



ICAO

ENVIRONMENT

# Latest Developments on ICAO's work on Climate Change and CORSIA

57th APAC DGCA Conference

Agenda Item 7: Aviation and Environment

4-8 July 2022

A small, realistic-looking globe of the Earth, showing continents and oceans, resting on a green leaf. The globe is positioned on the left side of the slide, partially overlapping the green background.

**Jane Hupe**  
Deputy Director, Environment  
Air Transport Bureau, ICAO



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## Feasibility of Long-Term Aspirational Goal (LTAG)



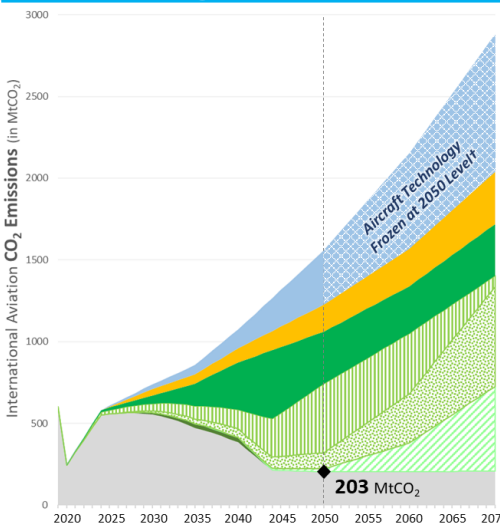
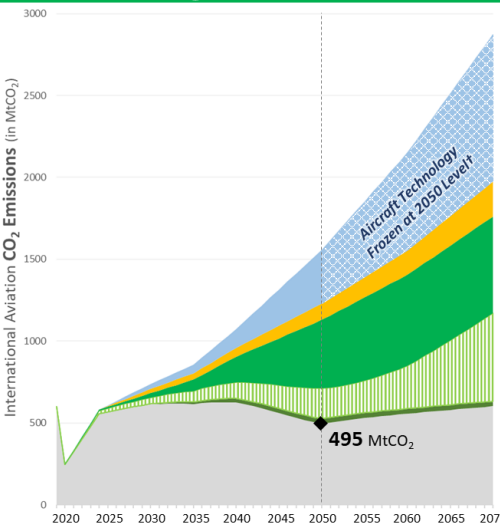
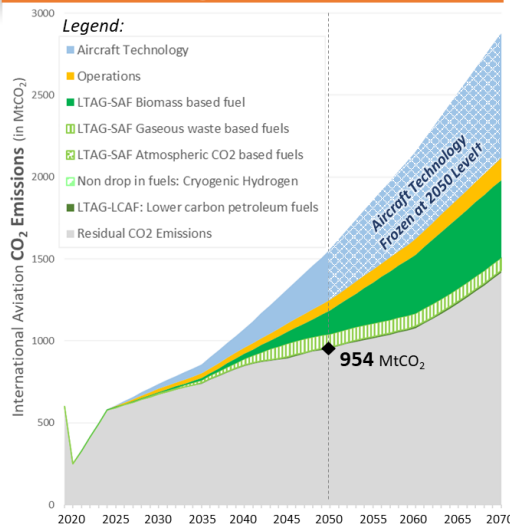
## IS1 LTAG Integrated Scenario 1

## IS2 LTAG Integrated Scenario 2

## IS3 LTAG Integrated Scenario 3

**Legend:**

- Aircraft Technology
- Operations
- LTAG-SAF Biomass based fuel
- LTAG-SAF Gaseous waste based fuels
- LTAG-SAF Atmospheric CO2 based fuels
- Non drop in fuels: Cryogenic Hydrogen
- LTAG-LCAF: Lower carbon petroleum fuels
- Residual CO2 Emissions



Metrics	IS1	IS2	IS3
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CO <sub>2</sub> Emissions in 2050 after Reductions	≈950 MtCO <sub>2</sub> in 2050 (160% of 2019 CO <sub>2</sub> emissions)	≈500 MtCO <sub>2</sub> in 2050 (80% of 2019 CO <sub>2</sub> emissions)	≈200 MtCO <sub>2</sub> in 2050 (35% of 2019 CO <sub>2</sub> emissions)
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Reduction in 2050 from the Baseline	<b>39% total</b> through: Technologies - 20%, Operations - 4%, Fuels - 15%	<b>68% total</b> through: Technologies - 21%, Operations - 6%, Fuels - 41%)	<b>87% total</b> through: Technologies - 21%, Operations - 11%, Fuels - 55%
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Cumulative residual Emissions from 2020 to 2070	23 GtCO <sub>2</sub> (2020 to 2050) 23 GtCO <sub>2</sub> (2051 to 2070)	17 GtCO <sub>2</sub> (2020 to 2050) 11 GtCO <sub>2</sub> (2051 to 2070)	12 GtCO <sub>2</sub> (2020 to 2050) 4 GtCO <sub>2</sub> (2051 to 2070)
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- **As part of the ICAO consultative process, the ICAO Global Aviation Dialogues (GLADs) on LTAG was held as a series of five virtual regional events**
  - APAC GLAD was held on 28 March and 4 April 2022
  - Raised awareness of ICAO work on LTAG, and facilitated exchange of views
  - Compilation of Q&A, and views expressed are available at the ICAO LTAG-GLADs website
- **ICAO High-level meeting on the feasibility of a LTAG (HLM-LTAG)**
  - 19 – 22 July 2022 in Montréal, Canada in hybrid format
  - All APAC States are encouraged to attend
- **Final LTAG deliberations will take place at the 41<sup>st</sup> Session of the ICAO Assembly**



2

## New ICAO ACT-SAF programme



- **An ICAO initiative to facilitate the development and deployment of sustainable fuels**
  - Tailored support for States in various stages of SAF development and deployment
  - Feasibility studies, policy and regulatory development, specific implementation projects, etc.
- **Partnerships and cooperation on SAF initiatives under ICAO coordination**
  - Through bilateral / multilateral agreements between States and various stakeholders (industry, international organizations, financial institutions)
- **Launched on 1 June 2022, all APAC States are invited to express interest in joining the ICAO ACT-SAF Programme**





- All stakeholders in collaboration to advance ACT-SAF efforts
- Connects with existing projects/programmes
- Promotes and accounts for actions globally
- Active participation of Regional offices on outreach, promotion and support for SAF initiatives in the region





1) States/Organizations express interest in becoming an ACT-SAF Partner	2) ICAO coordinates with Partners to detail the offers and requests, and suggest possible projects	3) ICAO connects ACT-SAF Partners	4) Memorandum of Understanding (MoU) is signed and projects executed
<p><b>Supporting State / Organization</b> can participate by providing experts and/or resources</p> <p><b>Requesting State</b> can participate by providing a focal point for coordination</p>	<p><b>Possible cooperation projects:</b></p> <ul style="list-style-type: none"><li>• Feasibility Studies</li><li>• Training programmes</li><li>• Support to SAF certification</li><li>• Support to Policy Implementation</li></ul>	<p><b>Criteria for connection</b></p> <ul style="list-style-type: none"><li>- Matching expertise</li><li>- Language, cultural and geographical aspects</li><li>- Resources availability</li></ul>	<p><b>MoU will contain:</b></p> <p>Details on the cooperation terms, including the roles and responsibilities of ICAO and each Partner</p>

**Instructions to Join ACT-SAF are available at**

<https://www.icao.int/environmental-protection/Pages/act-saf.aspx>



- Many States and Organizations have already implemented SAF initiatives in the APAC region – There is opportunity for mutual support

State	SAF initiatives	State	SAF initiatives
<b>Australia</b>	SAF Production Plans – Oceania Biofuels, BP SAF policies and financing being developed	<b>Malaysia</b>	SAF Research and Development SAF Production Plans – Malaysia/Shanxi Construction Investment Group
<b>Brunei Darussalam</b>	SAF Research and Development	<b>New Zealand</b>	SAF policies being developed SAF Research and Development
<b>China</b>	SAF Production Plans – Sinopec, Towngas, Honeywell/Oriental Energy	<b>Republic of Korea</b>	SAF Production Plans – LG Chem/Dansuk
<b>India</b>	SAF Research and Development SAF Production Plans – IndiGo/CSIR-IIP	<b>Singapore</b>	SAF Production Plans – Neste, Shell SAF policies being developed SAF Research and Development
<b>Indonesia</b>	SAF Research and Development SAF Production Plans – Persero	<b>Thailand</b>	SAF Research and Development SAF Production Plans – Bangchak/Thanachok
<b>Japan</b>	SAF Research and Development SAF Production Plans – JGC/COSMO Oil, Velocys/Toyo SAF policies and financing being developed		



- **Many States and Organizations have already implemented SAF initiatives in the APAC region – There is opportunity for mutual support**

Organization	SAF initiatives
<b>Airlines</b> (Air China, ANA, Cathay Pacific, China Eastern, China Southern, Hainan Airlines, Dragonair, IndiGo, Korean Air, JAL, Malaysia Airlines, Qantas, Singapore Airlines, Spicejet, Virgin Australia, etc.)	<u>Airlines have introduced various SAF initiatives such as:</u> SAF flights, delivery flights, offtake agreements Passenger, corporate SAF programmes Collaboration with various industry partners to develop SAF industry Targets for SAF in fuel uptake
<b>Multi-stakeholder action groups</b> (Act for Sky, Global Sustainable Aviation Fuel declaration, etc.)	Collaborations to establish SAF supply chains from production to deployment Promoting acceleration of the development, production and consumption of SAF

- **The ICAO Global Coalition for Sustainable Aviation**
  - Forum of stakeholders to facilitate the development of new ideas and accelerate implementation of environmental innovative solutions
- **ICAO Tracker Tools website collates latest information on CO<sub>2</sub> emissions reduction initiatives**





**3**

**State Action Plans and Assistance**



- **ICAO continues to work directly with States to support the development and update of State Action Plans (SAPs)**
  - 131 Member States have voluntarily submitted action plans to ICAO
  - While SAPs remain an important tool for communicating national plans of climate action towards international aviation, it is also a key tool for ICAO to assess States' progress towards achieve their collective aspirational goals
  - Within APAC region, 16 out of 39 States have submitted their SAP, with seven having updating their action plans during the 2020-2022 triennium

#### States in the APAC Region that submitted their SAP to ICAO

Australia	Indonesia*	New Zealand	Singapore
China	Japan*	Pakistan	Sri Lanka
Fiji	Malaysia*	Philippines	Thailand*
India*	Nepal	Republic of Korea*	Viet Nam*
*: States updated their SAP in 2020-2022 triennium			

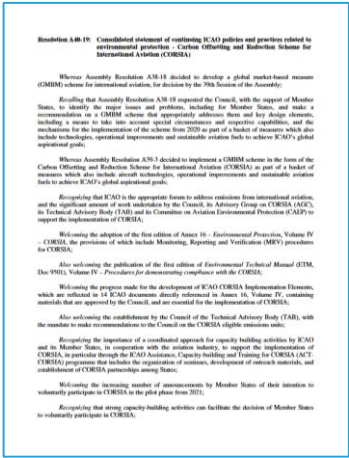


- **State Action Plan Buddy Programme**
  - ICAO Assembly Resolution A40-18 encourages States that have previously submitted action plans to share information contained, and develop partnerships to assist other States that have not yet developed action plans
  - Within the APAC region, States are encouraged to establish buddy partnerships
- **Other programs to support States include:**
  - ICAO assistance project on Capacity Building for CO<sub>2</sub> Mitigation from International Aviation with European Union (EU) funding (Phase I and Phase II)
  - ICAO United Nations Development Programme (UNDP) assistance project on Transforming the global aviation sector, with funding from the Global Environment Facility (GEF)

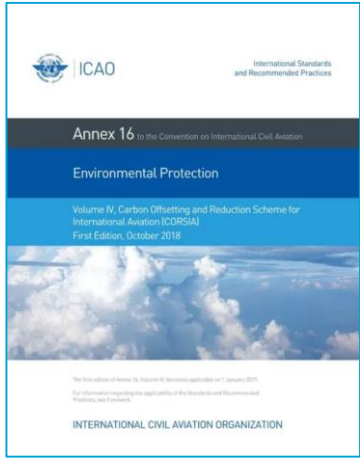


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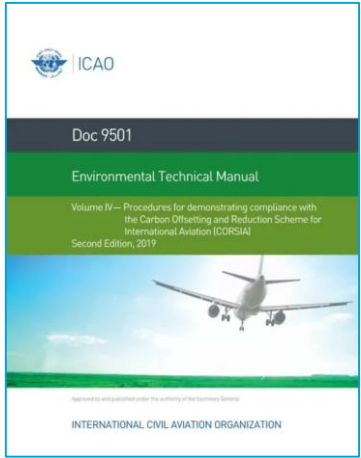
## CORSIA Implementation



### Assembly Resolution A40-19



### Annex 16, Volume IV (CORSIA SARPs)



### Doc 9501 (ETM), Vol. IV (CORSIA) (2nd edition)



### CORSIA Implementation Elements (ICAO documents)

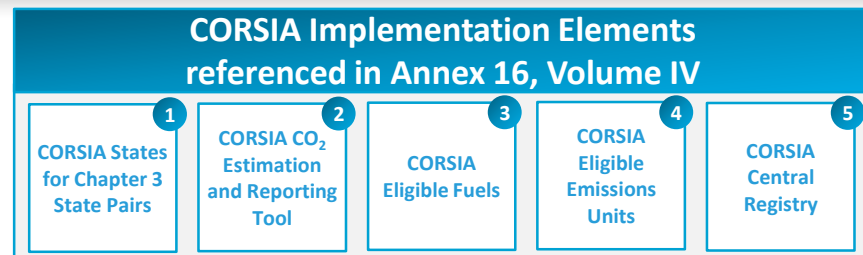


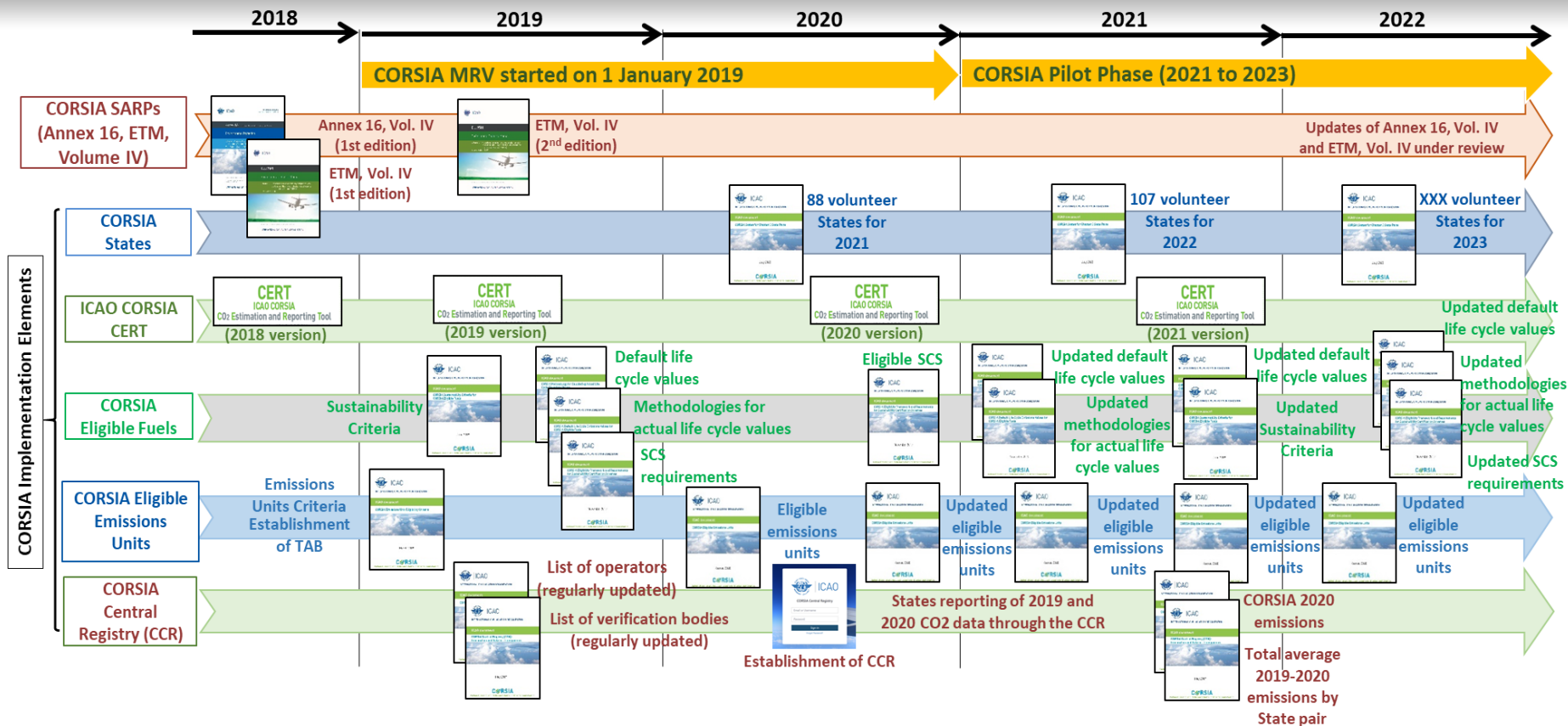
- 5 CORSlA Implementation Elements...

- ... reflected in 14 ICAO documents

- Directly referenced in Annex 16, Volume IV

- Contain material approved by the ICAO Council for publication by ICAO to support Annex 16, Volume IV, and essential for the implementation of CORSlA







Afghanistan	Maldives (*)	Republic of Korea
Australia	Marshall Islands	Singapore
Cambodia(*)	Micronesia (Federated States of) (*)	Thailand
Cook Islands	Nauru	Timor-Leste (*)
Indonesia	New Zealand	Tonga
Japan	Palau	Tuvalu
Kiribati	Papua New Guinea	Vanuatu
Malaysia	Philippines	

(\*) *Voluntary participation in CORSIA from 1 January 2023.*



**5** Capacity Building for CORSIA Implementation



ICAO Assistance, Capacity-building and Training on CORSIA (ACT-CORSIA):

ACT CORSIA is a **coordinated approach** to harmonize and bring together all relevant actions and promote **coherence to capacity building efforts for CORSIA implementation** – also enabling the **monitoring of global progress / transparency**

CORSIA Buddy Partnerships

Seminars, Online Tutorials

Brochures, Leaflets, Videos

Frequently Asked Questions

CORSIA Monthly  
Newsletters



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

- Cornerstone of ACT-CORSIA to support States
- Technical experts from supporting States voluntarily help requesting States with tailored approach to training
- Phased-approach with specific focus area to support necessary actions by States with different timelines



ACT-CORSIA <sup>Phase III</sup> Assistance, Capacity-building and Training on CORSIA	
<b>AUSTRALIA</b> 1. BRUNEI DARUSSALAM 2. INDONESIA 3. NAURU 4. PAPUA NEW GUINEA 5. SRI LANKA 6. THAILAND	<b>KENYA</b> 1. RWANDA 2. SEYCHELLES 3. SOUTH SUDAN 4. UGANDA
<b>BRAZIL</b> 1. ANGOLA 2. CABO VERDE 3. MOZAMBIQUE 4. SAO TOME AND PRINCIPE	<b>NEW ZEALAND</b> 1. FIJI 2. SAMOA 3. SOLOMON ISLANDS 4. VANUATU
<b>CANADA</b> (Facilitated by CASOSI) 1. ANTIQUA AND BARBUDA 2. BARBADOSS 3. GUYANA 4. HAITI 5. JAMAICA 6. SURINAME 7. TRINIDAD AND TOBAGO	<b>NIGERIA</b> 1. GAMBIA 2. GHANA 3. LIBERIA 4. SIERRA LEONE 5. SUDAN
<b>CANADA / FRANCE</b> 1. BENIN 2. BURKINA FASO 3. BURUNDI 4. CAMEROON 5. CENTRAL AFRICAN REPUBLIC 6. CHAD 7. COMOROS 8. CONGO 9. DJIBOUTI 10. D. R. OF CONGO 11. GABON 12. GUINEA 13. MADAGASCAR 14. MALI 15. MAURITANIA 16. MAURITIUS 17. NIGER 18. SENEGAL 19. TOGO	<b>REPUBLIC OF KOREA</b> 1. LAO PEOPLE'S D. R. 2. MONGOLIA 3. PAKISTAN 4. PHILIPPINES 5. VIETNAM
<b>FRANCE</b> (Facilitated by ICAO) 1. ALGERIA 2. COTE D'IVOIRE 3. MOROCCO * 4. SAUDI ARABIA * 5. TUNISIA *	<b>QATAR</b> 1. SAUDI ARABIA 2. IRAQ 3. KUWAIT 4. LIBYA 5. OMAN
<b>GERMANY</b> 1. ALBANIA 2. ARMENIA 3. AZERBAIJAN 4. BELARUS 5. GEORGIA 6. KAZAKHSTAN 7. NORTH MACEDONIA 8. REPUBLIC OF MOLDOVA 9. SERBIA 10. TAJIKISTAN 11. TURKMENISTAN	<b>SINGAPORE</b> 1. COOK ISLANDS 2. KIRIBATI 3. MARSHALL ISLANDS 4. PALAU 5. TONGA 6. TUVALU
<b>ITALY</b> 1. BAHAMAS 2. COLOMBIA 3. ERITREA 4. ETHIOPIA 5. PARAGUAY 6. SOMALIA 7. UNITED REPUBLIC OF TANZANIA	<b>SOUTH AFRICA</b> 1. BOTSWANA 2. LESOTHO 3. MALAWI 4. NAMIBIA 5. ZAMBIA 6. ZIMBABWE
<b>JAPAN</b> 1. AFGHANISTAN 2. BANGLADESH 3. BHUTAN 4. CAMBODIA 5. MALAYSIA 6. MYANMAR	<b>SPAIN</b> (Facilitated by COCESNA) 1. BELIZE * 2. BOLIVIA 3. COSTA RICA * 4. CUBA 5. EL SALVADOR * 6. EQUATORIAL GUINEA 7. GUATEMALA * 8. HONDURAS * 9. MEXICO 10. NICARAGUA * 11. PERU 12. URUGUAY
	<b>USA</b> 1. ARGENTINA 2. DOMINICAN REPUBLIC 3. ECUADOR 4. PANAMA
	<b>16 SUPPORTING STATES</b> <b>118 REQUESTING STATES</b>




Supporting State	Requesting State	Supporting State	Requesting State
Australia	Brunei Darussalam	Japan	Afghanistan
	Indonesia		Bangladesh
	Nauru		Bhutan
	Papua New Guinea		Cambodia
	Sri Lanka		Malaysia
	Thailand		Myanmar
New Zealand	Fiji	Singapore	Cook Islands
	Samoa		Kiribati
	Solomon Islands		Marshall Islands
	Vanuatu		Palau
Republic of Korea	Lao People's Democratic Republic		Tonga
	Mongolia		Tuvalu
	Pakistan		
	Philippines		
	Viet Nam		



**6** COVID-19 & 2022 CORSIA Periodic Review



- **In June 2020, the Council decided to safeguard against inappropriate economic burden on aeroplane operators**
  - During the CORSIA pilot phase, to use 2019 emissions values for 2020 emissions, for CORSIA design features, including the CORSIA baseline.
- **In March 2021, the Council agreed on the process and TOR for 2022 CORSIA periodic review**
  - SL consultation followed to collect States' experiences regarding CORSIA implementation
- **Information on COVID-19 impacts and 2022 CORSIA periodic review are keep updated on the dedicated website**
  - <https://www.icao.int/environmental-protection/CORSIA/Pages/CORSIA-and-Covid-19.aspx>

 The 2022 Assembly will consider the outcome of the 2022 CORSIA periodic review, including the definition of the CORSIA baseline after the pilot phase



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