



Second Phase of the ICAO Assistance Project with the EU Funding : *“Capacity Building for CO₂ Mitigation from International Aviation*

3 to 5 April 2023
Harare, Zimbabwe



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ICAO



Objectives of the ICAO Seminar

- Raising Awareness on the Outcomes of the 41st Assembly
- States sharing their State Action Plans (SAPs)
- To provide Focal Points of the 10 participating States with the opportunity to strengthen their capacity in the area of developing Sustainable Aviation Fuels (SAF)
- To share experiences in preparing and submitting CO₂ emissions reports for international aviation using the Aviation Environmental System(AES)



Setting the Scene (Day 1)

- Update on the status of the ICAO Project with the European Union(EU) Funding Phase II: *Capacity Building for CO₂ Mitigation from international Aviation*
- Country progress update: Benin, Botswana, Cabo Verde, Cote D'Ivoire, Madagascar, Mali, Rwanda, Senegal, Seychelles, Zimbabwe
- Introduction to Sustainable Aviation Fuels and ACT-SAF
- Feasibility Studies on SAF



Day 2 (AM)

- Session 3: SAF Technology and Certification
- Session 4: SAF Sustainability and Reporting Under CORSIA
- Session 5: SAF Market Outlook and Policies
- Session 6: SAF Financing



Day 2 (PM)

- Session 7: Case Study – Government Role / Support and Transition to SAF at the Airports
- Session 8: SAF – Experience in Africa
- Conclusion and Next Steps

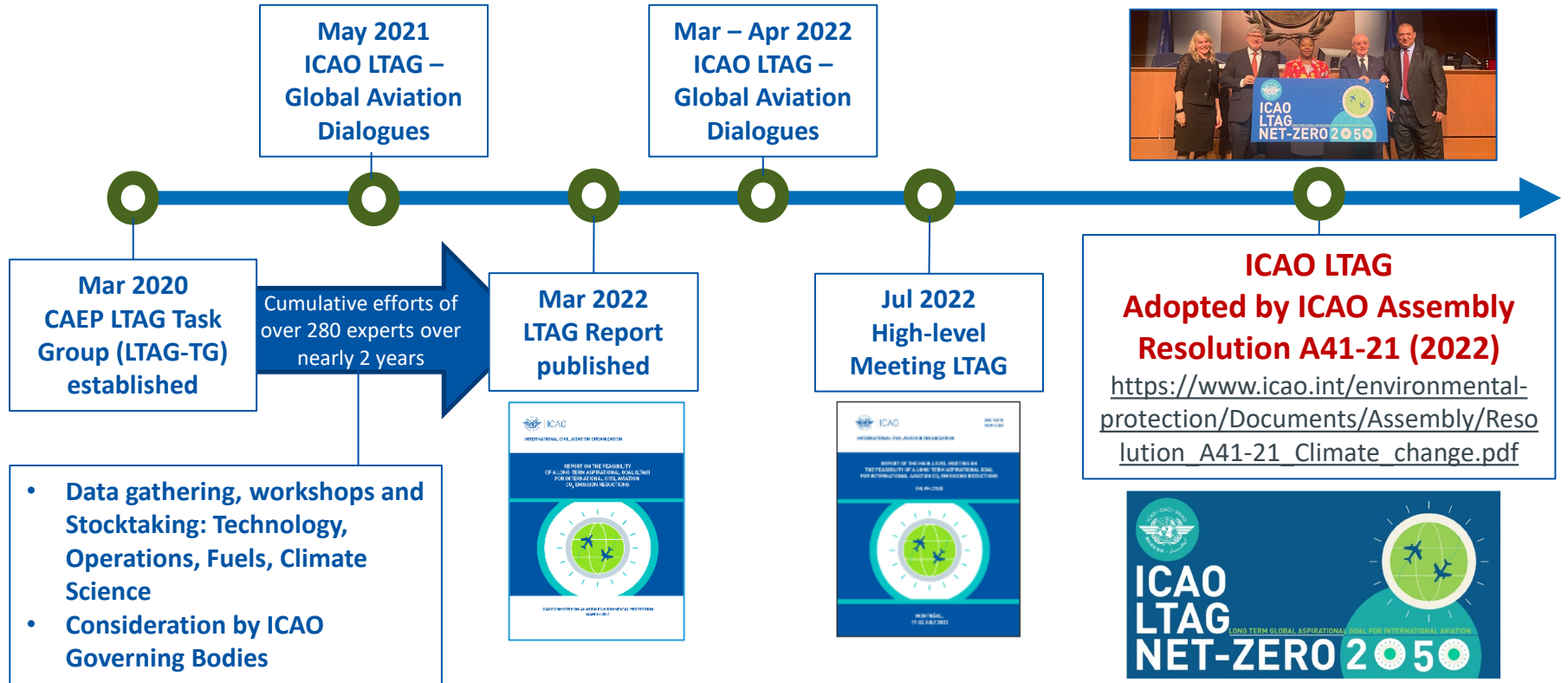


Outcomes of the 41st ICAO Assembly





Milestones toward LTAG outcome





Key outcomes from 41st Session of ICAO Assembly (Oct 2022)

The Assembly agreed to a collective long-term global aspirational goal (LTAG) of **net-zero carbon emissions from international aviation by 2050** (Resolution A41-21 Para 7)

- In support of Paris Agreement's temperature goal (A41-21 Para 7)
- **Collective global aspirational goal, and does not attribute specific obligations or commitments** in the form of emissions reduction goals to individual States (A41-21 Para 8)



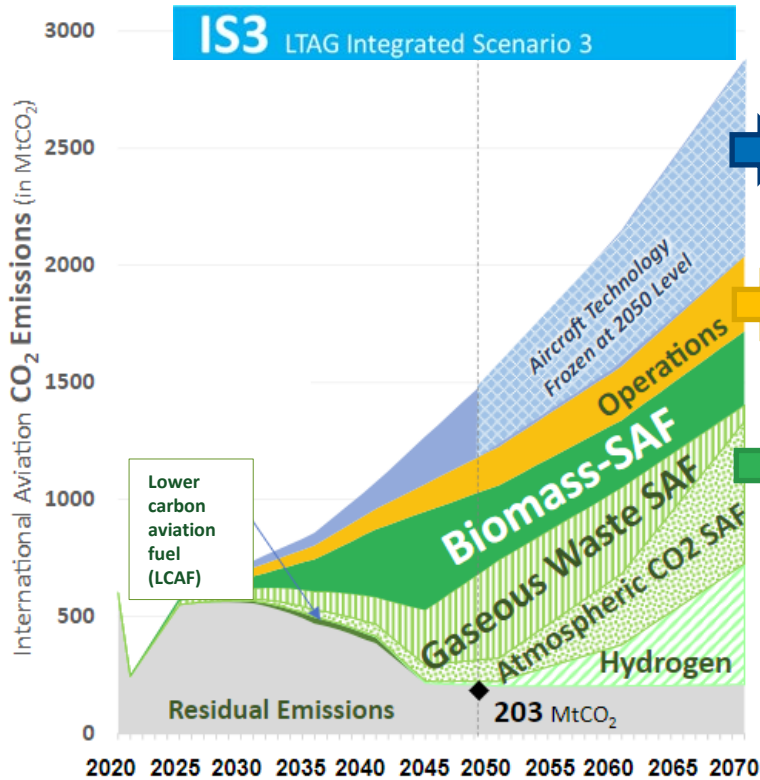


Highlights from ICAO LTAG Report





LTAG Report – Contributions from technology, operations, and fuels



Advanced tube and wing, unconventional airframe/propulsion concept aircraft, non-drop-in fuels such as battery electric etc.

Improvements in the performance of flights across all phases

Sustainable aviation fuels (SAF) and other cleaner energy have the largest impact on residual CO₂ emissions, driving overall reductions by 2050
Contributions from hydrogen may increase in the 2050s and 2060s if technically feasible and commercially viable



LTAG Report – Financing costs and investments across stakeholders

Projected cumulative (2020-2050) costs and investments associated with highest-ambition LTAG scenario, across each stakeholder group

Stakeholders	Costs/investments
States	\$160b
Air Navigation Service Providers	\$20b
Aircraft manufacturers	\$350b
Fuel suppliers	\$3,200b
Airports	\$125b

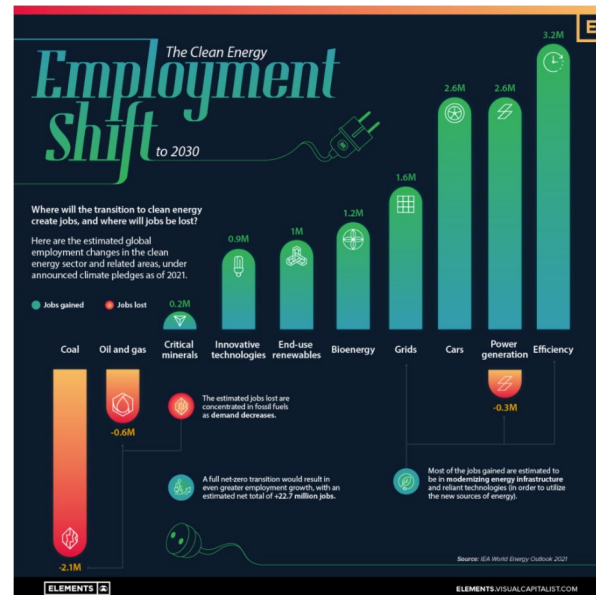
Breakdown of fuel suppliers	Costs/investments
SAF biomass-based fuels	\$950b
SAF from gaseous waste	\$1,700b
SAF from atmospheric CO ₂	\$460b
LCAF	\$60b
Hydrogen	\$55b

Note: Some investments from upstream stakeholders are passed on downstream (e.g. operators) in the form of incremental price of products



Opportunities and Challenges in SAF

- Significant employment shifts towards the green energy sector expected in the future
 - IEA World Energy Outlook estimated global employment shifts (job loss in coal, oil and gas, gains in **end-use renewables**, bioenergy, efficiency)
 - Manufacturers committed to delivering commercial aircraft certified to operate on **100% SAF by 2030** to realize maximum potential of drop-in fuel use
- Expansion of research and development
 - Non-CO₂ benefits from SAF use (e.g. improved air quality)
 - New feedstock and conversion pathways
 - Non drop-in fuels



Source: <https://elements.visualcapitalist.com/the-clean-energy-employment-shift-by-2030/>



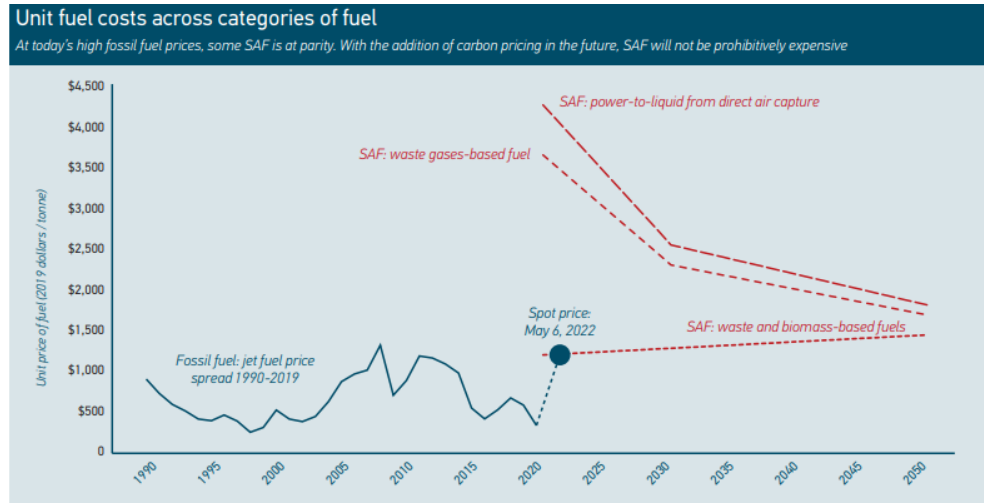
Opportunities and Challenges in SAF

- **Competition for feedstock**
 - Renewable diesel (for land transport) also takes up huge volumes of feedstock
- **Financing**
 - **Access to capital**, in particular for SAF technology providers may be very limited, impacting opportunities for any scaling up of production
 - Insufficient funding to enable technologies to attain sufficient competitiveness to compete in the market
 - Council held a **high-level exchange with financial institutions** on 28 March 2023, to discuss aviation decarbonization's challenges and opportunities



Opportunities and Challenges in SAF

- Existing price gap
 - With the right levels of investment and increased SAF volumes, current price differences between SAF and conventional jet fuel are expected to converge in the future



Source: Waypoint 2050 Factsheet #15 / Jun 2022. Based on ICAO/CAEP data



Assistance, Capacity-building and Training for SAF (ACT-SAF)





ICAO Assistance, Capacity-building and Training for Sustainable Aviation Fuels (ACT-SAF) programme was launched in June 2022

- Facilitating the development and deployment of SAF
- **Training** through the ACT-SAF Series
- Future support in **SAF certification and policy implementation**
- Identification of **financing opportunities** (informal regional exchanges with financial institutions etc.)
- **ICAO template for feasibility study** being developed with partners - will align objectives of studies to support investment decisions
- Provision of **SAF feasibility studies** for States
- Platform for **SAF monitoring and accounting** towards LTAG achievement

Bringing partners together to collaborate on ACT-SAF projects





How will ACT-SAF work?

1) Interested party expresses interest in becoming an ACT-SAF Partner	2) ICAO deploys ACT-SAF activities based on States tailored needs and capabilities	3) ICAO connects ACT-SAF Participants	4) ICAO facilitates agreements and coordinates concrete SAF projects
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<p>Deployment of ACT-SAF activities</p> <ul style="list-style-type: none"> - Coordination calls with States to assess needs and offers - ACT-SAF Series on a monthly basis - Preparations to launch feasibility studies - Development of ICAO template for feasibility studies - Inception of ACT-SAF Platform on monitoring and reporting of SAF 	<p>Ongoing</p> <p>Facilitate the matching of needs and opportunities between States and industry</p>
<p>Connection with financing institutions</p> <p>Regional workshops & meetings with banks Identification of financial tools relevant for SAF</p>	





State Action Plans





State Action Plans (SAPs)



A State Action Plan is a living document that defines a State's actions to reduce their CO₂ emissions from international civil aviation.

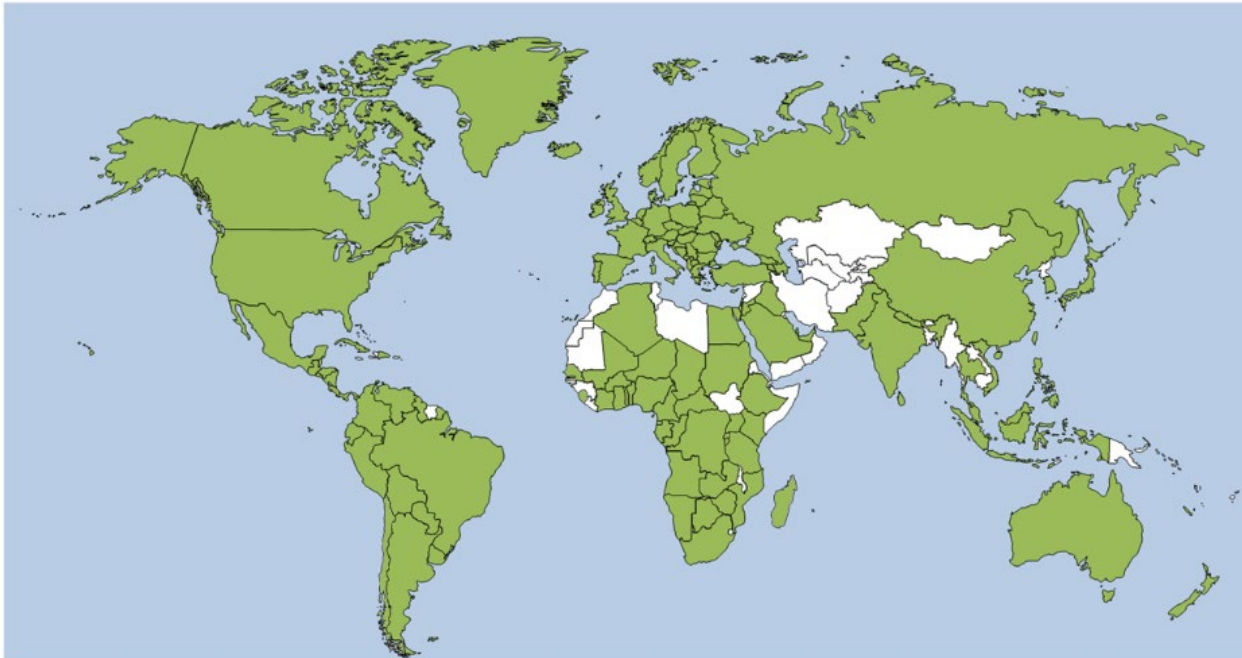


Within a State it is a planning and coordination tool, and it provides a clear communication route to ICAO.

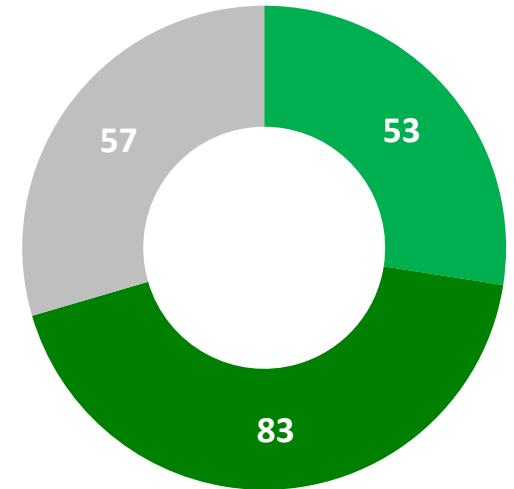


State Action Plans Achievements

136 States representing **98.17% of global RTK** have voluntarily submitted their State Action Plan



Global SAP Submissions /Updates

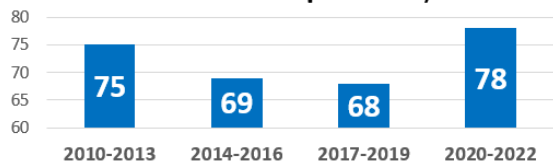


- States Submitted Once
- States Updated
- States left to submit



State Action Plans Achievements

SAP Submissions and Updates by triennium

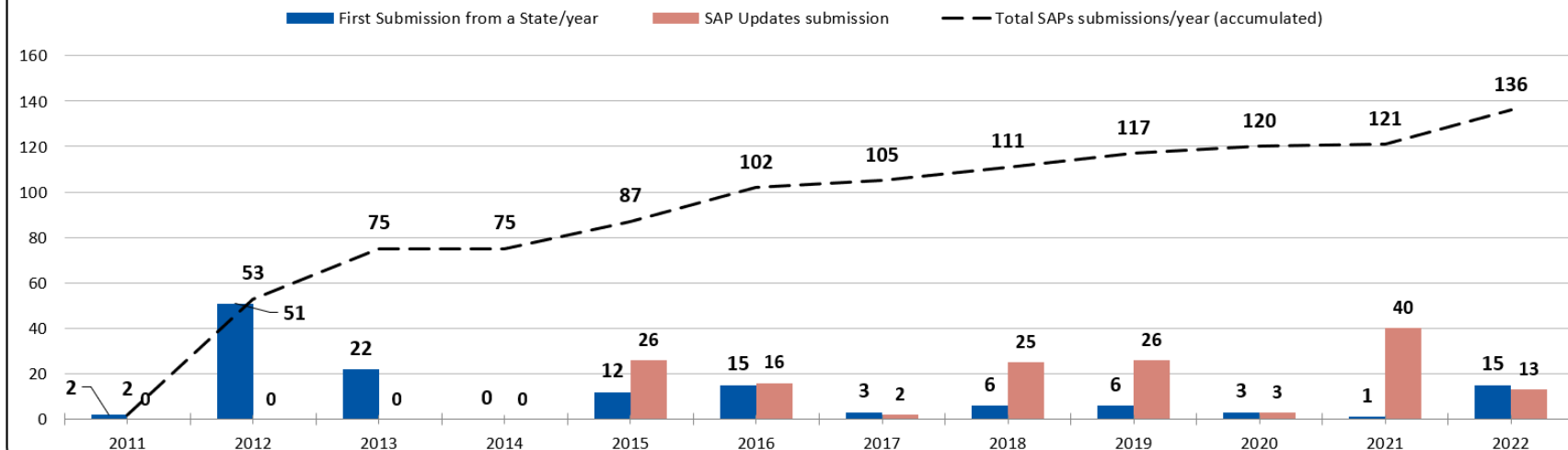


SAP Updates by triennium

Triennium	2011 - 2013 (A-38)	2014 - 2016 (A-39)	2017 - 2019 (A-40)	2020 - 2022 (A-41)
Updates	0	42	53	56

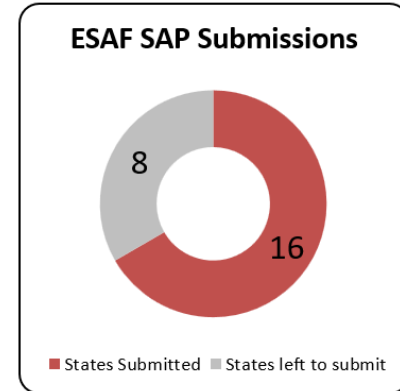
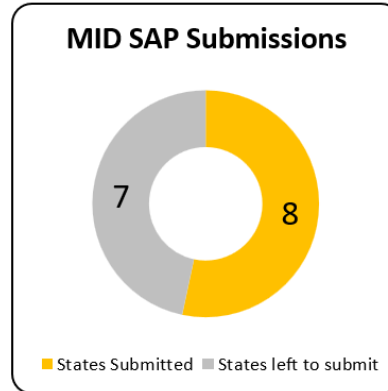
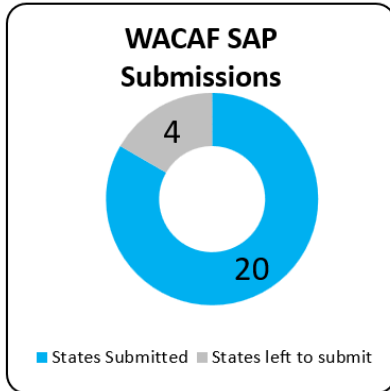
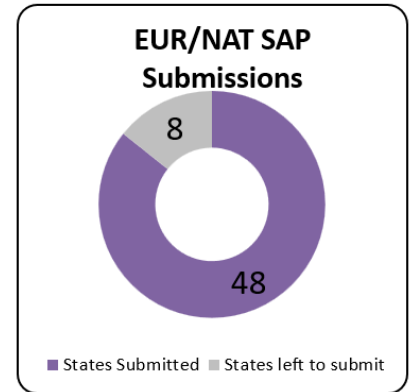
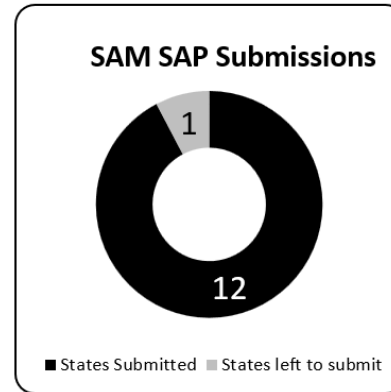
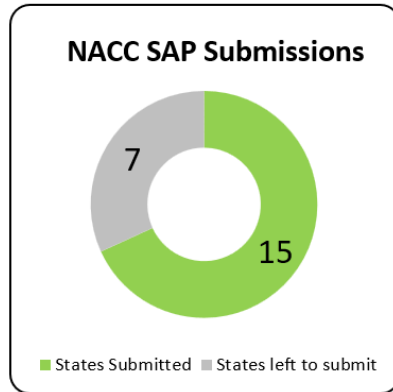
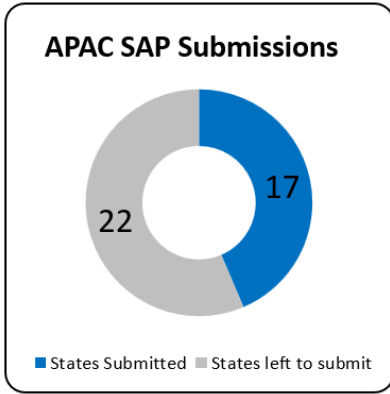
✓ 2020-2022 triennium was the triennium with the **highest number of SAP updates from States (56)**

Timeline of State Action Plan Submissions





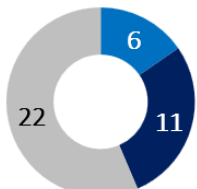
State Action Plans Achievements





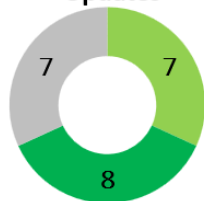
State Action Plans Achievements

APAC SAP Submissions / Updates



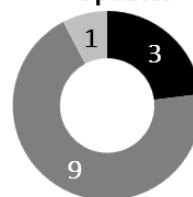
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NACC SAP Submissions / Updates



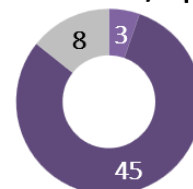
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SAM SAP Submissions / Updates



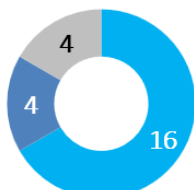
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EUR/NAT SAP Submissions / Updates



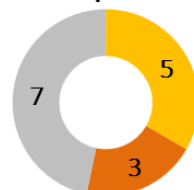
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- States Updated
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WACAF SAP Submissions / Updates



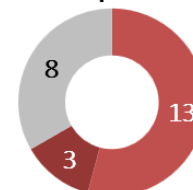
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MID SAP Submissions / Updates



- States Submitted Once
- States Updated
- States left to submit

ESAF SAP Submissions / Updates



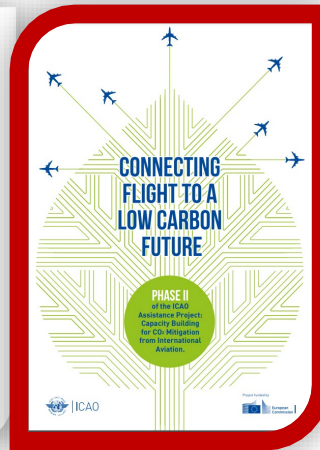
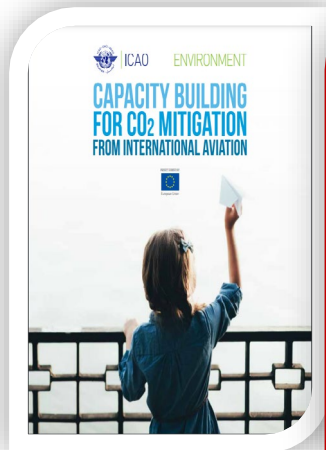
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ICAO SAP Buddy Programme



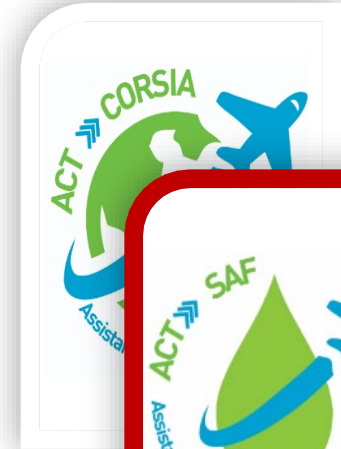
ICAO Assistance Project with the European Union (EU) Funding, Phase I & Phase II



ICAO – UNDP Project-financed by GEF



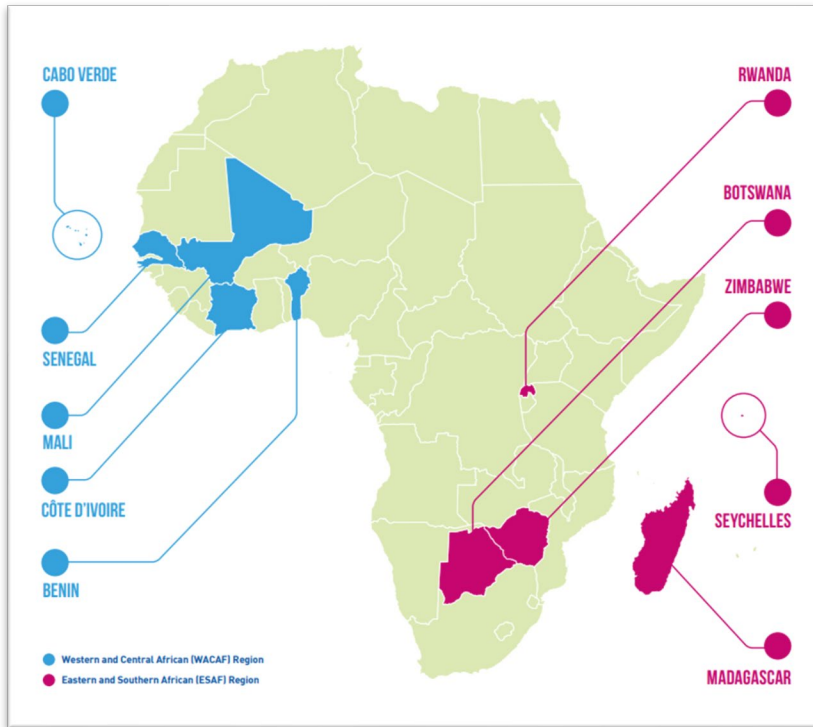
ICAO – ACT Programmes



State Providing Support	State Receiving Support
Bulgaria	North Macedonia
Spain	Ukraine
Namibia	Zambia
Kenya	Botswana
Dominican Republic	Panama
Namibia	Gambia
Italy	Madagascar
Brazil	Mozambique
Spain	Bolivia (Plurinational State of)



ICAO-EU project Capacity Building for CO₂ Mitigation from International Aviation Phase II



- 10 new quantified action plans submitted to ICAO in 2022
- Regional Seminar in Cabo Verde was organized in July 2022 for sharing experiences
- 3 Feasibility Studies on the use of Sustainable Aviation Fuels to be conducted in 2023:
- Zimbabwe, Cote D'Ivoire, Rwanda
- UNITAR training module to be updated in 2023.



Action Plan on Emissions Reduction (APER) Website

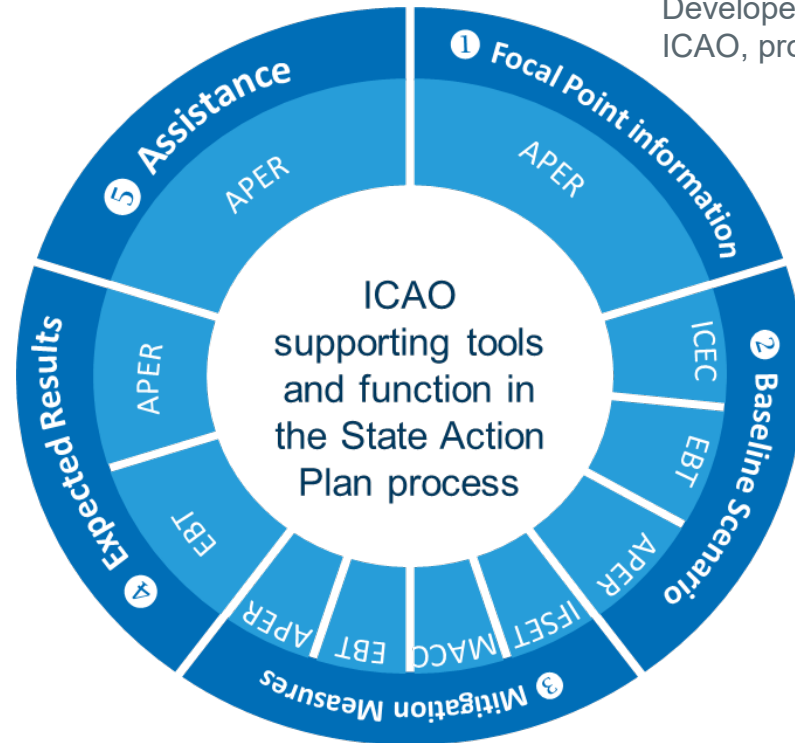
Developed to assist States that want to prepare and submit their State Action Plan to ICAO, providing access to tools that facilitate the SAP development.

- Environmental Benefit Tool (EBT)

This tool has been designed by ICAO to assist States in the process of defining a baseline scenario, estimating the quantifiable benefits resulting from the selected mitigation measures, and it provides estimated expected results. This tool can support a State with establishing a quantified State Action Plan, while requiring minimal data inputs. All State Action Plan Focal Points are encouraged to utilize this tool while developing or updating a State Action Plan.

Other supporting tools under APER website:

- Marginal Abatement Cost (MAC) Curve Tool
- ICAO Fuel Savings Estimation Tool (IFSET)
- ICAO Carbon Emissions Calculator for States (ICEC)





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Beijing

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THANK YOU