

Case Study: Role play - SAF Value Chain and Partnerships

How to become SAF ready? How to make SAF happen?

SAF Training for ACI Africa & AFRAA

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Day 1 Section 2: Value Chain & DSL - Our guiding principle for this training

Topic

Role Play: SAF Value Chain and Partnerships



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CBR Sustainability Partners



CEO & Founder

More than 15 years experience in the chemical process industry, large production infrastructure projects and technology development with focus on green transition of various industries via ClimateTech related innovation (renewable fuel, green chemistry, sustainability, environmental management systems, environmental certification, etc.)

Consulting Focus @ CBR Sustainability Partners

- Commercial project development and deal advisory (due diligences, etc.) of green energy, fuel and chemicals investments and production plant projects
- Renewable fuel and chemical regulatory, commercial and technology expertise

Education

- EMBA -Executive Master of Business Administration-, Kellogg School of Management at Northwestern University / WHU Otto Beisheim School of Management
- Diploma -International Business Studies-, University of Paderborn, Germany / École Supérieure de Commerce de Reims, Grande École / NEOMA Business School, France.

Day 1 Section 2: Value Chain & DSL - Our guiding principle for this training

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Role Play: SAF Value Chain and Partnerships



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CBR Sustainability Partners



Project Manager

Raphaela Spielberg has over 7 years professional experience in the financial field, and 5 years of experience in strategy development and implementation of impact projects and climate technologies and with experience in thematical investment consulting and climate risk management of ESG compliant projects. She is experienced in assessing and developing business cases in the PtX field, analysing global challenges and opportunities, executing the financial modelling and conducting deep-dive research of risk and sensitivity.

Consulting Focus @ CBR Sustainability Partners

- Project management and business planning, e.g., application support for EU funding programs for the demonstration of innovative low-carbon technologies (EU Innovation Fund)
- Sustainability (CSR) and ESG concept development and implementation (strategy, roadmaps, reporting, labels)




Education

- Sustainability & Climate Risk Professional, GARP
- Master in Sustainable Finance, NOVA SBE, Lisbon

Today's learning journey

Guiding Questions


As we go through this session, consider the following questions:

-  What are your **own primary concerns** and **expectations** about SAF?
-  What's your **stakeholder's primary concern**?
-  What **solutions, compromises** or **commitments** can you think of and offer?



Objectives

By the end of this session, you will:

-  Understand the **roles of stakeholders** along the SAF value chain
-  Identify **key collaboration challenges** and **opportunities**.
-  Develop **strategies** for effective **partnerships** to scale SAF adoption

The successful development of a Direct Supply Line for SAF depends on a robust partner ecosystem to lay the foundations for future plant roll-out

Initial Project Consortia

Partnerships and alliances between new as well as established players with diverse backgrounds are formed.

IP

Project Developer

Technology Provider & EPC

Strategic and Financial Investors

Feedstock Suppliers

Infrastructure, Transport, Land

Debt / Banks

SAF Project A
for plant 1

Equity

Off-take

SAF Offtakers

Roll-out

SAF Project B
for plant 2,3,4..

Grants

Loan Guarantees

Policy, Regulatory, Certification

Associations

R&D

Your group work: Tackle DSL Challenges & Build Solutions

Take on the **role of a specific stakeholder** and tackle the **specified challenges** related to a DSL from that stakeholder's perspective.



Group work:

- You will be divided into **five groups**, with each group representing a different stakeholder profile.
- **Discuss the DSL challenges** your stakeholder group faces, **add new challenges** that come to your mind and **propose how to collaborate with other stakeholders** to overcome these barriers and provide **first sketches of solutions**.
- You will have **20 minutes** to dive into your group discussion and to **fill out the worksheet** with first solutions.
- Each group has **5 minutes** to present their proposed solutions **to the full audience**.

Understanding the stakeholders' role, challenges and business objectives

Challenges

1. Feedstock provider

Supplies used cooking oil (UCO) facing different challenges: (1) Unstable collection volumes from municipal areas; (2) competition from exports and (3) varying quality requiring intensive pre-treatment (costs)

2. SAF Producer

Operating bio refinery (HEFA pathway) facing challenges (1) to sign long-term, binding offtake agreements due to high prices, (2) plant performance due to varying feedstock supplies and (3) qualified labour for operations and maintenance

3. Airport

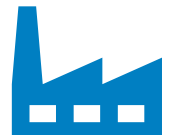
Keen to promote SAF adoption and provide SAF at the airport but facing (1) the problem of SAF access (availability), (2) infrastructure limits (logistics, storage, etc.) and (3) SAF quality assurance (blending, etc.)

4. Airlines

Keen to deploy SAF into its operations to respond to regulations (CORSIA, ReFuelEU) but facing challenges of (1) SAF availability, (2) high green premium and (3) unstable customer demand and willingness-to-pay

5. Regulatory bodies (industry policy makers)

Ambition to support local SAF production to create socio-economic benefits but challenges of (1) interdependencies of industry sectors (preferred use of feedstock, electrification, etc.), (2) variety of policy options and methodologies (mandates vs. incentives, GHG emissions reduction or volumes



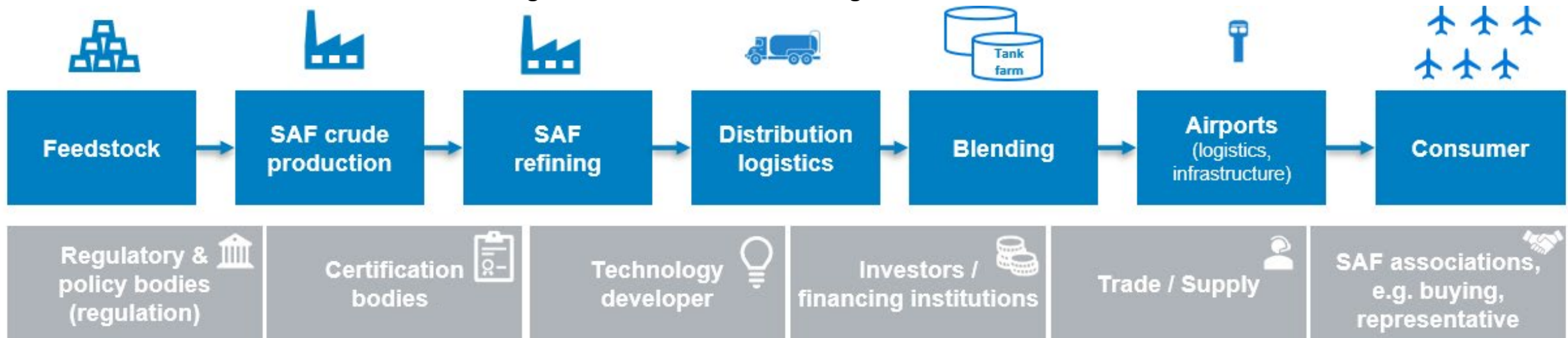
SAF Direct Supply Lines are self-sustaining supply chains for Sustainable Aviation Fuels, fundamental to boost sustainability in aviation

Steps and actors *along* the SAF value chain: New possibilities, new feeds, new players and partnerships

A **Direct Supply Line** (DSL) for SAF is a **self-sustaining network** of **regional supply chains**, consisting of a **local feedstock**, a commercial fuel **production plant**, and long-term **offtake partners**.

Stakeholders *around* the SAF value chain: Leveraging existing infrastructures and industry best practices

This is a complex system involving **multiple stakeholders**. While such a supply chain is **not yet fully established for SAF**, similar frameworks **exist in fossil aviation**, and much of this existing infrastructure can be leveraged for sustainable aviation.



“The SAF journey is only as strong as its weakest link.”

Stakeholder role		Stakeholder DSL interfaces	Documentation
Airport Promotion of SAF adoption and (physical) provision of SAF at the airport / Promotion of SAF uptake – We exclude Hydrogen		1. Airlines 2. SAF suppliers incl. logistics and blending 3. Fuel suppliers and airport fuel infrastructure operators 4. Government 5. Certification bodies	
Challenges	Challenge description	Proposed solutions with required collaborators	
A	Facilities (storage, blending) – Availability and funding	1. Incentives to airlines and passengers (government) 2. Voluntary schemes to be incentives 3. Airport providing land and infrastructure for SAF uptake	
B	Incentives to airlines to take SAF (affordability, etc.)	1. Policy interventions (incentivizing airlines, customers) 2. Customer awareness increase 3. Discount on airport charges provided to airlines by airports	
C	Infrastructure – Airport fuel system and final into-plane supply	1. Airport decarbonization initiatives (SBTi Scope 1, 2,3) – credit rating with sustainability performance 2. Airport buy own in-plane equipment	
D	Incumbent fuel supplier (extra punitive charges, etc.)	1. Discount on airport charges provided to airlines by airports	
E	SAF handling skills and labour qualification	1. Integrate SAF in the curriculum of technical universities and education facilities as well as research institutes	
F	SAF quality assurance	1. Cooperation with ISCC and RSB 2. Certification and training	
E	Transition period of SAF and jet fuel	1. SAF awareness assurance	
SAF as integral part considered in Ethiopia? Seamless integration of SAF ensured? (partnerships for blending and storage, etc.)			

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Time to take action: Fill out the collaborative solutions for relevant challenges

Stakeholder role

Feedstock provider

Collects, pretreats and supplies a feedstock to the SAF producer

Stakeholder DSL interfaces

1. **SAF Producer** as immediate offtaker
2. **Ministries** as enablers
3. **Final off-taker** generating demand in the market
4. Logistics, transportation, collection of the feedstock

Challenges	Challenge description	Proposed solutions with required collaborators
A	<ul style="list-style-type: none"> Unstable collection volumes from municipal areas (Natural hazards) Varying quality requiring intensive pre-treatment (costs, delivery delays) 	<ul style="list-style-type: none"> Government incentives for farmers to grow energy crops without displacing food. Long-term contracts with SAF producers to stabilize demand - early engagement along the DSL to collaborate around the steps of certification and quality assurance.
B	<ul style="list-style-type: none"> Competition from exports 	<ul style="list-style-type: none"> Define regional strategies around the opportunity of SAF Take countries that are already championing in SAF as role models to organize the concrete activities and get the buy in from the regulators
C	<ul style="list-style-type: none"> Lack of collaboration and activation of the country-specific opportunities 	<ul style="list-style-type: none"> Share experiences and record the best practices – define strategic plans to encourage the production of feedstocks Create task forces and ensure the initiatives are driven by the champions / disrupters
D	<ul style="list-style-type: none"> Land Use Competition: SAF feedstocks (e.g., crops, waste oils, algae) may compete with food production. 	<ul style="list-style-type: none"> Use non-food feedstocks (agricultural residues, municipal waste, algae) – tap into the opportunity of food waste
E	<ul style="list-style-type: none"> Lack of education/collaboration between the higher level stakeholders (producers / ministries) and the ones on the ground (farmers / grassroots movement) 	<ul style="list-style-type: none"> Organize the feedstock capacities on the ground. Once feedstock potentials are identified on Feasibility Study level, define concrete measures to mobilize feedstock suppliers, ie identifying high potential feedstock, educating the farmers, job creation, leveraging seasonal interplays between countries (e.g., Cameroon and Gabon)

Stakeholder role

SAF Producer

Operating bio refinery (HEFA pathway) to produce SAF and distribute it to selected airports by various transport modes

Stakeholder DSL interfaces

Documentation

1. Feedstock supplier (Farmers, Agriculture association)
2. Offtaker (Airport, Airline, fuel supplier)
3. Transport
4. Certification Regulatory for products
5. National Policies / local standards + international
6. Investors

Challenges

Challenge description

Proposed solutions with required collaborators

A

Long-term, binding offtake agreements with airlines due to high prices and market uncertainty

1. government mandate, roadmap, incentives, taxes (cap ticket price)
2. Partnerships, JV, other producers → sharing risk
3. multiple off-taker
4. Diversify (Diesel) (Airport operation)

B

Plant performance due to varying feedstock supplies

1. long term supply contracts with supplier
2. diversify feedstock → technology provider
3. Incentives for feedstock supplier (lease land to support farmers)
4. Education, engaging, convincing → associations, governments

C

Qualified labour for operations and maintenance

1. Higher education / Institution / students / financing
2. Consultants
3. Outsourcing, gradually building capacity

D

SAF life cycle, transport / infrastructure readiness

1. Infrastructure provider
2. help financing
3. policy / roadmap
4. Stakeholder engagement

E

Technology /regulatory changes
→ less interest of product

1. include in business model / risk evaluation / project development

Time to take action: Fill out the collaborative solutions for relevant challenges

Stakeholder role

Airlines

Deployment of SAF in its operations to respond to regulations (CORSIA, ReFuelEU) and voluntary sustainability commitments

Stakeholder DSL interfaces

1. Corporate customers
2. Technology developers
3. Financers
4. Fuel producers/ suppliers
5. Airports
6. Policy makers

Challenges

Challenge description

Proposed solutions with required collaborators

A

SAF availability

1. Fuel suppliers - Fuel suppliers should provide SAF adequately with correct certification / leveraging JV to have certain SAF % agreements
2. Policy makers - To regulate some mandates
3. Airlines - Collaborate with other airlines
4. Airports - To support with adequate infrastructure for the SAF storage

B

High green premium

1. Corporate customer to subsidize the premium partially
2. Policy makers/ Government- tax reliefs/ fuel surcharge relief

C

Unstable customer demand and willingness-to-pay

1. Corporate customers - Having PA/ marketing the awareness of benefits
2. Fuel producers - To supply energy dense SAF for utilization in longer flights
3. Technology developers - To develop efficient technology to reduce cost
4. Project developers - To scale up the capacity and minimize the cost
5. Financer - To finance the innovation in technology

D

Limitation of technology

1. Technology developers - To provide aircrafts with ability to use SAF at higher blend

Thank you for your attention!

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