

Sustainable aviation fuel: multistakeholder initiatives mapping

Workshop report

September 2024



Sustainable aviation fuel: multistakeholder initiatives mapping

	Contents	Page
01	Executive summary	03
02	Key enablers to bridge the scale-up gap	05
03	Overview of initiatives and mapping results	11
04	Insights from the workshop	16
05	Agreed outcomes and next steps	20
06	About ATAG and PA Consulting	22
07	Appendix: Initiative overviews	28

Sustainable aviation fuel: multistakeholder initiatives mapping

1

Executive summary

Executive Summary

We are pleased to share with you the summary report from the work by ATAG and PA Consulting, focused on “sustainable aviation fuel: multistakeholder initiatives mapping”.

The aviation sector has committed to reaching net zero by 2050 and yet on current projections emissions from aviation still expected to reach 1.8 – 2 Gt CO₂ by that year. While other solutions exist, such as electric and hydrogen aircraft, the majority of these solutions will only be feasible in the medium-term and for short-haul flights. SAF will still be the most viable solution for emissions from aviation given its key advantages as an easily certifiable drop-in fuel.

In response to this global need for SAF to decarbonise aviation, there are a large number of multi-stakeholder SAF initiatives being developed around the world. These all have a very important aim: to help the rapid scale-up of SAF to help aviation meet its climate challenge.

However, the SAF scale-up challenge is significant. SAF production capacity in 2024 is expected to reach 1.5Mt and needs to increase to ~500Mt over the next 25 years. To achieve this, timing is critical. With 2030 just around the corner, investment decisions need to be made over the next 18 to 24 months. In addition to considering beyond 2030, and out to 2050, which in reality is not far away.

There is therefore no time for duplication in activity from the initiatives addressing the SAF scale-up challenge.

ATAG and PA Consulting have undertaken a mapping exercise to ensure that the distinct aim of each of the identified initiatives is understood. Importantly, to understand where there may be gaps in activity as we collectively work to accelerate the energy transition for aviation.

The approach to the exercise was two-fold: firstly, each of the initiatives were reviewed as a part of the initial mapping exercise. Followed by a workshop session that was held to discuss the mapping and have a wider conversation about the scale-up and how we can ensure the most efficient use of resources and look for any gaps in activity that should be filled.

This report summarises the findings of the mapping as well as the feedback and discussions that took place. Thank you to everyone that supported the SAF multistakeholder initiatives mapping.



Haldane Dodd

Executive Director, ATAG



Kata Cserep

Global Head of Aviation, PA Consulting

Sustainable aviation fuel: multistakeholder initiatives mapping

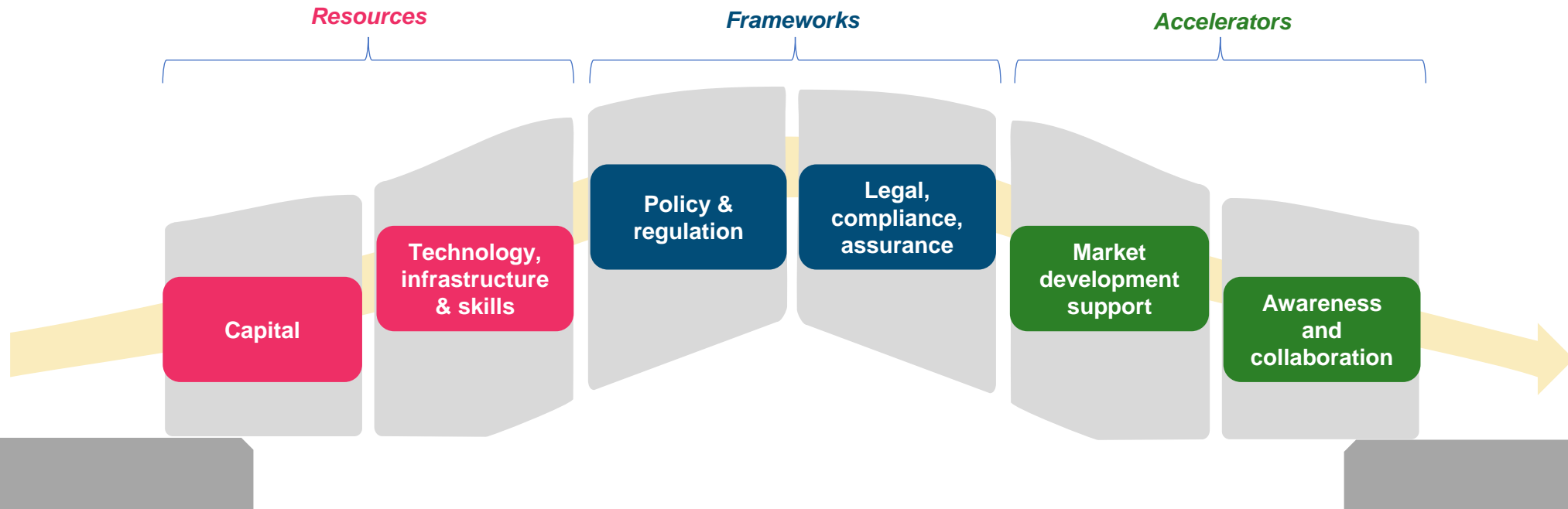
2

Key enablers to bridge the scale-up gap

Key enablers that will help us to bridge the scale-up gap

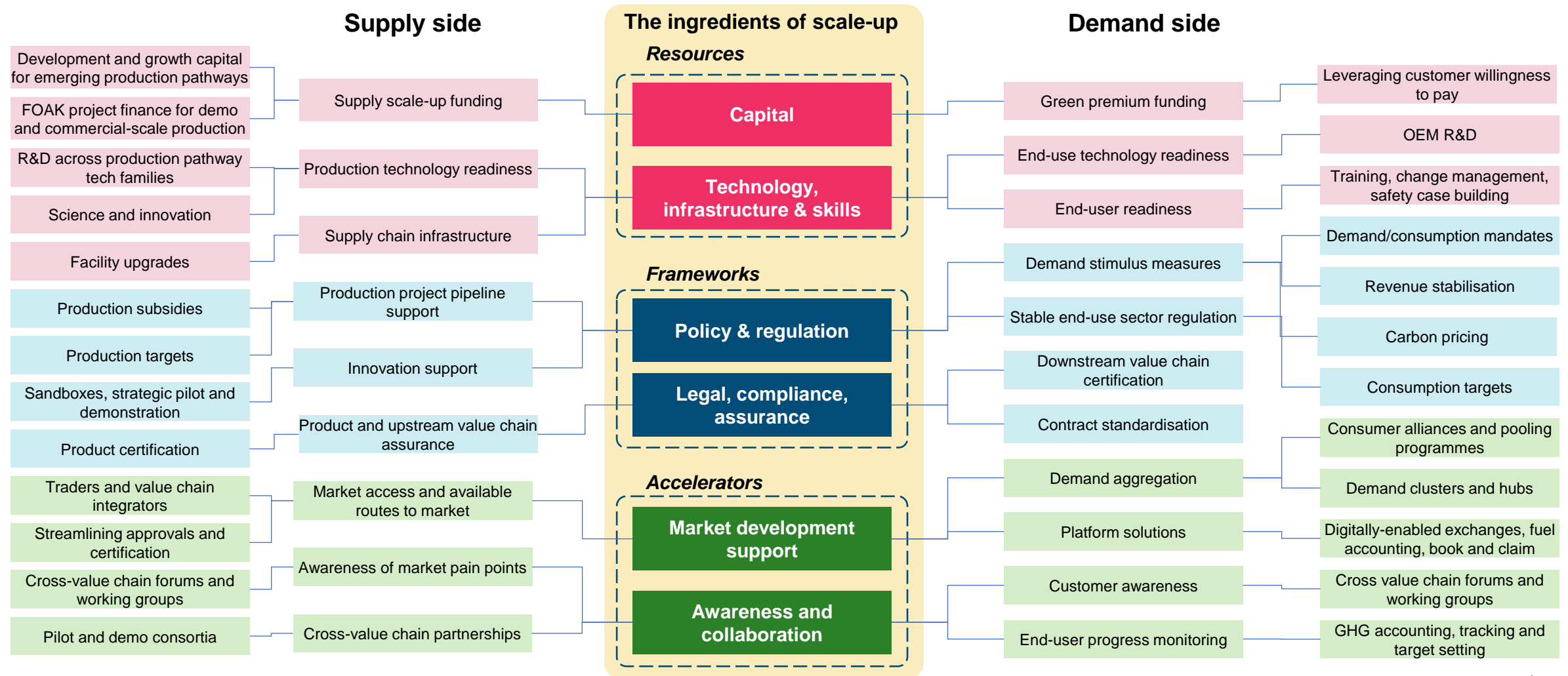
Bringing together the key ingredients of scale-up to form a coherent scale-up pathway

Any new technology scale-up requires key enablers which support transition from concept to commercial maturity. There are *resources* required as inputs to scale-up, *frameworks* which can support, de-risk and legitimise the new technology, and *accelerators* which can speed progress along the maturity curve. The bridge's stepping stones illustrate the necessity of having each of these in place and evolving in concert; if any one piece is missing, progress can stall.



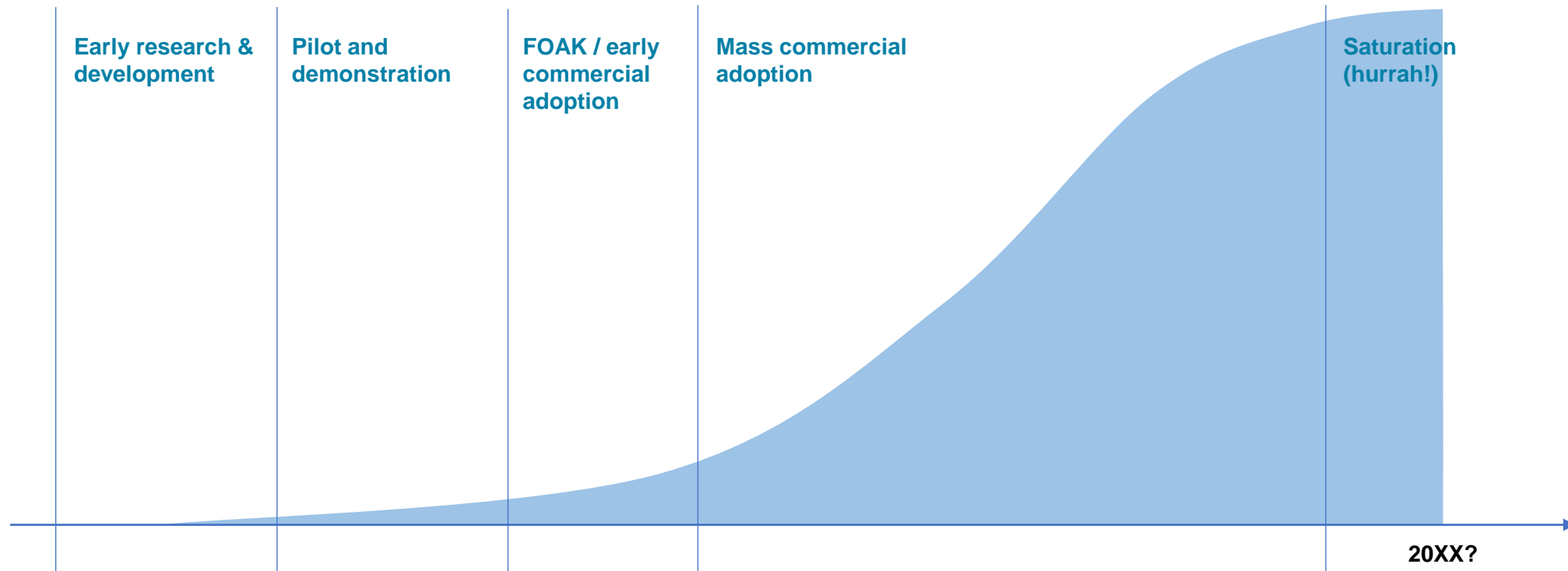
Thinking about coordination from different perspectives

1) 'Making' the market from both sides



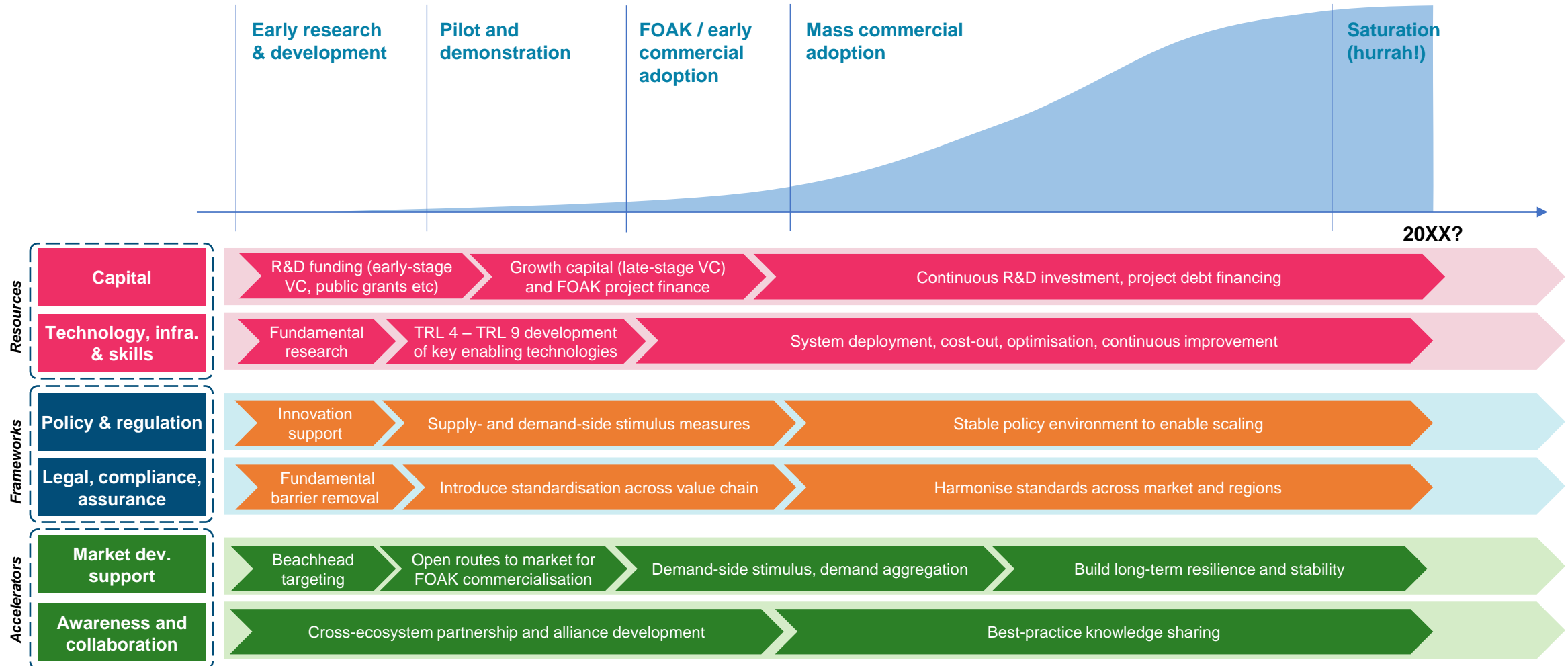
Thinking about coordination from different perspectives

2) Timing is everything – the right measures for the right phase of scale-up



Thinking about coordination from different perspectives

2) Timing is everything – the right measures for the right phase of scale-up

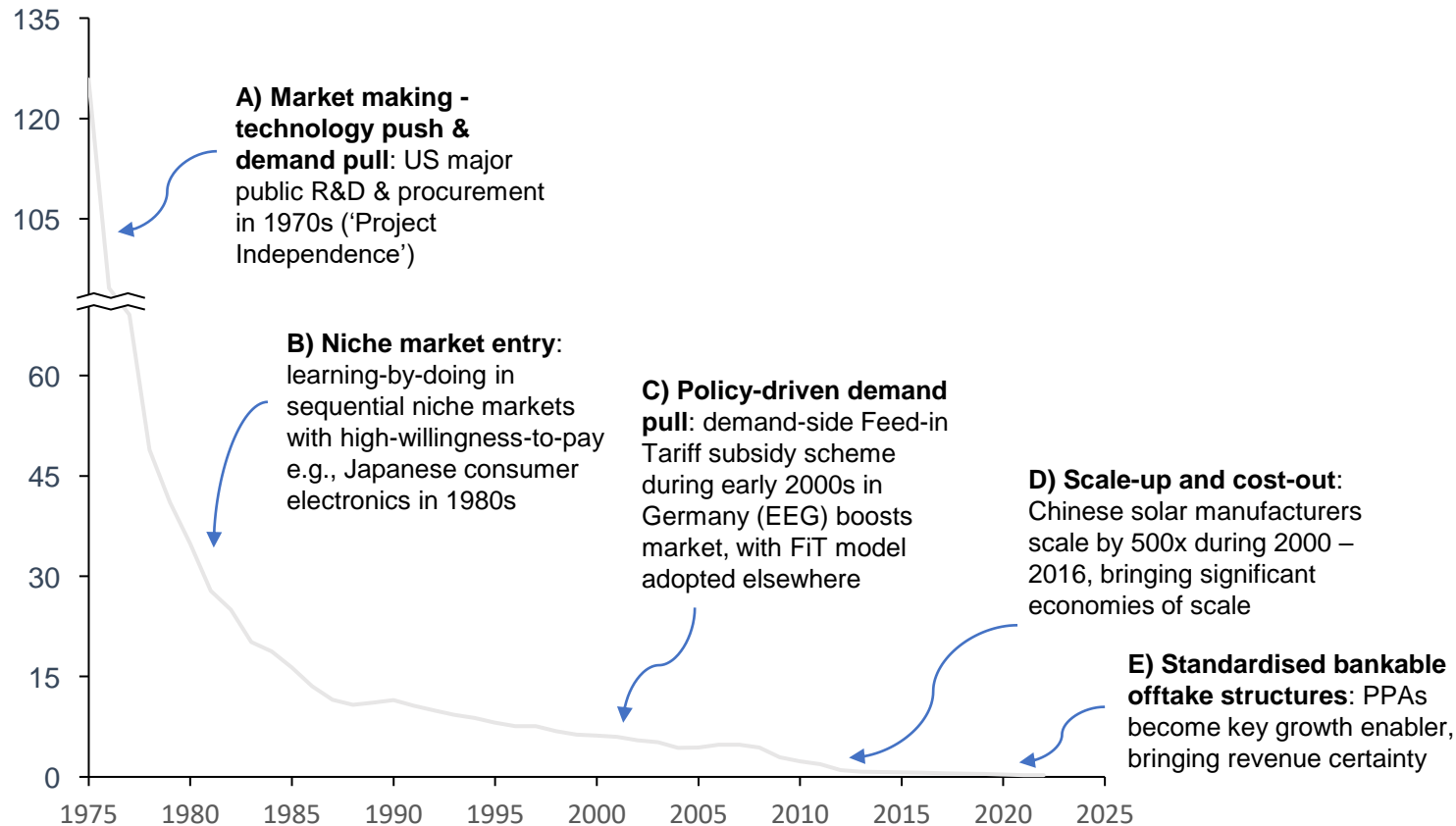


Thinking about coordination from different perspectives

3) Focusing on what works - lessons from the story of solar



Solar PV module price
USD/W



Sources/credit: IRENA (2023), Nemet (2019). Prices in 2022 USD, adjusted for inflation

Key success drivers

A) Market making: coordinated technology push and demand pull

B) Niche beachhead segments with high willingness-to-pay

C) Sustained policy support on supply and demand side

D) Production scale-up and continuous R&D to drive cost out and optimisation

E) Standardised offtake structures to aid bankability and scale-up

How could this be applied in aviation?

- Coordinated multilateral partnerships (e.g., OEM-offtaker-financier)
- Targeted cost pass-through to customers with high willingness to pay (business travel etc)
- Right blend of revenue support/ mandates/ Incentives across key regions
- Production efficiency improvements
- Modular construction
- Introducing standardised, well-understood forms of contracting across value chain

Sustainable aviation fuel: multistakeholder initiatives mapping

3

Overview of initiatives and mapping results

24 multi-stakeholder industry initiatives involved in SAF scale-up were identified and mapped for the purpose of this exercise

Project SkyPower		Sustainable Markets Initiative		Aviation Climate Taskforce		C2ES	
Mission Possible Partnership		Impact		RSB		First Movers Coalition	
Airports of Tomorrow		Rocky Mountain Institute		DOE Loan Programs Office		Green Finance Institute	
Industrial Transition Accelerator		SAF Coalition		GBTA		TPG Rise Climate	
WTTC SAF Project		Smart Freight Centre		Biofuture Campaign		ICAO Finvest Hub	
Mundys		SABA		Americans for Clean Aviation Fuels		Breakthrough Energy	

Please see section 7 for summary overviews of each initiative.

Results from the SAF initiative mapping exercise

1) Enabler heatmap

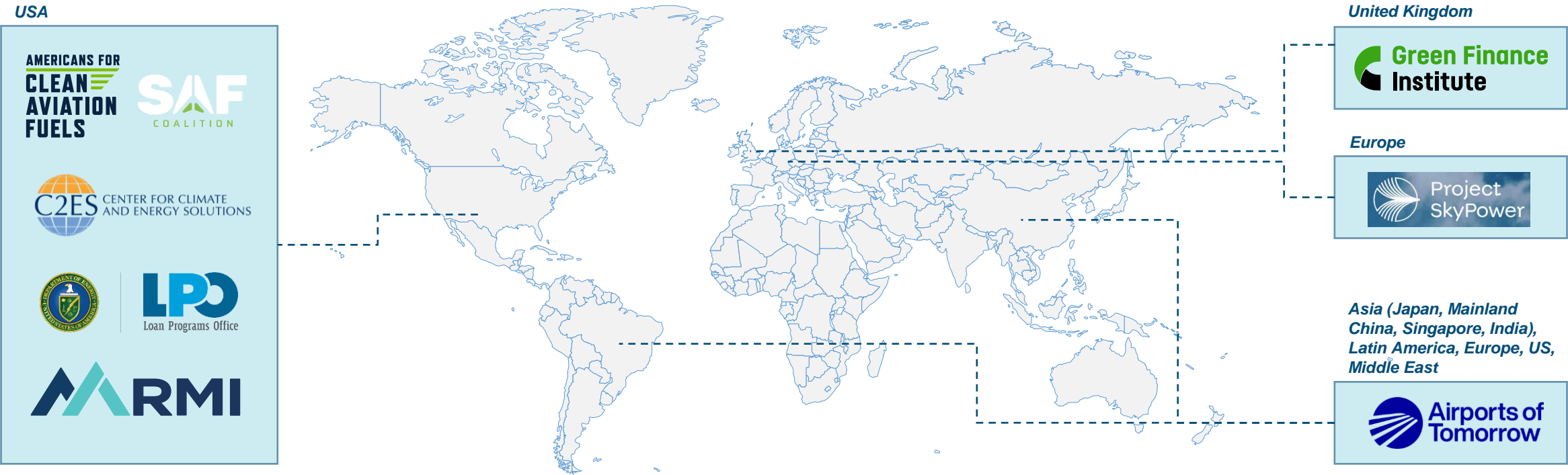
Initiative	Capital	Tech., infra., skills	Policy and regulation	Legal, compliance, assurance	Market dev. support	Awareness and collaboration
Project SkyPower						
Industrial Transitions Accelerator						
Breakthrough Energy						
Airports of Tomorrow						
DOE Loan Programs Office						
Impact						
Mundys						
TPG Rise						
Green Finance Institute						
Aviation Climate Taskforce						
Mission Possible Partnership						
Rocky Mountain Institute						
SAF Coalition						
GBTA						
Sustainable Markets Initiative						
RSB						
ACAF						
First Movers Coalition						
Sustainable Aviation Buyers Alliance						
Smart Freight Centre						
C2ES SAF Working Group						
WTTC SAF project						
Biofuture Campaign						

The different initiatives were mapped against the various enablers, highlighting that most initiatives focus on more than one enabler, with some focusing on almost all.

The colours indicate the relative level of focus of an initiative against the key enablers, where the darker shade of colour is representative of a more significant focus. This is based on a qualitative assessment by PA.

Overall, the results presented show that the majority of initiatives have a strong focus on capital, plus awareness & collaboration. This was done purposefully from the outset of the mapping exercise, as the focus was to identify capital focused multi-stakeholder industry SAF initiatives.

Most of the initiatives cover multiple geographies, but there are also several which are clearly focused on a particular region



Non-country specific: Multiple of the mapped initiatives work on a global level to facilitate the SAF scale-up





As a key enabler for SAF scale-up, we have segmented capital into sub-activities and identified various parameters of focus

	Focus area	Time horizon of initiative	Granularity	Primary activities in enabling capital			
Initiative	Supply-side / demand-side	Short-term time bound / long-term enduring	Project level / sector-level interventions	Direct capital deployment	Convening role	Structural support (e.g., frameworks / roadmaps)	Tools and actionable insight
Breakthrough Energy	Supply-side	Long-term	Project-level	Equity and grant funding for projects and initiatives			
Industrial Transitions Accelerator	Supply side	Short-terms	Sector-level		Multi-stakeholder effort to catalyse supply side investment		
Airports of Tomorrow	Supply side	Short-term	Sector-level		Convening stakeholders to tackle production scaling barriers		
Project SkyPower	Supply side	Short-term	Project-level (large-scale e-SAF)		Multi-stakeholder effort to tackle bankability of specific e-SAF projects	De-risking framework to unlock specific projects	
Mundys	Cross-market	Long-term	Project-level	Interest in enabling tech and infra across value chain			
Impact	Cross-market	Long-term	Sector-level		Convener across industry, finance, policy and science		Progress monitoring and data transparency
Sustainable Markets Initiative	Cross-market	Long-term	Sector-level		Convening leaders across industry, finance, policy etc		
TPG Rise	Cross-market	Long-term	Project-level	Growth equity in sustainable fuels space			
Green Finance Institute	Supply side	Long-term (with near-term goals also)	Sector-level		Multi-stakeholder effort to tackle supply-side risks and crowd in capital	Testing and demonstrating finance solutions	
Aviation Climate Taskforce	Supply side	Long-term	Project-level	Low-TRL R&D funding	Convening multi-disciplinary innovation networks		
DOE Loan Programs Office	Supply-side	Long-term	Project-level	Debt and loan guarantees for production projects			

Sustainable aviation fuel: multistakeholder initiatives mapping

4

Insights from the workshop

Summary of perspectives from the workshop: Gap analysis

1. Investors are struggling to make the case for long-term investments in SAF

Producers are currently facing difficulties in getting their SAF plants to FID, while investors are struggling to make the case for long term investments in SAF. Further work is required to demonstrate bankability of SAF projects to ensure necessary investments at the scale required; it was noted that several of the initiatives in the mapping are targeting this area of challenge.

2. Gap in confidence over the SAF policies and regulations being announced

There is uncertainty from the market as to whether regulatory bodies will stick to their announced targets and mandates, and how any future changes may have an impact on SAF demand and supply. A stocktake of current policies is required to understand where policies are working and where they are failing to support SAF scale-up.

3. Inability to take credit for SAF purchases through a collective offtake agreement

The industry is turning to new methods of sending demand signals to producers, such as through collective offtake agreements. However, an inability by SAF purchasers to take credit for this purchase and associated emissions reductions with confidence was highlighted. This is noted as a gap and a blocker to more substantial corporate SAF demand.

4. Alignment lacking between different governments on how feedstocks are prioritised

Currently feedstocks needed to produce SAF are under heavy competition for their use in other sectors. Alignment between different governments globally, as well departments within government bodies, is therefore required to facilitate there being sufficient volumes to allow SAF to scale for the aviation industry.

5. Skills gap currently prominent within the SAF industry

Large majority of the skills required by the SAF industry remain within the oil and gas sector. Work is therefore required to ensure the right skills are in the correct place, including a mapping of the skills and academic requirements needed by the SAF industry.

Summary of perspectives from the workshop: **Co-ordination**

1. Co-ordination required to drive capital more effectively into SAF projects

Highlighted multiple initiatives currently have primary activities focused on enabling capital through playing a convening role. Further work required to turn this into specific frameworks and approaches that can be used for de-risking at project level to bring capacity to market.

2. Improved cross-industry partnerships needed to ensure lessons learnt from recent SAF project failures

Multiple SAF project failures announced in recent months, which have resulted in a combined ~1m tonnes SAF capacity setback (against ~20 Mt forecast by 2030). Industry co-ordination required to ensure lessons are learnt from this setback and do not get repeated.

3. A more truly global effort required to co-ordinate on SAF scale-up

Mapping results identified many initiatives are 'globally focused', therefore non-country specific and consequently not addressing topics such as regional barriers to scaling SAF. As a result, it is encouraged that initiatives working 'globally' also take a specific geographic focus.

4. A clear definition of the effectiveness of each initiative is required to ensure true progress is underway

As part of the maturing of the SAF scale-up landscape, completing a regular stock-take of the progress made by each initiative (by themselves or independently), is needed to ensure true progress is being made. Where synergies or opportunities for teaming-up or streamlining exist, these should be grasped, in service of more effective global progress.

5. Supporting ongoing co-ordination between the mapped initiatives required

Value identified during the workshop from understanding what the different initiatives are pursuing, as well as relevant information sharing. It was therefore proposed that to ensure future efforts are co-ordinated, an annual gathering is held, and newsletters published during the year.

Summary of perspectives from the workshop: **Do we need more co-ordination?**

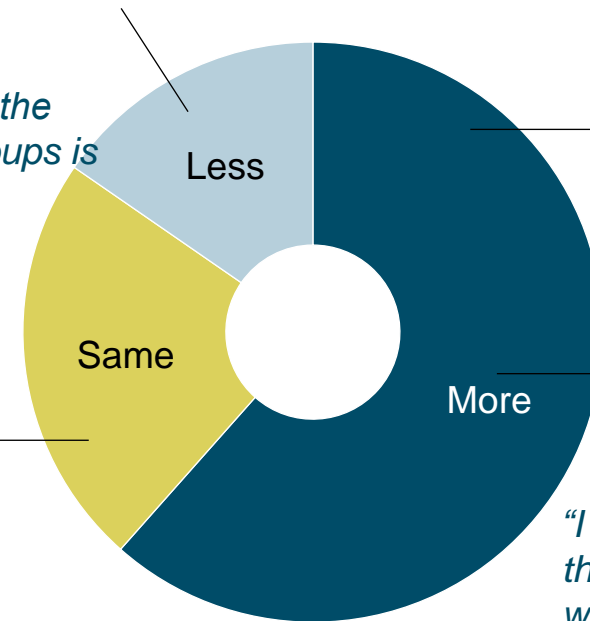
To understand how participants of the workshop felt current initiatives supported SAF scale-up, they were asked whether they felt there should be more, less or the same amount of co-ordination between initiatives focused on SAF.

Discussions highlighted a range of different views, driven by geographical differences as well as the stakeholders. It was notable that SAF industry stakeholders (e.g. producers, airports, airlines) were generally less in favour of additional co-ordination efforts than the multi-stakeholder initiatives whose day job already includes co-ordination with stakeholders.

“The market is the market – we should leave it to work itself out.”

“The overhead from all the events and working groups is already excessive”

“The level of co-ordination works well from my perspective”



“More harmonisation across the different initiatives is needed. A lot of noise currently creating increased complexity to manage.”

“Analysis required on where policy in-country is and is not effectively allowing SAF to scale.”

“I was not previously aware of the extent of different initiatives working on SAF scale-up; I would like to be more regularly updated.”

“We need consolidation, not just co-ordination – too many differing initiatives, e.g., in book & claim, not helpful for scale-up.”

Sustainable aviation fuel: multistakeholder initiatives mapping

5 Agreed outcomes and next steps

Agreed outcomes and next steps following the workshop

ATAG to confirm when the final report is released

Sustainable aviation fuel: multistakeholder initiatives mapping

6

About ATAG and PA Consulting

About ATAG: our members

Principal partners



Strategic associates



Affiliates



Supporters

15 additional members including: AACO, A4E, AIRE, ALTA, Comac, ERA, FNAM, Genève Aéroport, IARO, ICC, ICCAIA, PATA, Paris Aéroport, ROMATSA and WTTC.



About PA: PA in numbers

We are more than

4,000

experts working from offices across the UK, Ireland, US, Netherlands, and Nordics.

fee income

£790m

fee income growth in five years

73%

Clients would recommend us

97%

Working in global teams across seven sectors



Consumer and
Manufacturing



Government and
Public Services



Defence
and Security



Health and
Life Sciences



Energy
and Utilities



Transport

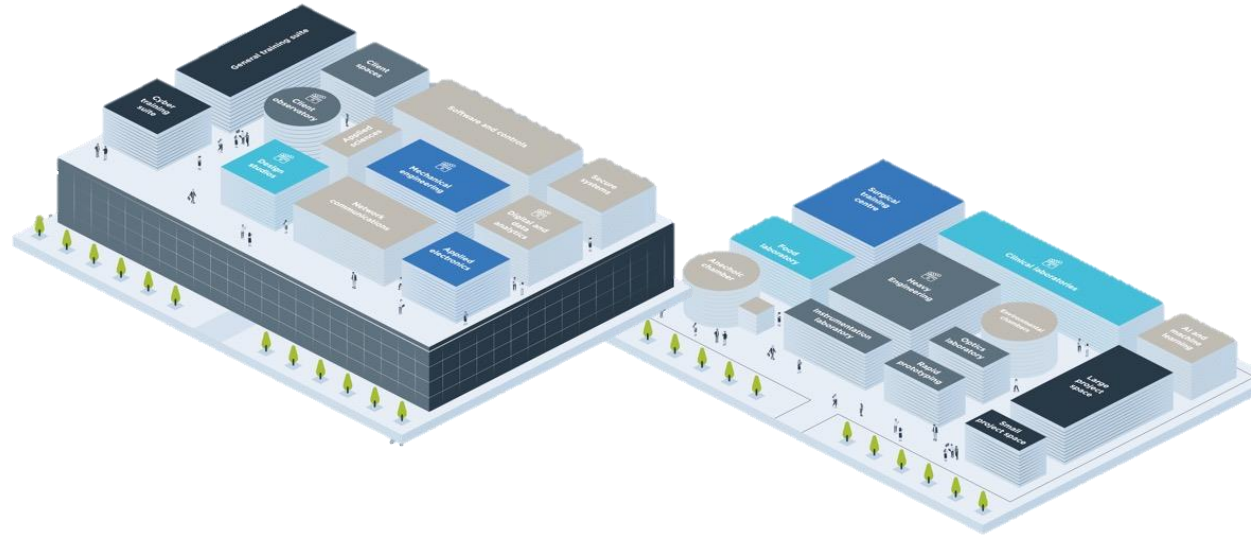


Financial
Services

and our team of c.400 scientists and engineers in PA's **Global Innovation Technology Centre (GITC)** in Cambridge, UK.

About PA: PA's Global Innovation & Technology Centre

Our Global Innovation and Technology Centre (GITC) in the UK is home to more than 500+ strategists, scientists, designers, technologists and engineers. Across 11,000 square meters of design studios, laboratories and engineering workshops, our experts take our clients' biggest challenges and deliver the end-to-end innovation journey.



Design

- Digital/user experience design
- Industrial and service design
- Engineering development
- Quality management
- Design thinking

New product design and development

- New concept identification
- Technical feasibility assessment
- Product development and sample production
- Digital and customer experience design
- Transfer to manufacturing

Manufacturing process design and innovation

- Bespoke manufacturing equipment
- Manufacturing system integration
- Sharing and sourcing networks
- Sustainability in manufacturing

Technology and innovation strategy

- Innovation strategy development
- Customer digital insights and focus groups
- Innovation and R&D
- Technology acquisition and strategy
- IP and knowledge management



About PA: We are at the intersection of sustainable fuels

We are at the intersection of sustainable fuels, policy & regulation and forecasting market pricing and strategy development, with proven track record across all of these areas.

Our credentials include delivering the future vision for sustainable fuels, to developing its technologies, and writing decarbonisation policies.

We have deep industry expertise, whilst understanding the mutual dependencies and synergies between the different parts of the aviation value chain.



About PA: Our PA team who joined the workshop



Kata Cserep

Global Head of Aviation

With 20 years of commercial aviation experience across the industry, Kata is an expert in the linkages and tensions that characterise and shape aviation. She was the PD on ATAG's Fuelling Net Zero report and works with investors, airlines and airports on SAF-related topics. Kata joined PA in June 2023 with a focus on bringing the full breadth of PA's capabilities to the aviation ecosystem.

Kata.Cserep@paconsulting.com



Mike Davis

Emerging Low Carbon Technologies

Mike works with clients across the clean energy and climate tech space providing strategic advisory support. He has worked across sustainable fuel value chains and emerging offtake markets, with projects ranging from strategy development for major energy companies to due diligence of climate tech technology developers.

Mike.Davis@paconsulting.com



Amelia Garbutt

Sustainable Aviation Fuel

Amelia is a strategy consultant with a specialist focus on sustainable fuel offtake markets, with a detailed understanding from a regulatory and technology angle. Recently, Amelia has collaborated with airports to develop their SAF strategies, created a global SAF tracking tool with an OEM and worked with eSAF investors.

Amelia.Garbutt@paconsulting.com



Kim McCann

Sustainable Fuels Partner

Since 2006 Kim has focused on the re-engineering of value chains in the energy industry to define the technology changes for a net zero future, particularly in hardest to decarbonise industry and transport such as Aviation and Maritime. Kim is working extensively in the commercialisation of Hydrogen, PtL, Waste to X and other tech.

Kim.McCann@paconsulting.com



Gian Dapul

Energy Transition Investment Strategy

With a decade of experience in clean energy and energy transition strategy, Gian's main focus at PA is helping industrial and energy clients decarbonise. Prior to PA, Gian was at McKinsey supporting buy-side and sell-side due diligence processes for a wide variety of investors and portfolio companies in energy and adjacent industries.

Gian.Dapul@paconsulting.com



Mikel Santos

Sustainability Transformation

Mikel specialises in sustainable growth strategy and technology & innovation driven transformation. He has over 18 years' experience working for large multinationals, governments and regulators across different sectors with a focus on energy, transport and industrial manufacturing.

Mikel.Santos@paconsulting.com

Sustainable aviation fuel: multistakeholder initiatives mapping

7 Appendix: Initiative overviews

Initiative overviews: Project SkyPower and MPP

Project SkyPower



Key enablers	Capital - Awareness and collaboration
Geography	Europe

Overview of the initiative

- Project SkyPower’s mission is to pave the way for the first large-scale e-SAF plants in Europe to reach FID by 2025 to drive progress towards key regulatory targets (ReFuelEU and UK mandate), and e-SAF market tipping points in the 2030s. The vision is to make e-SAF a commercial reality by 2030.
- The initiative aim is to bring transparency to e-SAF value chain economics in a series of investment fora which will explore pathways to bankability for individual large-scale e-SAF plants in Europe. This series of fora will result in a clear action plan that will be implemented through industry-led projects.
- The project is spearheaded by a group of 12 CEOs with representation from across the European aviation value chain. Such organisations include: AirFranceKLM Group, Technip, Velocys, Topsoe, SkyNRG, Natixis.
- Project SkyPower presents a time-bound initiative (2024-2025) to accelerate e-SAF development in Europe. The project will foster value chain collaboration, unifying the voice of pioneers from across the entire e-SAF ecosystem.

Project Mission Possible Partnership (MPP)




Key enablers	Capital - Policy and regulation - Market development support - Awareness and collaboration
Geography	Non-country specific

Overview of the initiative

- Led by the ETC, RMI, the We Mean Business Coalition, and WEF, MPP is an alliance of climate leaders focused on supercharging the decarbonisation of 7 global industries representing 30% of emissions, one of which includes aviation.
- Endorsed by major global aviation leaders, MPP’s Aviation Transition Strategy provides a shared vision for the industry’s low-carbon future, detailing real economy milestones detailing industry, policy and finance action required to get to net zero on a 1.5°C-aligned pathway. It outlines, for instance, that 10–15% of the final jet fuel demand need to come from SAFs by 2030 to kick off the transition to net-zero in the 2030s and 2040s – requiring a ramp-up of the current SAF project pipeline by a factor of 5–6 by 2030.
- MPP have also set an industry target of 300 SAF plants by 2030, of which these must achieve FID within the next 3 year. Progress is being tracked through MPP’s Global Project Tracker. MPP’s Tracker maps announcements, investment decisions and operations of net-zero-aligned industrial projects across critical industrial sectors globally.

Initiative overviews: impact and Mundys

impact



Key enablers

Capital - Awareness and collaboration


Geography

Non-country specific

Overview of the initiative

- impact brings together financial institutions and aviation companies that recognise clear and simple emissions standards in financing contracts as the lever to make flying more sustainable. An independent non-profit association, impact is a forum that enables various stakeholder groups to share expertise and collaborate to at last reduce emissions in a consequential way.
- impact's focus lies on measuring the decoupling of aviation's CO₂ emissions from the industry's economic output by using three essential KPIs. (1) How much CO₂ does an airline emit in total? (2) How much CO₂ is needed to produce a certain unit of capacity? (3) How closely are CO₂ emissions trends coupled with capacity changes?
- Members actively contribute to working groups, of which impact has five. The association provides a framework for these expert bodies to produce concrete proposals in: Transition finance for airlines and lessors, enablers, science and reporting. Impacts 30 plus members include respected banks, lessors, investors, law and consulting firms. Such as CBA, ING, Bank of China, KPMG.

Mundys



Key enablers

Capital - Awareness and collaboration

Geography

Non-country specific

Overview of the initiative

- Mundys is a diversified global infrastructure group that manages motorway and airport concessions, offers mobility services and intelligent transport systems with a portfolio of assets that combines transport infrastructure concessions with digital service platforms to provide advanced mobility services.
- Mundys' mission is to drive the development of increasingly sustainable, safe, smart and efficient mobility solutions while underpinning the creation of economic and social value for communities and territories where we operate.
- Mundys do this through active investment in cutting-edge assets, capable of offering mobility services that provide a stand-out travel experience; as well as simplify daily life of people and fostering economic and social progress, triggered by innovative and environmentally-friendly mobility solutions.
- Mundy's is also actively working, as part of Airports of Tomorrow, on exploring blended finance solutions for SAF project funding to accelerate scale-up, although this process is in relative infancy.

Initiative overviews: WTTC and GBTA

World Travel & Tourism Council (WTTC) SAF project



Key enablers	Awareness and collaboration
Geography	Non-country specific

Overview of the initiative

- The aim of WTTC’s SAF project is to support its members and send a clear signal to fuel producers on how the Travel & Tourism sector can drive SAF uptake, while also demonstrating solidarity with the aviation community. This recognises the significant role Travel & Tourism can play in supporting SAF, which is currently largely unexplored.
- The project is being completed across 4 phases by WTTC and ICF, ending in a workshop. The workshop objective to coordinate joint actions and collaboration across different membership types, collect further feedback and prepare an action plan outlining optimal role of WTTC on SAF and next steps. WTTC and ICF aspire to present project outcomes at COP29 in November 2024.
- WTTC’s members are the Chairmen or Chief Executives of leading global Travel & Tourism companies, from all geographies and industries, including hotels, airlines, airports, tour operators, cruise, car rental, travel agents, rail, as well as the emergent sharing economy, enabling them to speak with one voice to governments and international bodies.

Global Business Travel Association (GBTA)



Key enablers	Awareness and collaboration
Geography	Non-country specific

Overview of the initiative

- GBTA and its 8,000+ members represent and advocate for the \$1,357 trillion global business travel and meetings industry. GBTA and the GBTA Foundation deliver education, events, research, advocacy, and media to a growing global network of more than 28,000 travel professionals and 125,000 active contacts.
- GBTA supports its business travel members to manage their emissions, for example with SAF. GBTA achieves this through educating its members by sharing industry best practice.
- In 2023 the GBTA Foundation published its report, Managing Emissions from Business Travel Programs: Overview of Corporate Best Practices. Within the report includes key advice on SAF in relation to its purchasing options (i.e., from the airline, SAF producer/retailer and a buyer's alliance).
- The GBTA Foundation have also completed research that addresses the state of climate action in business travel including willingness to pay for SAF and decarbonisation initiatives.

Initiative overviews: SAF Coalition and ACAF

SAF Coalition



Key enablers	Capital – Technology, infrastructure and skills – Policy and regulation - Legal, compliance and assurance - Market development support - Awareness and collaboration
Geography	USA

Overview of the initiative

- The SAF Coalition was established in 2024 to advocate for policies that improve US economic competitiveness in SAF and increase domestic SAF production.
- The SAF Coalition is a non-profit, non-partisan coalition that represents the entirety of the SAF value chain. With members that include airlines, low-carbon fuel companies, manufacturers, technology developers and airports. For example: Alaska Airlines, LanzaTech, GBTA, World Energy, IAG, Boeing.
- The SAF Coalition advocates for policies that (1) Support SAF production through expansion and enhancement of SAF tax credits and other long-term incentives (2) Scale the supply of low-carbon, commercially competitive SAF, (3) Increase US economic competitiveness in the SAF marketplace, (4) Grow a robust and competitive market for SAF, (5) Finally, create jobs and increase US fuel production and innovation.

Americans for Clean Aviation Fuels (ACAF)



Key enablers	Capital – Policy and regulation - Awareness and collaboration
Geography	USA

Overview of the initiative

- ACAF is a diverse coalition of the largest industrial sectors in the US, from farmers to fuel producers and aviation to agribusiness. ACAF has a focus on promoting the economic benefits of building a robust US market for clean aviation fuels (CAFs).
- The focus of ACAF is to drive national efforts to advance policies that drive investment in American-grown feedstocks – benefitting the American economy, farmers and growers, the environment, and national security.
- The ACAF coalition advocates policies such as (1) Congress to extend existing federal incentives to scale SAF, including a broad extension of the Clean Fuel Production Tax Credit, (2) adoption of new state-level SAF incentives and policies that are stackable with and will complement existing federal incentives, (3) removal of existing regulatory barriers to scaling SAF production and clearing hurdles for new SAF feedstocks.
- Example partners of ACAF include Airbus, Exxon Mobil, Delta, Growth Energy.

Initiative overviews: Aviation Climate Taskforce and C2ES

Aviation Climate Taskforce (ACT)



Key enablers	Capital – Technology, infrastructure and skills - Awareness and collaboration
Geography	Global

Overview of the initiative

- ACT is a non-profit organisation founded with the goal of accelerating breakthroughs in emerging decarbonisation technologies by 10 years or more. Launched in October 2021, ACT brings together the BCG and 10 global airlines, including Air Canada, Air France-KLM Group, American Airlines, Cathay Pacific. Supported by their technical advisory board, from academia.
- ACT seeks to drive technological innovation and accelerate the R&D lifecycle, starting with mid-term solutions such as power-to-liquid synthetic fuels. ACT takes a portfolio approach and will gradually expand its scope to include new pathways for bio-based SAF and hydrogen technologies.
- ACT is targeting a research program on the order of \$50 million in total project costs over a five-year period and pending availability of matching funds from public and private sources. This corresponds to three cohorts of approximately fifteen projects with up to a three-year duration per project. Once priority projects have been identified, ACT will fundraise for an appropriate level of matching capital and may provide starter funds in the interim.

C2ES



Key enablers	Technology, infrastructure and skills – Policy and regulation - Awareness and collaboration
Geography	USA

Overview of the initiative

- C2ES has four different Technology Working Groups (TWGs), each focusing on a different technology. The SAF TWGs aim is to accelerate emerging SAF technologies. This is open to all fuel pathways but will focus primarily on emerging technologies: pathways with Fuel Readiness Levels new to or below FRL 9 (i.e., technologies without established production capacity).
- Pathways of particular focus include (1) Alcohol-to-Jet pathways, (2) Fischer-Tropsch pathways, and (3) pathways producing Power-to-Liquid fuels.
- The SAF TWG will create a confidential venue for fuel and feedstock producers, supporting infrastructure providers, sources of capital, and prospective offtake customers to convene and align on a shared vision for future SAF policy.
- A key output of the SAF TWG will be a long-term policy approach that will support widespread adoption of a diverse, low-carbon fuel mix in the aviation sector. The group will also create a set of educational materials that will explain the complex and dynamic SAF landscape to policymakers and the public.

Initiative overviews: AoT and FMC

Airports of Tomorrow (AoT)



Key enablers	Capital - Awareness & collaboration
Geography	Global

Overview of the initiative

- The AoT initiative, led by the World Economic Forum and Airports Council International (World), addresses supply side constraints related to the Net Zero transition through strategic dialogues between public and private stakeholders across the aviation value chain. AoT takes a holistic view of the requirements for aviation's energy transition, recognising this will require technical expertise and roadmaps on new infrastructure, analysis on feedstock sustainability and viability for SAF, and conversations on mobilising finance.
- AoT's 2024 Pillars of Work are split into 5, with 3 dedicated to Infrastructure and 2 on SAF. The first SAF pillar is focused on Supply Scaling, including overcoming regional barriers to scaling SAF worldwide. The second addresses Financing, including de-risking SAF investment by convening public and private actors.
- The AoT ecosystem comprises a broad range of representatives that span the aviation value chain, from airlines, airports, regulatory bodies, banks, OEMs, fuel suppliers and more. For example, Mundys, OMV, DHL, Arup, Airbus, ecoceres, Shell, World Energy, World Kinect, Aeroporti di Roma.

First Movers Coalition (FMC)



Key enablers	Capital – Technology, infrastructure and skills – Policy and regulation - Legal, compliance and assurance - Awareness and collaboration
Geography	Non-country specific

Overview of the initiative

- The FMC's mission is to advance the most critical, emerging climate technologies by leveraging members' collective purchasing power. By translating member commitments into the world's largest, credible demand signal, the FMC accelerates the adoption of emerging climate technologies to decarbonise the world's heavy-emitting sectors, including aviation.
- The FMC have an aviation commitment for both airlines and air transport companies, as well as airfare and air freight purchasers. Both commitments focus on replacing at least 5% of conventional jet fuel demand with SAF by 2030 (SAF with life-cycle assessment emissions abatement of 85% or more).
- Aviation in FMC has attracted the largest number of members of any sector in the coalition. A total of 28 companies have now joined the aviation commitment.
- During 2023-24, FMC also held workshops in India and Brazil to focus on aviation, to discuss key levers across policy, regulations and finance to accelerate domestic supply. A SAF workshop was also held in Singapore.

Initiative overviews: GFI and Breakthrough Energy

Green Finance Institute (GFI)



Key enablers Capital – Policy and regulation - Awareness and collaboration

Geography United Kingdom

Overview of the initiative

- The GFI was established in 2019 as a direct response to a key policy recommendation made by the industry-led Green Finance Taskforce to the UK Government in March 2018. At the nexus of the public and private sectors, the GFI is an independent, commercially focused organisation, that develops solutions to accelerate the flow of investment towards the transition to a net-zero economy.
- The GFI, supported by BE, has been working to address key risks faced by UK SAF plant developers, such as access to finance due to the associated price, technology, and feedstock risks. By partnering with financial institutions, corporates, ENGOs, policymakers, academics, and civil society experts, the GFI is working to develop solutions that overcome barriers to enable the UK SAF industry to scale. The GFI is also collaborating with Project Skypower, bringing UK-based expertise.
- The GFI recently supported the UK Government with the Revenue Certainty Mechanism (RCM) through providing an investor perspective and options analysis on the different proposed RCM options. The GFI also have been advising the government on the National Wealth Fund.

Breakthrough Energy (BE)



Key enablers Capital

Geography Non-country specific

Overview of the initiative

- Through investment vehicles, philanthropic programs, policy and advocacy efforts, and other initiatives, Breakthrough Energy works with a global network of partners to accelerate the technologies we need to build a carbon-free economy. Breakthrough Energy achieves this through the following mechanisms:
- BE Fellows: A global platform supporting promising inventors and researchers working on new technologies that could significantly reduce carbon emissions.
- Breakthrough Energy Ventures: Set of investment funds to support companies whose technologies can significantly reduce emissions from agriculture, buildings, electricity, manufacturing and transportation.
- BE Catalyst: Novel platform that funds and invests in project companies utilising emerging climate technologies that reduce emissions to reduce the Green Premiums and accelerate their adoption worldwide.
- BE's philanthropic team supports Project SkyPower and the GFI.

Initiative overviews: SABA and Rocky Mountain Institute

Sustainable Aviation Buyers Alliance (SABA)



Key enablers

Capital – Technology, infrastructure and skills – Policy and regulation - Legal, compliance and assurance - Market development support - Awareness and collaboration

Geography

USA

Overview of the initiative

- SABA is a membership-based, non-profit initiative of RMI and the Environmental Defense Fund (EDF), with expert support from the Center for Green Market Activation, focused on driving investment in high quality SAF, catalysing new SAF production and technological innovation, as well as supporting member engagement in policymaking. SABA is creating a credible, transparent and standardised system for aviation customers to support SAF. Examples of SABA members include BCG, Boeing, workday, BOOM.
- A key part of SABA is running first-of-kind joint procurement processes for SAF certificates (SAFc), sending a larger demand signal for SAF on behalf of SABA's members. SABA ran its first RFP in 2022 and second, multi-year RFP in 2023.
- To bring greater transparency to the sale and purchase of these environmental attributes, RMI and EDF developed a digital SAFc Registry, which is being used as the central platform to record the SAFc purchased through the RFP. SABA has also published a SAF Sustainability Framework and provides guidance on how to measure and report on aviation emissions involving SAF and SAFc.

Rocky Mountain Institute (RMI)



Key enablers

Capital – Policy and regulation - Legal, compliance and assurance - Market development support - Awareness and collaboration

Geography

USA

Overview of the initiative

- RMI is working to increase the demand and supply of SAFs in collaboration with other industry initiatives such as SABA, WEF and MPP. Through these partnerships, RMI are developing the following:
- Demand-side: (1) SAF demand aggregation targeted at corporate travellers, (such as with SABA), (2) Developing the Book & Claim system for SAFc, (3) Developing SAFc registry and guidance documents.
- Supply-side: (1) Understanding SAF supply barriers, (2) Catalyzing opportunity region cohorts for SAF development.

Initiative overviews: DOE LPO and TPG Rise Climate

DOE Loan Programs Office (LPO)



Key enablers Capital – Technology, infrastructure and skills

Geography USA

Overview of the initiative

- The United States Department of Energy's Loan Programs Office was created in 2005, when the Energy Policy Act of 2005 was signed into law.
- LPO has loans and loan guarantees available to help deploy innovative clean energy, advanced transportation, and tribal energy projects in the US. LPO provides debt financing for the commercial deployment of large-scale energy projects; but, for research, development, and demos (RD&D) and smaller projects, other offices within DOE offer funding and financing opportunities.
- In 2021 the DOE announced the SAF Grand Challenge, a government-wide effort to reduce the cost, enhance the sustainability, and expand the production and use of SAF. Commercial-scale SAF projects that utilize innovative technology and avoid, reduce, or sequester greenhouse gas emissions and meet other program requirements may be eligible for loan guarantees under the LPO's Title 17 Innovative Energy Loan Guarantee Program.

TPG Rise Climate



Key enablers Capital

Geography Non-country specific

Overview of the initiative

- TPG Rise Climate is the dedicated climate investing strategy of TPG's \$18 billion global impact investing platform TPG Rise. TPG Rise Climate pursues climate-related investments that benefit from the diverse skills of TPG's investing professionals, the strategic relationships developed across TPG's existing portfolio of climate-focused companies, and a global network of executives and advisors.
- The fund takes a broad-based sector approach to investment types, from growth equity to value-added infrastructure, and focuses on climate solutions in the following thematic areas: clean electrons, clean molecules and materials, and negative emissions.
- TPG Rise Climate takes a broad sector approach, ranging from growth equity to value-added infrastructure, and focuses on climate solutions in the following thematic areas: (1) Clean Electrons (Energy Transition and Green Mobility), (2) Clean Molecules (Sustainable Fuels and Sustainable Molecules), (3) Negative emissions (carbon solutions).

Initiative overviews: SMI and RSB

Sustainable Markets Initiative (SMI)



Key enablers Capital – Policy and regulation - Awareness and collaboration

Geography Non-country specific

Overview of the initiative

- The SMI was launched by His Majesty King Charles III, then The Prince of Wales, in 2020 at the World Economic Forum. The SMI's mandate, better known as the Terra Carta, has a mission to build a coordinated global effort to enable the private sector to accelerate the achievement of global climate, biodiversity and Sustainable Development Goal targets.
- The Sustainable Markets Initiative is a CEO led network comprised of multiple Task Forces, including the Sustainable Markets Initiative's Aviation Task Force (ATF), who's work focuses on coalescing activities to secure aviation's goal of net zero emissions by 2050.
- Within the Sustainable Markets Initiative ATF there are multiple workstreams led by different organisations. For example, the SAF workstream led by IAG's CEO.
- An immediate focus for the SAF workstream is to educate the SMI membership around SAF. In parallel, policy advocacy work focused on SAF is underway.

Roundtable on Sustainable Biomaterials (RSB)



Key enablers Capital – Policy and regulation - Legal, compliance and assurance - Awareness and collaboration

Geography Non-country specific

Overview of the initiative

- RSB is a global, non-profit and multi-stakeholder organisation that works with partners from industry, civil society, policy-makers and academia globally to advance the transition to a truly sustainable bio-based and circular economy. Examples of RSB's multiple different SAF initiatives that address key enablers:
- Decarbonising Aviation Sustainably in Southeast Asia: Aim to identify the most sustainable paths for SE Asia to become a global leader in SAF production.
- RSB SAF Policy Platform: A place for RSB's members to work together, discuss and provide recommendations on SAF policy.
- RSB's CORSIA Certification: Describes how to produce SAF from bio-based and advanced feedstocks in a sustainable way that meets ICAO CORSIA requirements.
- Demand Signal Recognition B&C Pilot: To develop and test a new methodology and verification system to demo bankable demand signals in SAF transactions in the RSB Book & Claim System.

Initiative overviews: SFC and CEM Biofuture Campaign

Smart Freight Centre (SFC)



Key enablers

Capital – Policy and regulation - Legal, compliance and assurance - Market development support - Awareness and collaboration

Geography

Non-country specific

Overview of the initiative

- Organizations on their journey to freight decarbonization can become a member of SFC and join the SFC community. Members have access to a wide portfolio of initiatives and projects to help them collaborate to improve their GHG emission performance and supply chain economics.
- Membership unlocks solutions through several SFC programs, including Global Logistics Emissions Council (GLEC), Clean Cargo, Sustainable Freight Buyers Alliance (SFBA), and Clean Air Transport.
- SFC's "Clean Air Transport" (CAT) programme aims to unite first movers on sustainable aviation in the freight sector, leveraging increased transparency of the GHG emissions from air freight services to drive decarbonization measures across the air transport sector.
- The Sustainable Freight Buyers Alliance (SFBA) is a collaborative initiative that brings together freight buyers in a joint effort to shift towards zero-emissions freight transport.

Clean Energy Ministerial (CEM) Biofuture Campaign



Key enablers

Technology, infrastructure and skills – Awareness and collaboration

Geography

Non-country specific

Overview of the initiative

- CEM Biofuture Campaign is a voluntary association of countries, companies, and industry associations with a shared interest in reducing GHG emissions through increased deployment of bio-based fuels, chemicals, and materials.
- CEM Biofuture Campaign is the mechanism for Bio-Based Industries to engage with international processes, including G7, G20, and Clean Energy Ministerial.
- Since 2022, the Biofuture Campaign has convened Industry with Biofuture Platform countries and the International Energy Agency to contribute technical and policy recommendations on the important and evolving issues of: (1) Increasing the evidence base for the availability of sustainable biomass feedstocks, (2) Carbon Accounting as applied to regulating fuels, chemicals, and materials.
- In 2024-25 CEM Biofuture Campaign is ensuring that Sustainable Fuels are high on the international agenda for: (1) Brazil's G20 Presidency, (2) Canada's G7 Presidency, (3) South Africa's G20 Presidency, (3) COP30 in Brazil.

Initiative overviews: ITA and ICAO Finvest Hub

Industrial Transition Accelerator (ITA)



Key enablers

Capital - Policy and regulation - Legal, compliance and assurance - Awareness and collaboration

Geography

Non-country specific

Overview of the initiative

- Launched at COP28, the ITA is a global multistakeholder collaboration with an initial three-year mandate to unlock investments and turbocharge the delivery of decarbonisation solutions across heavy industry and transport.
- The aim of the ITA's work is to fast-track industry progress by focusing on two primary pillars of work, which provide the greatest scope for impact based on pre-existing gaps: targeted project support & conditions for investment.
- The ITA's focus for the targeted projected support is to support decarbonisation projects in critical regions across ITA's six core areas (including aviation). Over the next 2-3 years, the goal is to move these projects towards FID. Prioritising emerging and developing countries, with the first country partnership is Brazil.
- The conditions for investment encompass three focus areas (1) Critical policy levers, (2) Low-emissions products standards, (3) Offtake de-risking.
- MPP's Global Project Tracker informs the ITA's work and helps track progress.

ICAO Finvest Hub



Key enablers

Capital

Geography

Non-country specific

Overview of the initiative

- ICAO Finvest Hub initiative is currently at proposal stage, and not yet launched.
- The proposed purpose of the initiative is to facilitate enhanced access to public and private investment capacities and funding from financial institutions (with a focus on developing countries and States with particular needs) for projects that contribute to the decarbonisation of international aviation.
- Key activities of the Finvest Hub could include establishing an exchange for projects contributing to the decarbonisation of international aviation, thus enabling investors to assess and identify suitable projects; facilitating the development of financial instruments and risk mitigation mechanisms; fostering public-private partnerships; providing technical assistance and capacity building on financing; and conducting outreach and advocacy.
- The project could be brought forward in three phases, from (1) Planning and set-up, (2) Operationalisation and implementation; through to (3) Scaling up and continuous improvement. Work's underway to develop the detailed structure of the Finvest Hub.



×



Thank you

www.atag.org

