



الجمعية العمومية - الدورة الثانية والأربعون

اللجنة التنفيذية

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تغير المناخ - الإطار العالمي للإيكاو بشأن وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران

(ورقة مقدّمة من مجلس الإيكاو)

الموجز التنفيذي

تتناول هذه الورقة التقدم الذي أحرزته الإيكاو منذ الدورة الحادية والأربعين للجمعية العمومية فيما يتعلق بالطيران الدولي وتغير المناخ، مع التركيز على تنفيذ الهدف العالمي الطموح طويل الأجل للطيران الدولي (LTAG). وهي تسلط الضوء على النتائج التي أسفر عنها مؤتمر الإيكاو الثالث للطيران والوقود البديل (CAAF/3) الذي انعقد في دبي بالإمارات العربيّة المتحدة في نوفمبر ٢٠٢٣، ولا سيما الإطار العالمي للإيكاو بشأن وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران، وخريطة طريق الإيكاو لتنفيذ نتائج المؤتمر والهدف العالمي الطموح طويل الأجل للطيران، بالارتكاز على أربع لبنات أساسية مترابطة: (١) السياسة العامة والتخطيط؛ (٢) الإطار التنظيمي؛ (٣) دعم التنفيذ؛ (٤) التمويل.

الإجراءات: يُرجى من الجمعية العمومية القيام بما يلي:

- التتويج بالتقدم الكبير الذي أحرزته المنظمة منذ الدورة الحادية والأربعين للجمعية العمومية بشأن الطيران الدولي وتغير المناخ، بما في ذلك اعتماد الإطار العالمي للإيكاو بشأن وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران، وقيام المجلس بإقرار خريطة طريق الإيكاو لتنفيذ نتائج المؤتمر والهدف العالمي الطموح طويل الأجل؛
- الإقرار بوضع وتنفيذ منهجية الرصد والإبلاغ عن الهدف العالمي الطموح طويل الأجل (LMR) والتقدم المحرز بشأن مبادرة الإيكاو لخطط عمل الدول فيما يخص أنشطة خفض انبعاث ثاني أكسيد الكربون، وفعاليات تقييم الهدف الطموح طويل الأجل وإعداد أدوات التتبع (Tracker Tools)؛
- إعادة التأكيد على أن معايير الاستدامة في خطة كورسيا وترخيص الاستدامة ومنهجية تقييم انبعاثات دورة الحياة المستخدمة للوقود المؤهل في خطة كورسيا يجب أن تُستخدم كأساس مقبول لأهلية الوقود المستدام للطيران ووقود الطيران المنخفض الكربون والطاقت النظيفة الأخرى المستخدمة في الطيران الدولي، من أجل توفير الشفافية اللازمة من الناحية التنظيمية واليقين والاستقرار وضمانات السلامة البيئية لمنتجات المواد الخام ومنتجات الوقود والمؤسسات المالية؛
- تشجيع الدول على زيادة مشاركتها في أنشطة الإيكاو لتسريع تحليل واعتماد قيم دورة حياة مصادر ومسارات الوقود الجديدة، وإصدار شهادات الاستدامة الخاصة بها؛

ه) الإقرار بالتقدم المُحرز في دعم تنفيذ وتمويل تدابير التخلص من الكربون الناجم عن الطيران، بما في ذلك من خلال برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام (ACT-SAF)، وتفعيل مركز الإيكاو للاستثمار المالي، والنظر في إعداد مبادرة أو آلية تمويل خاصة بالمناخ تحت إشراف الإيكاو؛ و) الإقرار بالطبيعة العاجلة لزيادة التمويل لتدابير إزالة الكربون في قطاع الطيران وأهميتها والطلب إلى المجلس اتخاذ إجراءات عاجلة من أجل تنفيذ التوصيات القصيرة الأجل المحددة في المرفق (ز) لتعزيز الإطار والخطط الحالية بشأن مبادرات التمويل والشؤون المالية لمواصلة دعم التقدم المحرز نحو تحقيق الهدف الطموح الطويل الأجل والإطار العالمي بشأن وقود طيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران وتنفيذهما، لا سيما بالنسبة للدول النامية والدول ذات الحاجات الخاصة؛ ز) الطلب كذلك إلى المجلس إعداد مسار عمل لتحديد الحاجات والفجوات التمويلية والنظر في سبل معالجة الخيارات طويلة الأجل المحددة في المرفق (ز)، بما في ذلك جوانب الجدوى، ورفع التقارير في هذا الخصوص إلى الدورة الثالثة والأربعين للجمعية العمومية؛ ح) الطلب إلى الإيكاو مواصلة رصد التقدم المحرز في إطار اللبنة الأساسية الأربعة لتنفيذ خريطة طريق الإيكاو، بما في ذلك من خلال أدوات الإيكاو للتعقب؛ ط) النظر في المعلومات الواردة في هذه الورقة بغرض تحديث قرار الجمعية العمومية ٤١-٢١.	الأهداف الاستراتيجية: الآثار المالية: المراجع:
ترتبط ورقة العمل هذه بالهدف الاستراتيجي: "الطيران المستدام بيئياً".	
تتخذ الأنشطة المذكورة في هذه الورقة رهناً بتوافر الموارد في الميزانية العادية للفترة بين ٢٠٢٦-٢٠٢٧-٢٠٢٨ و/أو من المساهمات الخارجة عن الميزانية بالاستناد إلى خطة أعمال الإيكاو للفترة ٢٠٢٦-٢٠٢٨.	الآثار المالية:
الوثيقة Doc 10184، "القرارات السارية المفعول الصادرة عن الجمعية العمومية" (في ٢٠٢٢/١٠/٧) الوثيقة Doc 10201، "تقرير مؤتمر الإيكاو الثالث للطيران وأنواع الوقود البديل" ورقة العمل A42-WP/27، "بيان موحد بسياسات وممارسات الإيكاو المستمرة في مجال حماية البيئة - تغير المناخ"	المراجع:

١ - الهدف الطموح الطويل الأجل ونتائج المؤتمر الثالث للطيران وأنواع الوقود البديل

١-١ اعتمدت الدول الأعضاء قرار الجمعية ٤١-٢١ خلال الدورة الحادية والأربعين للجمعية العمومية للإيكاو المنعقدة في أكتوبر ٢٠٢٢، وانفقت فيه على الهدف الطموح طويل الأجل (LTAG) المتمثل في تحقيق صافي انبعاثات صفيرية للكربون بحلول عام ٢٠٥٠. واعتمد المؤتمر الثالث للطيران وأنواع الوقود البديل الذي عُقد في دبي، الإمارات العربية المتحدة في نوفمبر ٢٠٢٣، الإطار العالمي للإيكاو بشأن وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران لتسهيل التوسع العالمي في إعداد وإنتاج ونشر طاقات الطيران النظيفة،^١ إدراكاً منه أنه من المتوقع أن يكون للطاقات النظيفة أكبر قدر من المساهمة في خفض انبعاثات ثاني أكسيد الكربون في قطاع الطيران. ولدعم تحقيق الهدف الطموح الطويل الأجل، تسعى الإيكاو والدول الأعضاء فيها إلى تحقيق رؤية عالمية جماعية طموحة لخفض انبعاثات ثاني أكسيد الكربون في قطاع الطيران الدولي بنسبة ٥ في المائة بحلول عام ٢٠٣٠، من خلال استخدام طاقات الطيران النظيفة (انظر المرفق (أ) للاطلاع على إطار الإيكاو العالمي^٢).

^١ الموقع الإلكتروني للمؤتمر الثالث للطيران وأنواع الوقود البديل: <https://www.icao.int/Meetings/CAAF3/Pages/default.aspx>

^٢ أعربت الصين والعراق والاتحاد الروسي والمملكة العربية السعودية عن تحفظاتها بشأن بعض جوانب الإطار العالمي.

٢-١ وكان اعتماد الإطار بعد عام واحد فقط من الاتفاق بشأن الهدف الطموح الطويل الأجل بمثابة إشارة واضحة إلى المجتمع الدولي بأن قطاع الطيران الدولي يلتزم التزاماً راسخاً بالمضي قدماً في مسار التخلص من الكربون. ويوفر الإطار أيضاً الوضوح والاتساق والقدرة على التنبؤ للحكومات والمستثمرين من القطاعين العام والخاص والصناعة ومنتجي الوقود لدعم وإطلاق الإمكانيات الكاملة للتحويل في مجال الطاقة في قطاع الطيران على الصعيد العالمي.^٣

٣-١ وفي يونيو ٢٠٢٤، أقرّ المجلس خريطة طريق الإيكاو لتنفيذ نتائج المؤتمر وتنفيذ الهدف الطموح الطويل الأجل، والذي يركز على أربع لبنات أساسية مترابطة، وهي (١) السياسة العامة والتخطيط، (٢) الإطار التنظيمي، (٣) دعم التنفيذ، (٤) التمويل (انظر المرفق (ب) بشأن خريطة طريق الإيكاو). وتقدم هذه الورقة آخر تقدم أُحرز في تنفيذ خريطة طريق الإيكاو مع الاعتراف بأهمية تحقيق تقدم متوازن بين اللبنة الأساسية، وإجراء استعراض يدعم الجمعية العمومية في النظر بشأن في تحديث القرار ٤١-٢١.

٢- التقدم المحرز في تنفيذ خريطة طريق الإيكاو

اللجنة الأساسية الأولى (السياسة العامة والتخطيط) - منهجية الرصد والإبلاغ الخاصة بالهدف الطموح الطويل الأجل، وخطط عمل الدول، وتقييم الهدف الطموح الطويل الأجل وأدوات التتبع (Tracker Tools)

١-٢ استجابةً للفقرة ٩ من القرار ٤١-٢١، وبناءً على طلب آخر من المجلس وكذلك الإطار العالمي الذي اعتمدته المؤتمر، وضع الاجتماع الثالث عشر للجنة حماية البيئة في مجال الطيران (CAEP/13) المنعقد في فبراير ٢٠٢٥ منهجية الرصد والإبلاغ الخاصة بالهدف الطموح الطويل الأجل، التي تجمع بين تقييمات لما مضى إنجازه لتتبع الأداء الفعلي للطيران الدولي على مدى السنوات السابقة، مقابل الإنجازات البارزة مثل الرؤية العالمية الطموحة التي وضعها المؤتمر، إلى جانب تقييمات إنجازات المستقبل حتى عام ٢٠٥٠ لتقديم توقعات محدثة بحلول عام ٢٠٥٠. وستأخذ هذه التقييمات في الاعتبار مساهمة مختلف الدوافع والتدابير، مثل الحركة الجوية والتكنولوجيا والعمليات ووقود الطيران المستدام وتأثيراتها على خفض انبعاثات ثاني أكسيد الكربون، وعلى أثر التكلفة، وعلى تنمية القطاع. وإلى جانب تقييمات الإنجازات الماضية والمستقبلية، وضعت لجنة حماية البيئة في مجال الطيران أيضاً نهجاً متعدد المستويات لمنهجية الرصد والإبلاغ عن الهدف العالمي الطموح طويل الأجل، بما في ذلك المنهجية الأساسية (المستوى ١) وتحسيناتها الإضافية التي تتطلب موارد إضافية وقدرات وضع البيانات/النماذج (المستوى ٢ و ٣) ويمكن أن تسمح بالتنفيذ التدريجي خلال دورات لجنة حماية البيئة في مجال الطيران في المستقبل (انظر المرفق (ج) للاطلاع على ملخص منهجية الرصد والإبلاغ عن الهدف العالمي الطموح طويل الأجل).

٢-٢ وسوف تسترشد مناقشات أخرى في الجمعية العمومية بمنهجية الرصد والإبلاغ عن الهدف العالمي الطموح طويل الأجل، إلى جانب العناصر الأخرى المطلوبة في الفقرة ٩ من القرار ٤١-٢١، مثل رصد خطط عمل الدول وتقييم الهدف الطموح الطويل الأجل. وفي حين تُوفر المنهجية إطاراً عالمياً للرصد لتتبع التقدم الكمي في خفض انبعاثات القطاع الدولي نحو تحقيق الهدف الطموح الطويل الأجل، فإن تطبيقها سيتطلب أيضاً مراعاة انعقاد المؤتمر الرابع للطيران وأنواع الوقود البديل في موعد أقصاه عام ٢٠٢٨، بما في ذلك التحديثات المحتملة للرؤية العالمية الطموحة والإطار العالمي.

٣-٢ وفيما يتعلق بخطط عمل الدول (SAPs)، تواصل الإيكاو جهودها التعاونية مع الدول لتسهيل وضع تلك الخطط وتحديثها وتقديمها. وتكتسب هذه المبادرة زخماً متزايداً، لا سيما مع تزايد التركيز على وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران، دعماً للإطار العالمي الصادر عن المؤتمر الثالث للطيران وأنواع الوقود

^٣ مقطع فيديو الإيكاو حول نتائج المؤتمر الثالث للطيران وأنواع الوقود البديل

البديل والهدف الطموح الطويل الأجل. وحتى يونيو ٢٠٢٥، قدّمت ١٥٠ دولة خطط عملها الوطنية، مما يمثل أكثر من ٩٩ في المائة من الحركة الجوية العالمية.^٤ وتقدّم الطبعة الرابعة من " إرشادات بشأن إعداد خطط عمل الدول فيما يتعلق بأنشطة تخفيض انبعاثات ثاني أكسيد الكربون: نحو تحقيق الهدف الطموح الطويل الأجل" (Doc 9988)، الصادرة عام ٢٠٢٤، إرشادات واضحة حول كيفية دمج الدول لطاقت الطيران النظيفة والابتكارات الأخرى في خطط عملها، وتسهّل على الدول إعداد تقاريرها بشأن النتائج المتوقعة من تنفيذ تدابير مُختارة، مع تحديد السياسات والإجراءات وخرائط الطريق ذات الصلة في خطط العمل. وفي عام ٢٠٢٤، حدّثت لجنة حماية البيئة في مجال الطيران إرشادات الإيكاو بشأن تدابير السياسة العامة لإنتاج ونشر وقود الطيران المستدام.^٥

٢-٤ وبناءً على طلب الجمعية العمومية والإطار العالمي، تجري الإيكاو تقييماً سنوياً للهدف الطموح الطويل الأجل، بما في ذلك تقييم الهدف الطموح الطويل الأجل لعام ٢٠٢٥ كجزء من أسبوع الإيكاو للمناخ في مجال الطيران في يونيو ٢٠٢٥، والذي يغطي جميع الجوانب المتعلقة برصد التقدم المحرز في تدابير خفض انبعاثات ثاني أكسيد الكربون في مجال الطيران، بما في ذلك التقدم المحرز في دعم التنفيذ والتمويل.^٦

٢-٥ وبالإضافة إلى ذلك، قامت الإيكاو بتحديث أدوات تتبع الطاقات النظيفة،^٧ والتي كانت تتابع التطور في مختلف المؤشرات المتعلقة بوقود الطيران المستدام. وعلى مدار السنوات الثلاث الماضية، سجّلت أدوات التتبع زيادة ملحوظة في عدد السياسات المتعلقة بوقود الطيران المستدام المعتمدة أو قيد الإعداد (٣٣ سياسة عامة تتعلق بوقود الطيران المستدام)، والمطارات التي توزّع وقود الطيران المستدام (١٠٩ مطارات إضافية)، والعمليات المعتمدة لتحويل وقود الطيران المستدام (عملية إضافية واحدة)، والخامات الأساسية المعترف بها ودفعات وقود الطيران المستدام المعتمدة بموجب خطة التعويض عن الكربون وخفضه في مجال الطيران الدولي (كوريا) (٧ خامات تغذية إضافية وحوالي ٢٠٠ كيلو طن من وقود الطيران المستدام المعتمد في إطار خطة كوريا)، وحجم وقود الطيران المستدام بموجب اتفاقيات الشراء (١٠٧ اتفاقيات إضافية لشراء ٢٨ مليون طن إضافية من وقود الطيران المستدام)، ومرافق إنتاج وقود الطيران المستدام المُعلن عنها (٣٢٩ إعلاناً إضافياً)، وآخر الأخبار حول تطورات وقود الطيران المستدام. كما يتتبع التصميم أيضاً اللبنة الأساسية الأربعة للإطار العالمي.

٢-٦ ويمكن الاطلاع على مزيد من المعلومات عن مبادرة الإيكاو المتعلقة بخطط عمل الدول، وتقييم الهدف الطموح الطويل الأجل، وأدوات التتبع في المرفق (د).

اللجنة الأساسية الثانية (الإطار التنظيمي) - الإطار العام لخطة التعويض عن الكربون وخفضه في مجال الطيران الدولي لوقود الطيران المستدام ووقود الطيران المنخفض الكربون ونظام محاسبة الوقود

٢-٧ أقرّ الإطار العالمي بوضوح بأنه ينبغي استخدام معايير الاستدامة، وترخيص الاستدامة، ومنهجية تقييم دورة حياة الانبعاثات المستخدمة في أنواع الوقود المؤهلة بموجب خطة كوريا كأساس مقبول لأهلية وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران المستخدمة في الطيران الدولي.

٢-٨ وطلب أيضاً تسريع ترخيص الاستدامة بما يتماشى مع متطلبات خطة كوريا، ووضع واعتماد برامج جديدة لترخيص مستوى الاستدامة (SCS)، وتسريع تحليل واعتماد قيم دورة الحياة لمصادر ومسارات الوقود الجديدة. وفي هذا الصدد، اتخذت سلسلة من الخطوات لتسريع العمل الفني للجنة حماية البيئة في مجال الطيران دعماً لقرارات المجلس بشأن سلسلة من

^٤ برنامج الإيكاو الخاص بخطط عمل الدول: https://www.icao.int/environmental-protection/Pages/ClimateChange_ActionPlan.aspx

^٥ إرشادات الإيكاو بشأن سياسات وقود الطيران المستدام:

https://www.icao.int/environmental-protection/Pages/saf_guidance_potential_policies.aspx

^٦ تقييم الهدف الطموح الطويل الأجل لعام ٢٠٢٥ كجزء من أسبوع الإيكاو للمناخ في مجال الطيران لعام ٢٠٢٥

^٧ أدوات الإيكاو لتتبع الطاقات النظيفة "Cleaner Energy Tracker Tools": <https://www.icao.int/environmental-protection/pages/SAF.aspx>

التعديلات على الأطر التنظيمية لخطة كورسيا (انظر المرفق (د) للاطلاع على التقدم المحرز المتعلق بأنواع الوقود المؤهلة بموجب خطة كورسيا).

٩-٢ وبناءً على طلب الإطار العالمي وخريطة طريق الإيكاو، سُنَّجري لجنة حماية البيئة في مجال الطيران دراسة لأنظمة محاسبة الوقود للطيران الدولي المُستخدمة حالياً في السوق المفتوحة، بهدف تحديد أي دور مُحتمل قد تؤديه الإيكاو وأي تحديث ضروري لأطرها وأنظمتها التنظيمية، والتي ينبغي أن تستفيد، قدر الإمكان، من المنهجيات والإجراءات القائمة بموجب خطة كورسيا، وسوف يدعم هذا العمل أيضاً الرصد والإبلاغ عن الهدف العالمي الطموح طويل الأجل المذكور أعلاه.

١٠-٢ ويجري العمل أيضاً في الأمانة العامة لتسهيل ترخيص استدامة وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى المؤهلة بما يتماشى مع متطلبات خطة كورسيا. وفي هذا الصدد، أطلقت الأمانة العامة مشروع تسريع برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام "ACT-SAF Accelerator"، الذي يُقدم الدعم لتسريع عمليات تحليل واعتماد قيم دورة حياة مصادر ومسارات الوقود الجديدة. ويدعم أول مشروع لتسريع برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام تحليل خامات التغذية التي يمكن استخدامها لإنتاج وقود الطيران المستدام (الكسافا/الكاجو)، على النحو المحدد في دراسة جدوى برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام في كوت ديفوار (انظر أيضاً اللجنة الأساسية الثالثة أدناه والمرفق (ه)).

اللجنة الأساسية الثالثة (دعم التنفيذ) - برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام وبرنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال الهدف الطموح طويل الأجل

١١-٢ يتطلب تحقيق الهدف الطموح طويل الأجل برنامجاً قوياً ومُستهدفاً ومُصمماً لدعم بناء القدرات والتنفيذ، فيما يتعين على الإيكاو وقطاع الطيران والأوساط الأكاديمية وغيرها من الجهات المعنية العمل معاً لتنفيذ هذا البرنامج، مع مراعاة الظروف المختلفة للدول والأقاليم، وبما يتماشى مع الهدف الاستراتيجي "عدم ترك أي بلد وراء الركب". وأُطلق برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام (ACT-SAF) في يونيو ٢٠٢٢ لتقديم دعم مصمم وفقاً لظروف الدول في مختلف مراحل إنتاج ونشر وقود الطيران المستدام، وتسهيل الشراكات والتعاون بشأن المبادرات المتعلقة به بتنسيق من الإيكاو، وللعمل كمنصة لتسهيل تبادل المعرفة والاعتراف بجميع المبادرات حول العالم. ورحبت الفقرة ١٨ ج) من القرار ٤١-٢١ بهذا البرنامج، الذي جرت موافقته مع طلب الإطار العالمي.

١٢-٢ وحسب الوضع السائد في يونيو ٢٠٢٥، انضمت ١٠٩ دول شريكة في برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام و١٤٦ منظمة شريكة إلى البرنامج، وتم الاعتراف بها على موقعه الإلكتروني. وتقدم سلسلة الدورات التدريبية الخاصة بالبرنامج تدريباً شاملاً للشركاء حول مجموعة من المواضيع المهمة المتعلقة بوقود الطيران المستدام؛ وأنجزت ١٩ دورة تدريبية، وهي متاحة على قناة الإيكاو التلفزيونية. وجرى أيضاً توفير دورات تدريبية وحلقات عمل بالحضور الشخصي في الكاميرون وغينيا الاستوائية وتنزانيا بدعم من المملكة المتحدة، وعُقدت حلقة عمل عن البرنامج في المكسيك بالتنسيق مع المكتب الإقليمي للإيكاو وأمريكا الشمالية وأمريكا الوسطى ومنطقة الكاريبي.

١٣-٢ وبالإضافة إلى ٧ دراسات جدوى لوقود الطيران المستدام (SAF) أُجريت بالفعل حتى عام ٢٠٢٣ بمساهمات قدمها الاتحاد الأوروبي لصندوق الإيكاو للبيئة، يجري حالياً تنفيذ أو التخطيط لإجراء ٢٣ دراسة جدوى أخرى لوقود الطيران المستدام ودراسات تنفيذ أعمال في إطار برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام، بمساهمات مقدمة من فرنسا وهولندا والمملكة المتحدة والاتحاد الأوروبي وشركة إيرباص. ويجري التخطيط لمبادرات أخرى بمساهمات مقدمة من النمسا

وكوت ديفوار ومساهمات متوقعة من إيطاليا وجمهورية كوريا وسويسرا. وترد تفاصيل حالة جميع هذه الدراسات في لوحة معلومات جديدة متاحة على الموقع الإلكتروني للبرنامج. ويمكن الاطلاع على مزيد من المعلومات عن البرنامج في المرفق (هـ).

١٤-٢ وبعد تشغيل برنامج الإيكاو للمساعدة وبناء القدرات والتدريب في مجال وقود الطيران المستدام بنجاح، تخطط الأمانة العامة لتوسيع نطاقه ليشمل برنامج المساعدة وبناء القدرات والتدريب في مجال الهدف الطموح الطويل الأجل في أقرب وقت ممكن، بالاستناد إلى نهج البرنامج الخاص بوقود الطيران المستدام وربطه بمبادرات الإيكاو بشأن بناء القدرات المتعلقة بالتكنولوجيا والعمليات.

اللجنة الأساسية الرابعة (التمويل) - الإعلام والتوعية ومركز الإيكاو للاستثمار المالي والدراسة الرامية إلى إعداد مبادرة مالية أو آلية تمويلية لأنشطة المناخ في إطار الإيكاو

١٥-٢ يُعدّ الحصول على الموارد المالية أمراً بالغ الأهمية لنشر وقود الطيران المستدام ومصادر الطاقة النظيفة الأخرى في مجال الطيران، إذ يتطلب توسيع نطاق استخدام الوقود لدعم الهدف الطموح الطويل الأجل استثمارات تراكمية تبلغ حوالي ٣,٢ تريليون دولار أمريكي بحلول عام ٢٠٥٠ (وفقاً لتقرير الإيكاو بشأن الهدف الطموح الطويل الأجل).

١٦-٢ وفي إطار أنشطة الإعلام والتوعية المتعلقة باحتياجات التمويل لتحقيق الهدف الطموح الطويل الأجل، وبناءً على طلب الإطار العالمي، تعمل الإيكاو على تعزيز المشاركة وإعداد شبكات وحوارات منظمة بين الدول الأعضاء والمجتمع المالي الدولي والجهات المعنية الأخرى، بما في ذلك المؤسسات المالية العامة والخاصة والمستثمرون وشركات التأمين، بالإضافة إلى منظمات الأمم المتحدة وغيرها من الصناديق وأدوات الاستثمار المعترف بها دولياً، بهدف تحديد وتعزيز فرص التمويل وتحديد أولويات مشاريع التخلص من انبعاثات الكربون الناجمة عن قطاع الطيران، لا سيما للبلدان النامية والدول ذات الاحتياجات الخاصة.

١٧-٢ وتعمل الإيكاو أيضاً على تشجيع الدول على استخدام معايير ومتطلبات الإيكاو للاستدامة، والتي تُشكل الأساس المقبول لأهلية وقود الطيران المستدام ووقود الطيران المنخفض الكربون ومصادر الطاقة النظيفة الأخرى في مجال الطيران لإعطاء الأولوية لمشاريع الطاقة النظيفة في مجال الطيران وتسهيل حصولها على التمويل (انظر المرفق (و) للاطلاع على مزيد من المعلومات عن أنشطة الإعلام والتوعية التي تضطلع بها الإيكاو).

١٨-٢ واستجابةً للفقرة ١٨ أ) من القرار ٤١-٢١، وبناءً على الطلب المحدد بموجب الإطار العالمي، أسست الإيكاو مركز الإيكاو للاستثمار المالي وتعمل الآن على تفعيله. ومركز الإيكاو للاستثمار المالي هو منصة لتسهيل فرص الحصول على الاستثمارات العامة والخاصة، بالإضافة إلى التمويل من المؤسسات المالية، للمشاريع التي تُسهم في التخلص من انبعاثات الكربون الناجمة عن قطاع الطيران الدولي.

١٩-٢ وعلى سبيل المثال، تتعاون الإيكاو مع الوكالة الدولية للطاقة المتجددة (IRENA) لإعداد منصة مشتركة لربط مشاريع الطاقة النظيفة في قطاع الطيران بالمستثمرين المحتملين من القطاعين العام والخاص من خلال عملية "التوفيق"، مما يساعد المستثمرين على تحديد المشاريع وتقييمها، مع مدى مطابقتها للمعايير والشروط الفنية للإيكاو (مثل معايير الاستدامة لوقود الطيران المستدام ووقود الطيران المنخفض الكربون) (انظر المرفق (و) للاطلاع على مزيد من المعلومات عن شراكة الإيكاو والوكالة الدولية للطاقة المتجددة).

٢٠-٢ واستجابةً للفقرة ١٨ (ب) من القرار ٤١-٢١، نظر المجلس كذلك في إعداد مبادرة أو آلية تمويل خاصة بالمناخ تحت إشراف الإيكاو، مع معالجة التحديات المالية والمؤسسية والقانونية المحتملة، بما في ذلك من خلال النظر في دراسة تهدف إلى النظر في إمكانية إعداد مبادرة مالية أو آلية تمويلية لأنشطة المناخ في إطار الإيكاو. ويرد في المرفق (ز) التقرير الذي يقدمه المجلس في هذا الصدد إلى الجمعية العمومية.

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APPENDIX A

ICAO GLOBAL FRAMEWORK FOR SAF, LCAF AND OTHER AVIATION CLEANER ENERGIES

(Adopted by CAAF/3 on 24 November 2023)

Whereas the 41st Session of the Assembly resolved under Resolution A41-21, paragraph 7 that “ICAO and its Member States are encouraged to work together to strive to achieve a collective long-term global aspirational goal for international aviation (LTAG) of net-zero carbon emissions by 2050, in support of the Paris Agreement’s temperature goal, recognizing that each State’s special circumstances and respective capabilities (e.g. the level of development, maturity of aviation markets, sustainable growth of its international aviation, just transition, and national priorities of air transport development) will inform the ability of each State to contribute to the LTAG within its own national timeframe”;

Whereas the Assembly Resolution A41-21, paragraph 8 further recognizes that “the LTAG is a collective global aspirational goal, and it does not attribute specific obligations or commitments in the form of emissions reduction goals to individual States, and urges each State to contribute to achieving the goal in a socially, economically and environmentally sustainable manner and in accordance with national circumstances”;

Whereas the Assembly Resolution A41-21, 17th preamble “recalls the UNFCCC and the Paris Agreement and acknowledges its principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances”;

Whereas the Assembly Resolution A41-21, 18th preamble “also acknowledges the principles of non-discrimination and equal and fair opportunities to develop international aviation set forth in the Chicago Convention”;

Recognizing that achieving the LTAG requires a comprehensive approach consisting of a basket of measures, including technology, sustainable fuels, operational improvements, and market-based measures. Sustainable Aviation Fuels (SAF), Lower Carbon Aviation Fuels (LCAF) and other aviation cleaner energies are expected to have the largest contribution to aviation CO₂ emissions reduction by 2050 and, whilst there are increasing initiatives to develop and deploy these fuels, current production levels of these fuels are still extremely low at only 0.2 per cent of all aviation fuel use;

Accordingly, there is a need for urgent global action to accelerate the global scale up in development and deployment of SAF, LCAF and other aviation cleaner energies in order to achieve the LTAG and thus provide ICAO’s continuous leadership in addressing emissions from international aviation;

Recalling that the Assembly Resolution A41-21, paragraph 28 f) requested to “convene the CAAF/3 in 2023 for reviewing the 2050 ICAO Vision for SAF, including LCAF and other cleaner energy sources for aviation, in order to define a global framework in line with the *No Country Left Behind* (NCLB) initiative and taking into account national circumstances and capabilities”;

Recognizing that there is significant potential for States to economically, socially and environmentally contribute to, and benefit from, the value chain for the development, production and deployment of SAF,

LCAF and other aviation cleaner energies, including as new economic streams and alternative sources for the energy security;

Recognizing that SAF, LCAF and other aviation cleaner energies need to be developed and deployed in an economically feasible, cost-effective and socially and environmentally acceptable manner and in accordance with national circumstances;

Recognizing that means of implementation commensurate to the level of ambition, including financing, will promote the achievement of the LTAG and, by extension, the development and deployment of SAF, LCAF and other aviation cleaner energies;

Recalling that ICAO, through the ICAO Council Industry Consultative Forum; the ICAO Council's dialogues with energy and financial institutions; and the 2023 ICAO Stocktaking on Aviation in Sector CO₂ Emissions Reductions, have heard the industry calls to help reduce risk and attract investment by providing greater regulatory certainty governing SAF, LCAF and other aviation cleaner energies and better access to financing, and by establishing better collaboration and coordination between all stakeholders;

Recognizing that the production of SAF, LCAF and other aviation cleaner energies is currently concentrated in a small number of States. The global framework intends to emphasize the benefits for States and ICAO in working toward the decentralization of such fuel production across all States and regions, providing a fair and equal opportunity to participate across the value chain, from feedstock to fuel production and use;

Recognizing that no single fuel source will be produced at a level necessary to achieve the LTAG. Accordingly, the global framework needs to be flexible and not exclude any particular fuel source, pathway, feedstock or technology that meets the CORSIA agreed criteria;

Recognizing that aviation is part of a global effort to address climate change, and the intent to accelerate the global scale up in development and deployment of SAF, LCAF and other aviation cleaner energies is consistent with recent international commitments in accelerating clean, sustainable, just, affordable and inclusive energy transitions and, in doing so:

- a) recognizes the needs, vulnerabilities, priorities and different national circumstances, particularly of developing countries; and
- b) supports strong enabling environments to foster innovation, technology transfer, building on and consistent with Assembly Resolution A41-21, paragraph 18 d), and access to low-cost financing;

Recognizing that no country should have to choose between fighting poverty and fighting for our planet. In this regard, efforts to decarbonize aviation need to work alongside efforts to sustainably develop the sector, particularly in developing countries.

Acknowledging that the role of this global framework is to facilitate the global scale-up in development and deployment of SAF, LCAF and other aviation cleaner energies by providing greater clarity, consistency and predictability to all stakeholders, including those beyond the aviation sector, on the policies, regulations, implementation support, and financing and investments required, to ensure all States have equal opportunities to contribute to, and benefit from, the expected emissions reductions from such aviation cleaner energies;

Also acknowledging that the global framework is built across four building blocks: policy and planning; regulatory frameworks; implementation support; and financing. These building blocks are interconnected and need to advance and work together to achieve their intended purpose;

Further acknowledging that throughout this global framework, the support for developing countries and States with particular needs, exists along a continuum, from the first step of the process to the last. Comprehensive capacity-building and implementation support and financing activities, are intended to work hand-in-hand to achieve this outcome and broader aviation decarbonization efforts in a sustainable manner;

Building Block 1 – Policy and Planning:

1. ICAO and its Member States will work together to strive to achieve a Vision of implementing the elements of this global framework in order to globally scale-up the development and deployment for SAF, LCAF and other aviation cleaner energies, as such fuels are expected to have the largest contribution to aviation CO₂ emissions reductions in the ‘basket of measures’ to achieve the LTAG. To support the achievement of the LTAG, ICAO and its Member States strive to achieve a collective global aspirational Vision to reduce CO₂ emissions in international aviation by 5 per cent by 2030 through the use of SAF, LCAF and other aviation cleaner energies (compared to zero cleaner energy use). In pursuing this Vision, each State’s special circumstances and respective capabilities will inform the ability of each State to contribute to the Vision within its own national timeframe, without attributing specific obligations or commitments in the form of emissions reduction goals to individual States.
2. This Vision will be continually monitored and periodically reviewed, as described in paragraph 11 below, including through the convening of CAAF/4 no later than 2028, with a view to updating the ambition on the basis of market developments in all regions.
3. Increasing the production of SAF, LCAF and other aviation cleaner energies across all regions will be integral to achieving the Vision and will rely on means of implementation including financing, technology transfer and capacity building.
4. In addition, the Vision should:
 - a) enable the increased production and supply of SAF, LCAF and other aviation cleaner energies across all regions;
 - b) be flexible, attainable and feasible;
 - c) be continually monitored and periodically reviewed (refer to paragraph 11 below);
 - d) be ambitious, in order to send a positive market signal to induce demand, trigger supply and attract significant additional investment, taking into account special circumstances and respective capabilities of States;
 - e) not negatively impact the growth of air transport, especially in developing countries;
 - f) contribute to a level playing field among all States and avoid market distortion;
 - g) be supported by the appropriate means of implementation including financing, technology transfer and capacity building;

- h) not exclude any particular fuel source, pathway, feedstock or technology, as long as it meets the CORSIA sustainability criteria;
 - i) take account of the projections included in the LTAG report and subsequent analysis by CAEP;
 - j) note national fuel-related emissions reduction goals and roadmaps by States and any other industry commitments;
 - k) not give rise to any mandatory measures to achieve this Vision and the objective of this framework; and
 - l) contribute to mitigating air pollution, maximising both public health and climate benefits.
- 5. States are encouraged to implement policies in support of the Vision, in a socially, economically and environmentally sustainable manner and in accordance with their special circumstances and respective capabilities.
- 6. In developing these policies, States are invited to consider the usefulness and benefits of the non-exhaustive and non-prescriptive list of potential policy components contained within the 'toolkit' in paragraph 18 below, noting that ICAO guidance provides further detail on these potential policy components and the guidance does not provide any endorsement of specific policies.
- 7. In developing and implementing their policies, States are encouraged to recognize:
 - a) the need for, and benefits of, a combination of policies under a coherent and coordinated national plan for the scale-up in production and deployment of SAF, LCAF and other aviation cleaner energies, noting that no one single policy is likely to deliver the best and most efficient outcomes and that the appropriate policy-mix will differ between States due to different national circumstances;
 - b) the need for policies to take into account cost impacts and affordability, and to avoid extraterritorial measures;
 - c) the need for policies to take into account the latest scientific and technological developments;
 - d) the importance of the policy's transparency, certainty and stability, for aircraft operators, feedstock producers, fuel producers, financial institutions and other relevant stakeholders; and
 - e) the need for policies to be applied in accordance with the Chicago Convention and its relevant instruments and any appropriate bilateral and multilateral agreements in place between States, with particular regard for the fundamental principles of non-discrimination, fair and equal opportunity; and the avoidance of market distortion.
- 8. States are encouraged to work together towards the harmonization of policies, to the extent possible and appropriate to circumstances, across States and regions as a longer-term objective.
- 9. The Vision is a collaborative effort with action required from different stakeholders, and States are to encourage relevant stakeholders (i.e. aircraft operators, airports, aircraft and engine manufactures, fuel

producers, ICAO's approved Sustainability Certification Schemes, and fuel standards bodies) to plan, develop and implement their own actions to help achieve the Vision, as appropriate, including:

- a) *Aircraft operators* to prioritize the negotiation, cooperation and commercial procurement of SAF, LCAF and other aviation cleaner energies; facilitate access for travellers, air cargo shippers and businesses who wish to voluntarily reduce their air travel footprint through access to the purchase of SAF, LCAF and other cleaner fuels; and implement measures to increase SAF compatibility within their fleets;
 - b) *Airports* to plan and deliver changes in airport infrastructure necessary to ensure efficient supply and access to drop-in fuels and, in collaboration with aircraft operators, fuel producers and other stakeholders, explore innovative ways to share the cost of such infrastructure changes across the value chain;
 - c) *Aircraft and engine manufactures and fuel producers* to accelerate work to ensure 100 per cent SAF compatibility is feasible in new, in-production and existing aircraft, as soon as it is considered safe to do so and in line with their announced commitments, and innovate to understand and maximize the opportunities offered by other cleaner energy sources in the longer term;
 - d) *Fuel producers* to foster innovation and investment into SAF, LCAF and other aviation cleaner energies and demonstrate technological readiness, scalability and sustainability of these fuels in line with the CORSIA requirements;
 - e) *ICAO's approved Sustainability Certification Schemes* to accelerate the sustainability certification of qualifying SAF, LCAF and other aviation cleaner energies in line with the CORSIA requirements; and
 - f) *Fuel standards bodies*, particularly ASTM, to work with all stakeholders to accelerate the qualification and approval of additional fuel production pathways.
10. States are encouraged to include their respective policies, actions and roadmaps for the development and deployment of SAF, LCAF and other aviation cleaner energies, in their State Action Plans, and where possible, to:
- a) identify resources, capacity and other factors (e.g. capacity assistance and access to technology) required;
 - b) help ICAO to tailor capacity building and implementation support measures, including facilitating access to financing and funding, in line with the State's needs; and
 - c) to quantify their Plans, to support ICAO's work in monitoring progress towards achieving the LTAG.
11. The implementation of the global framework should be continually monitored and periodically reviewed, including through annual ICAO stocktaking, and the convening of CAAF/4. In this regard, ICAO, with the technical contribution of CAEP, should identify and develop methodologies for monitoring the:

- a) progress on emissions reductions from SAF, LCAF and other aviation cleaner energies toward the achievement of the LTAG, including through the gathering, compiling and analyzing, by ICAO, of actions undertaken by States according to their State Action Plans and other relevant State reporting mechanisms;
- b) progress, at a global and regional level, on means of implementation support, including financing, provided to achieve the emissions reductions from SAF, LCAF and other aviation cleaner energies toward the achievement of the LTAG, including through the gathering, compiling and analyzing, by ICAO, of actions undertaken by States, industry, and other stakeholders; and
- c) impacts on the sustainable growth of the aviation industry, the geographical distribution of SAF production, cost impacts (including airfares and the price of SAF, LCAF and other cleaner energies), and the maintenance of fair and equal opportunities for the development and deployment of SAF, LCAF and other aviation cleaner energies, aspiring to have production sites in all ICAO regions before CAAF/4.

Building Block 2 – Regulatory Framework:

- 12. In the interests of providing regulatory transparency, certainty, stability and assurances of environmental integrity to feedstock producers, fuels producers and financial institutions, the CORSIA sustainability criteria, sustainability certification, and the methodology for the assessment of life cycle emissions used for ‘CORSIA eligible fuels’, should be used as the accepted basis for the eligibility of SAF, LCAF and other aviation cleaner energies used in international aviation.
- 13. ICAO, States and industry are encouraged to enhance efforts to increase the number of ICAO approved Sustainability Certification Schemes, in all regions, to accelerate the sustainability certification of qualifying SAF, LCAF and other aviation cleaner energies in line with the CORSIA requirements, without excluding any particular fuel source, pathway, feedstock or technology. In this regard, ICAO, with technical and neutral contributions of CAEP, is encouraged to accelerate the development and approval of new Sustainability Certification Schemes for SAF, LCAF and other aviation cleaner energies and to accelerate the analysis and approval of life cycle values for new fuel sources and pathways.
- 14. ICAO, States, industry and other relevant stakeholders are encouraged to work with fuel standards bodies, such as ASTM, to accelerate the certification of additional fuel production pathways, with a view to maximizing the number of certified sources of SAF, LCAF and other aviation cleaner energies.
- 15. Accounting methodologies on the use of SAF, LCAF and other aviation cleaner energies for international aviation, such as the CORSIA MRV, provides confidence in the use of such fuels and the claim of their environmental benefits by aeroplane operators, noting that such accounting methodologies could help support the monitoring of progress towards the achievement of the LTAG. Accounting methodologies and the associated reporting frameworks should take into account the following parameters, which seek to promote transparency, accuracy, consistency, comparability and completeness:
 - a) ensure the global coverage of emissions from international civil aviation, as part of the monitoring of the LTAG;

- b) support consistent application of methodologies amongst States, in a transparent manner;
 - c) enable accurate emissions reporting, including the use of cleaner energy for international civil aviation;
 - d) ensure environmental integrity through the avoidance of double-counting, including between domestic and international civil aviation;
 - e) use verified emissions information, supported with other information for the verification or validation of reported emissions;
 - f) promote cost-effectiveness by using simple accounting and reporting methodologies and procedures;
 - g) avoid excessive administrative burden on States and aeroplane operators; and
 - h) leverage, to the extent possible, existing methodologies and procedures under the CORSIA MRV.
16. ICAO should, with technical contributions of CAEP, undertake a study of fuel accounting systems for international aviation currently used in the open market. This study would include preliminary exploration of the so-called ‘book and claim’ concept to assess its relevancy and applicability, and taking into account relevant developments in other UN bodies, including the Article 6 of the Paris Agreement. The intent of the study would be to better understand these accounting systems and concepts and identify potential areas for further investigation. This work can help determine what, if any, role ICAO could have in supporting these systems to facilitate access to environmental benefits of SAF, LCAF and other aviation cleaner energies for international aviation and ensure environmental integrity, with a view to fostering without disincentivising the global production of such fuels, in particular in developing countries.

Building Block 3 – Implementation Support

17. All States should have access to the means to participate across all stages of the development and deployment of SAF, LCAF and other aviation cleaner energies, and all States and regions are encouraged to work together in a spirit of solidarity to ensure there is a truly global effort to contribute to, and benefit from, the work to reduce emissions from such aviation cleaner energies.
18. The global scale-up in production of SAF, LCAF and other aviation cleaner energies requires a robust and substantial capacity-building and implementation support programme. States, ICAO, industry, academia and other relevant stakeholders are encouraged to work together to deliver such a programme that:
- a) recognizes the need for an expanded, robust, targeted and tailored support to account for the various stages of readiness across the entire SAF/LCAF value chain, taking into account different circumstances across States and regions;
 - b) facilitates partnerships, alliances and cooperation between States and all relevant stakeholders, including regional collaborations that may result in regional solutions that produce fuels efficiently;

- c) includes exchange of information, sharing of best practices and technological developments among States, for which ICAO should provide a platform to facilitate this exchange and track progress;
- d) supports States in their planning, development and implementation of national and regional policies that can be applied across all stages of fuel supply-chain, including the following potential policy components that form part of a non-exhaustive 'toolkit' (referred to paragraph 6 above):
 - i. foster multi-stakeholder partnerships, alliances and cooperation, including with (as appropriate) aeroplane operators, airports, aircraft and engine manufacturers, energy producers and financial institutions;
 - ii. government incentives, including loans, grants, tax credits, regulatory support and other mechanisms for:
 - research and development, including determination of the technology readiness level;
 - sourcing of potential feedstock;
 - development and acceleration of feedstock production; and
 - development and acceleration of fuel production;
 - iii. targets and/or mandates for:
 - emissions reduction levels;
 - uptake of SAF, LCAF and other aviation cleaner energies; and
 - fuel blending levels;
 - iv. where beneficial, identify SAF, LCAF and other aviation cleaner energies as priorities for financing for economy-wide decarbonization efforts;
 - v. promote increasing the number of ICAO approved Sustainability Certification Schemes for SAF, LCAF and other aviation cleaner energies;
 - vi. promote feasibility studies for potential SAF, LCAF and other cleaner energy pathways;
 - vii. promote necessary changes in airport and energy supply infrastructure; and
 - viii. promote the use of Public Private Partnerships to deliver SAF and LCAF projects.
- e) regularly updates the ICAO detailed guidance on the 'policy toolkit' and the 'Rules of Thumb', where applicable, to estimate the costs, investment needs and production potentials, to help inform States' consideration of the selection of national and regional policies that are appropriate to their circumstances, noting that the guidance does not provide any endorsement of specific policies;
- f) supports the delivery, in a continuum, of feasibility studies, pilot projects, and 'proof of concept' plans, which may facilitate access to investment for their implementation;
- g) develops and provides training to enhance State's awareness and readiness, as well as to support the SAF and LCAF project's readiness to attract investment, including training on financial aspects of project development, financial planning and investment promotion; and

- h) assists in the development of relevant aspects of State Action Plans and roadmaps, including ICAO guidance and tools, and State-to-State support partnerships, noting that State Actions Plans may also include information on specific assistance needs for the implementation of measures to reduce aviation CO₂ emissions, which may facilitate access to investment and technology.
19. Access to technology is imperative for States to contribute to, and benefit from, cleaner energy development and deployment. Accordingly, States and industry shall promote and facilitate, in accordance with 14th preamble above, the effective transfer of technology, in particular to developing countries and States with particular needs, in line with the *No Country Left Behind* (NCLB) initiative, through comprehensive technical skills, manufacturing, processing and equipment, and noting the global benefits that come from increasing the supply of cleaner energy.
20. The ICAO capacity-building and implementation support should be delivered in an efficient, effective and coordinated manner under the ‘one-ICAO’ approach, incorporating support for all stages of SAF, LCAF and other aviation cleaner energies development and deployment, and building upon the success of the ACT-CORSIA and ACT-SAF programmes. States are also encouraged to develop specific projects under the ICAO Technical Cooperation Programme.
21. In line with the *No Country Left Behind* initiative, States are urged to make regular and substantial contributions to the ICAO Voluntary Environment Fund and other in-kind contributions (e.g. secondments) to support delivery of the substantial ICAO capacity building and implementation support programme, aimed at assisting developing countries and States with particular needs, including, as a priority, for feasibility studies and technology adaption.
22. Industry is also urged to provide expertise and financial support to support delivery of the substantial capacity building and implementation support programme including, as a priority, for feasibility studies and technology adaption.
23. ICAO should regularly monitor the progress and effectiveness of the capacity-building and implementation support efforts, including ensuring there are sufficient resources to deliver its support programme, as part of the broader means of implementation. In this regard, ICAO should consider developing necessary methodologies for monitoring and reporting back to States, including information on where its support efforts are located and the cost of those efforts.

Building Block 4 – Financing

24. As recognized in Assembly Resolution A41-21, paragraph 17, “means of implementation commensurate to the level of ambition, including financing, will promote the achievement of the LTAG. It requires substantial investments for States, according to their national circumstances, and that various possible modalities and/or funding mechanisms could be used by ICAO to facilitate financing and investment support for implementation of specific aviation CO₂ emissions reduction measures”.
25. According to the LTAG report, fuel suppliers will need to invest up to 3.2 trillion USD in producing aviation cleaner energies through to 2050, and additional investments will be needed for other aviation CO₂ reduction measures such as aircraft technologies and operational improvements. The scale of this

task presents both challenges and opportunities for ICAO, States and other stakeholders, including the financing community.

26. Specific to financing and funding, Assembly Resolution A41-21, paragraphs 18 a) and b), request the Council to:
- a) “initiate specific measures or mechanisms so as to facilitate, in particular for developing countries and States having particular needs, better access to private investment capacities, as well as funding from financial institutions, such as development banks, for projects contributing to the decarbonization of international aviation, as well as encourage new and additional funding to this purpose”; and
 - b) “further consider the establishment of a climate finance initiative or funding mechanism under ICAO, while addressing the possible financial, institutional and legal challenges, and report to the 42nd Session of the ICAO Assembly”.
27. These two paragraphs of the Assembly Resolution must be urgently progressed, in parallel, if the challenge of scaling-up SAF, LCAF and other aviation cleaner energies is to be addressed at the global level in a sustainable manner, including economic, social and environmental concerns.
28. With a view to achieving the LTAG, the primary objective for ICAO and its Member States with respect to financing should be to support countries in particular developing countries and States with particular needs, to improve access to low-cost financing and funding, and further de-risking of projects to develop and deploy SAF, LCAF and other aviation cleaner energies in order to promote sustainability and stimulate investment, in line with the *No Country Left Behind* initiative.
29. Measures to attract greater investment in SAF, LCAF and other aviation cleaner energies from development banks and other capital markets are integral to ICAO efforts under Assembly Resolution A40-22, particularly paragraph 8, to “continue fostering ICAO’s partnership with financial institutions seeking the prioritization or inclusion of aviation in their agendas and work programmes in order to facilitate States’ access to fund or finance their aviation development projects”.
30. Some financing instruments (e.g. blended finance and Public-Private Partnerships) require significant cooperation and collaboration between stakeholders, including States, industry and public and private financial institutions, to mitigate the investment risk. There is a role for ICAO and its Member States to engage in this cross-stakeholder collaboration as appropriate, on possible measures to de-risk investments.
31. ICAO, States and industry have a key role to play in advocating for greater investment in SAF, LCAF and other aviation cleaner energy projects by increasing awareness and understanding amongst the international finance community on:
- a) the collective commitment of States and the industry to achieve the LTAG;
 - b) the importance of the sustainable growth of the international aviation sector including the economic and social connectivity and trade flows;
 - c) the benefits of the use of SAF, LCAF and other aviation cleaner energies to address aviation’s contribution to climate change;

- d) the strong action from ICAO, States and industry to the global scale-up of SAF, LCAF and other aviation cleaner energies;
 - e) the direct and indirect economic and social benefits to States across the value chain of SAF and LCAF production;
 - f) the scale of the demand for SAF, LCAF and other aviation cleaner energies;
 - g) the challenges to accessing affordable and needed financing for projects for SAF, LCAF and other aviation cleaner energies; and
 - h) potential investment opportunities and returns.
32. As part of this advocacy and outreach, States and ICAO should enhance and deepen their engagement and dialogue with the international finance community and other relevant stakeholders, including:
- a) public and private financial institutions, including sub-national, national, regional and multilateral banks;
 - b) private capital markets, including investors and insurers;
 - c) capital and banking alliances;
 - d) State donors;
 - e) UN, and other internationally-recognized funds and investment vehicles; and
 - f) energy producers.
33. ICAO, in cooperation with States, should develop a series of case studies of successful SAF, LCAF and other aviation cleaner energies projects, drawing from examples in regions with different characteristic and investment risk. Such case studies could assist both project developers and prospective investors by providing examples of ‘tried and tested’ pathways for investment and instill confidence that investment opportunities can be realized.
34. States acknowledge and welcome the establishment of the ‘ICAO Finvest Hub’, which delivers on Assembly Resolution A41-21, paragraph 18 a), and look forward to its work to facilitate enhanced access to public and private investment capacities and funding from financial institutions, with prioritization of allocation to developing countries and States with particular needs, for projects contributing to the decarbonization of international aviation, including for the scale-up in development and deployment of SAF, LCAF and other aviation cleaner energies, as well as encourage new and additional funding for this purpose.
35. As a first step, ICAO should urgently put in place the necessary structure and capability, toward the operationalization of the proposed ‘ICAO Finvest Hub’ initiative. Such work should clearly identify how the Finvest Hub initiative complements broader aviation decarbonization capacity building and implementation efforts, including the ACT-SAF programme.
36. Key activities that the ICAO Finvest Hub could undertake include:
- a) developing a platform to connect aviation decarbonization projects with potential public and private investors, including a ‘matchmaking’ function, thus helping investors to identify and assess projects;

- b) working with various stakeholders to explore innovative funding and risk mitigation mechanism adapted to the decarbonisation of aviation, incentivizing investments, and promoting collaboration among stakeholders to mobilize financial resources effectively (e.g. fostering Public Private Partnerships);
 - c) collaborating with financial institutions, such as development banks, to create pathways for the funding of projects;
 - d) developing a database of funding and financing sources, together with their terms and conditions, for project developers to be able to draw on; and
 - e) developing a toolkit of term sheets templates (basic conditions to satisfy investors) for SAF, LCAF and other aviation cleaner energies.
37. Private capital alone will not be enough to fully address the challenge of scaling-up the development and deployment of SAF, LCAF and other aviation cleaner energies. Sizable public investment, including concessionary funding, as appropriate, will be required to support some SAF, LCAF and other aviation cleaner energy projects, particularly in developing countries and in States with particular needs.
38. States recognize the important role that ICAO can play in encouraging scaled up funding flows, including new and additional funding flows, as appropriate, and their transparent and effective disbursement. ICAO and its Member States need to ensure ‘no stone is left unturned’ in exploring avenues to support these objectives.
39. To this end, States underscore the importance of Assembly Resolution A41-21, paragraph 18 b) and agree that ICAO should expedite its work to further consider the establishment of a climate finance initiative or funding mechanism under ICAO, while addressing the possible financial, institutional and legal challenges. Recognizing the recent decision of the Council to undertake a study regarding the consideration of the establishment of a climate finance initiative or funding mechanism under ICAO, this work must be completed for consideration by the 42nd Session of the ICAO Assembly, in accordance with A41-21, paragraph 18 b).
40. States recognize that, in its work preparing the report under A41-21 paragraph 18 b), the ICAO Council should consider, among others, the following aspects:
- a) achieving the LTAG in a fair and sustainable manner;
 - b) the role that a climate finance initiative or a funding mechanism could play in reinforcing and complementing the work of the Fininvest Hub, and other mechanisms of the Organization, such as the ACT-SAF programme, the ICAO Technical Cooperation Program and the ICAO Voluntary Environment Fund;
 - c) the need for a gap analysis to identify where there are specific needs with attention to developing States and States having particular needs; and
 - d) the objective of promoting the increase of SAF production worldwide and concomitant economic, social and environmental benefits across all regions.

41. Globally, there are ongoing efforts to mobilize climate finance and maximize resources, including concessional financing, as appropriate, in order to support clean energy transitions. Aviation must have a role in these efforts to support its own transition and the achievement of the LTAG.
42. ICAO and its Member States should initiate a work stream to actively identify, analyse gaps and monitor developments in the UN and across the international financing community, including *inter alia* the Green Climate Fund and its upcoming replenishment, the Net Zero Asset Owner Alliance, and the Multilateral Development Banks Vision Statement, to identify and aggressively pursue opportunities to increase the allocation or earmarking of public and private capital devoted to aviation decarbonization projects, particularly on SAF, LCAF and other aviation cleaner energies.

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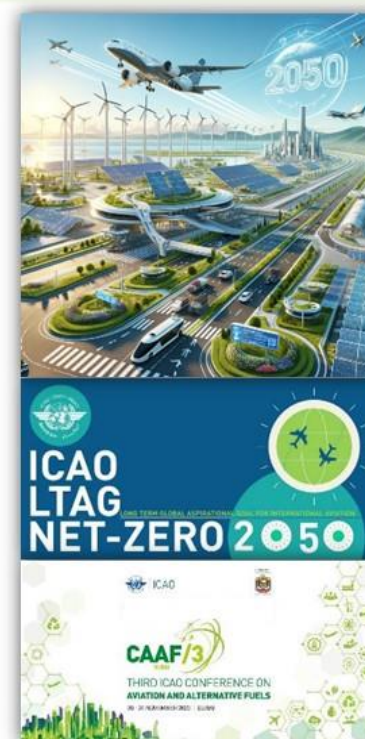
APPENDIX B

ICAO Roadmap for implementation of CAAF/3 outcomes and LTAG

(Approved by ICAO Council on 17 June 2024, C-DEC 232/6 refers)

The Council approved the ICAO roadmap for the implementation of the ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies, including the planned actions, roles and responsibilities, timeframe, required resources, and the relationship with related ICAO work, such as the LTAG implementation, leading to the 42nd Session of the Assembly in 2025, and until the convening of CAAF/4 by no later than 2028, on the understanding that:

- a) the ICAO roadmap would be a **“living document” to be regularly updated** to reflect the progress of implementation and elaborate on further actions, and this subject would become a recurring item to be reported during subsequent Council sessions, as required
- b) the ICAO roadmap **transparently outlines the additional resources required** to implement the Global Framework and the LTAG, and should be used to **inform resource mobilisation efforts, and subject to the upcoming 2026-2028 Business Plan and Regular Budget discussions**
- c) the implementation of the ICAO roadmap should be **progressed in a balanced manner between the four interdependent Building Blocks**, and should give immediate focus to the need to accelerate the level of capacity building and implementation support, financing and other critical enabling and monitoring elements, so that it may foster swift production and deployment of aviation cleaner energies in all regions
- d) the Secretariat should ensure the **coordination among all relevant Bureaux and ICAO bodies** on cross-cutting issues relating to the implementation of LTAG, and all the elements of the ICAO basket of measures for emissions reductions, under the **“One-ICAO” approach**, with clearly defined roles and responsibilities, such as for undertaking the feasibility studies under ACT-SAF and the operationalization of the Finvest Hub



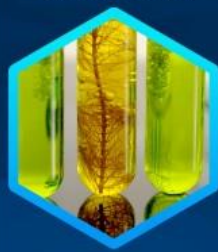


ICAO Global Framework for SAF, LCAF and other Aviation Cleaner Energies

Policy and
Planning



Regulatory
Framework



Implementation
Support



Financing



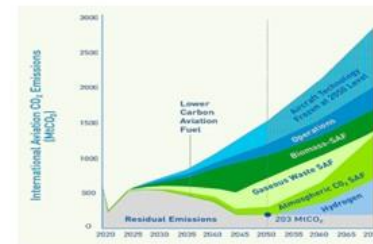
- Supports global scale up of aviation cleaner energies – Collective Vision to reduce 5% CO₂ by 2030
- Provides clarity, consistency and predictability to all stakeholders on 1) policy and planning, 2) regulatory framework, 3) implementation support, and 4) financing – 4 Building Blocks
- Monitors the implementation progress on emissions reductions and means of implementation
- Aspiring to have cleaner energy production facilities in all regions by CAAF/4 (no later than 2028)
- To update the Vision at CAAF/4 on the basis of market developments

BB1 – Policy and Planning (Monitoring Methodologies & State Action Plans)



Planned Actions

- To expand ongoing work for the development of **LTAG monitoring methodologies** by including specific methodologies for **monitoring the achievement of the collective global aspirational Vision and the implementation of the Global Framework**
- To add monitoring of the Global Framework implementation, as part of **annual ICAO LTAG Stocktaking events**, including **monitoring of the implementation support and financing**
- To increase **new and updated State Action Plans**, with focus on SAF, LCAF and other aviation cleaner energies, and gather, compile and analyse the data submitted, aiming to assist in monitoring progress
- **To convene CAAF/4 no later than 2028**, with a view to updating the Vision and the Global Framework



ICAO WIPES ON LONG-TERM ASPIRATIONAL GOAL			
Optimise	Technology	Reduce	Source of energy
 Optimise aircraft operations	 Develop new technologies	 Reduce aircraft emissions	 Source of energy
 Develop new technologies	 Reduce aircraft emissions	 Source of energy	 Optimise aircraft operations



**Action Plan
on Emissions
Reduction**





ICAO

ENVIRONMENT

BB1 – Policy and Planning (Monitoring Methodologies & State Action Plans)



Roles & Responsibilities, Timeframe



- **CAEP/13 in Feb. 2025**, with the support of the Secretariat, to recommend the LTAG monitoring and reporting (LMR) methodologies, for consideration by the Council and subsequently by the **42nd Session of the Assembly**
- **CAEP** to extend LMR methodologies, including monitoring of all aspects of the Global Framework implementation (e.g. implementation support, financing, geographical cleaner energy distribution, impact on growth) **by end of 2025**
- **By no later than 2028**, CAAF/4 to be prepared and convened for possible updates of the Vision and the Global Framework. **CAEP/14 in early 2028** to update the LMR methodologies as required
- **Secretariat** to support the monitoring of the Global Framework including through **annual ICAO LTAG Stocktaking events**
- **Secretariat** to regularly update the ICAO guidance, and provide continuous assistance for **State Action Plans**, with compilation and analyses of data submitted

Resources Required



- **ENV Officer** on monitoring of Global Framework and LTAG implementation
- **ENV Officer** on State Action Plans
- Resources for convening of **CAAF/4 no later than 2028**, and an additional **GS staff**

Relationship with LTAG implementation

- ICAO Global Framework, paragraphs 2, 10, 11, 18 and 23
- ICAO Assembly Resolution, A41-21, paragraphs 9 to 13



BB2 – Regulatory Framework (ENV Tools and Platform)



Planned Actions



- To urgently accelerate the analysis and approval of **life cycle values for new fuel sources and pathways** as CORSIA eligible fuels, while ensuring environmental integrity in line with CORSIA requirements
- To urgently accelerate the development and approval of **new Sustainability Certification Schemes (SCS)** on the use of CORSIA eligible fuels in all regions, while ensuring environmental integrity in line with CORSIA requirements
- To undertake a **study of fuel accounting systems for international aviation**, which can help determine **any possible ICAO role**
- To develop and/or update necessary **ICAO regulatory frameworks**, as appropriate, based on the study of fuel accounting systems and the LTAG monitoring and reporting (LMR) methodologies
- To develop a **possible ICAO IT platform** to integrate the monitoring of the Global Framework LTAG implementation, as appropriate

CORSIA



Study on fuel accounting systems



Necessary ICAO regulatory frameworks



Possible ICAO IT platform

BB2 – Regulatory Framework (ENV Tools and Platform)

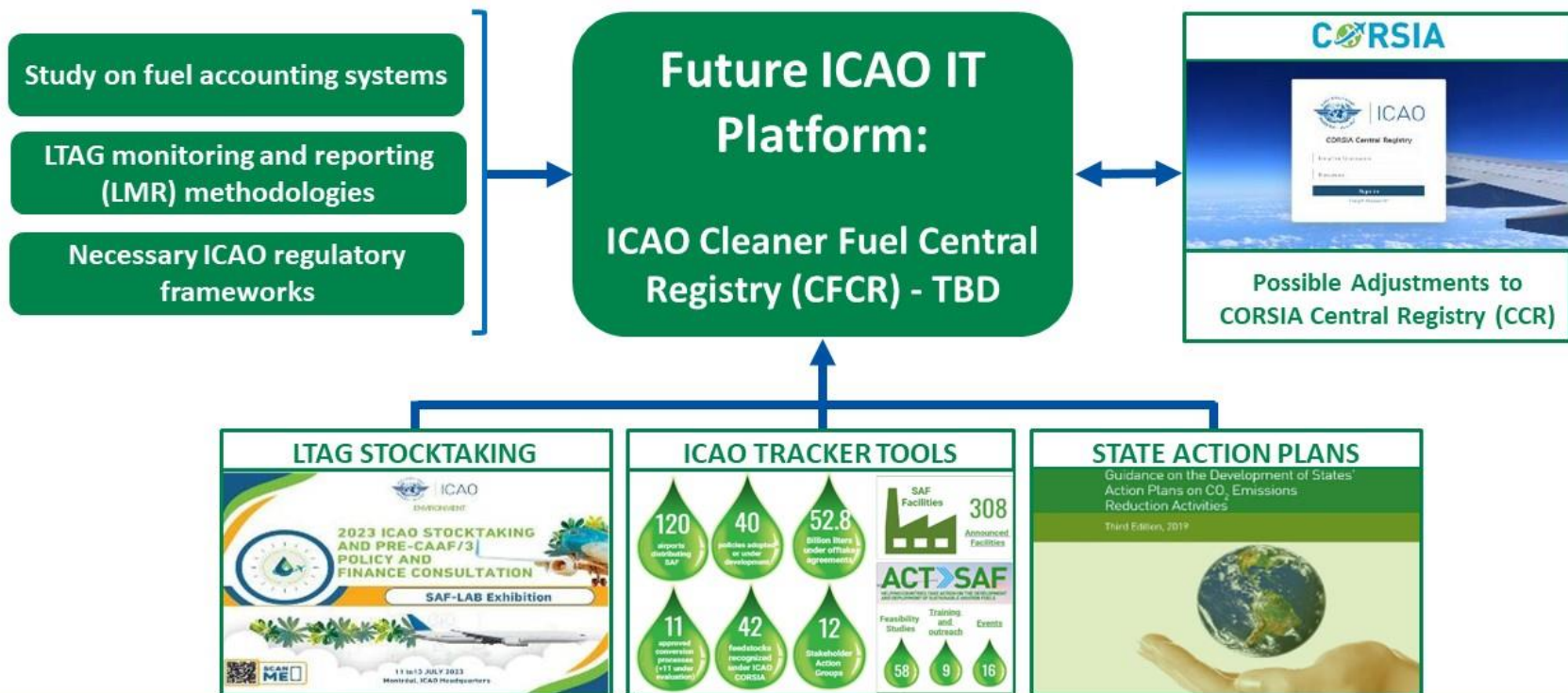


Roles & Responsibilities, Timeframe



- CAEP to urgently increase its technical and neutral work to recommend the **life cycle values for new fuel sources and pathways, and additional SCS, for Council approval**, in support of global production and deployment of SAF, LCAF and other aviation cleaner energies in all regions
- CAEP to **study fuel accounting systems** for international aviation including any possible ICAO role, **in conjunction with consideration of the LMR methodologies, by the end of 2025 and beyond**
- As soon as following the study of fuel accounting systems and the LMR methodologies, CAEP to recommend to the Council **any necessary ICAO regulatory frameworks** developments and/or updates
- Secretariat to enhance continuous support to the Council and CAEP work
- Secretariat to enhance continuous support to gather, compile, analyse and systematically update information, through **existing ICAO Tracker Tools, and development of additional tools** for emerging topics
- As part of its monitoring and implementation work, the Secretariat to consider the potential development of an **ICAO IT platform**, supporting any recommended ICAO regulatory frameworks developments and/or updates, and integrating the monitoring of the Global Framework and LTAG implementation (e.g. ICAO Cleaner Fuel Central Registry: CFCR), as well as possible adjustments to the CORSIA Central Registry (CCR), as appropriate

BB2 – Regulatory Framework (ENV Tools and Platform)



BB2 – Regulatory Framework (ENV Tools and Platform)



Resources Required

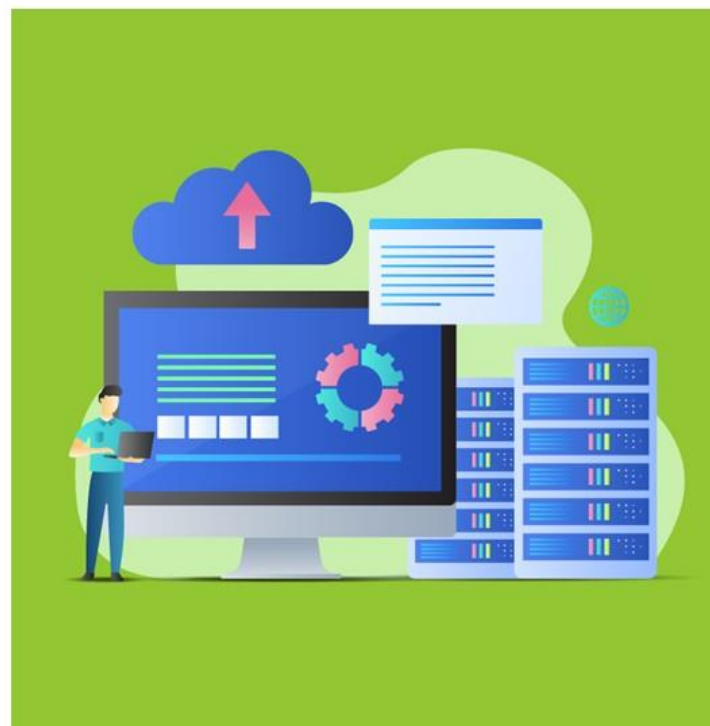


- **ENV Officers** on Cleaner Energies, to provide additional support to the existing ENV Fuel Officer
- **ENV Officers** on Environmental Tools and Platform
- Possible resources for the potential development of a **possible ICAO IT platform by 2028**, with appropriate adjustments of existing systems, and an additional **GS staff**

Relationship with LTAG implementation



- ICAO Global Framework, paragraphs 12 to 16
- ICAO Assembly Resolution, A41-21, paragraph 9, and Resolution A41-22 & Annex 16, Volume IV on CORSIA



BB3 – Implementation Support (ACT-SAF and ACT-LTAG programmes)



Planned Actions



- To deliver a **robust, targeted and tailored** capacity-building and implementation support, to promote the development and production of SAF, LCAF and other aviation cleaner energies
- ACT-SAF programme, including **guidance and training, sharing of best practices, feasibility studies and business cases, supporting development of project proposals, and partnerships knowledge sharing and technical cooperation** amongst States, industry and other stakeholders
- To extend ACT-SAF to add other emissions reduction measures (e.g. aircraft technology, operation) as **ACT-LTAG programme**



BB3 – Implementation Support (ACT-SAF and ACT-LTAG programmes)



Roles & Responsibilities, Timeframe



- Secretariat to update & enhance **training of existing topics** and develop new **training of emerging topics**
- Secretariat to **track and share best practices**, and develop & update **templates** for feasibility studies and business cases
- CAEP to regularly update **ICAO guidance & rules of thumb**.
- Secretariat to promote **knowledge sharing and cooperation** between States and with industry, including on technical skills, manufacturing, processing and equipment.
- **By 2025**, Secretariat to complete **20 ACT-SAF feasibility studies and business cases** in total, with voluntary contributions to ICAO ENV Fund
- **By 2028**, Secretariat to complete **50 ACT-SAF feasibility studies and business cases** in total, with voluntary contributions to ICAO ENV Fund
- Secretariat to extend ACT-SAF into **ACT-LTAG programme** as soon as possible, building upon the ACT-SAF approach/maturity

150+ States/Organizations become ACT-SAF partners



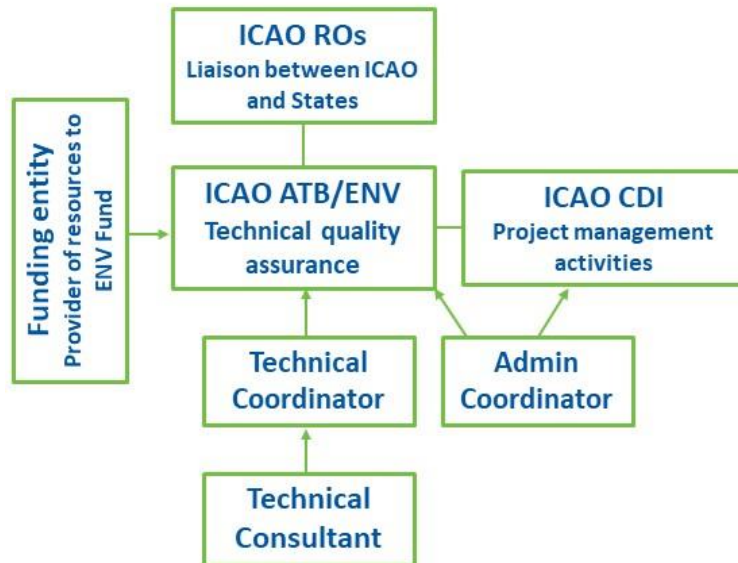
Scaling up SAF feasibility studies & business cases (2024 - 2026) with contributions to ENV Voluntary Fund

European Union	France	United Kingdom
Support 10 SAF feasibility studies for African States and India	Support 3 SAF feasibility and business cases, focused in African States	Support 3 SAF feasibility and business cases, focused in African States
Netherlands	Austria	Airbus
Support 3 SAF feasibility studies, for States in various regions	Support SAF feasibility studies (TBD)	Support SAF feasibility studies (TBD)

BB3 – Implementation Support (ACT-SAF and ACT-LTAG programmes)



ICAO project management structure for ACT-SAF feasibility studies & business cases



"One-ICAO" Approach

- **ICAO ATB/ENV** to lead the technical quality assurance, including the definitions of the project scope and milestones, and expertise requirements to hire project's consultants (**Technical Coordinator & Technical Consultant**), overseeing the consultants, with assessment and approval of deliverables.
- **ICAO CDI** to provide the administrative support of the project, including coordination for project management documentation, consultant recruitment, travel arrangements, financial transactions, procurements, etc. in coordination with ENV, LEB, FIN, ADB.
- **ICAO ROs** to act as the main liaison between ICAO and States receiving support, including the support to technical consultants undertaking feasibility studies and business cases in those States.





ICAO

ENVIRONMENT

BB3 – Implementation Support (ACT-SAF and ACT-LTAG programmes)



Resources Required



- **ENV Officer** to lead overall coordination the ACT-SAF programme, including training, sharing of information on initiatives and best practices (e.g. seminars, newsletters), technical quality assurance for feasibility studies and business cases, promotion of knowledge sharing, with an additional **GS staff**
- **CDI Administrative Coordinator** being hired to provide administrative support for ACT-SAF feasibility studies and business cases
- **Regional ENV Officers** to outreach, liaison and provide implementation activities for States in the region
- **Additional voluntary contributions to ICAO ENV Fund** by States and industry to support ACT-SAF programme and additional feasibility studies and business cases
- **Additional resources to support the development of project proposals** for the Finvest Hub

Relationship with LTAG implementation



- ICAO Global Framework, paragraphs 17 to 23
- ICAO Assembly Resolution, A41-21, paragraphs 18. c), d), e)





ICAO

ENVIRONMENT

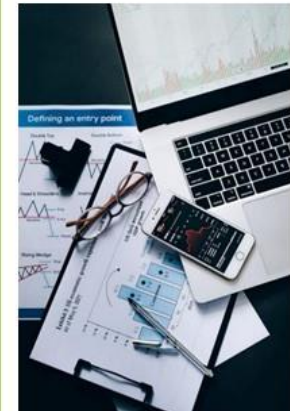
BB4 – Financing (Advocacy & Outreach, Fininvest Hub, Study)



Planned Actions



- As part of **advocacy and outreach activities** regarding financing needs towards the achievement of the LTAG, to **enhance engagement and establish networks and structured dialogues with the international finance community and other relevant stakeholders** (Framework paragraph 32 refers) in order to identify and promote financing opportunities for funding projects related to decarbonization, particularly the development and production of SAF, LCAF and other aviation cleaner energies, especially in developing countries
- To develop **specific measures or mechanisms to facilitate better access to financing** (e.g. private investment capacities, as well as funding from financial institutions such as development banks) for developing countries and States having particular needs, in particular the **operationalization of the ICAO Fininvest Hub** (A41-21, para 18. a))
- ICAO and its Member States to initiate a work stream to actively identify, analyze gaps and monitor developments in the UN and across the international financing community (Framework paragraph 42 refers) to identify and aggressively pursue opportunities to increase the allocation or earmarking of public and private capital devoted to aviation decarbonization projects, particularly on SAF, LCAF and other aviation cleaner energies
- To conduct a study through the services of a third-party consultancy, regarding the **consideration of the establishment of a climate finance initiative or funding mechanism under ICAO**, while addressing the possible financial, institutional and legal challenges (A41-21, para 18. b)); support development of a report by the Council to the Assembly; and consider any further action as appropriate





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BB4 – Financing (Advocacy & Outreach, Finvest Hub, Study)



Roles & Responsibilities, Timeframe

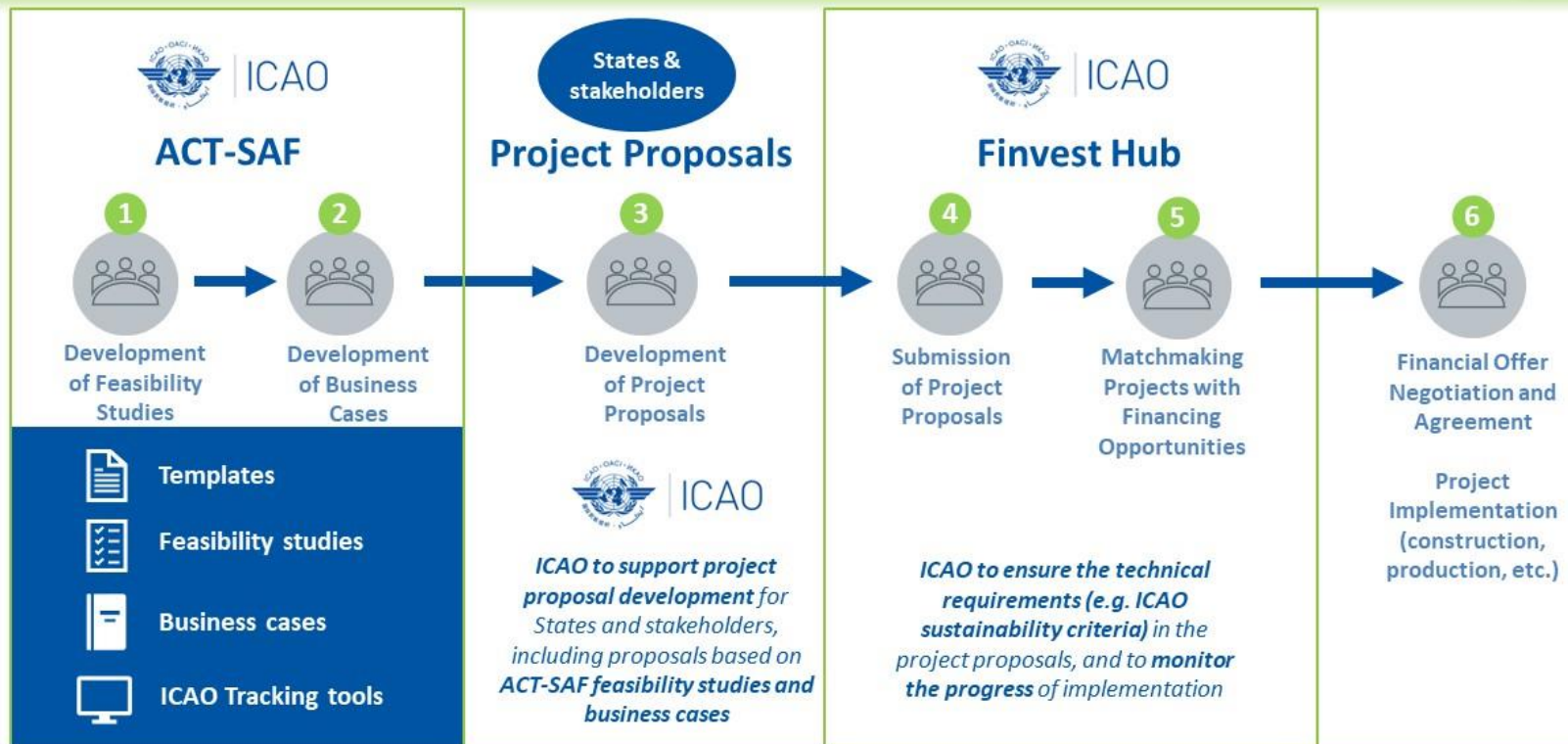


- Secretariat to continue to undertake **advocacy and outreach**, including at the annual LTAG Stocktaking events, and further dialogues for the high-level exchange of views
- **By 2025**, the Secretariat to **operationalize the ICAO Finvest Hub, by recommending to the Council possible options including in-house developments or partnerships** with Financing Platforms of other organizations, to facilitate financial access to aviation decarbonization project proposals, including project proposals developed **based on ACT-SAF feasibility studies and business cases**
- Regarding the consideration of the establishment of a climate finance initiative or funding mechanism under ICAO, **a selected third-party consultancy will deliver a study based on the TORs approved by the Council Small Group:**
 - ✓ Intermediary study (in 3 months from the start of the consultancy) and draft final study to the Small Group **by end of 2024**
 - ✓ Presentation to the Council **by early 2025**, before the final study to be delivered shortly thereafter
 - ✓ Based on the study, the Council will consider and approve its report to the deliberation of the **42nd Session of the Assembly**
 - ✓ Any further action can be considered, as appropriate, **after the Assembly**.



ICAO ENVIRONMENT

BB4 – Financing (Advocacy & Outreach, Finvest Hub, Study)





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BB4 – Financing (Advocacy & Outreach, Fininvest Hub, Study)



Resources Required



- **Officer** on Advocacy and Outreach, regarding financing needs toward the achievement of the LTAG to identify opportunities for aviation decarbonization projects
- **Officer** on ICAO Fininvest Hub to explore possible options for its operationalization, including in-house developments or partnerships, and to monitor the progress after the operationalization
- **Officer** on ICAO Fininvest Hub to develop aviation decarbonization project proposals, to facilitate financial access to the project proposals under the Fininvest Hub
- Resources for the **ICAO Fininvest Hub platform** development
- Resources for **a study through a third-party consultancy**, and possible resources for any follow-up activities

Relationship with LTAG implementation

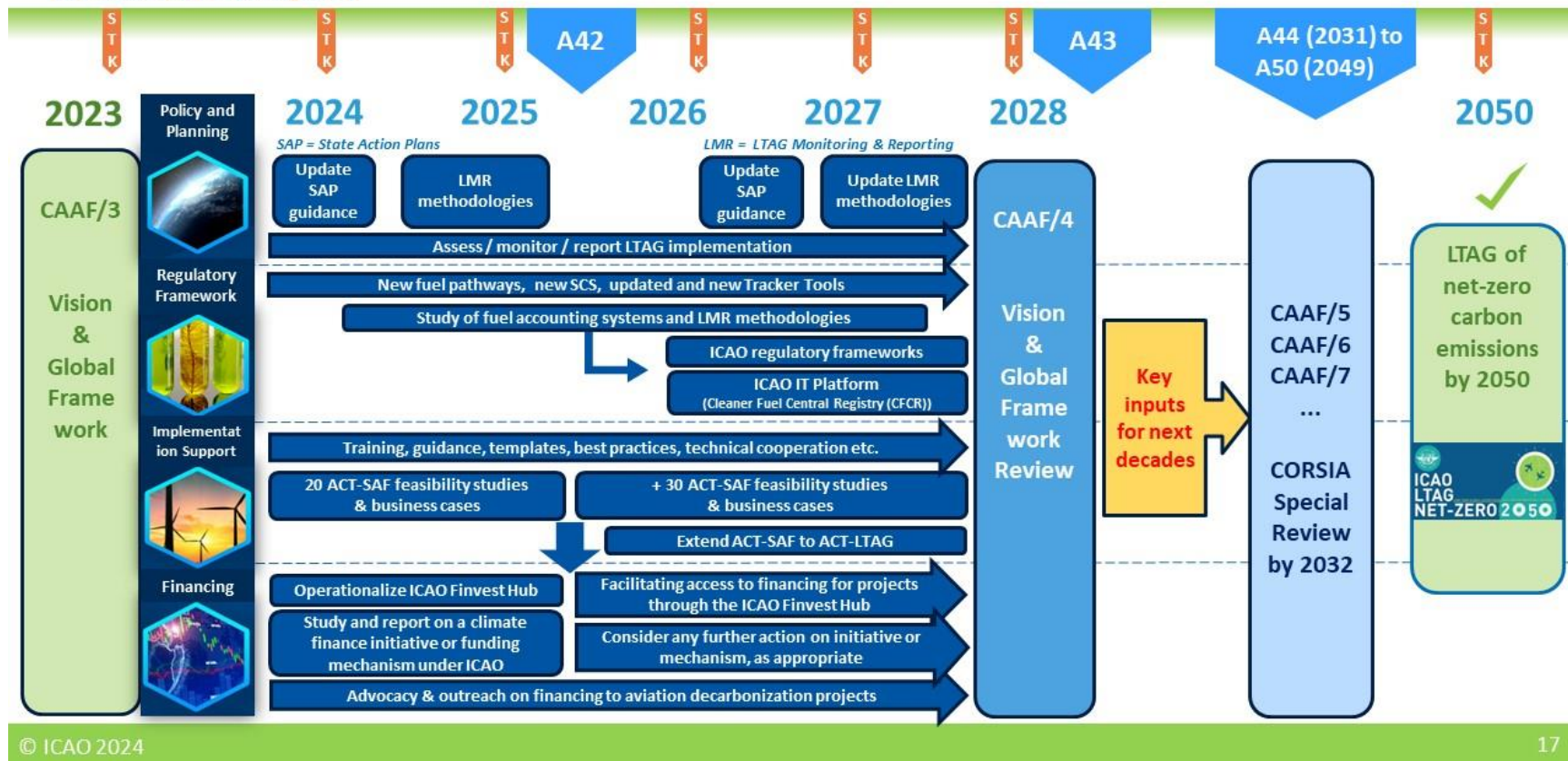


- ICAO Global Framework, paragraphs 31 to 42
- ICAO Assembly Resolution, A41-21, paragraphs 18. a), b)



ICAO Roadmap for implementation of CAAF/3 outcomes and LTAG

STK = Annual LTAG Stocktaking events



APPENDIX C

LTAG MONITORING AND REPORTING (LMR) METHODOLOGY

1. INTRODUCTION

1.1 The 41st Session of the ICAO Assembly adopted Resolution A41-21 on the long-term global aspirational goal (LTAG) for international aviation of net-zero carbon emissions by 2050, in support of the Paris Agreement's temperature goal, while also recognizing that each State's special circumstances and respective capabilities will inform the ability of each State to contribute to the LTAG within its own national timeframe. To allow for the monitoring of the progress towards the achievement of LTAG, Resolution A41-21, paragraph 9, also requested the ICAO Council to consider the necessary methodologies for the regular monitoring of progress on the implementation of all elements of the basket of measures towards the achievement of the LTAG⁸.

1.2 As part of the mandate given by the Assembly, the ICAO Council, with the technical contribution of the Committee on Aviation Environmental Protection (CAEP), developed a comprehensive and robust LTAG Monitoring and Reporting (LMR) Methodology to provide a standardized global approach to track aviation's progress on decarbonization, enabling transparent and informed decision-making across the international aviation sector.

1.3 The LMR methodology aims to assess progress on the implementation of CO₂ emissions reduction measures towards the achievement of the collective ICAO LTAG, including the past and future CO₂ emissions reductions in all elements of the basket of measures, the cost impacts of efforts to achieve the LTAG, the impact on the development of the sector, as well as the cost impacts of climate change on international aviation, regions and countries, in particular developing countries, noting that the implementation of the tiered approach of LMR methodology need more resources and information, especially the upper tiered approach for the regional level and country level assessment.

1.4 In addition to this methodology, the Council and the ICAO Secretariat also monitor progress on the implementation of all elements of the basket of measures towards the achievement of the LTAG, through the ICAO environment stocktaking process, the review of the ICAO Vision for SAF, monitoring of information from State Action Plans for international aviation CO₂ emissions reduction and means of implementation. Information on the ICAO State Action Plans initiative, LTAG stocktaking, and Tracker Tools is provided in **Appendix D**, information on the ICAO ACT-SAF Programme is provided in **Appendix E** and information on financing is provided in **Appendices F and G** of this paper.

1.5 In summary, the proposed LMR methodology is comprised of:

- (i) **Backward-looking and forward-looking approaches** to track the actual historical performance of the international aviation sector, and generate new updated projections towards the LTAG;
- (ii) **A tiered approach**, including a core methodology (Tier 1) and potential future enhancements (Tier 2 and Tier 3) that can allow for a phased implementation during future cycles;

⁸ ICAO Assembly Resolution A41-21: https://www.icao.int/environmental-protection/Documents/Assembly/Resolution_A41-21_Climate_change.pdf

- (iii) Considerations on how to implement the methodology as well as on **the output of the methodology** and how to communicate on the LMR assessments, should the methodology be approved.

1.6 The LMR-methodology follows key objectives and principles: (1) address the request from Assembly A41-21 (paragraph 9 refers) insofar as it is within CAEP's remit to do so; (2) allow for the review of historical performance of the international aviation sector and updated outlooks; (3) leverage existing relevant data, methods, tools and analyses from ICAO; and (4) evolve and be enhanced over time to address existing gaps in data or methods.

2. OVERVIEW OF THE LMR METHODOLOGY

2.1 LMR Methodology: Backward- and Forward-Looking Assessments

2.1.1 Against the above principles and working from the Assembly Resolution A41-21 requirements to monitor progress towards the achievement of the LTAG, the proposed LMR methodology combines two key components described in Figure 1: (1) backward-looking assessments to track actual historical performance of the international aviation sector in context of previous forward-looking assessments, along with (2) forward-looking assessments that comprise updated/refreshed forecasts and projections towards 2050.

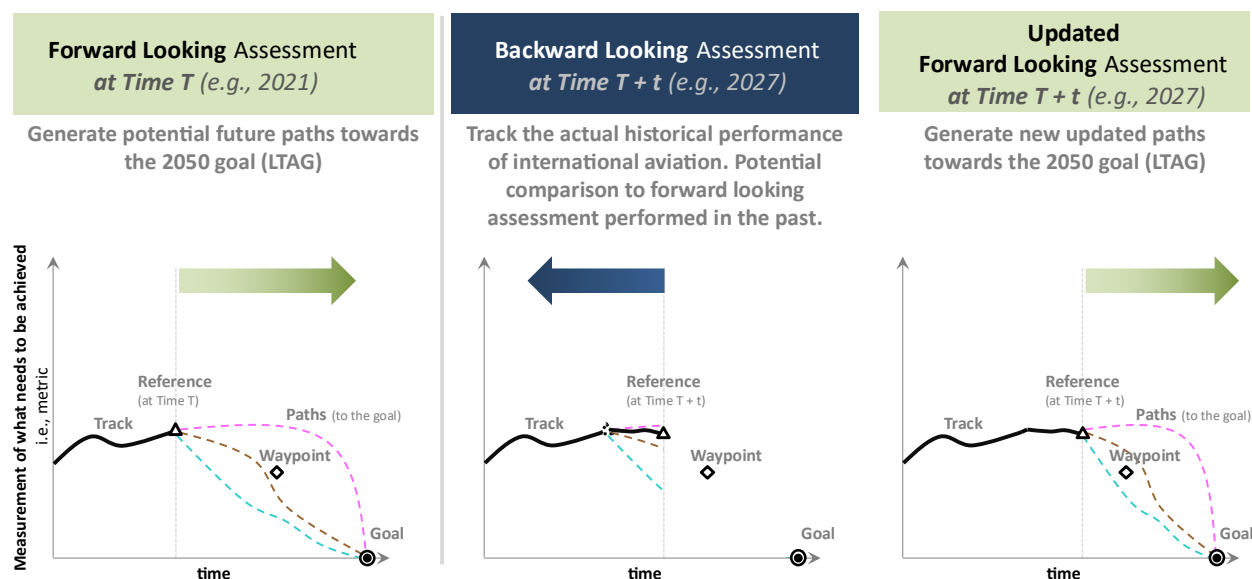


Figure 1: Description of the Backward- and Forward-Looking Assessments of the LMR Methodology

2.1.2 Such forward-looking assessments include the regular CAEP Trends assessment and updated analyses and projections described in the 2022 LTAG Report, such as assessments of the costs of the impacts to achieve the LTAG⁹.

2.1.3 While some of the elements of the LMR methodology would leverage historical and recurring work by CAEP (e.g., CAEP Trends), some elements are new(er) such as the backward-looking

⁹ 2022 ICAO LTAG Report: <https://www.icao.int/environmental-protection/LTAG/Pages/LTAGreport.aspx>

assessments that aim to put recent actual historical data, in context of previous forward-looking assessments. This will allow identifying the progress against the LTAG integrated scenarios, CAEP Trends and against any updated forward-looking assessments.

2.1.4 Therefore, the proposed high-level approach, including backward- and forward-looking assessments, will allow ICAO to make the following assessments, as described in Figure 2:

- a) to track the actual performance (e.g., residual CO₂ emissions) of the international aviation sector;
- b) to place the actual performance in context of the previously projected trends;
- c) to provide description and/or explanation of the contribution from individual drivers and measures (e.g., traffic, technology, operations, and/or SAF) and their effects on the actual performance of the sector; and
- d) to update the forward-looking assessments to generate new/updated paths towards the 2050 goal based on the latest available historical data at the time.

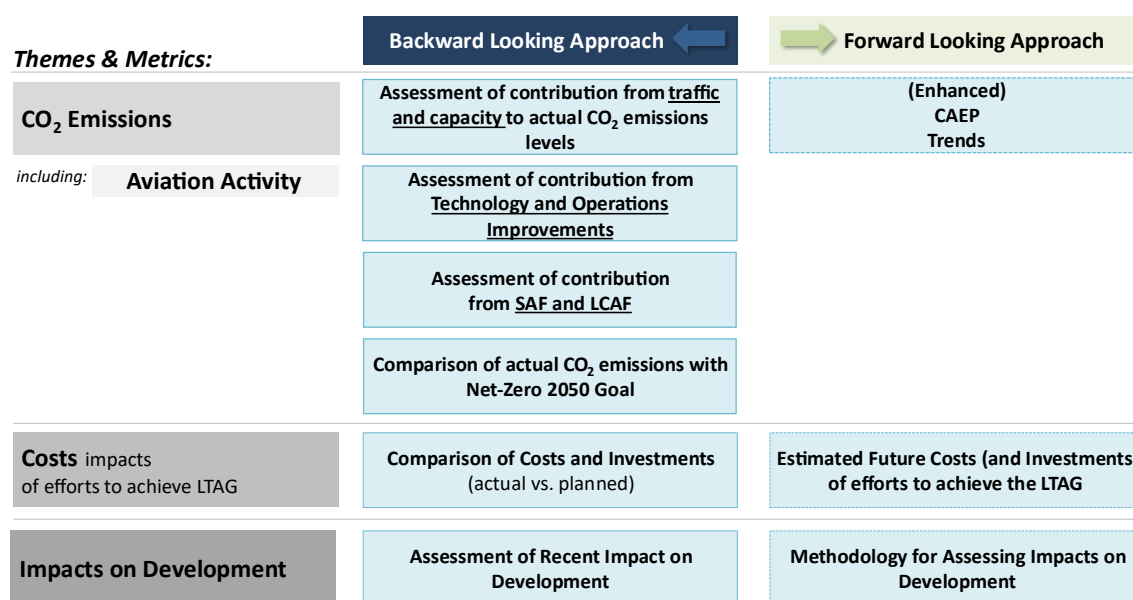


Figure 2: Description of the outcomes of the LMR Methodology

2.2 LMR Methodology: A Tiered Approach for a Phased Implementation

2.2.1 Along with the backward- and forward-looking assessments, the LMR methodology is also composed of a tiered approach, including a core methodology (i.e., Tier 1), an extension of Tier 1 that would provide additional insights (i.e., Tier 2) and a more advanced methodology (i.e., Tier 3).

2.2.2 Tier 1 captures elements of the LMR methodology that meet the minimum requirements from Resolution A41-21 (paragraph 9 refers), with confidence of successful implementation in the near-term. This Tier allows for a descriptive approach, comparison to previous forward-looking assessments (e.g., CAEP Trends, LTAG Report), relevant milestones (e.g., CAAF/3 global aspirational Vision), and existing data sources and methodologies.

2.2.3 In developing the methodology, the data, methods, and tools already available in ICAO will be leveraged, in preference to creating new data or new reporting requirements.

2.2.4 With additional resources and further data and modelling capabilities, additional elements from Tiers 2 and 3 could contribute to enhancing the LMR methodology in the future. As the methodology moves towards Tiers 2 and 3, an additional level of understanding and granularity of the underlying drivers and factors influencing the observed trends can be provided. Tiers 2 and 3 seek also to explain these trends by gathering, analysing and reporting additional data and, as such, this would require additional resources and further data and modelling.

2.2.5 Some limitations to the data available to ICAO have been identified and further work will enable ways to be proposed to address them.

2.2.6 The assessments of the **“cost impacts of the efforts to achieve the LTAG”** would update estimated costs as well as track actual costs of efforts to achieve the LTAG focusing on fuel costs (or savings) from aircraft technology improvements and cost premiums from SAF and LCAF as part of Tier 1, and expanding to other types of costs (e.g., aircraft technology non-recurring costs, operational costs) in Tiers 2 and 3.

2.2.7 The **“impact on the development of the sector”** will explore how to assess the impact of the incremental costs associated with the efforts to achieve the LTAG on the demand for international aviation. Under Tier 1, the LMR methodology would scope out an assessment of potential changes in future traffic estimates due to changes in the (partial) costs impacts of efforts to achieve the LTAG out to 2050.

2.2.8 Similarly, the methodology will also include an assessment of **“cost impacts of a changing climate”** relating to the costs of inaction to climate change, with an initial focus on extreme weather events at airports.

3. IMPLEMENTATION AND OUTPUT OF THE METHODOLOGY

3.1 The LMR methodology will be implemented in a tiered approach, starting with Tier 1 and reports will be delivered on a 3-year-cycle.

3.2 All the data and assessments will be integrated in a comprehensive output of the LMR methodology, in the format of a technical report to be made public by ICAO, to share as much information as possible to the public, while also considering any data sensitivity or restrictions, and to enable transparent and informed decision-making across the international aviation sector. Other reporting formats for communication to particular audiences will also be considered as resources permit.

3.3 Following the 42nd Session of the Assembly, the ICAO Council with the technical contributions of CAEP would undertake the work to deliver the first LTAG Monitoring and Reporting Report to the 43rd Session of the Assembly in 2028.

3.4 With the creation of a robust monitoring and reporting methodology, this new framework provides a standardized global approach to measure aviation's progress towards decarbonization and to adjust the course of the sector as needed.

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APPENDIX D

STATE ACTION PLANS, LTAG STOCKTAKING, AND TRACKING TOOLS

1. ICAO STATE ACTION PLANS INITIATIVE

1.1 With the collective long-term global aspirational goal for international aviation (LTAG) of achieving net-zero carbon emissions by 2050, paragraph 9 of Resolution A41-21 requests the Council to regularly monitor progress on the implementation of all elements of the basket of measures towards the achievement of the LTAG, through various tools or mechanisms including monitoring of information from the State Action Plans and means of implementation. Therefore, the [ICAO State Action Plans initiative](#) plays a crucial role in the monitoring of the progress to achieve the LTAG.

1.2 In accordance with paragraphs 10 to 13 of Resolution A41-21, States are encouraged to submit and update voluntary action plans to ICAO to reduce CO₂ emissions from international aviation, outlining respective policies, actions and roadmaps, including long-term projections.

1.3 ICAO continues to work directly with Member States to support the development of States' Action Plans. The State Action Plan initiative has become a key element of the Organization's comprehensive capacity-building and assistance strategy to support Member States implement a broad range of CO₂ emissions mitigation measures selected from the ICAO Basket of Measures. As of June 2025, 150 Member States, representing 99.11 per cent of global international aviation traffic in Revenue Tonne Kilometres (RTK) voluntarily submitted action plans to ICAO. These successful results demonstrate the high level of interest and engagement of Member States in this initiative, as well as the impact of ICAO's assistance and capacity-building activities.



150 States submitted Action Plans to ICAO

1.4 The quantifiable data provided in the State Action Plans allows ICAO to assess the collective global contribution of each State's plan toward the achievement of the global aspirational goals. The assessment of the action plans submissions shows that:

- 110 States, representing 68.88 per cent of global RTK included quantified data on baseline and expected emissions reductions;
- 20 States, representing 11.49 per cent of global RTK provided partially quantified data; and
- 20 States, representing 18.74 per cent of global RTK did not provide data or sufficient data to allow a quantified analysis.

1.5 As recognized by 2022 ICAO LTAG Report and Resolution A41-21, the largest potential impact on aviation CO₂ emissions reduction will result from fuel-related measures. Accordingly, the ICAO Global Framework was adopted by CAAF/3 in November 2023, including the collective global aspirational Vision to reduce CO₂ emissions in international aviation by 5 per cent by 2030 through the use of SAF, LCAF and other aviation cleaner energies, in contribution to the LTAG. In this regard, States are encouraged to include their respective policies, actions and roadmap for the development and deployment of SAF, LCAF and other aviation cleaner energies in their action plans, and to quantify the action plans to support ICAO's work in monitoring the global progress.

1.6 The assessment of 102 State Action Plans submitted and updated since 2020 indicates that 78 States have included SAF as one of mitigation measures, and 19 States have included their national long-term CO₂ reduction measures and targets in their State Action Plans submitted to ICAO.

1.7 The ICAO *Guidance on the Development of State Action Plans on CO₂ Emissions Reduction Activities: Towards LTAG Implementation* (ICAO Doc 9988) was updated in 2024 and its fourth edition is now available. It reflects the adoption of the LTAG, and emphasizes the pivotal role of State Action Plans in monitoring the progress on the implementation of all elements of the basket of measures towards the achievement of the LTAG. It also highlights the benefits associated with the development and deployment of SAF, LCAF, and other aviation cleaner energies, guided by the ICAO Global Framework adopted by CAAF/3, encouraging States to include in their Action Plans specific activities regarding the development and deployment of SAF, LCAF and other aviation cleaner energies.



1.8 In addition, the updated Guidance aims to encourage States to report quantified data in a harmonized manner, by providing an action plan template to support States in quantifying and reporting on the expected results from the implementation of selected measures, which will consequently allow ICAO to monitor the global progress. It also provides additional information regarding the identification of assistance needs to implement the selected CO₂ mitigation measures, including high-level information on financial instruments, and the examples of general conditions, requirements and eligibility criteria for decarbonization measures and projects to be accepted by financial institutions. ICAO continues to encourage States to participate in the State Action Plans “buddy partnerships” with other States to support their development and implementation of action plans.

2. ICAO LTAG STOCKTAKING

2.1 As requested by the Assembly and the Global Framework, ICAO has been undertaking annual LTAG stocktaking events, covering all aspects on the monitoring of progress for aviation CO₂ emissions reduction measures including the progress on the implementation support and financing.

2.2 Following the last Assembly, the [2023 LTAG Stocktaking](#) was held in July 2023, as part of the CAAF/3 preparation process, and it was followed by pre-CAAF/3 Policy and Finance Consultation Sessions which initiated the consultation among States, focusing on policy and finance matters, with involvement of public and private financial institutions and other relevant stakeholders, building an initial basis for CAAF/3 outcomes and the Global Framework.

2.3 Over 1 000 participants registered for the three-day hybrid event, with panellists from governments, aviation and energy stakeholders, research institutions, start-up companies and civil society shared their visions, ambitious plans and roadmaps for decarbonizing aviation for energy transition. All the sessions held during the event were moderated by female leaders in aviation, reflecting the sector's efforts towards improved gender equality. During the three-day event, a simultaneous exhibition (including a "SAF-LAB Exhibition") was held on site at ICAO Headquarters, showcasing various stages of a fuel-related supply chain, such as feedstock, processing, distribution and certification, as well as broader CO₂ emissions reduction innovations related to technology, operations and fuels, to foster a deeper understanding and wider view on the basket of measures to support the achievement of the LTAG.

2.4 The [2024 LTAG Stocktaking](#) was held at ICAO Headquarters in October 2024, and covered all aviation in-sector CO₂ emission reduction measures and innovations, including technologies, operations, fuels and cleaner energies. Following the adoption of the ICAO Global Framework, the 2024 Stocktaking focused on SAF, LCAF and other aviation cleaner energies, and showcased the latest information from States, industry and other stakeholders in view of monitoring progress on the implementation of the LTAG and the Global Framework.

2.5 Following the 2024 LTAG Stocktaking, a side event related to the ACT-SAF programme, "ICAO SAF Connect", was held on 11 October 2024 gathering ACT-SAF Partners for the first time to discuss further progress on the ACT-SAF programme through a series of Roundtable discussions under different topics pertaining to the programme.

2.6 The [2025 ICAO Aviation Climate Week](#) – *Skyward Action: Realizing Aviation's Sustainable Future*, was held from 2 to 4 June 2025 at ICAO Headquarters, to provide an opportunity for participants to be informed of the overall progress achieved and discuss the latest developments on all environmental topics, prior to the 42nd Session of the ICAO Assembly, and encompasses:

- a) 2025 ICAO LTAG Stocktaking to monitor progress towards the LTAG achievement;
- b) with a focus on the implementation of the ICAO Global Framework;
- c) sharing the outcomes and recommendations from the thirteenth meeting of ICAO's Committee on Aviation Environmental Protection (CAEP/13); and
- d) address wider environmental topics, such as CORSIA, non-CO₂ aviation emissions, green airports, climate adaptation and resilience.



Visual identity of 2023 / 2024 LTAG Stocktaking events and 2025 Aviation Climate Week.

3. ICAO TRACKER TOOLS

3.1 As part of efforts to monitor the progress for the implementation of the LTAG and the Global Framework, ICAO has been developing and updating the ICAO Cleaner Energy Tracker Tools, comprising various SAF-related indicators such as SAF policies adopted or under development, airports distributing SAF, approved SAF conversion processes, feedstocks recognized and batches of SAF certified under CORSIA, SAF volumes under offtake agreements, announced SAF facilities, and latest news on SAF developments. The main developments since the last Assembly are summarized as follows:

3.2 **Policies** – The number of SAF supporting policies either adopted or under development has increased from 14 to 47 SAF policies, including the adoption of SAF mandates in Brazil, the United Kingdom and the European Union, and incentive schemes such as the SAF tax credit in the United States.

3.3 **Airports** – The number of airports distributing SAF (either continuously or in batches) has increased from 63 to 172 airports, including the first SAF uplifts in commercial flights in ESAF (Nairobi, Kenya) and MID (Dubai, United Arab Emirates and Hanak, Saudi Arabia) regions.

3.4 **Conversion processes** – With the latest approval of ATJ-SKA process in 2023, there are now 11 conversion processes approved by ASTM international to produce SAF, and 11 more processes are currently under evaluation.

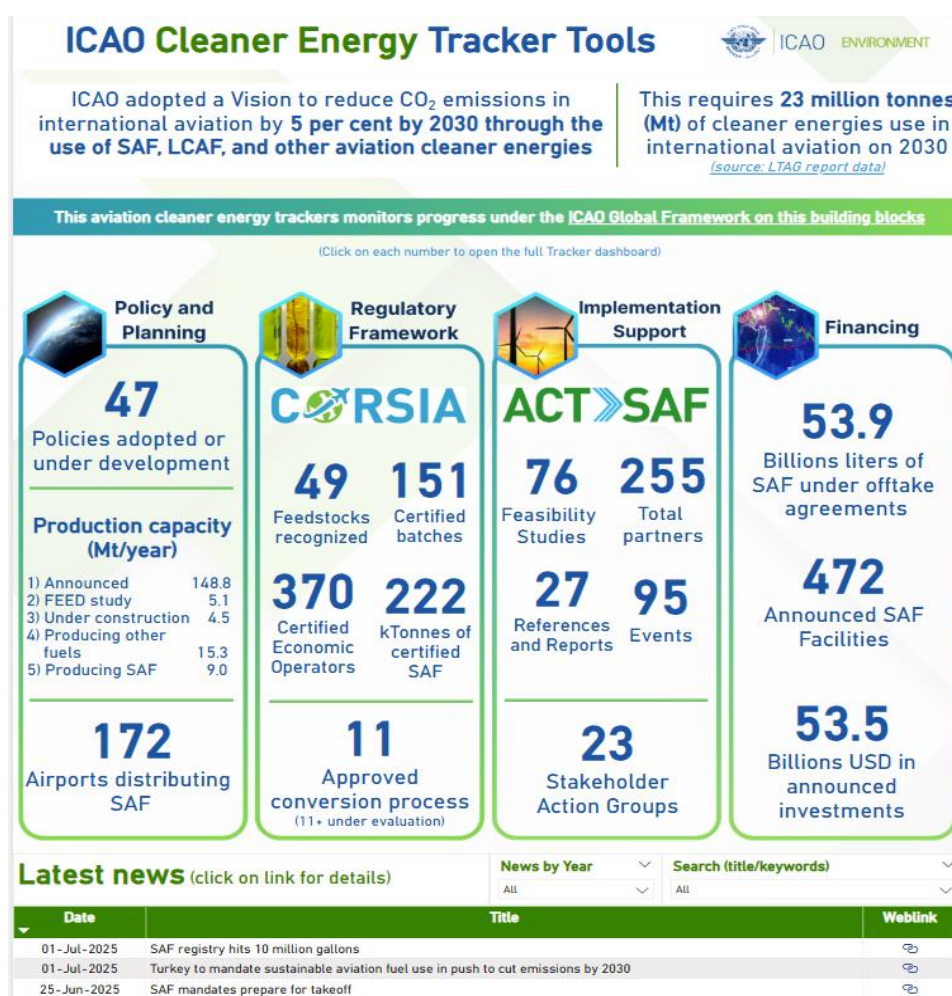
3.5 **Feedstocks recognized in CORSIA** – With the latest approval of non-standard coconut, wheat starch slurry, mixed animal fats, lard fat, poultry fat, beef tallow, and residue gases, there are now 49 feedstocks recognized under CORSIA for the production of CORSIA eligible fuels.

3.6 **Certification of CORSIA eligible fuels** – The first certifications of CORSIA eligible fuels occurred in 2022, with batches of certified SAF produced by Neste, WorldEnergy, and EcoCeres. In 2024, approximately 20% of all SAF produced globally was certified under CORSIA (~200Kt), and more than 350 economic operators were certified under CORSIA, including fuel producers, feedstock producers, traders and blenders. A third Sustainability Certification Scheme (SCS), ClassNK was also approved in 2024 to certify fuel producers against the CORSIA requirements, joining ISCC and RSB which were approved as SCS in 2020.

3.7 **Offtake agreements** – The number of offtake agreements signed between airlines and fuel producers has increased from 50 agreements (18.2 billion SAF liters) to 157 (53.9 billion SAF liters) agreements, totalling an additional demand of 28 Mt of SAF by 79 airlines.

3.8 **SAF production facilities** – The number of announcements on SAF production facilities has increased from 143 to 472. The facilities that actually started to produce SAF has increased from 7 to 49 facilities, totalling 3.9 Mt of installed SAF production capacity. It should be noted that such SAF facilities are not being used at their full capacity due to various aspects such as feedstock availability, policy support and competition with other fuels. As a reference, IATA estimated 1 Mt of SAF production in 2024.

3.9 **Investments on SAF production**– The amount of announced investments on facilities that could produce SAF has increased from 1 billion USD in 2021 to 53.5 USD billion.



3.10 The Tool also tracks the progress for the implementation of ICAO Assistance, Capacity-building and Training for SAF (ACT-SAF) programme – Refer to **Appendix E** for details.

APPENDIX E

ICAO ACT-SAF PROGRAMME

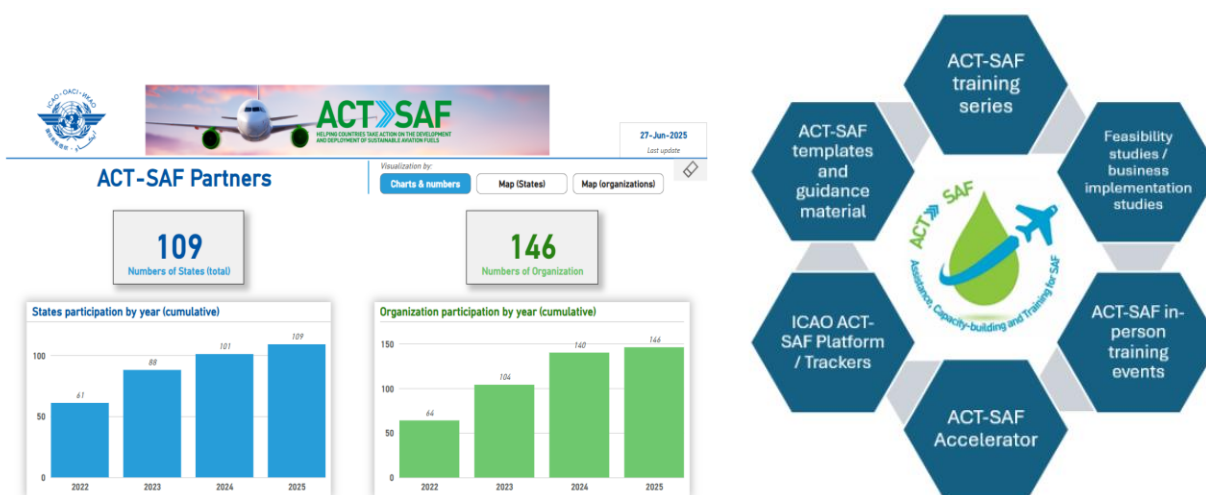
1. INTRODUCTION

1.1 The achievement of the LTAG requires a robust, targeted and tailored capacity-building and implementation support programme. ICAO, along with industry, academia and other relevant stakeholders need to work together to deliver such a programme, taking into account different circumstances of States and regions, and in line with the *No Country Left Behind* initiative.

1.2 The ICAO Assistance, Capacity-building and Training for SAF (ACT-SAF) programme was launched in June 2022. Its goal is to provide tailored support for States in various stages of SAF development and deployment, facilitate partnerships and cooperation on SAF initiatives under ICAO's coordination, and serve as a platform to facilitate knowledge sharing and recognition of SAF initiatives around the world. The ACT-SAF programme was welcomed by Resolution A41-21, paragraph 18 c) and aligned with the request set forth by the Global Framework adopted by CAAF/3.

2. ACT-SAF ACTIVITIES

2.1 **Participation:** As of June 2025, 109 ACT-SAF partner States and 146 partner organizations have joined the programme and are recognized on the ICAO ACT-SAF website¹⁰. One may become an ACT-SAF partner by agreeing to the ACT-SAF Terms and Conditions¹¹. ICAO welcomes more partners to the ACT-SAF programme, which may include: Member States (civil aviation authorities, fuel or energy-related authorities), aviation industry (manufacturers, aeroplane operators), fuel producers/industry, academia, financial institutions (e.g., development banks), civil society organizations and associations interested in aviation-related climate change action.



¹⁰ <https://www.icao.int/environmental-protection/Pages/act-saf.aspx>

¹¹ [ACT-SAF Terms and Conditions](#)

2.2 **ACT-SAF Series:** The ACT-SAF series of training sessions is delivering comprehensive training to partners on an array of important SAF-related topics, ranging from sustainability, to policy, financing, certification and logistics. ICAO has been supported by the contributions of various ACT-SAF partner States and organizations, providing knowledge and expertise on these various topics. By June 2025, 19 training sessions have been concluded (see below), including the recent sessions on building bankable SAF projects, aviation and green taxonomy, country examples in SAF development, and SAF clearing houses. All training series are available on ICAO TV¹² and the presentations are provided on the ACT-SAF Series website¹³.

ACT-SAF Series (Number and Date)	Topic
#1 - 25 November 2022	An introduction to SAF
#2 - 25 January 2023	SAF sustainability and reporting under CORSIA
#3 - 23 February 2023	SAF technology and certification
#4 - 23 March 2023	SAF policies
#5 - 31 August 2023	SAF conversion processes
#6 - 12 October 2023	SAF accounting and book and claim systems
#7 - 30 November 2023	SAF logistics
#8 - 25 January 2024	Launch of the 2024 ACT-SAF Season
#9 - 29 February 2024	Green Hydrogen for Aviation
#10 - 28 March 2024	ICAO methodologies and tools for life cycle assessment
#11 - 6 May 2024	Implementing the ICAO Global Framework – Step-by-step examples of SAF policy making
#12 - 6 June 2024	ICAO State Action Plans and SAF
#13 - 3 July 2024	SAF Business Implementation studies and TEA models
#14 - 26 September 2024	Update on 100% SAF testing and recent achievements
#15 - 27 November 2024	Coprocessing and revamping: how to use existing refineries to produce SAF
#16 - 18 December 2024	Aviation and Green Taxonomy
#17 - 23 January 2025	From Vision to Reality - Sweden
#18 - 4 March 2025	Understanding SAF Clearing Houses
#19 - 8 May 2025	Building Bankable SAF Projects

2.3 **ACT-SAF Studies (feasibility studies/business implementation studies):** In addition to the 7 SAF feasibility studies already conducted until 2023 with the contributions provided to the ICAO ENV Fund by the European Union, 23 more SAF feasibility studies and business implementation studies are currently being implemented or planned under the ACT-SAF programme. These efforts are supported by contributions from France, the Netherlands, the United Kingdom, the European Union, and Airbus. ICAO has launched an open call for the consultants to develop these ACT-SAF studies¹⁴. The status on all these studies is detailed in the ACT-SAF dashboard, as illustrated below.



¹² <https://www.icao.tv/act-saf-series>

¹³ <https://www.icao.int/environmental-protection/Pages/ACT-SAF-Series.aspx>

¹⁴ https://estm.fa.em2.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX_3001/job/24058/?utm_medium=jobshare



2.4 **Feasibility Studies** – The ACT-SAF feasibility studies provide a general assessment of the potential of SAF production on a State or region, including a preliminary evaluation of all feedstocks that could be available for SAF production, financing and capacity building needs, and an action plan for establishing an efficient and sustainable value chain for SAF. As of June 2025, ICAO has started the development of feasibility studies for Chile, Ethiopia, India, Jordan, Peru, Uganda, Ghana, Argentina and Panama. In addition, a data request/guide has been sent to Cameroon, Egypt, Equatorial Guinea, Madagascar, Mauritania, Mozambique and Senegal, in preparation for their development of feasibility studies in the 2025/2026 timeframe. Early data collection on the States' aviation market, energy sector, agricultural landscape, along with vital insights into demographics, economic conditions and climate factors are crucial to establishing a robust study.

2.5 **Business Implementation Studies** – Building upon the results of a feasibility study, the ACT-SAF business implementation studies provide support for States where prospects for the development of SAF have already been identified. These studies include a detailed analysis of the shortlisted feedstock/pathway, supplemented with sustainability and life-cycle assessments, assessments of SAF production costs, market supply/demand, and technical-economic analysis. As of June 2025, ICAO has started the development of business implementation studies for Rwanda, South Africa, Zimbabwe, Kenya and Côte d'Ivoire. A business implementation study is also planned to be developed for Ethiopia, once the current feasibility study is delivered.

2.6 **ACT-SAF Accelerator** – The ACT-SAF programme is also providing support to facilitate the sustainability certification of qualifying SAF, LCAF and other aviation cleaner energies in line with the CORSIA requirements. The “ACT-SAF accelerator” has been launched in March 2025, is providing support to accelerate the analysis and approval of life cycle values for new fuel sources and pathways. With resources provided by France, the first ACT-SAF accelerator project will support the analysis of feedstocks with potential to be used for SAF production (cassava/cashew), as identified on the ACT-SAF feasibility study for Côte d'Ivoire.

2.7 **ACT-SAF In-person Training and Workshops** – In-person training is also being delivered under ACT-SAF. With the support of the United Kingdom, in-person “SAF Introductory Training and SAF Regulation Support Workshops” were held in Cameroon, Equatorial Guinea, and Tanzania between March and April 2024. In 2024, an ACT-SAF Workshop was delivered in Mexico in coordination

with the NACC Regional Office, and an ACT-SAF partner also organized the First Pan-American SAF Congress in Colombia under the ACT-SAF framework. ICAO is currently organising a training in Viet Nam with the resources offered by Austria.

2.8 ACT-SAF Support to Regulatory Development – With resources provided by France, support has also been provided to Côte d’Ivoire regarding the inclusion of SAF in a national bioenergy code, and development of related regulations.

2.9 Template and guidance materials: With support from ACT-SAF partners, ICAO has developed templates and guidance documents for the development of feasibility studies and business implementation studies. This is aimed at setting out a consistent approach towards the implementation of such studies, as well as incorporating examples of outcomes from a selection of publicly available studies. These templates are currently being used for the development of the above-mentioned ACT-SAF feasibility and business implementation studies.

2.10 ACT-SAF Knowledge Hub –recognizes all the initiatives supported by many ACT-SAF partners, which are grouped into feasibility studies, training and outreach activities, and relevant events, with the aim to share information and facilitate the coordination of efforts globally. ICAO is actively engaging with ACT-SAF partners that are developing capacity building programmes on SAF, such as EASA and the World Bank, to optimize the use of resources. During the 2025 ICAO Aviation Climate Week, coinciding with the three-year anniversary of ACT-SAF, the Knowledge Hub was launched. This aims to bring together all relevant training resources on SAF for easy access.



ICAO ACT-SAF Knowledge Hub

Coordination with ACT-SAF Partners identified that many States need conceptual knowledge on SAF. To help address that, the ACT-SAF Knowledge Hub aims to consolidate all relevant materials and useful references on SAF.

ACT-SAF Series of Training Sessions				SAF Feasibility Studies																																									
Comprehensive training on an array of SAF-related topics. All the sessions and their materials are available for viewing and downloading.				Studies developed by ICAO and other organisations that aim to evaluate the potential for SAF production at a given State, including feedstock production.	Number of Studies 76																																								
<table border="1"> <thead> <tr> <th>#</th> <th>Topic</th> <th>link video</th> <th>link presentation</th> </tr> </thead> <tbody> <tr><td>19</td><td>Building bankable SAF projects</td><td>link</td><td>link</td></tr> <tr><td>18</td><td>Understanding SAF Clearing Houses</td><td>link</td><td>link</td></tr> <tr><td>17</td><td>From Vision to Reality - Sweden</td><td>link</td><td>link</td></tr> <tr><td>16</td><td>Aviation and Green Taxonomy</td><td>link</td><td>link</td></tr> <tr><td>15</td><td>Coprocessing and revamping: how to use existing refineries to produce SAF</td><td>link</td><td>link</td></tr> <tr><td>14</td><td>Update on 100% SAF testing and recent achievements</td><td>link</td><td>link</td></tr> <tr><td>13</td><td>SAF Business Implementation studies and TEA models</td><td>link</td><td>link</td></tr> <tr><td>12</td><td>ICAO State Action Plans and SAF</td><td>link</td><td>link</td></tr> <tr><td>11</td><td>Implementing the ICAO Global Framework – Step-by-step examples of SAF policy making</td><td>link</td><td>link</td></tr> </tbody> </table>				#	Topic	link video	link presentation	19	Building bankable SAF projects	link	link	18	Understanding SAF Clearing Houses	link	link	17	From Vision to Reality - Sweden	link	link	16	Aviation and Green Taxonomy	link	link	15	Coprocessing and revamping: how to use existing refineries to produce SAF	link	link	14	Update on 100% SAF testing and recent achievements	link	link	13	SAF Business Implementation studies and TEA models	link	link	12	ICAO State Action Plans and SAF	link	link	11	Implementing the ICAO Global Framework – Step-by-step examples of SAF policy making	link	link	SAF events Compilation of events hosted to discuss global challenges and solutions for further developing SAF. Upcoming events 36 Past events 59	
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				Technical References and Reports Useful materials to facilitate technical understanding on various SAF aspects. Available references 27																																									

2.11 ACT-SAF Newsletter – Updates on the ACT-SAF programme are provided in regular newsletters¹⁵, which include the most recent developments, a summary of the latest ACT-SAF series and relevant events.

¹⁵ <https://www.icao.int/environmental-protection/Pages/act-saf.aspx>

APPENDIX F

CLIMATE FINANCING AND ICAO FINVEST HUB

1. ADVOCACY AND OUTREACH

1.1 Access to financial resources is particularly crucial for the deployment of SAF and other cleaner energies for aviation as the scaling-up of fuels in support of the LTAG would require cumulative investments of around USD 3.2 trillion by 2050 (according to the ICAO LTAG Report). Recognizing the importance of financing in aviation decarbonization projects, ICAO continues to actively engage financial institutions such as development banks and private equity entities, by communicating on the LTAG and the crucial role of SAF and other cleaner energies and the associated investment needs for aviation. ICAO also actively tracks the volumes of announced investments in SAF and other aviation cleaner energies.

1.2 In September and November 2022, ICAO organized 4 initial exchanges on financing with 19 public¹⁶ and private financing institutions¹⁷ for all the ICAO regions. The exchanges enabled ICAO to explore and better understand financing trends, instruments, and opportunities for the aviation sector.

1.3 As part of the CAAF/3 preparation process, in March 2023, an informal meeting of the Council with several international financing institutions (African Development Bank, Emirates Development Bank, European Bank for Reconstruction and Development, European Investment Bank, Inter-American Development Bank, and World Bank), and the Air Transport Action Group (ATAG) was convened to address the challenges and opportunities in decarbonizing aviation. This was followed by two more informal meetings in June 2023 with private banks and investors¹⁸, as well as energy companies¹⁹.

1.4 During the ICAO LTAG Stocktaking in July 2023, a full day was dedicated to presentations and discussions on financing the achievement of the LTAG, where two discussion panels involved financing institutions, States and stakeholders active on financing aviation cleaner energies. At the ICAO LTAG Stocktaking in October 2024, two sessions on Finvest and financing the aviation cleaner energy transition discussed the role of ICAO and the Finvest Hub, of policy as an enabler, the importance of collaborations and partnerships, as well as challenges and solutions to project financing. The 2025 ICAO Aviation Climate Week, in June 2025, also included discussions on unlocking climate finance to continue the dialogue with public and private financing institutions.

1.5 At the ICAO Global Implementation Support Symposium (GISS) held in Punta Cana, Dominican Republic in May 2024, dedicated sessions explored innovative financing mechanisms to support aviation infrastructure development and the transition to a greener industry. The ICAO Finvest Hub was a key topic, highlighting the need for greater partnerships and increased engagement between the aviation industry and financial institutions. Support for its operationalization was emphasized at the 2025 ICAO Global Implementation Support Symposium (GISS) held in Abu Dhabi, United Arab Emirates in

¹⁶ Brazil Development Bank (BNDES), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Emirates Development Bank (EDB), Arab Bank for Economic Development in Africa (BADEA), African Development Bank (AfDB), Asian Development Bank (ADB), World Bank, Green Climate Fund (GCF).

¹⁷ SmartEnergy, ING Group, Green Investment Group, First Abu Dhabi Bank (FAB), Arab Investment & Export Credit Guarantee Corporation (Dhaman), Genzero, Deutsche Bank, Investor Group on Climate Change, Banque de Montréal (BMO).

¹⁸ BNP Paribas, Caisse de Dépôt et Placement du Québec, Bank of America, Breakthrough Energy, GenZero, Meridiam, Impact on Sustainable Aviation, with contributions from the ATAG.

¹⁹ ARAMCO, ENI, ExxonMobil, Gevo, Indian Oil Corporation, Neste, Petrobras, Shell, TotalEnergies, with contributions from the World Economic Forum.

February 2025. The ICAO Finvest Hub will facilitate dedicated pathways for funding sustainable aviation fuel production facilities, clean energy infrastructure, and other aviation decarbonization initiatives.

1.6 A number of outreach activities have also been conducted by the Secretary General with representatives from the finance sector (including multilateral development banks, private banks and investment funds) to raise awareness on the operationalization of the ICAO Finvest Hub.

1.7 A key aspect of that outreach is to provide clarity on the scope of the Finvest Hub, which is not to manage any fund, but to make sure that the States and the managers of SAF, LCAF and other cleaner energy projects will submit projects through the platform that are well positioned to attract interest from the financing community. To that end, meetings were held in Singapore, Japan, Washington D.C. and London with representatives of the finance sector and other cleaner energy stakeholders.

1.8 Global Sustainable Aviation Marketplace (GSAM) conducted in Abu Dhabi (UAE) featured a global discussion on the ICAO Finvest Hub that included a number of informal matchmaking roundtables covering different geographic areas. Each roundtable included representatives from ICAO Member States, airlines, airports, SAF producers and investors which intended to show from a practical perspective how the Finvest Hub online platform can work in bringing together different stakeholders. Finally, thanks to the generous contribution of the UK, the Secretary General has appointed a Chief for the Finvest Hub initiative who is now fully engaged in accelerating its operationalization.

1.9 Overall, reactions have been positive, and many stakeholders have welcomed ICAO's involvement, in particular in helping States to understand expectations from the finance community. During the GSAM meetings in particular, a call to support the Finvest Hub initiative was made, materialized with a Letter of Intent reflecting the wording of the CAAF/3 Global Framework. This Letter of Intent is an additional vehicle to reach out to entities that have not been involved with ICAO activities, but would be instrumental to the financing of SAF, LCAF and other cleaner energy sources projects.

2. ICAO FINVEST – IRENA COOPERATION

2.1 To respond to paragraph 18 a) of Resolution A41-21 and as requested by the Global Framework, ICAO is currently working on the establishment and operationalization of the ICAO Finvest Hub, a financial platform to facilitate enhanced access to public and private investment, as well as funding from financial institutions, for projects contributing to the decarbonization of international aviation.

2.2 As part of the operationalization of the ICAO Finvest Hub, ICAO and the International Renewable Energy Agency (IRENA) signed a Memorandum of Cooperation in October 2024 to explore partnership arrangements to facilitate the identification of financial resources for scaling up SAF, LCAF and other aviation cleaner energy solutions.

2.3 In this regard, discussions between ICAO and IRENA explored the collaboration through IRENA's Energy Transition Accelerator Financing (ETAF) platform²⁰, which currently facilitates the funding and de-risking services for renewable energy projects, through the submission of project proposals and their technical and financial assessments, towards the matchmaking with 14 ETAF Funding Partners²¹.

²⁰ IRENA ETAF platform: <https://etafplatform.org/>

²¹ Abu Dhabi Fund for Development (ADFD), the Asian Infrastructure Investment Bank (AIIB), the Abu Dhabi Future Energy Company (Masdar), Swiss Reinsurance Company Ltd (Swiss Re), OPEC Fund for International Development (OPEC Fund), the Inter-American Development Bank (IDB), the Emirates Development Bank (EDB), the Islamic Development Bank Group (IsDB),

2.4 In February 2025, ICAO presented to the ETAF Funding Partners the ICAO LTAG and the Global Framework on SAF, LCAF and other aviation cleaner energies, as well as the ICAO Finvest Hub concept and the importance of financing in aviation decarbonization projects in particular, as well as the crucial role of cleaner energies and the associated investment needs for aviation.

2.5 Subsequently, ICAO and IRENA agreed on the establishment of a Finvest Hub module for the IRENA ETAF platform (IRENA ETAF – ICAO Finvest platform) which will provide the concrete means to: 1) receive SAF project proposals; 2) assess the technical and financial aspects of the project proposals; and 3) submit the project proposals for consideration by the ETAF Funding Partners.

2.6 During the ICAO Aviation Climate Week in June 2025, a special session was held, highlighting synergies between ICAO and IRENA in the development of the IRENA ETAF – ICAO Finvest platform, key project eligibility criteria required of project submissions, expected processes, as well as initial mockups of the platform.

2.7 To that end, in July 2025, the collaborative partnership agreement between ICAO and IRENA was signed, setting out the platform's operational modalities, roles/responsibilities for both organizations, as well as coordination and implementation arrangements. The IRENA ETAF – ICAO Finvest platform is expected to be launched in September 2025, prior to the 42nd Session of the ICAO Assembly, to initiate an open call for SAF project proposals to support SAF development and deployment. Through this collaboration, ICAO has been able to facilitate better access to climate financing, in delivering planned actions to support the ICAO Roadmap for the implementation of the Global Framework and LTAG.

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the Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC), the European Bank for Reconstruction and Development (EBRD), the Hongkong and Shanghai Banking Corporation (HSBC), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and Africa 50.

APPENDIX G

CONSIDERATION OF THE ESTABLISHMENT OF A CLIMATE FINANCE INITIATIVE OR FUNDING MECHANISM UNDER ICAO

1. Assembly Resolution A41-21, paragraph 18 b) “requests the Council to further consider the establishment of a climate finance initiative or funding mechanism under ICAO, while addressing the possible financial, institutional and legal challenges, and report to the 42nd Session of the ICAO Assembly”.

2. In response to the Assembly request, this Appendix provides the report of the Council, which took into consideration analyses of potential funding and climate finance options conducted by a third-party consultancy as resource and inputs among others.

3. The Council took into account Resolution A41-21, in particular paragraphs 17 and 18, and the ICAO Global Framework for Sustainable Aviation Fuel (SAF) and Lower Carbon Aviation Fuel (LCAF) and other Aviation Cleaner Energies, with attention given to availing the necessary finance to developing countries and States with particular needs in its consideration of the funding mechanisms and finance initiatives to support financing of CO₂ emissions reductions in international civil aviation to achieve the Long-term Aspirational Goal (LTAG) of net-zero carbon growth by 2050. The Council also recognized that SAF, and LCAF and other cleaner energies would be the main contributor for the reduction of CO₂ emissions from international aviation and SAF and LCAF are of immediate priority.

4. Funding mechanisms

4.1 Options considered for a funding mechanism are broadly categorised into voluntary funds, a global mandatory fund or by a global carbon charge.

4.2 Voluntary funds

4.2.1 Voluntary funds are easier to implement within the existing ICAO framework including the ICAO Financial Regulations, and the ICAO Resource Mobilization Policy and its Annex on the Establishment and Management of Voluntary Funds. However, the inflows from voluntary funds are unpredictable, depending on donors’ willingness and capabilities, and often with conditions for the use of the funds. To increase the fund size and optimise the flexible use of multiple funding contributions, it could be useful for ICAO to establish a clear set of criteria for the collection and disbursement of funds, prioritisation and qualification of objectives and projects, as well as a sound governance structure with the involvement of donors to encourage voluntary funding to be unearmarked while still allowing funds to be earmarked if deemed necessary by the donors.

4.2.2 There was recognition that it would be most pragmatic to leverage on the foundation of the existing ICAO voluntary Environment Fund to further expand and evolve its scope to support aviation decarbonization activities and different finance models such as blended financing. Potentiating the voluntary Environment Fund should encompass the consideration of an increase of its size, the establishment of a revised set of objectives and priorities and a review of its operational rules, including new mechanisms to incentivize voluntary contributions. Additional specialised financing expertise could be required for the management of funds but could be sustained from the fund itself. On a longer term, consideration could be given for further progression of the fund to be managed under another institution, such as a Multilateral Development Bank (MDB) or a specialized climate finance entity, to oversee the

financial management and administration of the fund. These could be funding and financing institutions that share similar policies and climate priorities as ICAO to operate the funds to benefit from their financial expertise while ICAO would still provide instructions and oversight on the fund's strategic direction, operations and disbursement.

4.2.3 Consideration was also given to the possibility to explore tapping on existing funds not operated by ICAO to earmark contributions from ICAO Member States towards CO₂ emissions reductions in international aviation. The benefit is leveraging on existing funds such as the UNFCCC Green Climate Fund with multiple funding sources and cross-sector outreach, but ICAO would not have full control over how the funds align with its climate initiatives and risks of misalignment with ICAO's priorities. Further exploration should be made if this could be undertaken in the short- or medium-term based on the need to source for the right funds and negotiations with the fund managers to ensure a ring-fenced fund allocation that aligns with ICAO's climate priorities.

4.2.4 Further consideration was given to drawing in funding beyond States to include co-funding from the industry and other public and private sources of funding for aviation decarbonization projects. It was recognised that future exploration of fund initiatives that mandate contributions from the industry could encourage greater industry support for voluntary measures and investment in the success of those measures. It was also recognised that the Secretariat currently has initiatives and efforts to raise funds for ICAO as a whole and is stepping up efforts to draw in more funding resources for aviation decarbonization projects under the Finvest Hub.

4.3 Mandatory Fund

4.3.1 A mandatory fund established and operated by ICAO was considered. It has the advantage of providing stable and more predictable funding but under the current ICAO structure, a Treaty or international agreement would be necessary to establish binding obligations for States which requires collective political will and time. It is envisioned that such an agreement would contain detailed criteria on the governance structure, collection and disbursement of funds such as method of assessment, prioritisation and qualification of objectives and projects and prioritisation of fund disbursement. Depending on the fund size, ICAO may need specialised experts to operate the funds. More details would therefore be required to consider its feasibility and in any case, it would be a medium to longer term consideration in view of the time to negotiate a collective agreement or treaty taking into account legal considerations and the required ratification.

4.4 Global Carbon Charge

4.4.1 The option of a mandatory global carbon charge has the benefit of generating stable revenue for the fund to support climate financing but is at the same time complex and politically sensitive. Specifically, concerns were raised that a global carbon charge could put a higher cost on users, negatively impacting the international aviation development of developing States, more than what the States would receive from such a global carbon charge funding mechanism.

4.4.2 It was highlighted that Assembly Resolution A41-22 on the ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) emphasized the decision by the 39th Session of the Assembly for CORSIA as a single global market-based measure (MBM) scheme for the international aviation industry, as opposed to a possible patchwork of State and regional MBM schemes. A Global Carbon Charge would conflict with the CORSIA scheme as it would be duplicative with international

aviation CO₂ emissions being accounted for more than once. Accordingly, this funding option should not be considered at the same time with CORSIA in operation until 2035.

4.4.3 It is acknowledged that the International Maritime Organization is separately pursuing a similar concept and it would be useful to assess the model when a decision has been made.

4.4.4 Given the complexity and lack of available details, the feasibility of this option cannot be determined at this stage. Further review to explore the global carbon charge would have to take into account the concerns and points contained herein including that there should not be a conflict with the CORSIA scheme, the governance, any legal barriers or challenges under the Chicago Convention and the ICAO charging principles, policies and provisions.

5. Climate Finance initiatives

5.1 Several finance initiatives that would help to facilitate access to funds and financing for aviation decarbonisation projects were considered.

5.2 It was agreed that there were benefits to step up advocacy of aviation decarbonising projects with MDBs and other financial institutions, leveraging on ICAO expertise in aviation and understanding of the projects to enhance their visibility as essential efforts to be prioritized within the climate finance agenda. This approach could improve access to existing financing windows offered by institutions with substantial expertise in funding large scale initiatives, increasing the likelihood of securing the necessary support for these aviation decarbonization projects. The advocacy could also be to encourage these MDBs and financial institutions to earmark part of their funding for aviation decarbonisation projects. To provide better focus, priority could be given to SAF, LCAF and cleaner energy projects for the immediate term.

5.3 Setting up a Project Acceleration Facility will be beneficial to States to help to bridge the gap between ACT-SAF feasibility studies and supporting States with technical assistance in collaboration with project developers with the preparation of bankable, investment-ready aviation decarbonization projects. The facility's primary focus would be on developing detailed project documentation, such as technical specifications, financial models, operational strategies, structuring offtake agreements, contracts, and de-risking investments at the project level.

5.4 It was noted that some elements of project acceleration and advocacy were already initiated under ACT-SAF and will be further enhanced with the operationalization of the Finvest Hub.

5.5 An Aviation Decarbonisation Taxonomy would define a classification system for aviation projects that contribute to reducing carbon emissions, making them more attractive to investors that are focused on sustainability with better access to climate financing under the Finvest Hub. A global aviation decarbonisation taxonomy has not yet been established but it has the potential to help MDBs and financing institutions to prioritise the aviation sector for climate financing. The ICAO Secretariat is exploring the development of a global aviation taxonomy that could be helpful for States to adopt and help attract MDBs and financial institutions to fund these aviation projects. For SAF, LCAF and other aviation cleaner energies, the ICAO criteria and requirements set out in ICAO Annex 16 would be used. In the absence of an aviation decarbonisation taxonomy from ICAO, the financing institutions and MDBs will look to other established taxonomies for aviation decarbonisation projects. The Taxonomy would have to be approved by the ICAO Council.

5.6 The Global Aviation Green Bond Platform concept which envisions a centralized initiative led by ICAO to establish a standardized framework and certification scheme for green bonds within the aviation sector was briefly explored. More work would be required to gain better clarity on the technical and economic feasibility and the effectiveness for ICAO to embark on this option which usually allows large sums of money to be raised in a diversified manner without relying solely on traditional borrowing. The payment of bonds is usually more flexible than traditional bank loans, but this alternative could be further explored under the Finvest Hub in the longer term.

— END —