

ICAO ESAF/ WACAF Annual Environmental Workshop and EASA 3rd Annual SAF Workshop Under the ICAO - EU ACT-SAF Assistance Project

20-23 April 2026 Kigali Rwanda



Session 3

CORSIA Implementation



ICAO





Blandine Ferrier

Regional Officer: Environment

International Civil Aviation Organisation
(ICAO)- WACAF Regional Office

Bferrier@icao.int



Blandine Ferrier is a Regional Officer, Environment at the ICAO, where she has been working since 2007. She began her career at ICAO Headquarters in Montreal, serving for nearly ten years as Coordinator of the States Action Plan (SAP) Initiative and of ICAO environmental assistance projects, and as Secretary of the Committee on Aviation Environmental Protection (CAEP) Working Group on Airports and Operations.

Since 2017, she has been based at the ICAO European and North Atlantic (EUR/NAT) Regional Office, where she leads ICAO's work on aviation environmental protection for the EUR/NAT and WACAF Region

Coffee break



ICAO



Session 3

CORSIA Implementation



ICAO





ICAO



Chinga Mazhetese

Regional Officer: Environment/ Aeronautical
Meteorology

International Civil Aviation Organisation
(ICAO)- ESAF Regional Office

cmazhetese@icao.int



Chinga Mazhetese is a Regional Officer for Environment and Aeronautical Meteorology at the ICAO Eastern and Southern African (ESAF) Regional Office, based in Nairobi, Kenya. Prior to this she was an Environmental Protection Specialist at the South African Civil Aviation Authority.

She joined ICAO in 2019 and in this role, she supports 24 Member States in implementing ICAO Standards and Recommended Practices related to environmental protection and meteorology.

She has over a decade of experience in climate-related programme and project management across the aviation and energy sectors.

Lunch Break



ICAO



ICAO ESAF/ WACAF Annual Environmental Workshop and EASA 3rd Annual SAF Workshop Under the ICAO - EU ACT-SAF Assistance Project

20-23 April 2026 Kigali Rwanda



Session 4

The Case for SAF: Global Context and ICAO Vision



ICAO





Blandine Ferrier

Regional Officer: Environment

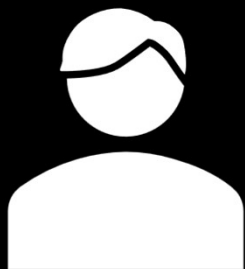
International Civil Aviation Organisation
(ICAO)- WACAF Regional Office

Bferrier@icao.int



Blandine Ferrier is a Regional Officer, Environment at the ICAO, where she has been working since 2007. She began her career at ICAO Headquarters in Montreal, serving for nearly ten years as Coordinator of the States Action Plan (SAP) Initiative and of ICAO environmental assistance projects, and as Secretary of the Committee on Aviation Environmental Protection (CAEP) Working Group on Airports and Operations.

Since 2017, she has been based at the ICAO European and North Atlantic (EUR/NAT) Regional Office, where she leads ICAO's work on aviation environmental protection for the EUR/NAT and WACAF Region



Raphaela Spielberg

Project Manager

CBR Consult & Invest GmbH

rspielberg@cbr-partner.de



TBC





ICAO



Kola Masha

Managing Director

Babban Gona

info@babbangona.com



Kola is the co-founder of Babban Gona, a Nigerian company that mobilises agro-services to halt the cycle of poverty and violence to create prosperous communities.

Prior to co-founding Babban Gona, Kola was a Managing Director and CEO of Notore, one of Nigeria's leading agricultural conglomerates. He led the development and execution of its commercial strategy across West and Central Africa, preparing the company to sell one million tons of fertilizer and establish a modern seed business. He also led the raise of \$130 million in equity. Kola is a Senior Advisor to the Nigerian Minister of Agriculture and has received numerous awards (e.g. Skoll Award for Social Entrepreneurship).

Coffee break



ICAO



Session 5

Feedstocks and their Sustainability Challenges in Africa





ICAO

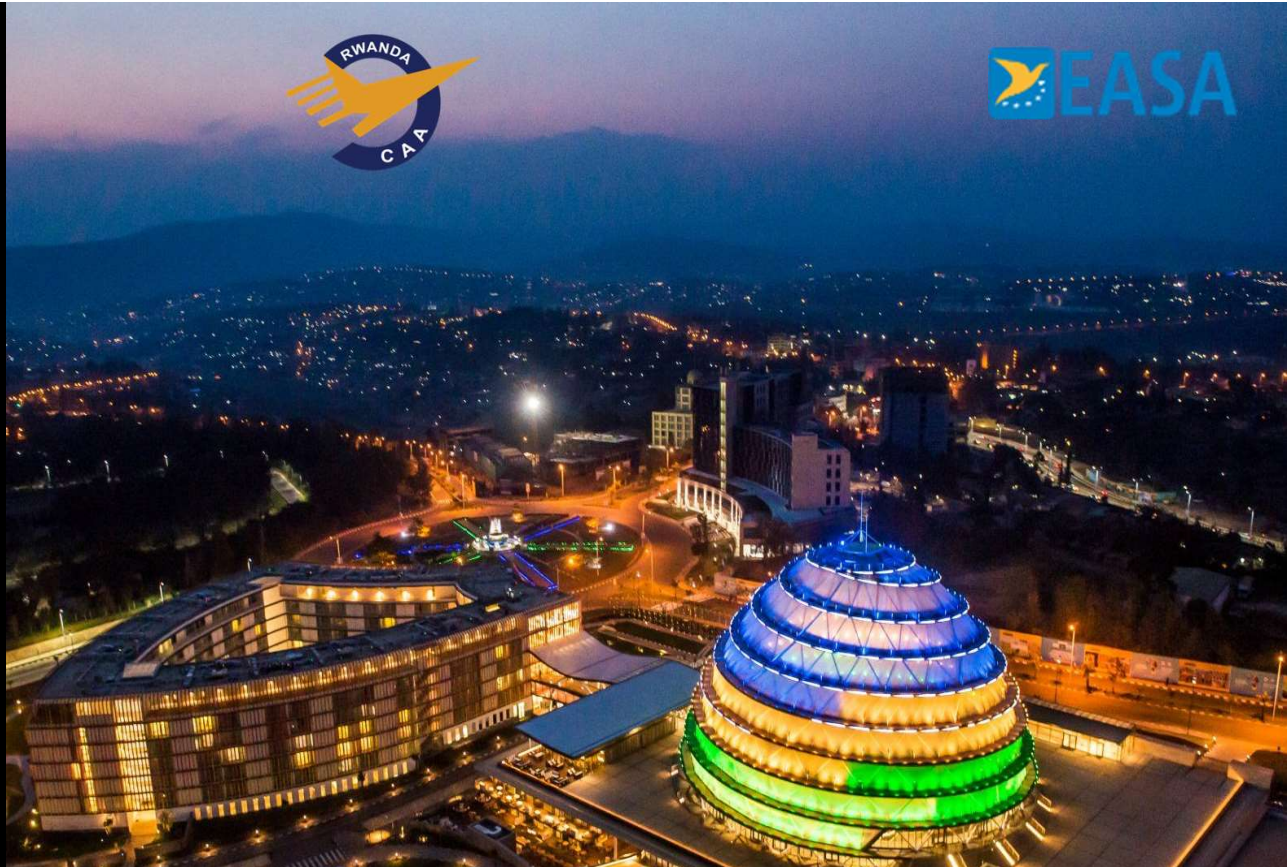


Ms Blanca de Uribarri

Senior Project Manager

RSB

blancadeulibarri@rsb.org



Blanca is a Senior Project Manager at RSB, working on internationally focused EU R&D projects. She brings over 12 years of experience in bioenergy, renewable energy, and sustainability, with a strong background in EU funded research and RED certification. Previously at Spain's National Renewable Energy Centre (CENER), she worked on multiple Horizon 2020 projects covering waste valorisation, agricultural residues, energy systems integration, and sustainable aviation fuels.

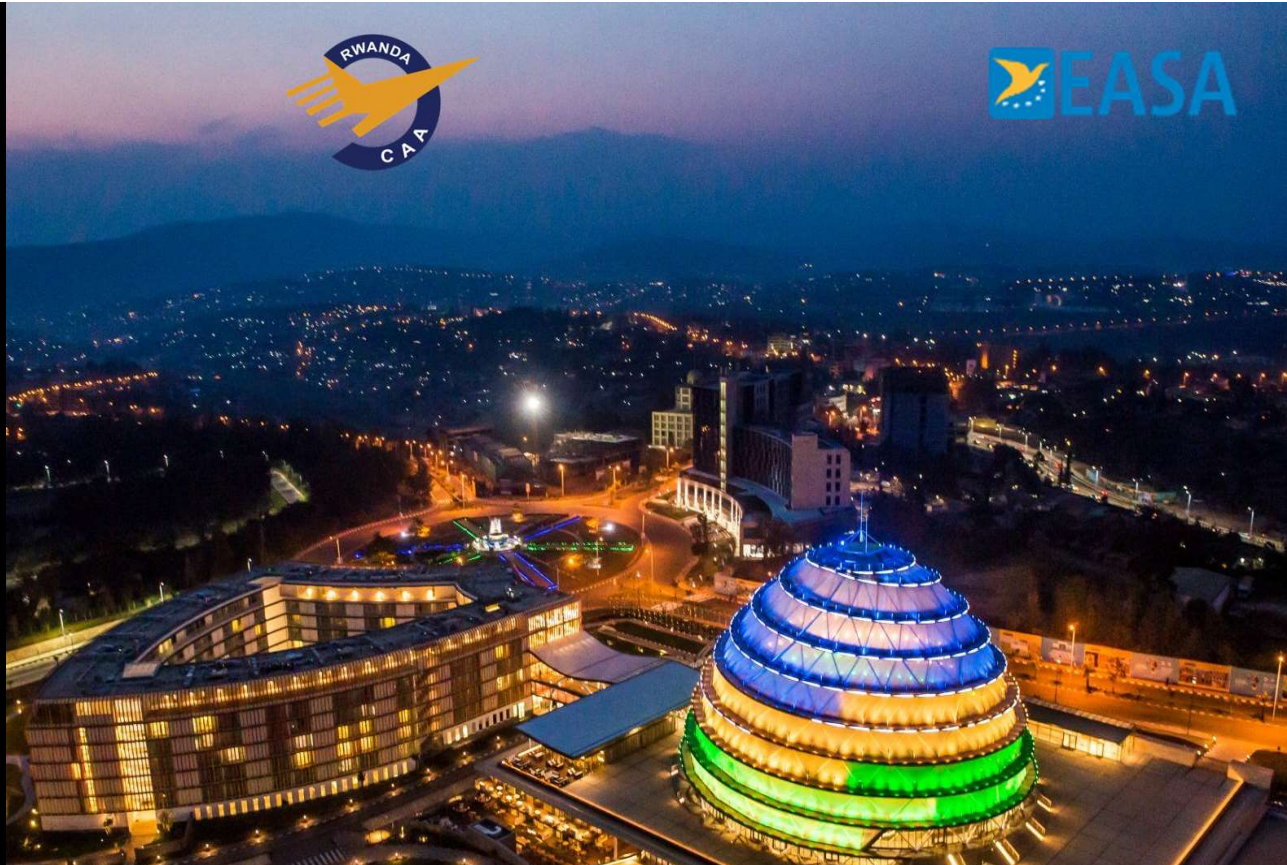


Mr Eduardo Entrena Barbero

Sustainability Manager

RSB

eduardo.entrena@rsb.org



Eduardo Entrena is a Sustainability Manager at RSB, working with EU-funded projects and advisory services to third parties, with a focus on life cycle analysis and certification processes for biofuels and biomaterials. Prior to joining RSB, he managed a sustainability department at a research, development, and innovation consultancy for approximately two years, where he supervised and led EU-funded projects.

Session 6

Panel on Activation of Feedstock in ECOWAS region



ICAO





ICAO



Frankline Omondi

Environmental Expert

AFCAC

fomondi@afcac.org



Frankline is an Aviation and Environment Expert at AFCAC with over 14 years of experience in civil aviation, environmental protection, and sustainability, spanning airline operations, regulatory frameworks, and continental policy development. He is also the AFCAC CAEP Observer. He leads aviation environmental protection and sustainability initiatives across Africa, working closely with governments, global and regional organisations, stakeholders, and international partners.

He currently plays a central role in SAF development in Africa, including coordination of the Continental SAF Strategy and Policy Guidelines, which provide a harmonised framework for SAF deployment placing a strong emphasis on sustainable development of African Air Transport as a catalyst for socio-economic development and African integration.

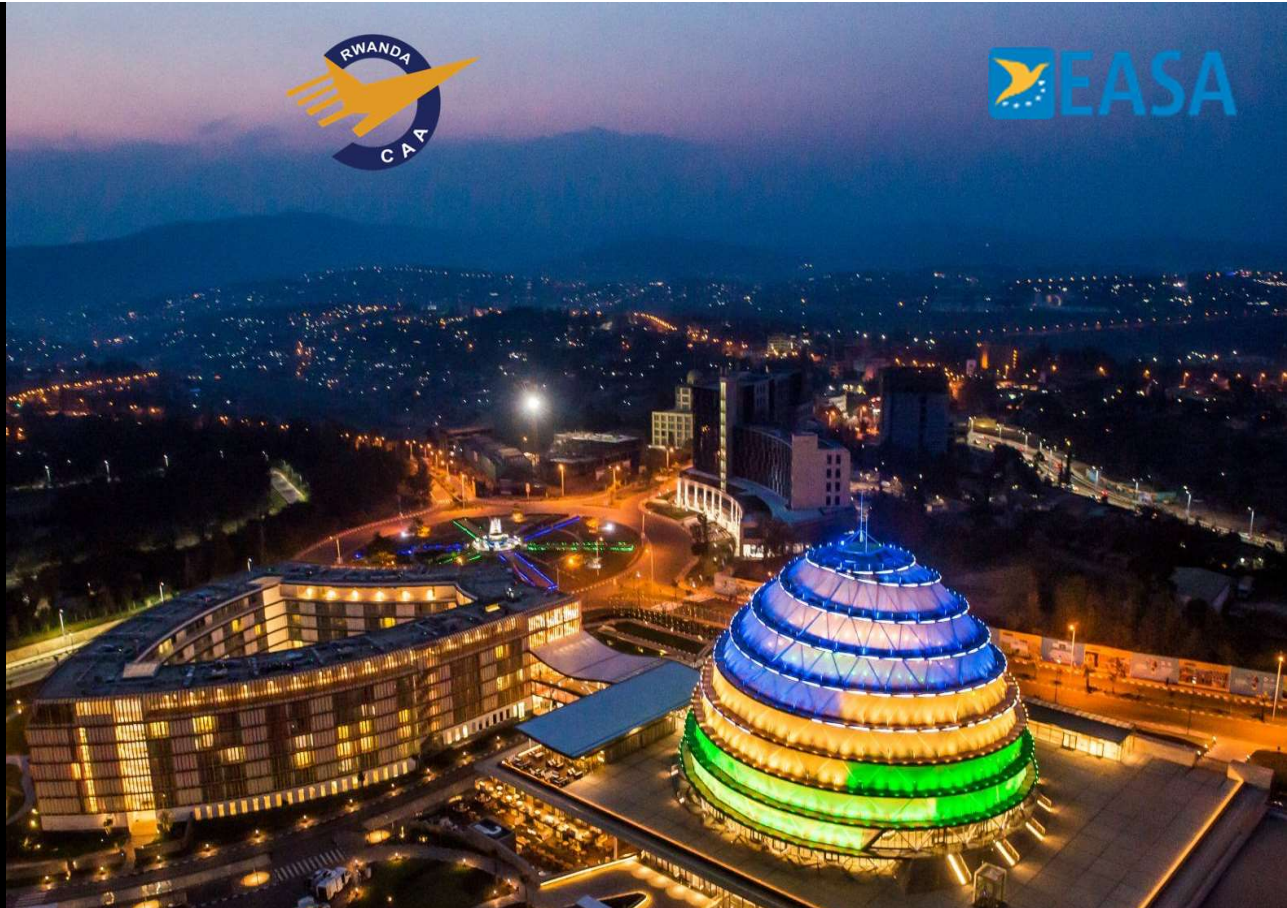


Mr William Gyamerah

Manager, Aerodrome Safety and Standards

Ghana CAA

wagyare@caa.com.gh



William works in the Ghana CAA holding responsibilities in aerodrome inspections and certification.

In additions to inspector tasks, William is responsible of Environmental Protection, Focal Point for CORSIA, State Action Plan and SAF.

William has led the development of the ICAO SAF Feasibility Study and the ongoing Business Implementation Study for SAF.



ICAO



Mr Hyacinthe Metch

Technical Advisor to the Director of
Supply, Refining, and Distribution

**Direction Générale des
Hydrocarbures**

h.metch@dgh.ci



Mr. METCH has more than fifteen years of experience in the supply and refining sector in Côte d'Ivoire. In 2011, he joined the General Directorate of Hydrocarbons as an engineer. He then held positions of Head of the Studies and Planning Department and Deputy Director of Supply and Refining.

Since 2023, he has held the position of Technical Advisor to the Director of Supply, Refining, and Distribution.

Metch graduated from the National Polytechnic Institute of Yamoussoukro (INPHB) and holds several certificates obtained from the French Institute of Petroleum (IFP) and the Training and Research Institute (SOFRECO) in Paris.

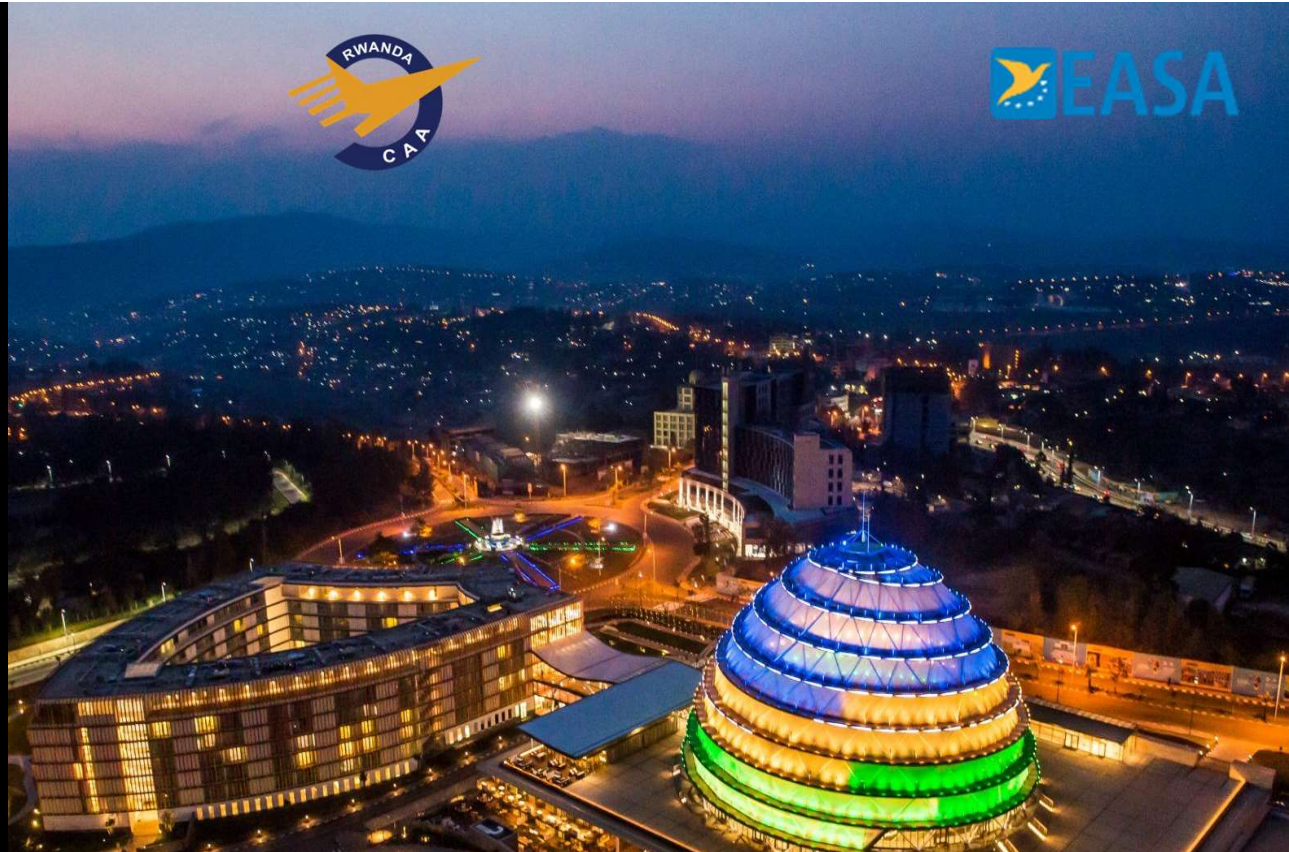


Ms Oyetoun F. Adegbesan

General Manager
Air Transport Operations

NCAA

Oyetoun.Adegbesan@ncaa.gov.ng



Oyetoun works in the Nigeria CAA holding responsibilities of Manager in Air Transport Operations.

In additions to inspector tasks, Oyetoun is responsible of Environmental Protection, acting as Focal Point for CORSIA, State Action Plan and Sustainable Aviation Fuels.

Oyetoun and her team has been instrumental in the creation of the SAF Technical Working Groups which have supported the development of the EU funded ICAO SAF Feasibility Study.



Mr César Velarde

ACT-SAF Consultant

ICAO

cvelarde@icao.int



César Velarde has dedicated most of his career to the development and promotion of Sustainable Aviation Fuels (SAF). Between 2013 and 2020 he was co-rapporteur of the ICAO working groups dealing with SAF, the ICAO CAEP Alternative Fuels Task Force (AFTF) first and then the ICAO CAEP Fuels Task Group (FTG). He has worked for the Spanish Civil Aviation Authority, the European Civil Aviation Conference (ECAC) and the International Civil Aviation Organization (ICAO), where he manages the implementation of SAF Feasibility Studies under the ICAO ACT-SAF Program.



ICAO



Ms Damiana Serafini

SAF Technical Expert – Agro-Economist

Consultant

damiana.serafini@gmail.com



Damiana Serafini is a sustainable aviation fuels and transport decarbonization specialist with more than 15 years of international experience working across aviation, climate policy, and low-carbon transport systems. She has worked as a senior consultant on aviation decarbonization for IATA and as SAF technical consultant to ICAO under the ACT-SAF programme, conducting national feasibility studies supporting the development of SAF roadmaps in Trinidad & Tobago, Ghana, Zimbabwe, and Nigeria. Today, she brings hands-on experience supporting African States in translating SAF opportunities into practical implementation pilot projects for the development of the SAF ecosystem within African Nations aligned with ICAO climate goals.



ICAO ESAF WACAF annual
Environmental Workshop

RESUME

ETUDE DE FAISABILITE SUR L'UTILISATION DES SAF EN COTE D'IVOIRE



Feedstoks (Glucides)

1



Sucre & Amidon	Quantité estimée (TM)	Ethanol / Buthanol (litre)	Production SAF (litre)	Contraintes	Avantage
Sorgho	700 000	14 000 000	8 400 000	<ul style="list-style-type: none"> Culture de sorgho moins riche en sucre Culture saisonnière Conflit avec l'alimentation animal Logistique de collecte Culture non mécanisée 	<ul style="list-style-type: none"> Bon rendement en éthanol du Sorgho doux Capacité à pousser en zone aride Faible consommation en Côte d'Ivoire Réduire l'insécurité alimentaire Revenus additionnel aux paysans
Bagasse	300 000	54 000 000	32 000 000	<ul style="list-style-type: none"> Multiple usage Alimentation animale Consommation d'eau 	<ul style="list-style-type: none"> Collecte aisée Bon rendement en SAF
Mélasse	40 000	8 000 000	4 800 000		
Pomme de cajou	5 200 000	157 000 000	94 545 000	<ul style="list-style-type: none"> Collecte difficile Rapide dégradation des pommes Culture saisonnière Logistique de collecte 	<ul style="list-style-type: none"> Abondance de la pomme de cajou Revenus additionnel aux paysans Création d'emploi Faible utilisation
Résidu de Maïs	840 000	42 000 000	252 000 000	<ul style="list-style-type: none"> Collecte difficile Culture saisonnière 	<ul style="list-style-type: none"> Bon rendement en éthanol Revenu supplémentaire aux agriculteurs
Manioc (écores)	6 500 000	112 000 000	67 000 000	<ul style="list-style-type: none"> Collecte difficile 	<ul style="list-style-type: none"> Robuste et résilient Pas de saison Résistant à la sécheresse
Manioc (amidon)		1 300 000 000	780 000 000		

Mise en Oeuvre

2



GOUVERNEMENT	ACTEURS DU SECTEUR		
<ul style="list-style-type: none"> Engagement à promouvoir les énergie renouvelable 	<p>Mise place des base pour une industrie CAD</p>		
<ul style="list-style-type: none"> Mise en place d'un cadre réglementaire Renforcement de capacité Etablir des mécanisme de soutien & d'incitation à l'investissement dans le secteur secteur Etablir les niveau d'incorporation 	<ul style="list-style-type: none"> Développer chaine de collecte de la matière première Coopération Organisme internationaux et Etats Etude de mise en œuvre des LCAF et du co-processing par la SIR Usine pilote ATJ Essaie d'utilisation du FAME 	<ul style="list-style-type: none"> Effectivité technologie LCAF et du co-processing SIR Centres de production d'huile végétale et d'éthanol Utilisation du biodiesel dans l'aéroport 	<ul style="list-style-type: none"> Construction de d'unité de production de SAF utilisant la voie Manioc-Ethanol-ATJ Réalisation d'étude technico-commerciale pour les graines d'hévéas et DMS
<ul style="list-style-type: none"> Avant projet de loi portant code de la bio-énergie Projet Décret définissant les condition d'exercice des activités Projet d'Arrêté sur les spécification des biocarburant qui indique les mandat Partenariat avec NIR 	<div style="text-align: center;"> <p>Producteurs de biocarburants → Centre de blending → Dépôts livranciers</p> <p><i>Déchets organiques</i></p> <p>SIR SOCIÉTÉ IVOIRIENNE DE RAFFINAGE</p> </div> <ul style="list-style-type: none"> - Produire les biocarburants - Autorisation: Agrément de production - SIR acheteur exclusif des biocarburants - Pour incorporation dans les carburants comme additif - Point de stockage des produits 		

FEASIBILITY STUDY ON THE USE OF SUSTAINABLE AVIATION FUELS IN GHANA

ICAO ACT-SAF ASSISTANCE PROJECT
Capacity Building for Sustainable Aviation
Fuels (SAF)

Funded by the United Kingdom

William Agyare, Ghana CAA

ICAO, EASA, RCAA,
ACT - SAF Regional Workshop/ Rwanda 20-23 April 2026



Feedstock Potential & Diversity: Ghana's Core Strength

Ghana offers a **diverse portfolio** of sustainable feedstocks with varying opportunities and constraints

Feedstock Category	Annual Availability	Key Opportunities	Main Constraints
Cassava residues	Very high (~20.8 Mt/yr)	Strong national footprint; Regional approach with Côte d'Ivoire, & Togo	Fragmented collection; preprocessing needs
Municipal solid waste	Large urban streams	Year-round supply; methane avoidance benefits	Sorting challenges; collection infrastructure gaps
Palm oil residues	Significant around mills	HEFA & co-processing; international recognition	Competition with mill energy uses
Animal tallow/fat/oil	Concentrated at abattoirs/processors	HEFA & co-processing; international recognition	Limited scale & rendering infrastructure; competing uses
Maize residues	High but dispersed	Thermochemical routes; regional complementarity	High moisture; competing uses; seasonal
Cocoa pod husks	~800,000 t/yr concentrated	Recognized sustainability; leverage cocoa logistics	Smallholder collection; transport costs

Infrastructure & Logistics Readiness

Existing Assets (Opportunities)

- Available PPP with a robust bioethanol supply chain infrastructure
- Tema Oil Refinery capacity (45,000 bpd)
- New Sentuo Oil Refinery (40,000 bpd/ phase 1)
- Future Hub Jomoro (900,000 bpd)
- BOST storage and distribution network
- Airport fuel handling systems

Infrastructure can be **adapted for SAF blending** and handling with targeted investments

Main Challenges (Priority-Phased Approach)

- Engage in technology and know how in SAF production
- SAF costs remain higher than fossil Jet A-1
- Government initiatives to bridge production and Financing risks for first/pilot projects
- Infrastructure upgrade, feedstock mapping and collection
- Incentivize for centralized biomass hubs
- Communication, Collaboration & Coordination on PPP

Incentives and **blended finance models** essential for competitiveness

Infrastructure & Logistics Readiness (PPP)

SUPPLY CHAIN SUMMARY- WITH PRIVATE PARTNER IN PPP



FEEDSTOCK PLANTATION

ETHANOL AVAILABILITY
AS FEED FOR ATJ



BIOFUEL REFINERY



WAREHOUSES



ARTICULATED TRUCKS



BIOFUEL MANUFACTURING PLANT



BIOFUEL BULK ROAD VEHICLES



BIOFUEL STORAGE TANK FARMS



GHANA IS READY



Photos from SAF
exercise held on 24th
February, 2026



GCAA formally received
the ICAO-ACT feasibility
study results





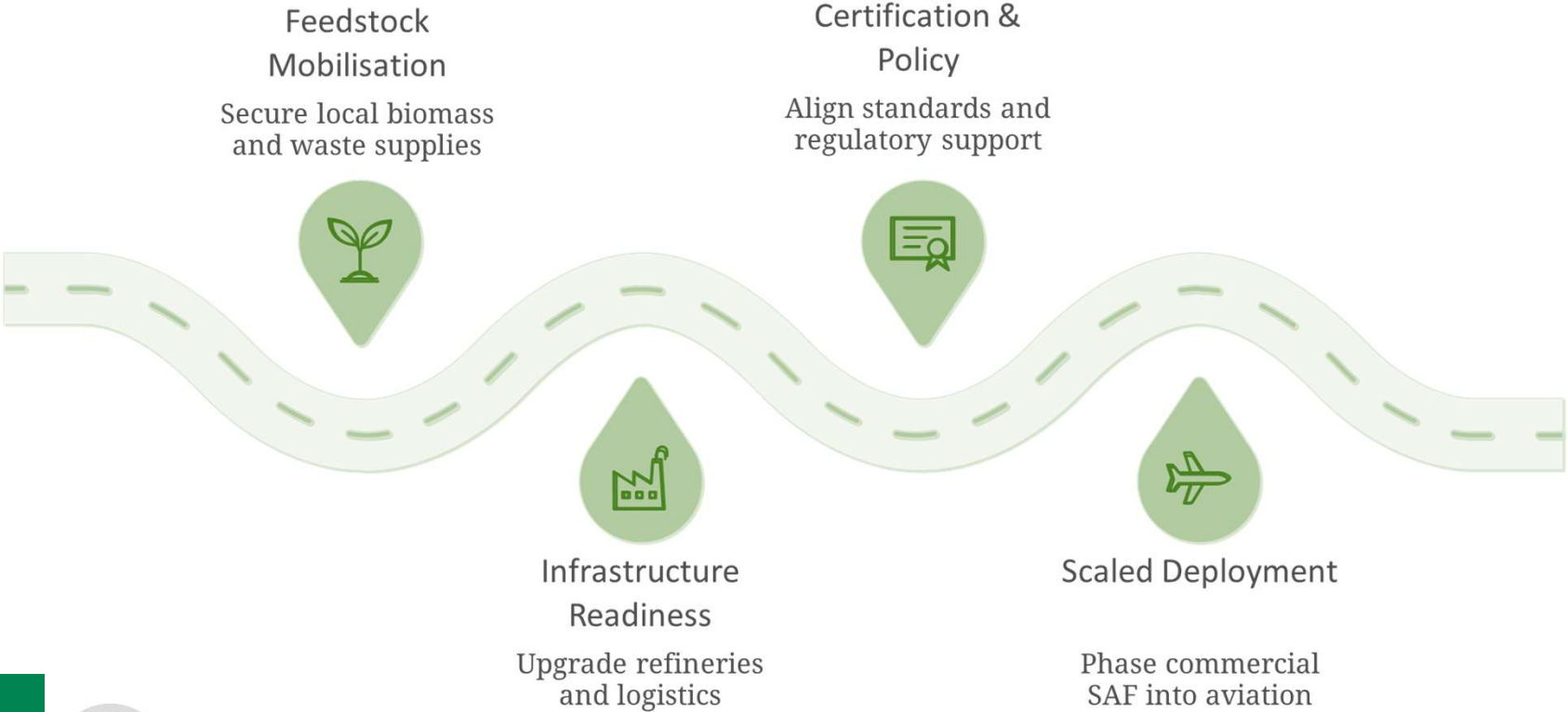
ICAO ESAF/WACAF ENVIRONMENTAL WORKSHOP

Unlocking Nigeria's Potential for Sustainable Aviation Fuels (SAF)



Building Nigeria's Sustainable Aviation Fuel Platform

A structured roadmap for feedstock mobilisation, infrastructure readiness, certification, and phased deployment of Sustainable Aviation Fuel, from near-term refinery co-processing to scalable national production architecture.



Feedstock Platform for SAF Deployment

Nigeria's feedstock base spans four distinct pathways, from near-term residue-derived lipids to longer-term, mid-term sugars to ethanol, and long-term lignocellulosic resources, each with different readiness levels and mobilisation requirements.




Deployment Readiness and Remaining Gaps

 **Near-Term Entry Pathway**


Refinery co-processing using PFAD and POME oil is deployable now.

 **Emerging Industrial Platform**

Domestic ethanol expansion under E10 implementation is underway.

 **Airport Introduction Conditions**

Hydrant storage, depot systems, and QA/QC procedures operational at LOS and ABV.

 **Residue Systems**

Collection and preprocessing require scaling.

 **Crop Productivity**

Improvements needed for ethanol-platform expansion.

 **Certification**

Sustainability and traceability systems require operational validation. ASTM D7566 recognition pathway still required.



Session 7

ICAO CORSIA CEF Sustainability Framework



ICAO



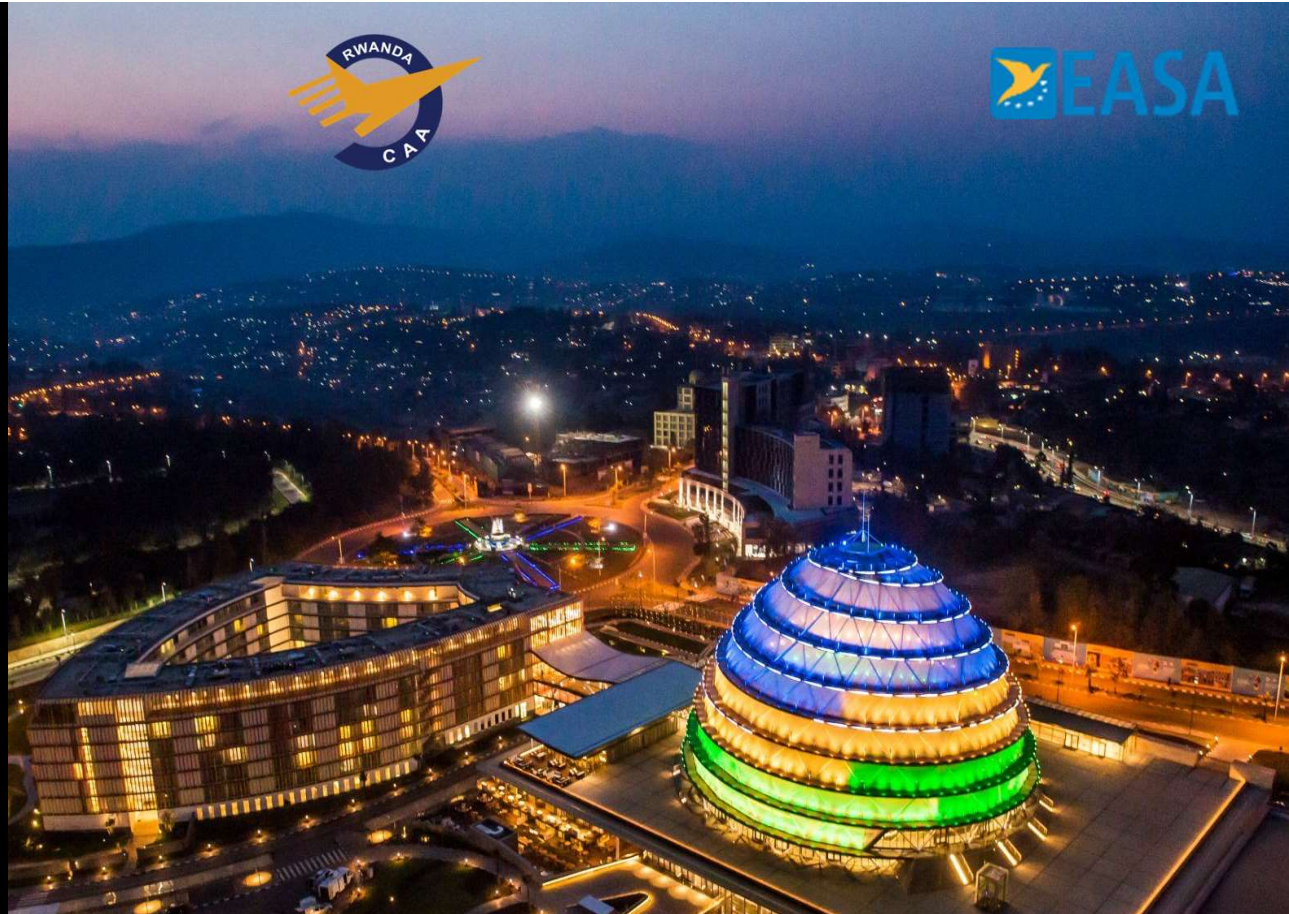


Mr Daniel Brousse-Rivas

Refuel EU Officer

EASA

daniel.brousse-rivas@easa.europa.eu



Daniel Brousse Rivas is a Sustainable Aviation Officer at EASA. He currently coordinates the implementation of ReFuelEU Aviation at the Agency, and other related SAF topics. He is also currently chairing the WG5 Group (Fuels) for the Committee of Environment (CAEP) at ICAO and provides technical expertise in different international forums. He is an aerospace engineer and worked previously for the Spanish Aviation Authority on environmental topics.

Closing of Second Day



ICAO

