATEMALA
11. MADAGASCAR	5. HONDURAS
12. MALI	6. NICARAGUA
13. MAURITANIA	<b>NEW ZEALAND</b>
14. MAURITIUS	1. FIJI
15. NIGER	2. SAMOA
16. SENEGAL	3. SOLOMON ISLANDS
17. TOGO	4. VANUATU
<b>CANADA / FRANCE / SPAIN</b>	<b>NIGERIA</b>
1. ALGERIA	1. GAMBIA
2. EGYPT	2. GHANA
3. IRAQ	3. LIBERIA
4. JORDAN	4. SIERRA LEONE
5. MOROCCO	5. SUDAN
6. SAUDI ARABIA	<b>REPUBLIC OF KOREA</b>
7. TUNISIA	1. LAO PEOPLE'S D. R.
<b>GERMANY</b>	2. MONGOLIA
1. JAMAICA	3. PAKISTAN
2. TAJIKISTAN	4. PHILIPPINES
3. TRINIDAD & TOBAGO	5. VIETNAM
<b>GERMANY/ ECAC</b>	<b>SOUTH AFRICA</b>
1. ALBANIA	1. BOTSWANA
2. ARMENIA	2. LESOTHO
3. AZERBAIJAN	3. MALAWI
4. REPUBLIC OF MOLDOVA	4. NAMIBIA
5. SERBIA	5. ZAMBIA
6. NORTH MACEDONIA	6. ZIMBABWE
7. TURKEY	<b>SPAIN</b>
<b>ITALY</b>	1. BOLIVIA
1. ANTIGUA AND BARBUDA	2. CUBA
2. BAHAMAS	3. PERU
3. ERITREA	4. URUGUAY
4. ETHIOPIA	<b>USA</b>
5. GUYANA	1. ARGENTINA
6. SOMALIA	2. DOMINICAN REPUBLIC
7. SURINAME	3. ECUADOR
8. UNITED REPUBLIC OF TANZANIA	4. PANAMA
<b>ITALY &amp; BRAZIL</b>	
1. ANGOLA	
2. CABO VERDE	
3. COLOMBIA	
4. MOZAMBIQUE	
5. PARAGUAY	
6. SAO TOME AND PRINCIPE	



15 DONOR STATES  
98 RECIPIENT STATES

## ACT-CORSIA Buddy Partnerships

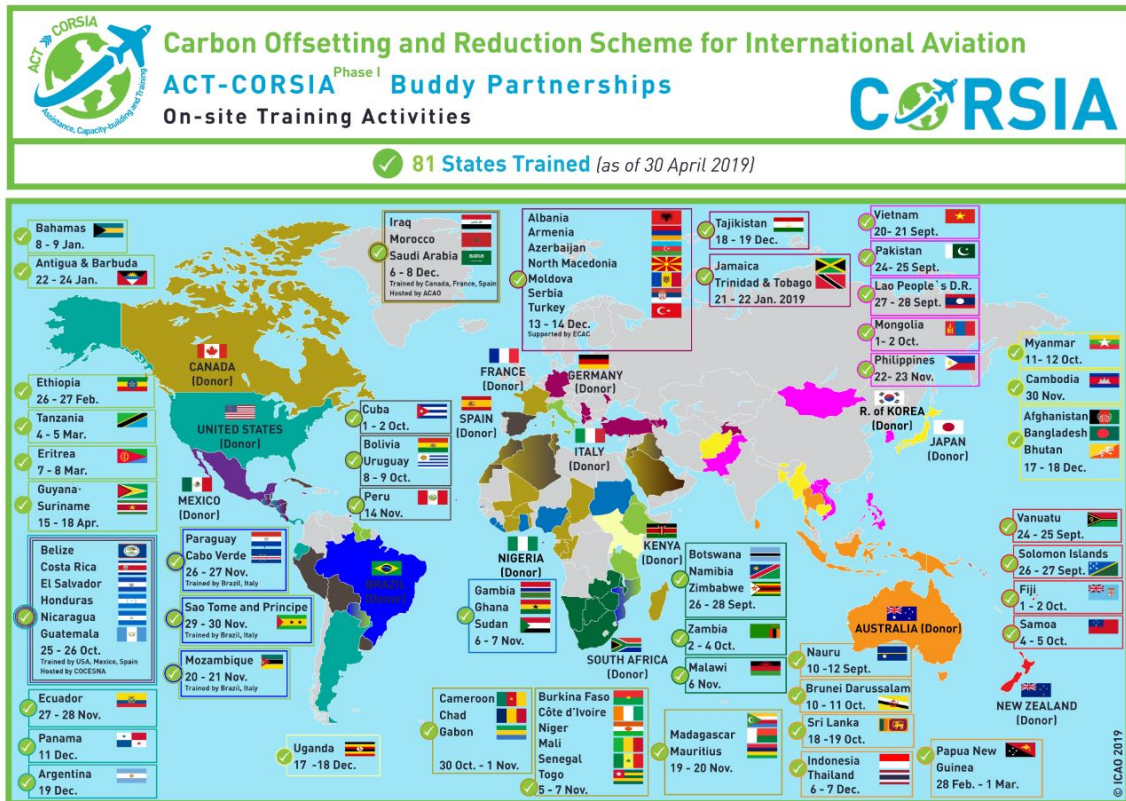
- The Council encouraged the establishment of CORSIA Buddy Partnerships among States.
  - A donor State provides assistance to a recipient State to build its national capacity to implement CORSIA.
  - Assistance is in the form of a donor State offering expert(s) on CORSIA to provide individual training to and undertake the necessary follow-up with, the CORSIA focal points of the recipient States, in close coordination with the ICAO Secretariat.



## ACT-CORSIA Buddy Partnerships

CORSIA Buddy Partnerships across various regions are being established, involving around 15 donor States and 98 recipient States.

- Daily update on the on-site training activities by donor State experts at the recipient States has been provided on the ICAO CORSIA website, enabling full transparency of the assistance progress under the ICAO umbrella.





## ACT-CORSIA: Current Focus Areas

- ICAO coordinated initiative
  - Different cooperation modalities/agreements to be undertaken amongst ICAO Member States for capacity-building and assistance under the umbrella of ICAO
  - Three Step Approach: Preparatory Activities/On-site Training/Remote Follow-Up
- 1) Development and approval of Emissions Monitoring Plans**
  - 2) Establishment of national/regional regulatory frameworks**



Different phases of ACT-CORSIA will be designed with specific focus areas, as necessary actions by Member States are required by different deadlines

***Phase 1 (September to December 2018)***

Focus areas:

- Development and approval of Emissions Monitoring Plans
- Establishment of national/regional regulatory frameworks

***Phase 2 (2019):***

Focus will be on emissions reporting and verification

***Phase 3 (from 2020 and 2021):***

Focus areas will be on

- Emissions reporting and verification
- Updated information on eligible fuels and eligible emissions units



## Other ACT-CORSIA Activities

- In response to the request by the Council to enhance the communication efforts of the Secretariat to the public, the Secretariat:



- Restructured and updated the ICAO CORSIA public website ([www.icao.int/corsia](http://www.icao.int/corsia)) in order to facilitate better access to information on all aspects of CORSIA;
- Updated and published responses to Frequently Asked Questions (FAQs) on CORSIA, including those related to Annex 16, Volume IV; and
- Initiated the update of its outreach materials, including brochures and leaflets to reflect the decisions of the Council on Annex 16, Volume IV.

## CORSIA Implementation Elements

The five ICAO CORSIA Implementation Elements listed below are reflected in 14 ICAO documents approved by the ICAO Council for publication. These ICAO documents are directly referenced in Annex 16, Volume IV and are essential for the implementation of the CORSIA.

Click on the links below to get more information on each of the ICAO CORSIA Implementation Elements and the corresponding ICAO documents.

ICAO CORSIA Implementation Elements	ICAO documents
<b>CORSIA States for Chapter 3 State Pairs</b>	1. CORSIA States for Chapter 3 State Pairs
<b>ICAO CORSIA CO<sub>2</sub> Estimation and Reporting Tool (CERT)</b>	2. ICAO CORSIA CO <sub>2</sub> Estimation and Reporting Tool
<b>CORSIA Eligible Fuels</b>	3. CORSIA Eligibility Framework and Requirements for Sustainability Certification Schemes 4. CORSIA Approved Sustainability Certification Schemes 5. CORSIA Sustainability Criteria for CORSIA Eligible Fuels 6. CORSIA Default Life Cycle Emissions Values for CORSIA Eligible Fuels 7. CORSIA Methodology for Calculating Actual Life Cycle Emissions Values
<b>CORSIA Eligible Emissions Units</b>	8. CORSIA Eligible Emissions Units 9. CORSIA Emissions Unit Eligibility Criteria
<b>CORSIA Central Registry (CCR)</b>	10. CORSIA Central Registry: Information and Data for the Implementation of CORSIA 11. CORSIA Aeroplane Operator to State Attributions 12. CORSIA 2020 Emissions 13. CORSIA Annual Sector's Growth Factor (SGF) 14. CORSIA Central Registry (CCR): Information and Data for Transparency

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## Brochure and Leaflets

### CORSIA IMPLEMENTATION PLAN Brochure



(EN) (FR) (SP) (RU) (AR) (ZH)

### CORSIA AT A GLANCE Series (1 to 10)

- \*\*\*\*\*
- CORSIA AT A GLANCE SERIES**
1. IMPLEMENTATION COMPONENTS
  2. EMISSIONS MONITORING PLAN
  3. EMISSIONS MONITORING OPTIONS
  4. ACTION CHECKLIST
  5. OFFSETTING REQUIREMENT STEPS
  6. CORSIA CENTRAL REGISTRY
  7. PUBLICATION OF INFORMATION AND DATA FROM CORSIA CENTRAL REGISTRY
  8. CORSIA VERIFICATION
  9. CORSIA ELIGIBLE FUELS
  10. CORSIA EMISSIONS UNITS CRITERIA

## ICAO CORSIA CO<sub>2</sub> Estimation and Reporting Tool (CERT)

This ICAO CORSIA Implementation Element is reflected in the ICAO document entitled "ICAO CORSIA CO<sub>2</sub> Estimation and Reporting Tool", referenced in Annex 16, Volume IV.

### ICAO document "ICAO CORSIA CO<sub>2</sub> Estimation and Reporting Tool"

Version 2019 of the ICAO CORSIA CERT is available for [download here](#)

CSV file templates for importing data into the ICAO CORSIA CERT:

- a) Template for the "Summary of assessment of applicability of CORSIA and eligibility to use the ICAO CORSIA CERT in 2020" functionality is available for [download here](#).
- b) Template for the "CO<sub>2</sub> Estimation and Reporting for 2019" functionality is available for [download here](#).

The ICAO CO<sub>2</sub> Estimation Models (CEMs) is a set of equations underpinning the ICAO CORSIA CERT, which allow for the estimation of CO<sub>2</sub> emissions as a function of Great Circle Distance or Block Time for a given aircraft type. The 2019 Version of the ICAO CEMs is available for [download here](#).

The ICAO CORSIA CO<sub>2</sub> Estimation and Reporting Tool (CERT) can be used by an aeroplane operator to support the monitoring and reporting of their CO<sub>2</sub> emissions, in accordance with the requirements from ICAO Annex 16, Volume IV, Part II, Chapter 2, 2.2 and Appendix 3.



Carbon Offsetting and Reduction Scheme  
for International Aviation (CORSIA)

— Frequently Asked Questions (FAQs) —  
(updated as of 9 August 2018)





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## ICAO CORSIA Verification Course

The ICAO CORSIA Verification Course that has been developed by ICAO provides training on how to verify CO<sub>2</sub> Emissions Reports that have been prepared by aeroplane operators, in accordance with the provisions of the CORSIA Standards and Recommended Practices (SARPs).



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GLOBAL AVIATION TRAINING  
TRAINAIR PLUS™

New Course Launch

**CORSIA  
VERIFICATION  
COURSE**



<https://www.icao.int/training/Pages/training-catalogue-details.aspx?catid=2657&language=0&region=&ITP=1>



## Next Steps:

- **Complete ACT-CORSIA phase 2 - trainings** through Buddy Partnerships
- TAB assessment of eligible emissions units
- Further progress in work on CORSIA eligible fuels
- Complete development of the CCR and proceed to its operationalization



## CORSIA ACTION CHECKLIST 2020

### STATE

TIMELINE FOR ACTION	STATE	AEROPLANE OPERATOR
1 January - 31 December		<ul style="list-style-type: none"> <li>○ Monitor 2020 CO<sub>2</sub> emissions from international flights in accordance with the Emissions Monitoring Plan</li> </ul>
1 January - 31 May		<ul style="list-style-type: none"> <li>○ Compile 2019 CO<sub>2</sub> emissions data</li> <li>○ Perform an internal pre-verification of the 2019 Emissions Report</li> <li>○ Consult ICAO document "CORSIA Central Registry (CCR): Information and Data for Transparency" in order to identify an accredited verification body for the verification of the Emissions Report for 2019</li> <li>○ Engage a verification body for the verification of the 2019 Emissions Report</li> </ul>
By 31 May		<ul style="list-style-type: none"> <li>○ Submit the verified 2019 Emissions Report and associated Verification Report to your State</li> </ul>

1 June - 31 August	<ul style="list-style-type: none"> <li>○ Conduct an order of magnitude check of the aeroplane operator's verified 2019 Emissions Report</li> </ul>
30 June	<ul style="list-style-type: none"> <li>○ Notify ICAO of your State's participation in CORSIA offsetting in year 2021</li> <li>○ Notify ICAO which option your State has selected for calculating the aeroplane operator's offsetting requirements during the 2021-2023 period</li> </ul>
1 August	<ul style="list-style-type: none"> <li>○ Obtain and use the ICAO document entitled "CORSIA States for Chapter 3 State Pairs"</li> </ul>
31 August	<ul style="list-style-type: none"> <li>○ Submit 2019 CO<sub>2</sub> emissions data to ICAO</li> </ul>
30 November	<ul style="list-style-type: none"> <li>○ Submit updates to the list of aeroplane operators attributed to your State and updates to the verification bodies accredited in your State to ICAO</li> </ul>
31 December	<ul style="list-style-type: none"> <li>○ Obtain and use the ICAO document entitled "CORSIA Aeroplane Operator to State Attributions"</li> </ul>



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South American  
(SAM) Office  
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Headquarters  
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Central African  
(WACAF) Office  
Dakar

European and  
North Atlantic  
(EUR/NAT) Office  
Paris

Middle East  
(MID) Office  
Cairo

Eastern and  
Southern African  
(ESAF) Office  
Nairobi

Asia and Pacific  
(APAC) Sub-office  
Beijing

Asia and Pacific  
(APAC) Office  
Bangkok



THANK YOU



## CORSIA Focal Point Nominations

- 160 States have officially nominated their CORSIA focal points
- If your State has not officially nominated their CORSIA focal point by writing a letter to ICAO's Environmental Office, please do so ASAP
- The CORSIA focal point will be necessary for CORSIA implementation