

Project SkyPower

Accelerating the take-off
for e-SAF in Europe



Project
SkyPower

June 2024

Foreword

The aviation industry has a proud record of innovation throughout its 120-year history. We now face one of our biggest challenges: reducing the impact of flying on our planet. Innovative technologies with potential to reduce emissions can help us get there – but most have yet to reach scale.

Project SkyPower brings the aviation value chain together to break down the barriers to growth for what is expected to be a promising innovation in the market: e-SAF, a low to zero emissions aviation fuel made using renewable electricity, water and captured carbon dioxide. E-SAF has significant potential for emissions reduction over its lifecycle - it could produce at least 90 per cent fewer greenhouse gas emissions than fossil jet fuel from production to use, and is set to become an important lever.

This White Paper, commissioned by Project SkyPower and produced by systems change agency Systemiq, explores the important role that e-SAF will play in closing the gap towards a lower emissions aviation industry, and how bold leaders in Europe can pave the way for this innovative technology to scale. It clearly demonstrates a closing window of opportunity to scale e-SAF to market tipping points if the industry is to meet its ambitious emissions reduction targets by 2050.

The paper sets out the opportunity for the European aviation sector to capture a significant share of the global e-SAF market, which could be worth an estimated EUR 250 billion by 2050. But while 70 per cent of the global e-SAF project pipeline is located in Europe, no plant has yet reached final investment decision (FID), with the industry and investors sensitive to the risks of such first-of-a-kind plants and the initially high green premium.

Project SkyPower has clear, time-bound ambitions: we want to remove the barriers for the first e-SAF plants to reach final investment decision no later than 2025, and to be fully operational by 2030. The business-as-usual approach will not work – we must set aside industry norms in service of a bigger goal.

This paper lays out Project SkyPower's theory of change. Our members commit to the depth of transparency and collaboration across the value chain required to translate words into action. Together, we will collectively manage risks and capitalise on opportunities, as well as send a clear message to the ecosystem about the value of and demand for this technological innovation.

We have an opportunity for strategic leadership that can unlock commercial and climate benefits for the aviation industry and set us on a path towards a lower emissions future. As Co-Chairs of Project SkyPower, we invite you to join the mission.

Marjan Rintel, Co-Chair of Project SkyPower (CEO of KLM, on behalf of Air France-KLM)

Amy Hebert, Co-Chair of Project SkyPower (CEO of Arcadia eFuels)

Executive Summary

The context

The global aviation industry has committed to significantly reducing carbon emissions by 2050. Sustainable Aviation Fuels (SAFs) will play an important role in reaching that target, particularly for long haul flights. E-SAF, produced from renewable electricity, water and biogenic or atmospheric carbon, offers the greatest potential for cost reduction, has fewer feedstock limitations compared to other types of SAF, and offers over 90 per cent lifecycle emissions reduction relative to fossil fuels. Bio-SAF, i.e. SAF produced from biogenic material, offers an affordable and commercially available decarbonisation solution for aviation both in the near and long term. However, due to the globally limited availability of sustainable biomass feedstock and competing demands from other sectors, bio-SAF alone will not be able to decarbonise the aviation industry. It will need to be complemented by large volumes of e-SAF.

The challenge

E-SAF needs to reach commercial scale by 2030 and hit market tipping points in the 2030s to reach the scale necessary to enable a lower emissions aviation industry by 2050. It typically takes five years for an e-SAF project between reaching Final Investment Decision (FID) and being operational. Therefore, FIDs for e-SAF projects are needed by 2025 to start production by 2030. 70 per cent of the global e-SAF project pipeline is located in Europe

but no large-scale e-SAF plant has reached FID yet because of the risks involved in such first-of-a-kind plants as well as the initially high green premium.

The opportunity

E-SAF has the potential to become the cheapest of all SAF types by 2050 due to the strong cost reduction potential of its three major components: renewable electricity, electrolyzers and CO₂ capture. The global e-SAF market could reach EUR 250 billion by 2050¹ and create almost 90,000ⁱ jobs directly, with much larger levels of job creation indirectly in adjacent supporting industries. Europe could position itself as a key provider of technology and knowhow for e-SAF to the global market, and can increase its energy security, reducing its reliance on imported fossil fuels.

Why a new alliance is needed

Existing initiatives have already aligned the broader ecosystem on a common vision for SAF, with sector-level solutions defined on how to get there. It is now time to translate these sector-level findings into specific measures for e-SAF projects, and to work with the entire aviation and energy value chain in Europe towards the bankability of the first large-scale e-SAF projects.

¹ Estimation based on projected e-SAF costs of 1200 EUR/tonne by 2050, potential proportion of e-SAF in fuel mix (50%), and projected aviation fuel demand by 2050 of 70 Mt of kerosene equivalent.

Main Whitepaper

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The context of decarbonising aviation

In 2019, global aviation emissions amounted to 1.24 billion tonnes of CO₂e annually, equivalent to 2.5 per cent of global greenhouse gas emissions.ⁱⁱ In recent years, emissions from the sector have continued on an upward trajectory as the airline industry rebounds from the COVID-19 pandemic. As other sectors of the economy like road transport and power generation accelerate their decarbonisation efforts, the relative share of global emissions from the aviation industry is only set to increase with absolute emissions potentially reaching over two billion tonnes of CO₂e by 2050 in a business-as-usual scenario.ⁱⁱⁱ This is incompatible with climate targets and, given the large emissions output in relation to its concentrated usage, will increasingly become socially and politically unacceptable in the context of a rapidly warming world. To maintain its license to operate, deep emissions reductions in the aviation sector starting now are critical.

Several emissions abatement solutions are emerging, but Sustainable Aviation Fuels (SAFs) are currently considered the only viable option for mid-to-long haul flights (above 2,500 km) which account for approximately 60 per cent of global emissions from commercial passenger aviation.^{iv} Efficiency and demand measures, e.g. modal shifts to high-speed rail, are important emissions reduction levers, but on their own, are insufficient to

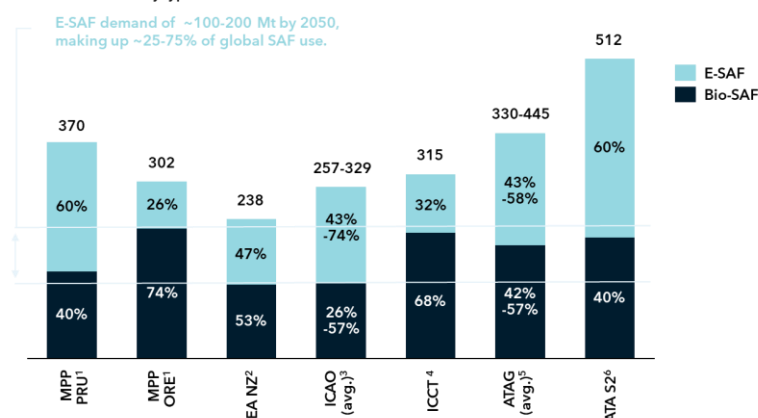
5 eliminate emission from aviation. Electric and hydrogen aircraft could reduce about 10 to 15 per cent of aviation's emissions by 2050^v but face two issues: energy density and thus range, as well as time to market. First, low energy densities limit those novel propulsion technologies to shorter-range, regional flights (up to a few hundred kilometres for battery-electric, and up to roughly 2,500 km for hydrogen aircraft).^{vi} Second, both battery-electric and hydrogen aircraft are unlikely to reach high levels of market penetration until the 2040s.^{vii} Unlike SAFs which offer a drop-in solution, these technologies require large investments in new infrastructure, and novel engine and aircraft design to accommodate new energy types, which are at much earlier stages of maturity and have long certification processes to ensure the highest level of safety. Waiting for these solutions to reach scale and delaying action is too high risk: high-integrity SAFs offer a scalable solution now and therefore should be employed to their maximum potential.

Why e-SAF? A more sustainable, scalable and affordable SAF in the long term

E-SAF (electro-SAF) is widely recognised by net-zero industry pathways (as shown in the figure on the right) as a critical solution to reach emissions targets by 2050. E-SAF, produced from additional renewable electricity and captured CO₂ from industrial, biogenic or atmospheric sources², is expected to account for a significant share of 25 up to 75 per cent of global SAF production by 2050.^{viii}

All emissions reduction scenarios expect a significant growth in e-SAF demand to 100-200 Mt by 2050

Global SAF demand by type in different scenarios in 2050, in Mt



Sources: 1) Mission Possible Partnership (MPP) Making Net-Zero Aviation Possible 2) IEA (2023) Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach 3) ICAO (2022) Report on the feasibility of a long-term aspirational goal (LTAG) for international civil aviation CO₂ emission reductions; note an average of scenarios 2 and 3 are taken 4) ICCT (2022) Vision 2050: Aligning Aviation with the Paris Agreement; breakthrough scenario shown 5) Air Transport Action Group (2021) Waypoint 2050; average of scenarios 1, 2 and 3 shown 6) IATA (2024) Comparative Review of Aviation Net-Zero Transition Pathways: scenario 2

The feedstock limitations confronting e-SAF are fewer and of a different nature compared to bio-SAF. High-integrity bio-SAF plays a critical role in providing an affordable and commercially available decarbonisation solution for aviation both in the near and long term. However, due to the globally limited availability of sustainable biomass feedstock, it will not be able to decarbonise the industry alone. Bio-SAF production typically relies on finite sources of biomass waste and residues (such as used cooking oil, agricultural residues, forestry residues or municipal solid waste), limiting the scale of bio-SAF production. E-SAF, on the other hand, faces fewer feedstock constraints given its reliance on other feedstock types: renewable electricity and atmospheric or biogenic carbon (e.g. from pulp and paper mills).

² Under EU regulations, until 2035 and 2040 industrial CO₂ sources from power generation and other hard-to-abate sectors respectively can be used in e-SAF production and be considered towards the e-SAF mandate.

6 However, these constraints are of a distinct nature as e-SAF production requires significant levels of renewable electricity, consuming around ~31 MWh per tonne of e-SAF (assuming point source carbon capture). Renewable electricity, although theoretically unlimited, is constrained by the rate of generation capacity build-out, which is currently slowed down e.g. by lengthy planning and permitting, and grid integration processes. This means that as all sectors in the economy accelerate their decarbonisation efforts, as is required to meet our climate targets, the availability of renewable electricity is expected to present a critical, yet surmountable, barrier to e-SAF production unless build-out is rapidly accelerated. A further constraint on e-SAF production is presented by the scale-up of Direct Air Capture (DAC); as biogenic sources of CO₂ are limited, aviation will need to increasingly rely on DAC to provide a carbon-neutral source of CO₂ for e-SAF production.

A common perception is that continued fossil fuel jet use, together with Direct Air Carbon Capture and Storage (DACCS), could be a more cost-effective and resource-efficient way of neutralising the climate impact of aviation, compared to e-SAF. While this may hold true for CO₂ emissions reduction, the current analysis overlooks the lower non-CO₂ impacts associated with e-SAF, particularly in regard to reduced contrail and cirrus cloud formation, as well as lower aerosol pollution around airports. A further risk of betting on DACCS alone is if the technology fails to scale or if costs fail to come down sufficiently, at which point it will be too late to scale e-SAF in time to meet climate targets. Conversely, scaling e-SAF necessitates concurrent expansion of renewable electricity and DAC, thereby ensuring readiness for both e-SAF and direct carbon removals (via DACCS). Scaling e-SAF now therefore offers a no-regrets solution.

E-SAF could become one of the most sustainable forms of SAF. If powered entirely by additional renewable electricity and using atmospheric or biogenic CO₂, e-SAF production could reduce well-to-wake emissions compared to fossil jet fuel by over 90 per cent and could save about 0.5-1.5 billion tonnes of greenhouse gas emissions annually by 2050, a significant contribution to global emission reduction efforts.^{ix} In addition, as e-SAF production does not have to rely on biomass, it limits biodiversity loss, deforestation and land use change which accompany certain bio-SAF production routes.^x

E-SAF has the potential to become the most affordable of all SAF types by 2050. While e-SAF production costs are currently higher than for all other SAF types, at an estimated 6-7 times the historical market price of fossil jet fuel, e-SAF is expected to have the greatest potential for cost reduction. Analysis conducted by the Mission Possible Partnership^{xi}, and based on McKinsey Energy Insights' Global Energy Perspective and WEF Clean Skies for Tomorrow Insights Report^{xii} show that e-SAF production costs could decrease by around 60 to 70 per cent becoming the most affordable SAF type at around 1,200 EUR/tonne by 2050, down from upwards of 4,000 EUR/tonne today.^{xiii} This potential for cost reduction comes from the expected steep learning curves of the three largest cost components in e-SAF production which collectively make up 70-80 per cent of total e-SAF production costs^{xiv}: renewable electricity generation, hydrogen production and CO₂ capture costs. Firstly, solar and wind installation costs are expected to continue their decline through economies of scale, standardisation of design, and continued optimisation, decreasing by 60 to 85 per cent^{xv} and 35 to 60 per cent^{xvi} respectively over the long-term. Similarly, as electrolyser production scales up and becomes increasingly automated, and as design and operations are increasingly optimised, electrolyser costs are expected to decline substantially decreasing by

7 up to 85 per cent^{xvii} in the long-term. Lastly, direct air capture costs are expected to fall by 50 to 80 per cent by 2050.^{xviii}

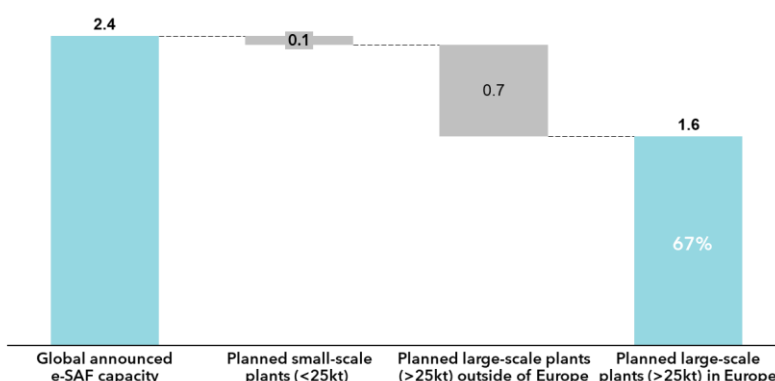
The global e-SAF market offers an economic opportunity worth an estimated EUR 250 billion³ by 2050, comparable to the fossil kerosene market today, with a European e-SAF market of about EUR 40 billion by 2050.^{xi} By taking action early and leading on e-SAF, Europe can better position itself as a technology leader globally, for export of its knowhow on e-SAF. Beyond the direct economic opportunity, scaling a new e-SAF market will unlock economic growth, job creation, with 90,000^{xx} new jobs expected globally, and innovation in adjacent renewable energy, and green hydrogen sectors.

Why Europe? A fertile ground for innovation and leadership with the largest concentration of announced e-SAF projects

Europe⁴, an innovation leader on e-SAF, is home to 70 per cent of the globally announced large-scale⁵ e-SAF projects. Compared to all other regions, Europe has the largest number and concentration of e-SAF projects announced. Out of 31 large-scale e-SAF projects announced globally, 26 are in Europe.^{xi} Although other regions might offer cheaper renewable electricity for e-SAF production, Europe currently boasts a strong foundation in aerospace, ambitious e-SAF technology innovation, as well as many of the capabilities required for e-SAF system integration, and optimisation of production processes. This positions Europe to be a global leader in this critical space, presenting a strategic opportunity for the region, with the capabilities and resources to accelerate the take-off of e-SAF globally.

Two thirds of global e-SAF capacity is planned in Europe

Global announced e-SAF capacity by 2030, Mtpa e-SAF



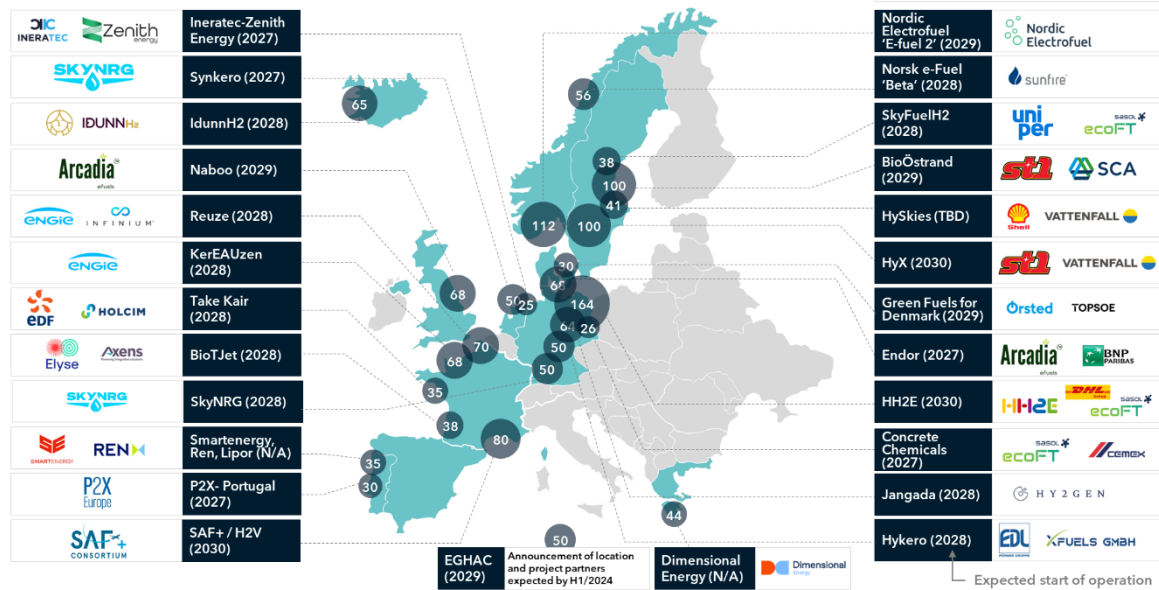
Sources: Systemiq analysis based on public information, Misson Possible Partnership decarbonisation project tracker, Transport & Environment (2024) The challenges of scaling up e-kerosene production in Europe. Note: status April 2024

³ Estimation based on projected e-SAF costs in the long run (1200 EUR/tonne), potential proportion of e-SAF in fuel mix (50%), and projected aviation fuel demand by 2050 of 70 Mt of kerosene equivalent.

⁴ Europe refers to the European Union (EU-27), the European Free Trade Association (EFTA) and the United Kingdom (UK).

⁵ Large-scale refers to plants which have a capacity of over 25 ktpa.

26 large-scale e-SAF plants (~1.6 Mt) in Europe announced, but not yet reaching FID



Notes: Status April 2024. All projects plan to use biogenic CO₂. Some projects also plan to use point source CO₂ from cement / steel production. Map excludes projects <25 ktpa e-SAF capacity.

Sources: Systemiq analysis based on public information, Mission Possible Partnership decarbonisation project tracker, Transport & Environment (2024) The challenges of scaling up e-kerosene production in Europe. Data status: April 2024.

Europe has strong SAF demand from a committed aviation industry, with the seven largest offtakers of current SAF volumes globally being European airlines in 2022.^{xxii}

The largest demand for SAF currently comes from Europe and with the SAF blending mandates, this demand is expected to strengthen. While recent long-term e-SAF offtake agreements have been announced in other regions (e.g. Twelve, Infinium) – likely boosted by the U.S. Inflation Reduction Act – airlines in Europe are calling for a similar boost to the European SAF industry, to enable continued leadership on SAF usage.

Europe is leading on SAF regulation globally, with the introduction of comprehensive regulatory frameworks on SAF adoption in the EU and UK, including increasing targets for e-SAF adoption. The EU Commission has mandated the replacement of 1.2 per cent of fossil jet fuel with e-SAF (out of a total six per cent SAF target, including bio-SAF) by 2030. This target increases incrementally in 5-year intervals reaching 35 per cent e-SAF adoption by 2050 (out of a total 70 per cent SAF), highlighting Europe's commitment to charting a course towards a lower emissions future for aviation.^{xxiii} Similarly, the UK is introducing a SAF mandate with similar levels of ambition (10 per cent SAF target by 2030, including bio-SAF with a 0.2 per cent e-SAF target by 2028).^{xxiv} Furthermore, the inclusion of SAF in the EU's Net Zero Industry Act reaffirms that SAF production is a strategic priority for the region, and is therefore granted certain advantages with regards to easing investment conditions, simplifying permitting processes and easing market access.

Despite having a comprehensive regulatory framework on SAF, Europe has struggled to deploy innovation thus far, without a single large-scale project having reached FID yet. While the existing regulatory framework creates a clear demand signal and sets the level of ambition, charting the course for SAF adoption in European aviation, it does not directly translate into FIDs for e-SAF production plants. Direct support for e-SAF production and

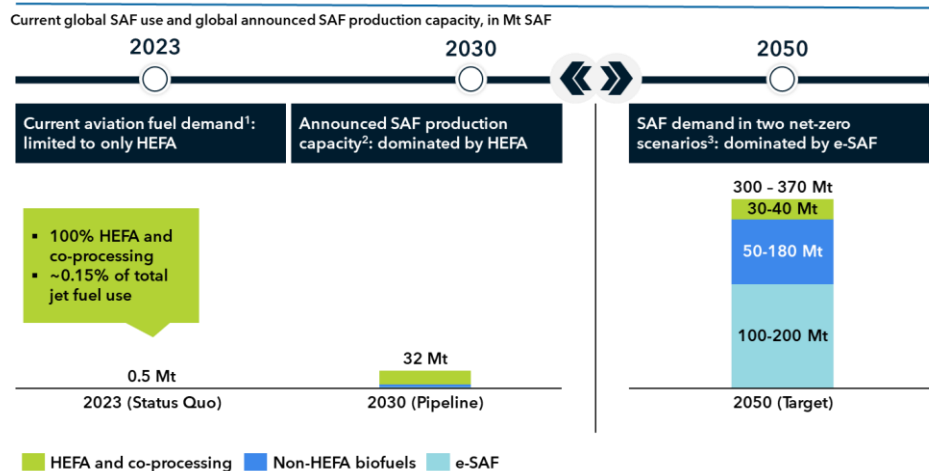
offtake, and derisking of investments in e-SAF, as it stands today in Europe is insufficient. The U.S., on the other hand, with the support of the Inflation Reduction Act, has created a more attractive environment for investment – foremost through its 40B/45Z SAF tax credits and 45V clean hydrogen tax credits, which are expected to be supplemented through additional state-level support.^{xxv} It has therefore seen more projects secure long-term offtake agreements compared to Europe.^{xxvi} Greater levels of de-risking are needed in Europe to both secure long-term offtake agreements, attract investment and secure debt financing.

Finally, Europe can gain energy security from local production of fuels (and the setup of critical infrastructure). More than 95 per cent of the EU's crude oil demand is imported.^{xxvii} This represents an almost complete energy dependence of the EU on regions like the Middle East, Asia and Russia, exposing Europe to high geopolitical risks. As seen from the RePowerEU plans^{xxviii} and other measures taken in response to the Russian invasion of Ukraine, Europe aims to considerably reduce energy imports, both for economic and geopolitical reasons. A critical share of local e-SAF production in Europe could provide greater energy security, in addition to catalysing the development of e-SAF in lower-cost renewables regions, securing the majority of the future e-SAF supply to Europe from those regions.

Why now? A shrinking window of opportunity over the next two years

While bio-SAF dominates the current SAF pipeline e-SAF needs to achieve commercial scale by end of this decade to set the aviation industry on track to meet its emissions reduction targets. Despite the need for large-scale e-SAF deployment in the long run to reach the 100-200 Mt needed by 2050^{xxix}, the current SAF project pipeline is dominated by bio-SAF, accounting for 90 per cent of the estimated 32 Mt of announced capacity by 2030, driven by its lower cost in the near-term.

The current SAF pipeline is dominated by HEFA biofuels despite an expectation that e-SAF will need to scale to 100-200 Mt by 2050



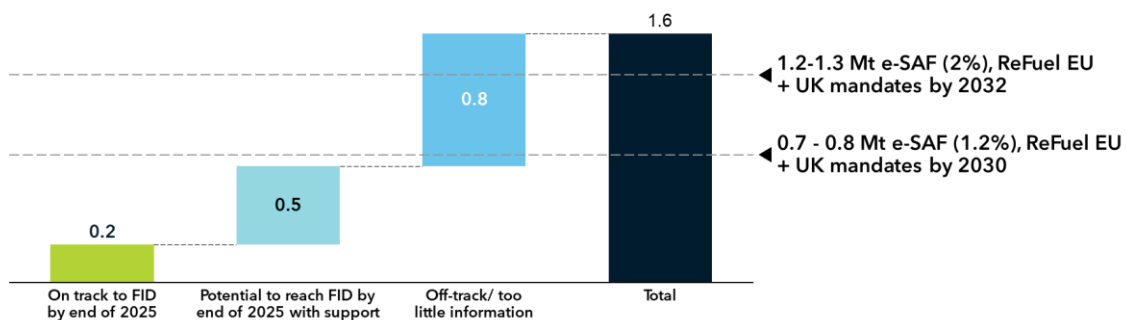
Notes and sources: 1. [IATA \(2023\)](#): SAF Volumes Growing but Still Missing Opportunities. 2. Announced projects include projects that have not yet reached FID. HEFA: Hydroprocessed Esters and Fatty Acids. 3. Source: [MPP \(2022\) Making Net-Zero Aviation Possible](#). The low-e-SAF scenario relies on 40 per cent e-SAF (share on total SAF use) by 2050, the high-e-SAF scenario on close to 75 per cent e-SAF.

However, if the scale-up of e-SAF was delayed until the point when sustainable biomass resources are already exhausted, it will be too late for e-SAF to reach the required scale by 2050. Market dynamics will not allow for the required pace of scale-up to achieve the required emissions reductions by 2050 given project lead times of up to five between FID and start of operation. This could lead to unsustainable levels of biomass production instead, posing biodiversity and land use change risks.

The EU is at risk of not meeting the 2030 (and subsequent) e-SAF sub-mandates of ReFuelEU. With the existing e-SAF project pipeline in Europe and the current support mechanisms, we are on track to replace 200 ktpa of European fossil jet fuel use with domestically produced e-SAF by 2030, only one quarter of the target set by the EU. While this could be supplemented by imports, the current project pipeline suggests that the potential additional volumes are unlikely to suffice. This risks a watering down of ambition level with the government under increasing pressure to relax e-SAF mandates.

Currently, Europe is not on track to e-SAF targets as only a quarter of required capacity by 2030 is on track to meet final investment decision by 2025

Planned e-SAF capacity in Europe by estimated status, Mtpa



Sources: Press search. Non-exhaustive data, upsides possible. Data status: 8 Feb 2024.

Notes: Preliminary analysis. Planned e-SAF capacity only refers to e-SAF output and does not include byproducts such as e-naphtha or e-diesel/gasoline. If announcement does not state SAF fraction of total product output, a SAF share of 70 per cent is assumed. Some plants are hybrid power and biomass to liquid plants (PbTL), for which the e-SAF share on the total SAF fraction is assumed as 50 per cent, the rest being classified as biofuel. The European fuel consumption by 2030 is assumed as 67 Mt (from [Destination 2050](#) report).

The window of opportunity to unlock large-scale e-SAF production in Europe is rapidly shrinking, and decisive action from industry leaders, policy makers and financial institutions is paramount. To meet the 2030 e-SAF production and use targets, FIDs for e-SAF projects need to be secured by 2025. This tight timeframe arises because e-SAF projects are expected to take at least five years for Engineering, Procurement, and Construction. Therefore, the next two years are critical to keep a safe and orderly transition within reach.

11 **Introducing Project SkyPower: accelerating the take-off for e-SAF in Europe**

Project SkyPower's mission is to pave the way for the first large-scale e-SAF plants in Europe to reach FID by 2025 in order to drive progress towards key regulatory targets (ReFuelEU and UK mandate), and e-SAF market tipping points in the 2030s. After hitting those tipping points, e-SAF production and use could scale exponentially in the 2030s and 40s. Project SkyPower has been established to seize the window of opportunity over the next two years, with an urgent call to action. The vision is to make e-SAF a commercial reality by 2030, paving the way for a significantly lower emissions global aviation industry.



Project SkyPower

Accelerating the take-off for e-SAF in Europe

Our vision

Making e-SAF a commercial reality this decade to unlock a global net-zero aviation industry by 2050

Our mission

Paving the way for the **first large-scale¹ e-SAF plants in Europe to reach Final Investment Decision** by end of 2025

Notes: [1] Large-scale e-SAF plants are defined here as plants with an annual capacity of more than 25,000 tonnes e-SAF.

Who will lead the way?

The governance model of Project SkyPower



Project SkyPower is spearheaded by a group of 12 CEOs with representation from across the European aviation value chain. These CEOs are committed to dedicating time and resources to this initiative in order to drive the scale-up of e-SAF in Europe. Their leadership will ensure that, as urgency mounts, decisive, swift and meaningful action can be taken.

12 **Co-chaired by Paul Polman (ex-CEO of Unilever), Marjan Rintel (CEO of KLM, representing the Air France-KLM Group), and Amy Hebert (CEO of Arcadia e-Fuels),** the initiative welcomes engagement from like-minded companies, NGOs, and policymakers across the European aviation sector. All stakeholders who share the vision of unlocking the commercial potential of e-SAF in this decade are encouraged to join.

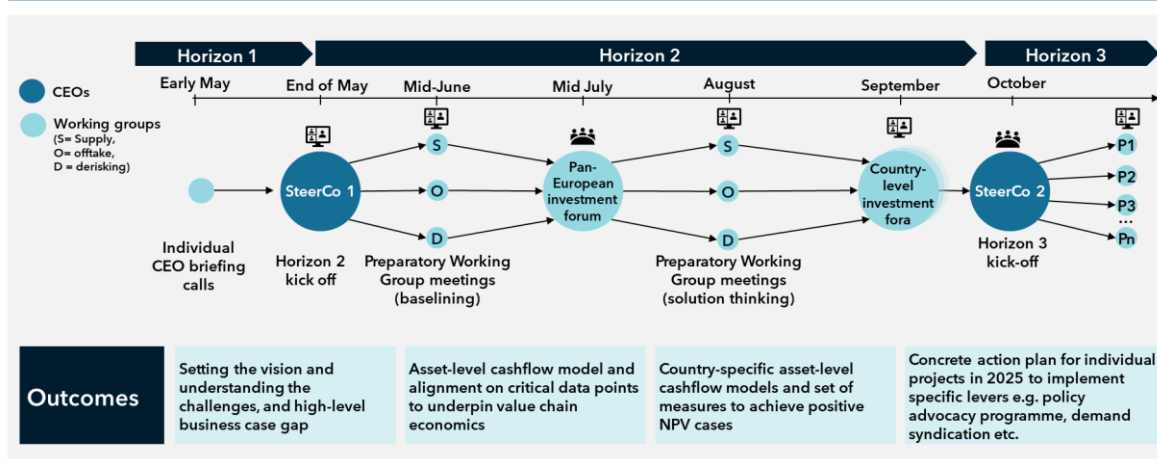
Project SkyPower is facilitated by a dedicated Secretariat, ensuring smooth operation, robust analytics and efficient knowledge sharing within the initiative. The extensive knowledge base, coupled with analytical leadership from our Secretariat partners, will equip stakeholders with the necessary insights to drive e-SAF development forward.

Project SkyPower will seek consultation from NGOs in this space to ensure that the recommendations and activities of Project SkyPower receive healthy challenge and consider different perspectives, and to provide full transparency. Interested NGOs are invited to contact Project SkyPower secretariat to learn more about getting involved.

What are Project SkyPower's objectives?

Project SkyPower aims 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, covering the most significant hurdles and risks currently faced – as well as tangible solutions to create viable business cases. This series of investment fora will result in a clear action plan that will be implemented through industry-led projects, translating insights to action.

Project SkyPower is structured in three horizons



Notes: Dates provided are indicative and subject to change

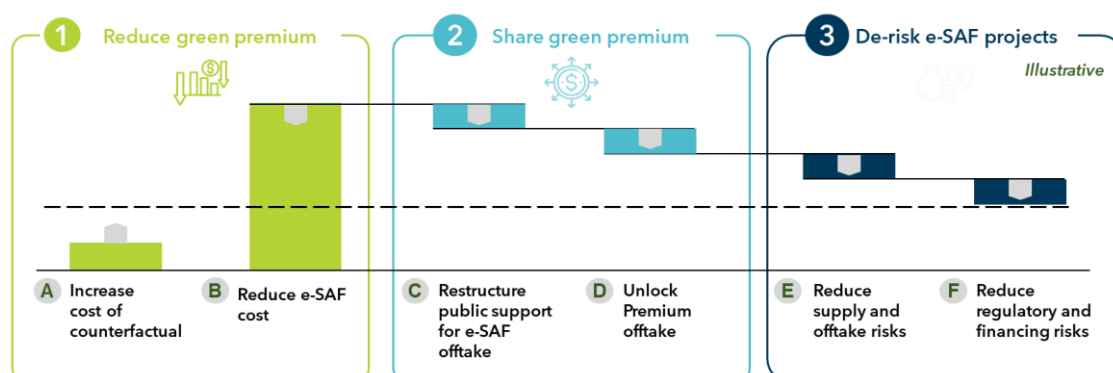
Project SkyPower will foster value chain collaboration, unifying the voice of pioneers from across the entire e-SAF ecosystem, including technology and feedstock providers, fuel producers, refiners, airlines, airports, OEMs, corporate customers, banks, equity investors, etc. In doing so, we will pool the collective brainpower, expertise and know-how of all parts of the e-SAF ecosystem to solve the toughest challenges facing the scale up of this technology, and allow the value chain to speak to policymakers and financiers with a single voice.

13 How will Project SkyPower achieve this?

The e-SAF investment fora in Horizon 2 will highlight solutions to reduce and share the green e-SAF premium as well as to de-risk e-SAF projects. A rigorous analysis on levers that can support the production and offtake of e-SAF will create a shared understanding of what is needed to close the e-SAF business case gap. From this, a concrete action plan to implement key levers identified will be developed.

Horizon 3, kicking off towards the end of 2024, will focus on translating plans into action. The action plan, underpinned by the robust analytics of Horizon 2, will define the concrete steps to implement the priority levers identified within the framework shown below that are required to unlock FID for individual projects in Europe. These could range from advocating for specific changes to existing policy instruments such as the SAF Allowances, or for public procurement of e-SAF, all the way to working with grid operators to reduce grid fees, developing de-risked offtake agreements structures, and carrying out demand syndication for e-SAF. This horizon will focus on working with members of Project SkyPower to drive forward individual projects in order to advance the implementation of these levers in 2025.

Preliminary approach to identify solutions towards bankability, including reducing and sharing the premium and de-risking first projects



Note: The overview above is illustrative and preliminary. Lever categories are not mutually exclusive nor collectively exhaustive. Feedback on this framework is welcome.

The year 2024 marks a pivotal moment for the future of aviation. Project SkyPower presents a time-bound initiative (2024-2025) to accelerate e-SAF development in Europe and unlock a sustainable future for the industry. By joining forces through Project SkyPower, we can collectively scale this innovative technology, to achieve a lower emissions aviation industry. The time to act is now. Let's take flight together towards a more sustainable tomorrow.

If interested in learning more, please reach out to:

secretariat@project-skypower.org

Endnotes

ⁱ Rocky Mountain Institute (**RMI, 2024**) Sustainable Aviation Fuel Targeted Opportunity Region. https://rmi.org/wp-content/uploads/dlm_uploads/2024/02/sustainable_aviation_fuel_targeted_region_rocky_mountain.pdf

ⁱⁱ Mission Possible Partnership (**MPP, 2022**): Making Net-Zero Aviation Possible: An industry-backed, 1.5°C-aligned transition strategy. <https://missionpossiblepartnership.org/wp-content/uploads/2023/01/Making-Net-Zero-Aviation-possible.pdf>

ⁱⁱⁱ European Parliament (2015): Emission Reduction Targets for International Aviation and Shipping. [https://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU\(2015\)569964_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2015/569964/IPOL_STU(2015)569964_EN.pdf)

^{iv} Mission Possible Partnership (**MPP, 2022**): Making Net-Zero Aviation Possible: An industry-backed, 1.5°C-aligned transition strategy. <https://missionpossiblepartnership.org/wp-content/uploads/2023/01/Making-Net-Zero-Aviation-possible.pdf>

^v International Air Transport Association (**IATA, 2024**): Aviation Net-Zero Transition Pathways: Comparative Review. Forthcoming.

^{vi} Ibid.

^{vii} Ibid.

^{viii} International Air Transport Association (**IATA, 2024**): Aviation Net-Zero Transition Pathways: Comparative Review. Forthcoming.

^{ix} Ibid.

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^{xiv} Ibid.

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^{xx} Rocky Mountain Institute (**RMI, 2024**) Sustainable Aviation Fuel Targeted Opportunity Region. https://rmi.org/wp-content/uploads/dlm_uploads/2024/02/sustainable_aviation_fuel_targeted_region_rocky_mountain.pdf

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^{xxii} Bloomberg (2023): How United and Other US Airlines Lost Momentum on Sustainable Jet Fuel. <https://www.bloomberg.com/news/articles/2023-10-05/how-us-airlines-fell-behind-europe-on-sustainable-jet-fuel>

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^{xxv} Note: Combining the max. 3 USD/kg H2 tax credits and the max. 1.75 USD/gallon SAF tax credits could about halve e-SAF production costs. However, these incentives qualify for fuel produced and sold until 2027. Long-term support is unclear and first U.S. states have also topped up the national SAF tax credits, e.g. Illinois.

^{xxvi} Examples: Infinium's Project Roadrunner (2023): <https://americanairlines.gcs-web.com/news-releases/news-release-details/efuels-leader-infinium-receives-75m-equity-commitment>, or offtake agreement of IAG from Twelve (2024): <https://www.twelve.co/post/twelve-s-historic-sustainable-aviation-fuel-deal-with-iag-is-deep-tech-gold>

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