

A review of Sustainable Aviation Fuel Initiatives from around the world:



The Commercial Aviation Alternative Fuels Initiative:
Domiciled in the U.S., with efforts focused on North America



SAFI-UAE Webinar Series – Week 3
Steve Csonka, Executive Director, CAAFI

18Aug'20

CAAFI - Public/Private Partnership

www.caafi.org

An aviation industry coalition established in 2006 to facilitate and promote the development and commercialization of sustainable aviation fuel (SAF), coincident with the industry's pending 2008 commitments (Air Transport Action Group – ATAG)

Goal is development of non-petroleum, drop-in, jet fuel production with:

- * Equivalent safety & performance*
- * Comparable cost*
- * Environmental improvement*
- * Security of energy supply for aviation*

*SAF - Synthetic kerosene,
primarily from renewable or
circular economy H-C sources*

Enables its diverse stakeholders to build relationships, share and collect data, identify resources, and direct research, development and deployment of alternative jet fuels

CAAFI's Functional & Financial Sponsors



CAAFI execution & governance

Day-to-day execution:

- * Office of the Executive Director (OED) = Executive Director, Assistant Director, Director Emeritus
- * Administrative Leadership Team (FAA, Volpe, OED)
- * Weekly teleconference, daily interactions of ALT

Steering Group (SG) provides advice, consent, and direction:

Monthly telecon chaired by OED; reviewing progress and pending activities; establishing priorities – 23 personnel:

- * Representatives from Functional Sponsors (at least one each)
- * Leads from each of 4 CAAFI Work Groups
- * Key collaborators from USDA, DOE, & ASCENT

CAAFI Charter outlines remit, structure, membership, operating norms, roles and responsibilities, Work Team remits, Goals and Objectives

- * Updated annually, or on an as needed basis, by consensus of the OED and SG

Needs and ideas continuously collected from all sources, internal and external

CAAFI Work Teams

Research & Development

Removing barriers for Multiple “Drop-in” Solutions

Sustainability

GHG LCA, PM2.5 Quantification, Sustainability

Certification / Qualification

Fostering industry approval via ASTM processes

Business

Facilitating Deployment, Investment

CAAFI Work Teams

Research & Development

Removing barriers for Multiple “Drop-in” Solutions

Led by Quad-Chairs

- * Gurhan Andac, GE Aviation
- * Joe Ellsworth, Boeing
- * Josh Heyne, UDRI
- * Stephen Kramer, Pratt & Whitney

Facilitated by ALT

- * Kristin Lewis & Peter Herzig, DOT/Volpe

- * Focus on Industry R&D needs – white paper publications – advising agencies/funders
- * Special topic reviews and communications
- * Rhythm of interaction with early stage producers
- * Administer R&D Team Prescreening efforts
- * Facilitate introduction into qualification efforts (ASTM D02.J / D4054 process)

CAAFI Work Teams

Certification / Qualification

*Fostering industry
approval via ASTM
processes*

Led by FAA N.E. Certification Office

- * Mark Rumizen, FAA

Facilitated by ALT

- * Kristin Lewis & Peter Herzig, DOT/Volpe
- * R&D Team Leads
- * Nate Brown & Anna Oldani, FAA AEE (tie to efforts of ASCENT & CLEEN)
- * OED

- * Focus on management of D4054 process, and Clearinghouse
- * Formal role of D4054 review and consent
- * Coordinating efforts to assist with fuel qualification, aligned with CRC and ASTM D02.J activities efforts
- * Coordination with producer introductions to ASTM community

CAAFI Work Teams

Sustainability

*GHG LCA, PM2.5
Quantification,
Sustainability*

Led by A4A and FAA

- * Nancy Young, A4A
- * Jim Hileman, FAA

Facilitated by ALT

- * Kristin Lewis & Peter Herzig, DOT/Volpe

- * Significant work in earlier years on sustainability overviews, Environmental Progression Framework, and guidance materials
- * In recent years, nearly entire effort has been focused on ICAO/CAEP work on CORSIA development and execution
- * Current frameworks and policy mechanisms provide confidence that sustainability will be appropriately addressed for SAF in the U.S.

CAAFI Work Teams

Business

*Facilitating
Deployment,
Investment*

Led by A4A, airline reps, and OED

- * Several iterations through the years

Facilitated by all the other teams,
OED, and Steering Group

- * As individual airline supply agreements started to unfold, CORSIA framework was adopted, and personnel changes occurred, focus of Business Team's activities changed
- * Now focused on assisting in making business connections within industry, between producers, suppliers, and airlines, and monitoring commercial readiness

CAAFI Is and Isn't

- * CAAFI is an initiative – it functions similarly to a public-private-partnership (PPP) – members committed to working toward a common goal
- * CAAFI “membership” is open to any collaborator who commits to engage with the broader body on SAF development – participation is broad and voluntary
 - * We are not a participant funded organization – participation is free
- * We do not have significant oversight, administrative, or finance functions – to keep administrative burden / cost to a minimum
 - * CAAFI activities (e.g. Biennial General Meeting) are designed to be break-even on cost (no profit / minimizing incremental support from sponsors)
- * Additional efforts are funded and executed by further PPP efforts between CAAFI and various Federal Agencies – leveraging the goals and resources of those agencies which coincide with our own, typically via a memorandum of understanding

CAAFI Is and Isn't

- * CAAFI performs no lobbying or policy advocacy – leaving such efforts to our sponsors, although we are often called-upon for technical insights and recommendations about needs
- * In order to be effective in working with such a group, one of our key tenets is to be fair and unbiased in our efforts – including technology, feedstock, company, participant
 - * We may focus certain internal efforts on solutions that are believed to be superior in terms of cost, sustainability, and timing, but our advocacy is for “all-of-the above” solutions
 - * We have confidence that this approach serves all, as we believe there will be unique, ideal solutions in every part of the world based on local policy, feedstocks, home-grown solutions, etc.

How CAAFI works

We create a forum for bringing interested parties together ...

Aircraft,
Engine, Subsystem
OEM's

Airlines,
Military,
Airport orgs.

Academia,
Gov't Labs

***Using multiple Work Teams
and PPP projects***

Supply
Chain
Partners

Fuel Producers,
Suppliers,
Handlers

Fed & State
Government
Offices

... to collaboratively stand-up a new industrial segment

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**2020 Collaborators:
1200+ individuals from
around the world**

Supply
Chain
Partners

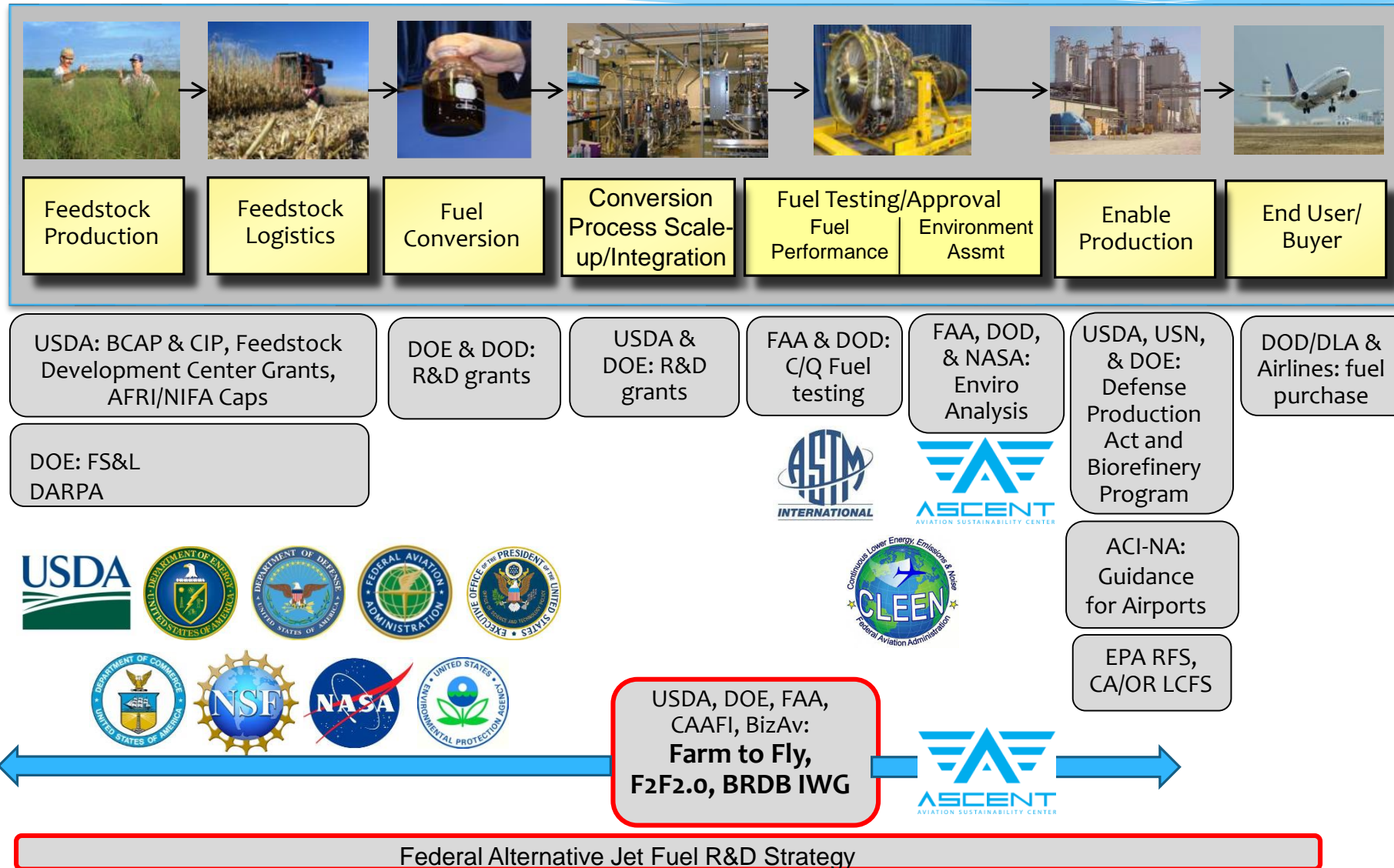
Fuel Producers,
Suppliers,
Handlers

Fed & State
Government
Offices

... to collaboratively stand-up a new industrial segment

Cooperative RDD&D efforts

Directly and through several PPPs



Coordinating Internationally

Global aviation enterprise ... needs global solutions



CAAFI



Ubrabio



SWAFEA/Alfabird



Queensland



ABRETF



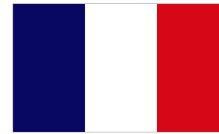
AIREG



SENASA/ITAKA



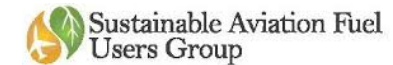
SkyNRG



IFP Energy Nouvelle



GARDN



SABB / BBP



Aviation Initiative for Renewable Energy in Germany e.V.

- * **Formal and informal coordination**
 - * **International Airshows**
 - * **Work plans - Bilateral Cooperation Agreements**
 - * **Coordination with R&D organizations**
 - * **Global Exchange meetings**
- * **ICAO / IATA as forum for exchange**



Key challenges and opportunities for SAFI's:

- * Create structures and oversight that allows nimbleness, flexibility, ability to redirect
- * With CAAFI structure, engagement with, and utilization of, public agency resources is key. Otherwise, different structure should be considered.
- * The SAF community recognizes that we should enhance communications: targeted and impactful communications strategy and effort are not trivial!
- * The SAF community could stand to improve an industry-wide, coordinated engagement approach on advocacy – challenge is agreeing on approach – each country different.
- * Need to determine how to capture value from environmental services, tailpipe emissions reductions, economic activity increases, ...
- * Need efforts that maintain focus on near-term opportunities and needs – don't let perfect become enemy of good enough – don't look for 2050 solutions tomorrow
- * No need to duplicate some efforts (e.g. Cert/Qual), whereas some could be welcome:
 - * D4054 Clearinghouse support; Commercial Scale Renewable Power for P-T-L; Specific R&D

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