

Stakeholder Collaboration and SAF Roadmaps

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

SAF Training for ACI Africa & AFRAA

23.-25.04.2025, Arusha, Tanzania

Topic

Stakeholder Collaboration and SAF Roadmaps



Raphaela Spielberg

@ raphaela.Spielberg.ext@easa.europa.eu
rspielberg@cbr-partner.de



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

Topic

Global SAF Policies: Rationale, Status & Challenges



Christoph Behrendt-Rieken



christoph.behrendt-rieken@eu-sea-ccca-corsia.org
cbehrendt@cbr-partner.de



CBR Sustainability Partners



Managing Partner

Christoph Behrendt-Rieken has 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

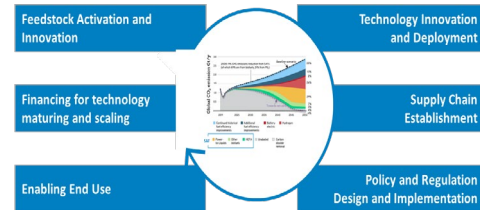
Education

- 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

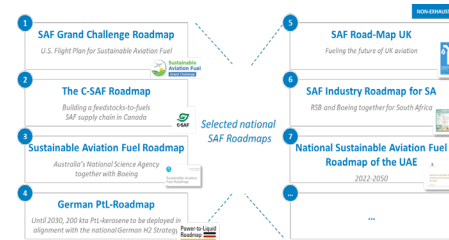
Guiding questions today



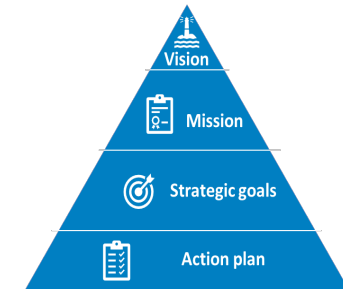
What **stakeholder collaborations** are critical across sectors to overcome barriers to SAF deployment at scale? What is the **SAF policy status**?



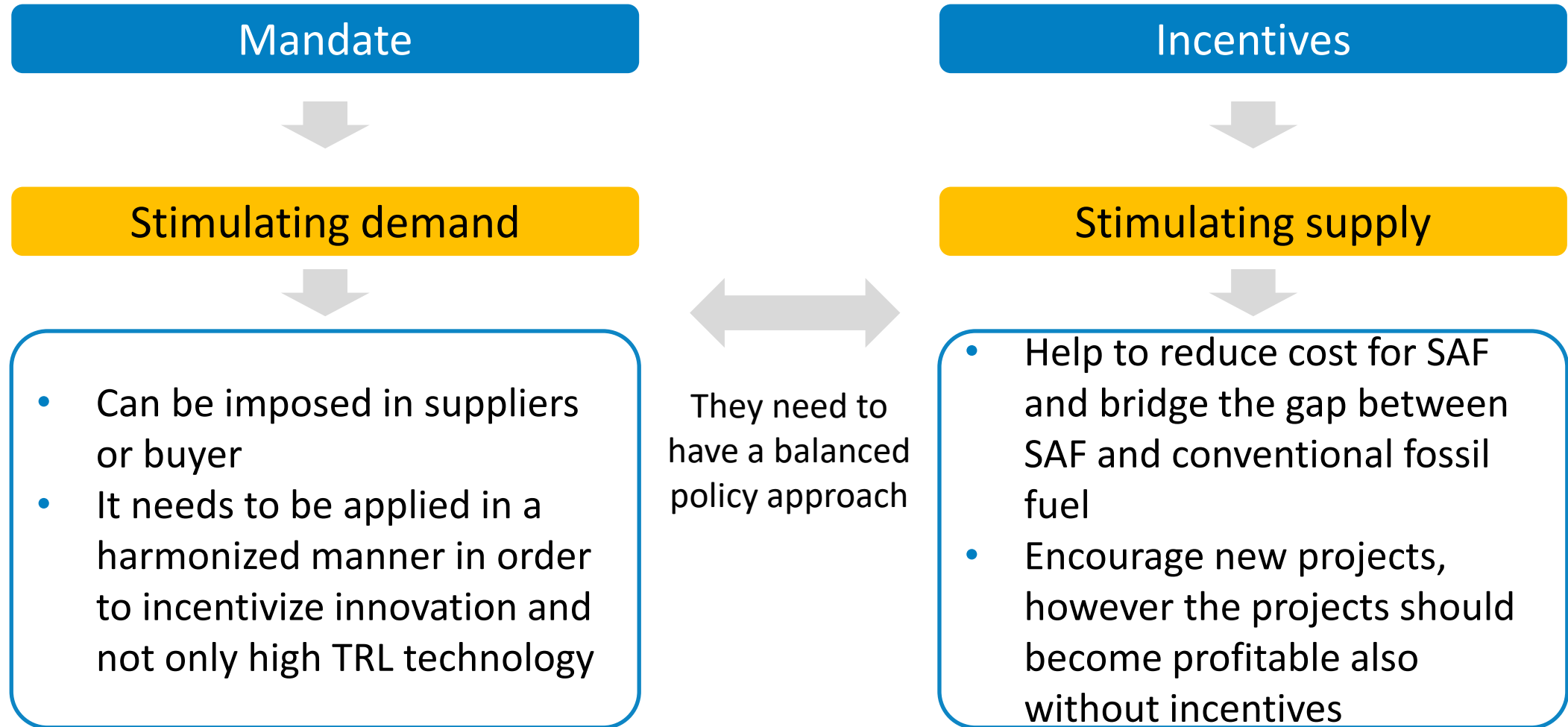
Why is a consistent **national SAF Roadmap** key to facilitate an **effective** and **efficient** SAF development and deployment? What are **major elements**?



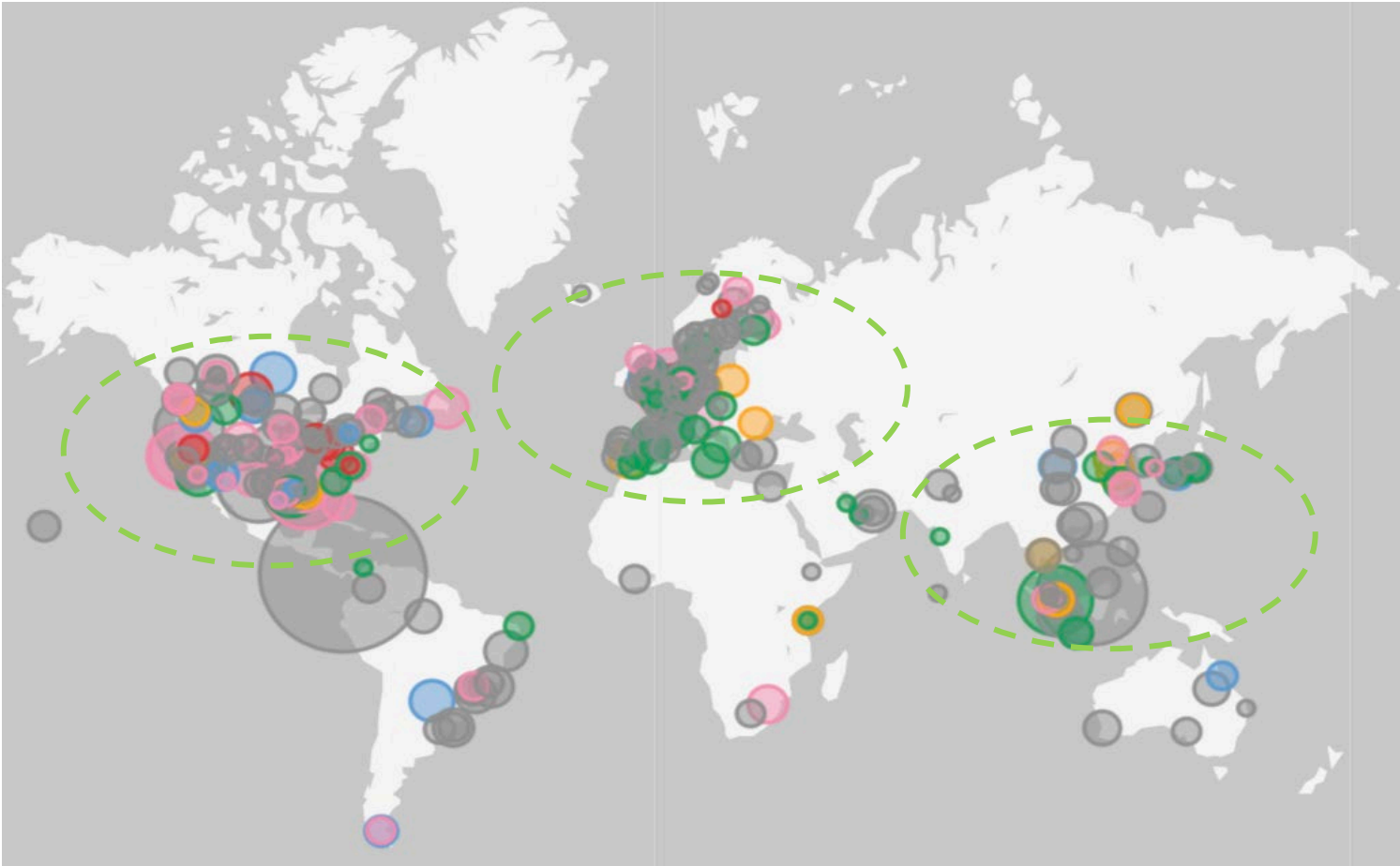
What are **examples** and **role models** of **national SAF Roadmaps**?



How to define a **SAF Roadmap**? What is the **starting point** and first **major recommended actions**?



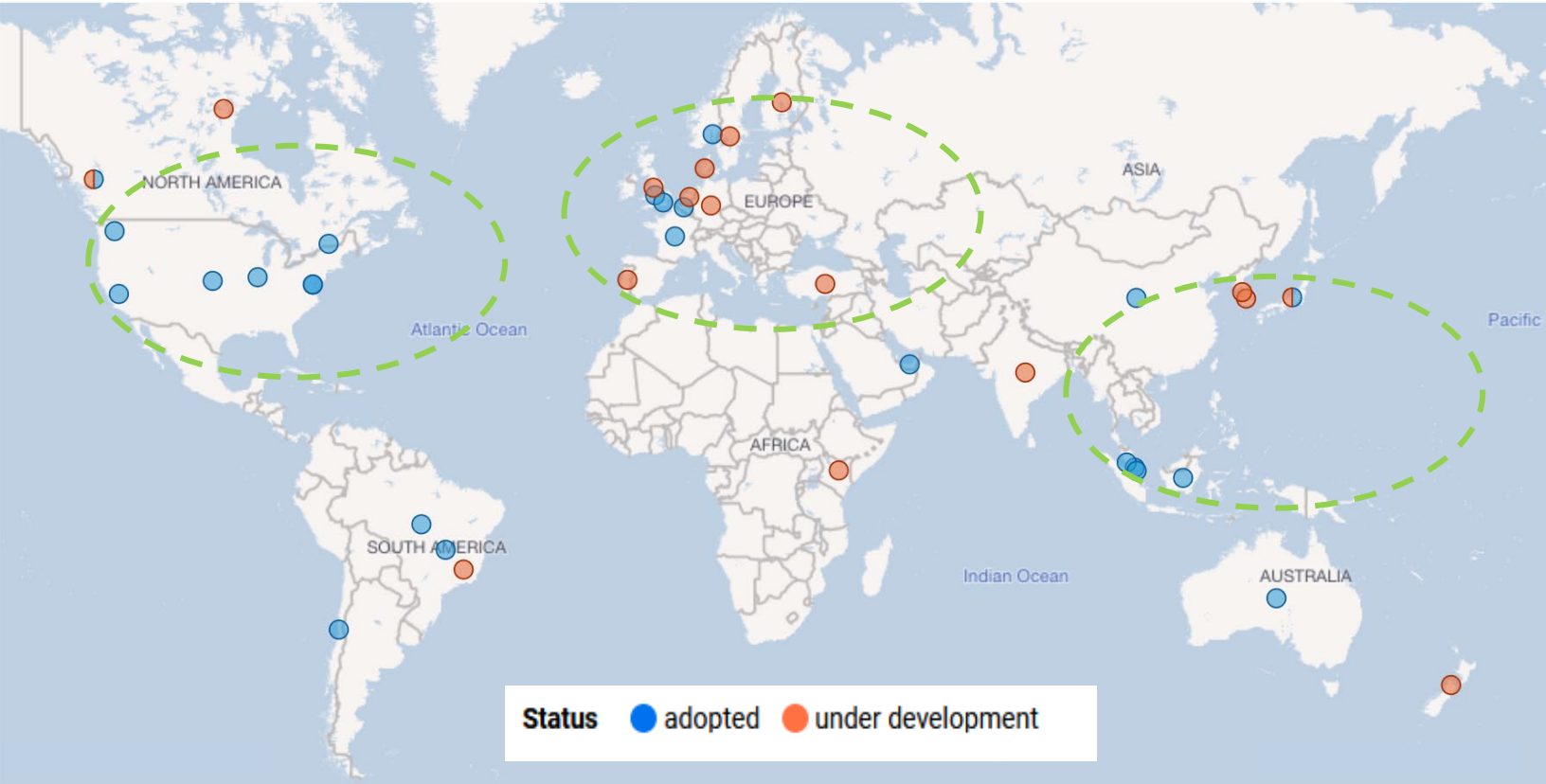
SAF production is mainly localised in EU and North America, where policies are mainly developed.



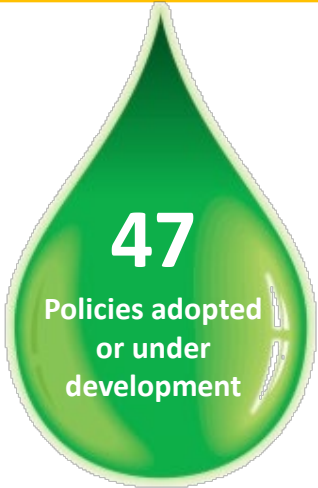
Despite some of the **policies** are only **under development** (not in force), this is enough to **stimulate SAF production** and the appearance of **new SAF projects**.

0.0 – ● 9.8k ● 1 - Initial Announcement ● 4 - In service-producing other renewable fuels ● 5 - In service- producing SAF
● 0 - cancelled/dormant project ● 3 - Under construction ● 2 - Front End Engineering Design (FEED)

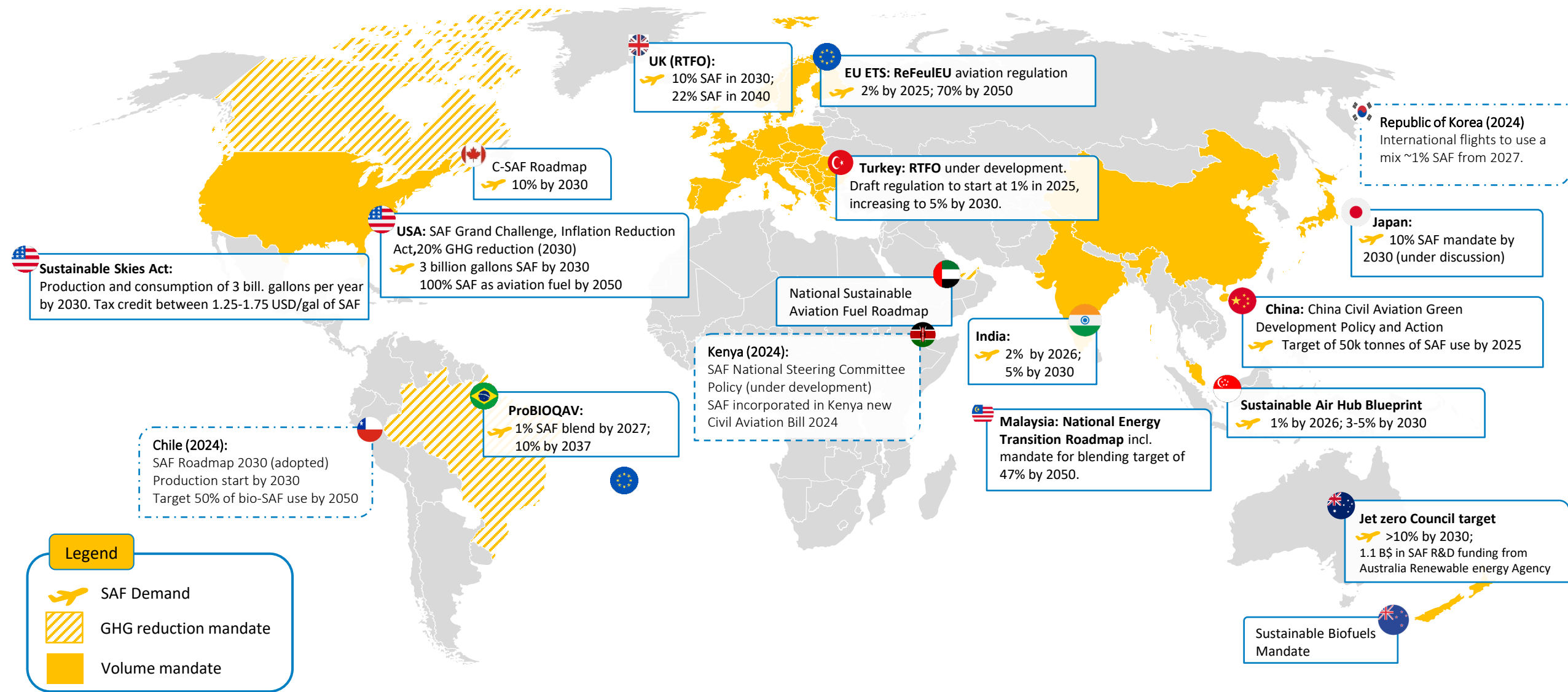
Policies have strong influence on SAF development, also if they are under development




Strong focus on **policies development** in the **U.S.** and **Europe**.




Global landscape of regulations (1/2)




Global landscape of regulations (2/2)




Transposing RED to national legislation




Finland: SAF obligation increase to reach 30% in 2030




Denmark: Fossil Fuel Free Domestic Flights by 2030




Netherlands: SAF Roadmap with blending mandate




Norway: SAF blend mandate 0.5% (2020), target 30% in 2030




Germany: Legislation for GHG reduction of fuels & Hydrogen Strategy




France: SAF Roadmap published 2020, aiming at 5% SAF in 2030




Sweden (2021): GHG reduction mandate (2021), target 27% in 2030



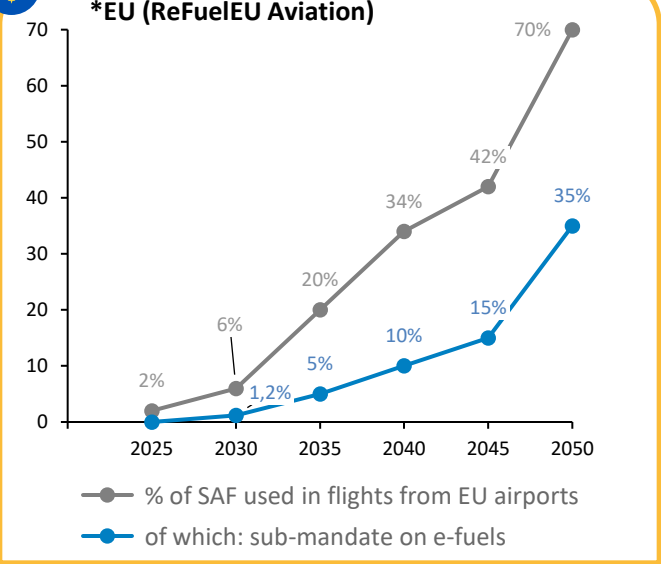
Spain (2023): Climate Change Law: 2% SAF supply in 2025



Portugal (2020): Roadmap for Carbon Neutrality 2050

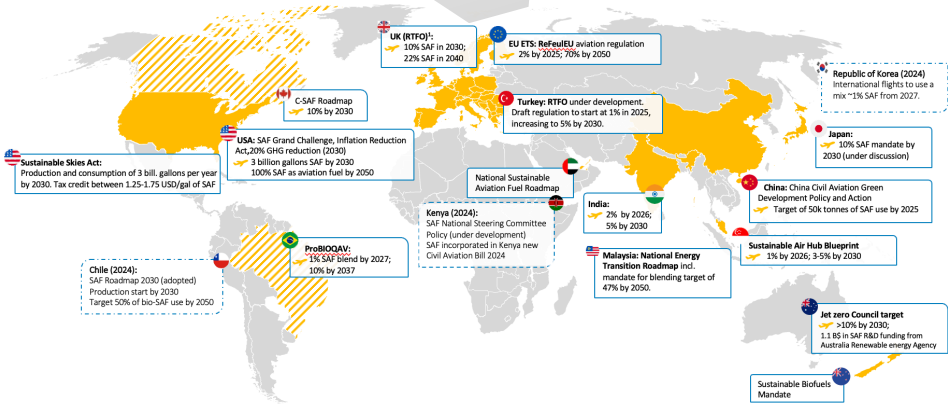


*EU (ReFuelEU Aviation)




Year	% of SAF used in flights from EU airports	% of which: sub-mandate on e-fuels
2025	2%	0%
2030	6%	1.2%
2035	20%	5%
2040	34%	10%
2045	42%	15%
2050	70%	35%

Legend:
● % of SAF used in flights from EU airports
● of which: sub-mandate on e-fuels



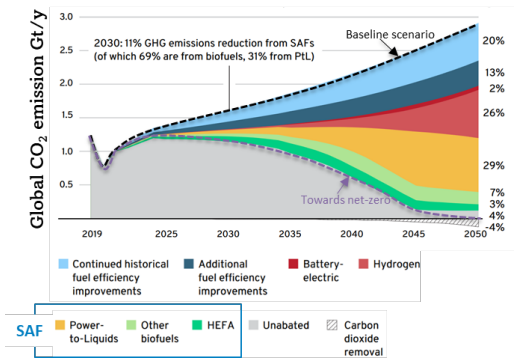
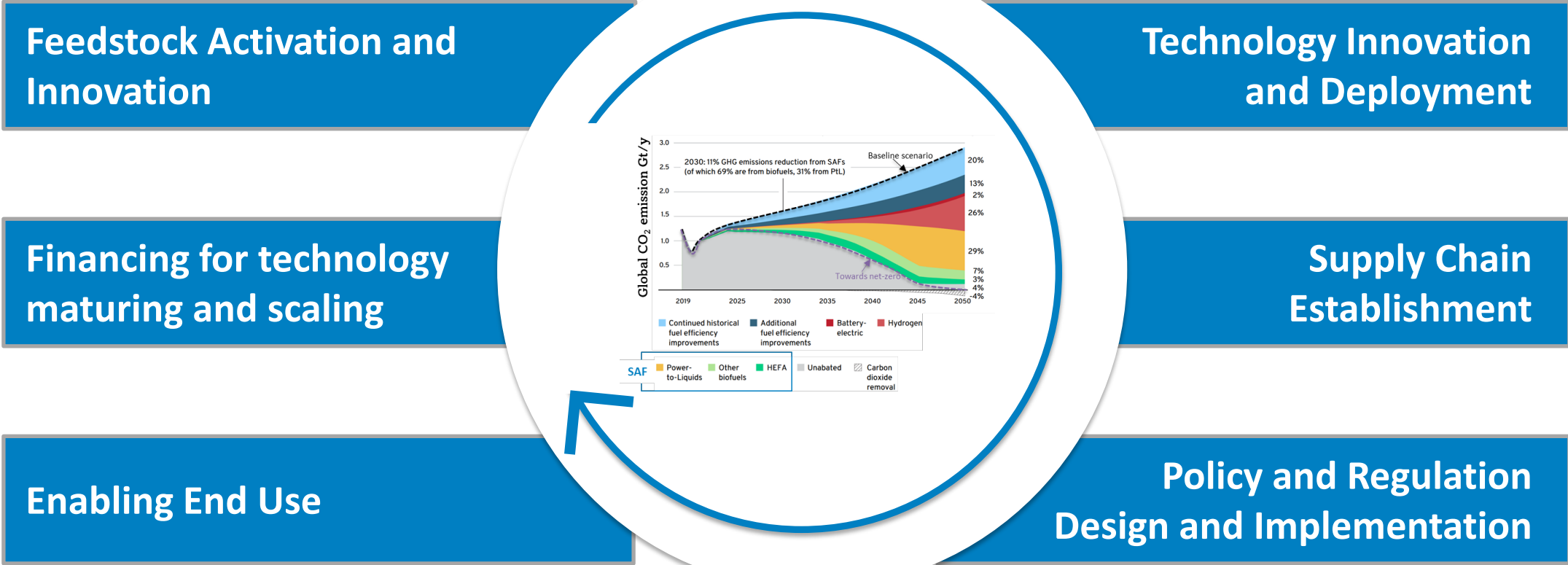
Global SAF regulations and targets:

- UK (RTFO):** 10% SAF in 2030; 22% SAF in 2040
- EU ETS: ReFuelEU aviation regulation** 2% by 2025; 70% by 2050
- C-SAF Roadmap** 10% by 2030
- USA: SAF Grand Challenge, Inflation Reduction Act** 20% GHG reduction (2030); 3 billion gallons SAF by 2030; 100% SAF as aviation fuel by 2050
- Turkey: RTFO under development.** Draft regulation to start at 1% in 2025, increasing to 5% by 2030.
- Republic of Korea (2024)** International flights to use a max ~1% SAF from 2027.
- Japan:** 10% SAF mandate by 2030 (under discussion)
- China: China Civil Aviation Green Development Policy and Action** Target of 50k tonnes of SAF use by 2025
- India:** 2% by 2026; 5% by 2030
- Kenya (2024):** SAF National Steering Committee Policy (under development) SAF incorporated in Kenya new Civil Aviation Bill 2024
- Malaysia: National Energy Transition Roadmap** incl. mandate for blending target of 47% by 2050.
- Sustainable Air Hub Blueprint** 1% by 2026; 3-5% by 2030
- Jet zero Council target** >10% by 2030; 1.1 B\$ in SAF R&D funding from Australia Renewable energy Agency
- Sustainable Biofuels Mandate**
- Chile (2024):** SAF Roadmap 2030 (adopted) Production start by 2030 Target 50% of bio-SAF use by 2050
- ProBioCIV:** 1% SAF blend by 2027; 10% by 2037
- Sustainable Skies Act:** Production and consumption of 3 billion gallons per year by 2030. Tax credit between 1.25-1.75 USD/gal of SAF



Source: CACAP; ICAO(2024)

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Consolidated overview of SAF national roadmaps objectives

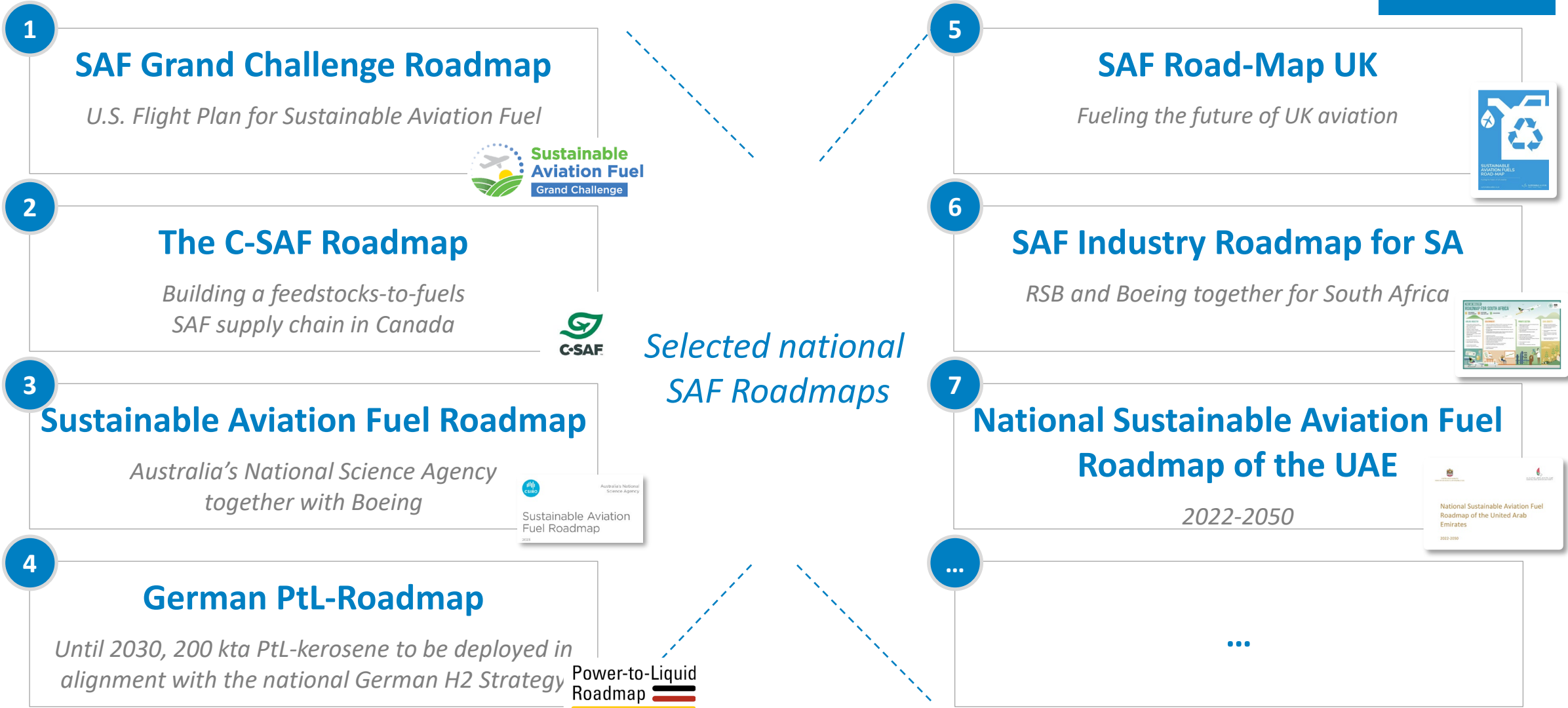


1 Technological Advancement and R&D	Address and Overcome SAF Production Barriers	Prioritize research to identify the most efficient and scalable SAF technologies
2 Feedstock Research and Utilization	Explore and Capitalize on Diverse SAF Feedstocks	Identify, research, and develop various sustainable feedstocks ensuring a resilient and diverse supply chain
3 Collaboration and Partnerships	Foster Global Collaboration and Stakeholder Engagement	Encourage public-private partnerships, global collaborations and engage stakeholders throughout the SAF supply chain
4 Infrastructure Development	Strengthen SAF Production and Distribution Infrastructure	Develop and enhance required infrastructure for production, distribution, and commercial deployment of SAF
5 Policy and Regulation	Implement Supportive SAF Policies and Frameworks	Design and promote national policies and regulations that incentivize SAF production, consumption, and investments
6 Education and Awareness	Boost Awareness and Adoption of SAF	Educate stakeholders across the aviation and energy sectors ensuring a well-informed industry and public
7 Economic and Commercial Viability	Ensure Economic Growth with SAF Initiatives	Addressing economic challenges, scaling production, and establishing a competitive SAF market

Examples and role models for national SAF Roadmaps and alike¹



NON-EXHAUSTIVE



1 U.S. SAF Grand Challenge Roadmap (1/2)



EXAMPLARY

About U.S. SAF Grand Challenge Roadmap

- ... enable **scale-up** of production and use of SAF to **3 billion gal/yr by 2030** and to **35 billion gal/yr in 2050** to meet **100% of domestic aviation fuel demand**
- ... **6 actions areas** are defined, here
 1. Feedstock Innovation
 2. Conversion Technology Innovation,
 3. Building Supply Chains
 4. Policy and Valuation Analysis
 5. Enabling End Use
 6. Communicating Progress and Building Support
- **Multistakeholder team** led by the DOE, DOT, and USDA worked with EPA, national labs, universities, nongovernmental organizations (NGOs), and the aviation, agricultural, and energy industries

Objectives of U.S. SAF Grand Challenge Roadmap

1

Expansion of SAF supply and end use

support regional feedstock and fuel production; workforce development; new infrastructure and commercialization support through federal programs; supporting policies; SAF pathways approval; outreach and coordination with military and industry end users

2

Reduction of SAF cost

drive down cost of production, expand the feedstock and conversion technology portfolio, leverage and repurpose existing production infrastructure, reduce risk to industry, and provide production incentives

3

Enhancement of SAF sustainability

maximizing environmental co-benefits of production, reducing the carbon intensity (CI) of supply chains, ensuring robust sustainability standards, and enabling approvals of higher blend levels of SAF

Key Actions To Support 2030 Production

- Build and support **stakeholder coalitions**
- Maximize **sustainable lipid supply** for 2030 (HEFA)
- Decarbonize, diversify, and scale current **fermentation-based fuel industry** (A2J)
- Invest in **SAF infrastructure**
- Develop improved **environmental models** and **data** for SAF
- Inform **SAF policy development**
- **Stakeholder** engagement on **sustainability**
- Enable use of **drop-in unblended SAF** and **SAF blends** up to **100%**
- Integrate **SAF** into **existing fuel distribution infrastructure**

Key Actions To Support 2030–2050 Production

- Conduct **RD&D on scaling** and **sustainability** of biomass, waste, and residue **feedstocks**
- Conduct **RD&D on feedstock logistics** and **handling** reliability
- **De-risk scale-up** through **R&D** and integrated **piloting of critical pathways**
- Build and support **regional stakeholder coalitions**
- Model and demonstrate **sustainable regional supply chains**
- Continue to **invest in industry deployment**
- Continue to **inform SAF policy development**
- Support **SAF qualification**

Overview on ambition level: Strategic timeline looking looks at a time horizon of three to five years





SAF Roadmap, Platform and Taskforce as central instruments activated via eight working packages

1

SAF Roadmap: Stakeholder Map

- Identification of all relevant stakeholders within the national SAF value chain
- Stakeholder activation
- Stakeholder onboarding

2

SAF Roadmap: Sponsorship

- Outline of required sponsorship support
- Identification of most eligible sponsors of SAF Roadmap & Engagement of sponsor(s)

3

SAF Roadmap: Vision & Mission

- Development of SAF Vision and Mission 2030 & beyond
- Set-up of strategic agenda 2023 with first defined strategic goals

4

SAF Roadmap: Action plan

- Projekt management capabilities established
- Break-down of strategic goals into actions
- Timeline 2023 elaboration

5

SAF Platform: Capacity Building

- Areas for capacity building
- Activation of experts and potential support, e.g., EASA
- Development of internal experts per dedicated areas

6

SAF Task Force: Organization chart & Ressource Planning

- Set-up of organigram
- Definition of required ressources and budgets
- Activation of ressources and budgets for 2023

7

SAF Task Force: Roles & Responsibilities

- Definition of roles within SAF task force (role model)
- Definition of leadership team
- Establishment of RACI matrix and responsibilities allocation

8

SAF Task Force: Governance - Rules & Procedures

- Principles of collaborating and working together
- Planning of meeting series 2023 and agendas
- Rotation of chairmanship

SAF Roadmap requires a Vision and Mission as cornerstones for the strategic goals and action plan



- Contribution of SAF Roadmap to **national decarbonization and net zero goals**
- Portion of SAF in the **national renewables mix**
- **Economic** and **social** beneficial **contribution**

- Creation of **SAF awareness** and **momentum** in the country
- Being a facilitator **connecting SAF value chain stakeholders**
- Being a **focal point of expertise** and capacities for SAF

- Expansion of **SAF supply** and **end use**
- **Reduction** of **SAF cost**
- Enhancement of **SAF sustainability**

- **Defined actions** with targeted **deliverables** linked to the **strategic goals** (contribution)
- **Defined timelines**, here 360 days plan plus strategic timeline covering three to five years

Examples

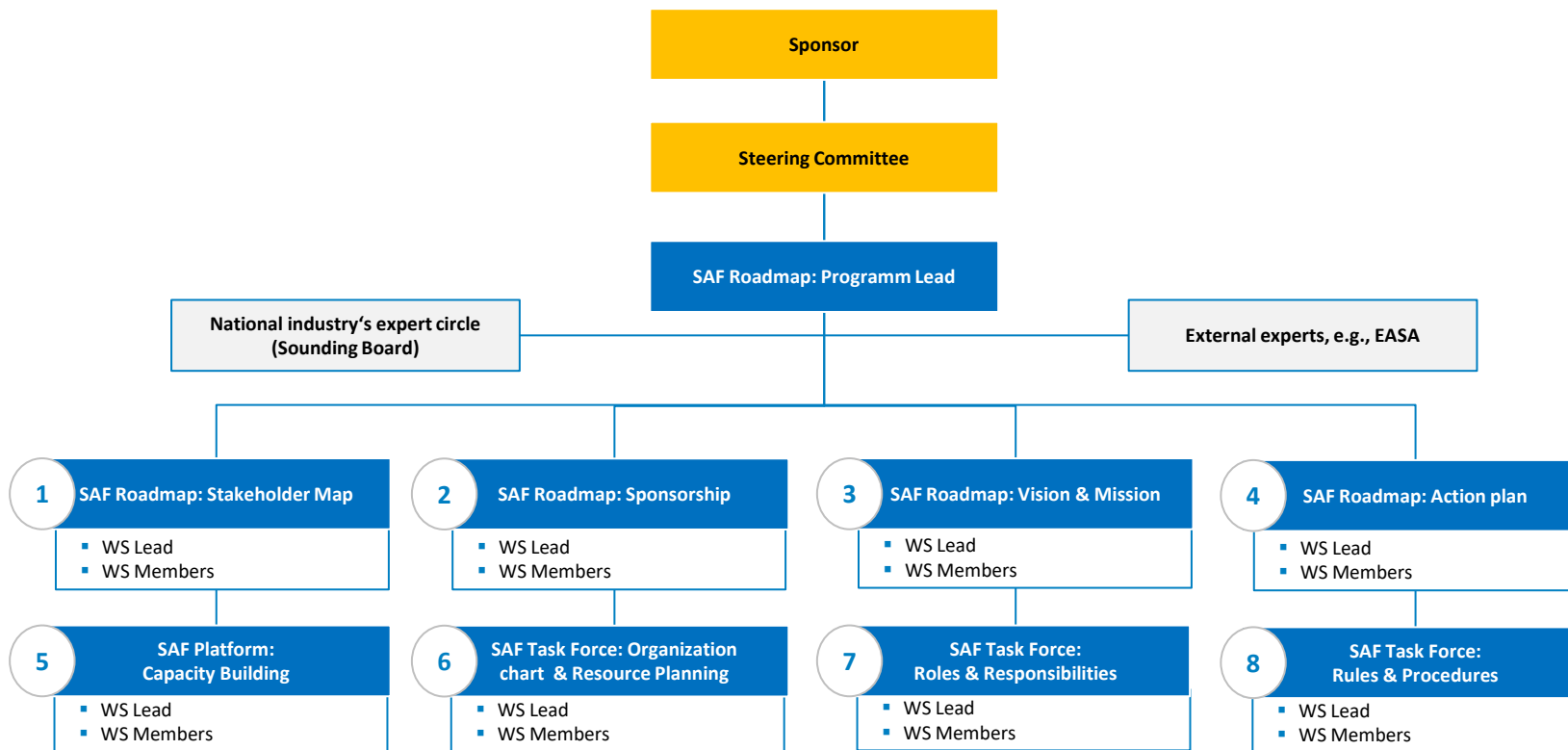
In order to institutionalize, an officially aligned and communicated organization chart should be put in place



1 SAF Roadmap: Stakeholder Map	2 SAF Roadmap: Sponsorship	3 SAF Roadmap: Vision & Mission	4 SAF Roadmap: Action plan
5 SAF Platform: Capacity Building	6 SAF Platform: Resource Planning	7 SAF Task Force: Roles & Responsibilities	8 SAF Task Force: Rules & Procedures

SAF Task Force organization chart

EXAMPLARY

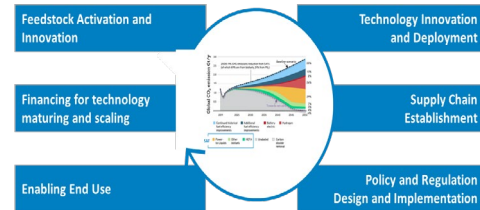


- Dedicated **organization chart** to install **steering and decision power**
- Highly recommended **Steering Committee** to be installed with key stakeholders, headed by the sponsor and/or rotating chairmanship, to get **commitment and execution power**
- **Dedicated workstream leaders** and teams to allocate **responsibilities**
- Institutionalized facilitation of expert **involvement**

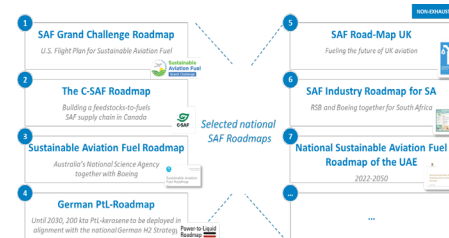
Key takeaways



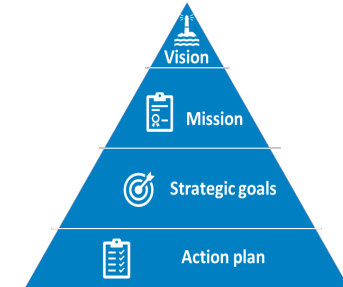
Multi-Stakeholder Collaboration is crucial to develop an integrated SAF value chain that balances technological innovation, financial viability, and policy alignment.



Achieving **net-zero emissions** by **2050** depends on the **pace of scaling up** and **deploying SAF** –
National SAF roadmaps as **pivotal catalysts**.



Required **SAF roadmaps** and **policies** for ramp-up, but need to be tailored to **regional-specific conditions**.



National SAF roadmaps define the **mid-term strategic directions** engaging all **key stakeholders**.

Thank you for your attention!

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