

DSC Meridian Capital LP is an opportunistic, event-driven credit investment firm founded by Sheru Chowdhry, the former Head of Credit Research & Co-Portfolio Manager of the Paulson Credit Fund (2004-2017). The firm seeks to generate absolute returns through the credit cycle. DSC Meridian seeks to prioritize principal protection, liquidity and shorting at the top of the credit cycle, while shifting portfolio focus to capital appreciation and equity-like upside at the bottom of the cycle. DSC Meridian invests both long and short, across small, mid, and large-sized capital structures, and across the full spectrum of credit opportunities from performing, stressed and distressed credit (bankruptcy reorganizations, litigations, liquidations) to post re-organization, event-driven equities and capital structure arbitrage. The firm integrates material ESG factors throughout the investment process and will often pursue an active corporate engagement strategy to help shape positive ESG-related outcomes.

January 2021

The Devil is in the Denominator: A Nuanced Approach to Assessing Carbon Intensity in the Airline Industry

Author



Paula Luff
Director of ESG
Research &
Engagement

Executive Summary: In 2019, the airline industry accounted for approximately 1 billion metric tonnes of CO₂e or about 2.5% of global Greenhouse Gas Emissions (GHG).¹ When non-CO₂ effects (NOX, vapor, soot etc.) are factored in, the sector's contribution to rising temperatures is much higher. According to the European Commission, if the industry were a country, it would rank in the top ten emitters.² While the COVID-19 pandemic significantly impacted air travel volumes, we believe the sector is poised to grow rapidly in the years to come. If airlines are a secular growth industry, then their emissions will also increase.

The key question this paper addresses is: *how does DSC Meridian approach decarbonization with an emitting industry that is essential to the economy?* The main challenge is that the industry as a whole is widely viewed as extremely difficult to decarbonize. There are factors companies can control like focusing on fuel efficiency and carbon offsets; however, airlines cannot get to net zero on efficiency and offsets alone. Aircraft technology and fuel innovation must be part of the solution going forward. As with all industries, climate change could be a significant disruptor, and within the investment theme of decarbonization, there will be winners and losers which should create opportunities for asset managers like DSC Meridian from both a long and short perspective.

¹ Climate change and flying: what share of global CO₂ emissions come from aviation? Hannah Ritchie October 22, 2020; Stasista, 2021

² European Commission 2020 report: Reducing Emissions from Aviation

INDUSTRY CARBON FOOTPRINT AND REDUCTION EFFORTS

Increased demand for air travel, COVID notwithstanding, could increase the aviation sector’s emissions by more than 300% over 2005 levels by mid-century. This represents up to a quarter of the world’s remaining carbon budget to stay under the two degrees Celsius warming scenario.³ The industry is widely viewed as exceedingly difficult to decarbonize and solutions such as hydrogen and electric power are decades away from widespread implementation.

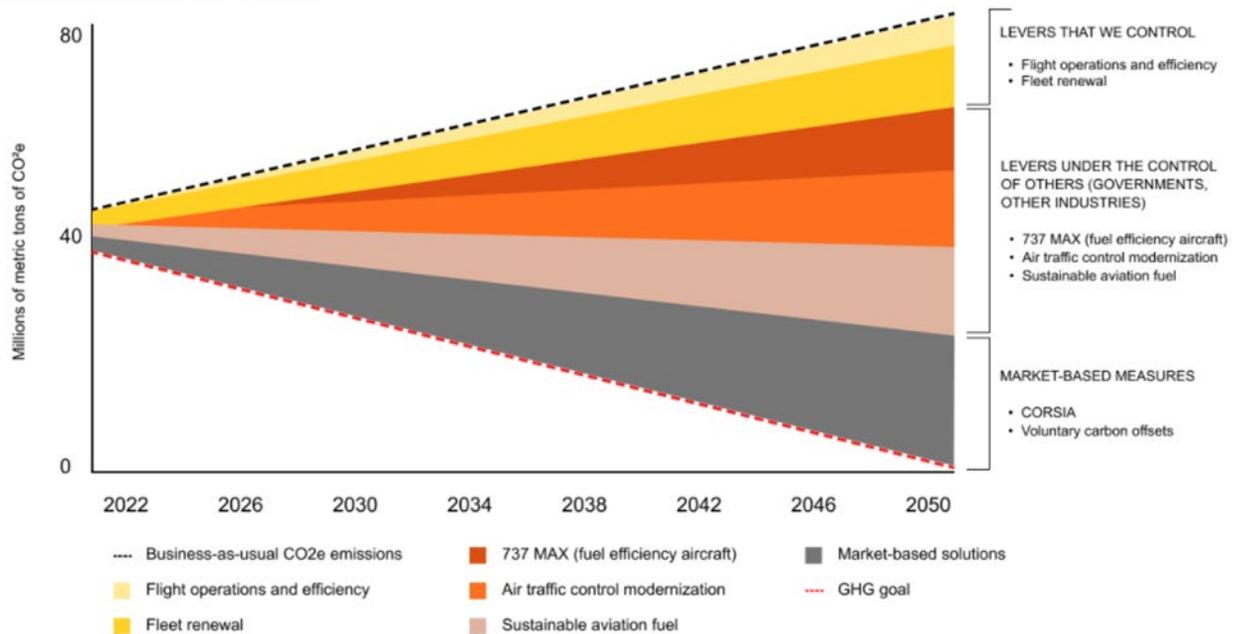
The graph below is a visual representation of the challenges faced by one South American airline with getting to net zero. What is noteworthy is that exogenous factors like regulation, technological innovation, and market-based measures account for the largest impediments preventing net zero alignment today. There are only a few levers this airline can control (fleet renewal, efficiency, purchasing offsets etc.)⁴

In fact, most carriers we have studied have focused on fleet renewal, operational efficiencies and carbon offsets in order to meet industry-wide reduction targets set in 2009, which include carbon-neutral growth by 2020 and cutting emissions in half by 2050 from 2005 levels.

CORSIA (the Carbon Offsetting and Reduction Scheme for International Aviation) is a market-based mechanism developed by the UN Civil Aviation Organization (UNCAO) to cap aviation emissions for international flights at 2020 levels by offsetting them elsewhere. Domestic emissions are covered by countries’ national pledges under the Paris Agreement. The pilot phase is underway now and the scheme becomes mandatory in 2027. Criticisms of CORSIA range from the quality of carbon credits and greenwashing to the lack of a clear pathway to a below two-degree scenario.

In a more recent development, the International Air Transportation Association (IATA) announced its Fly Net Zero initiative this

Getting to Net Zero in 2050



³ ICAO Climate Change Trends 2020

⁴ 2020 sustainability report, Gol Website

October. The plan relies heavily on scale up of sustainable aviation fuels (SAF), investment in new technology, improved operational efficiency, and offsets and carbon capture.

SUSTAINABLE AVIATION FUELS AS A PATH TO NET ZERO

According to the World Economic Forum's Clean Skies for Tomorrow Coalition, hybrid electric and hydrogen-powered aircraft could take ten to twenty years to develop and deploy at scale, although they might be feasible for smaller, short-haul aircraft in the next decade.

The report concludes that SAF is critical to the sector decarbonizing at scale. While technology is racing toward more effective decarbonization solutions, in the immediate term, SAF is the only existing option for significantly reducing emissions.

SAF is produced from sustainable feedstocks (municipal waste, sustainable biomass, used cooking oil, etc.) and is similar in chemistry to traditional jet fuel. It can be blended up to 50% (depending on fuel type) with traditional kerosene using the same infrastructure. The waste-to-value production of SAF means it already has a smaller carbon footprint than traditional kerosene the moment it is pumped into the plane. While SAF combustion generates CO₂, on a lifecycle basis, most sustainable aviation fuels provide a 70-80% reduction in CO₂⁵ compared to traditional jet fuel. The gold standard for SAF is certification from the Roundtable on Sustainable Biomaterials which only certifies fuels whose feedstocks do not contribute to food insecurity, deforestation, water stress, or soil degradation.

While safe and reliable sustainable jet fuels do exist, the main barrier to significant uptake today is the cost. We believe that SAF will become

more cost competitive with regulatory shifts, tax credits, other incentives and increased demand. Considering that fuel costs are between 20-30% of an airline's operating expenses, second only to personnel, price volatility of fossil fuels can have a material impact on an airline's financial performance. This gives us hope that companies' leadership teams will recognize the business imperative for further innovation around SAFs.

EVOLVING REGULATION

The regulatory landscape is changing globally in ways that will require airlines to adapt. Many countries have a minimum fuel standard that requires blending between 2-5% SAF with regular fuel.

Emissions from aviation have been included in the EU emissions trading system (EU ETS) since 2012 that applies to intra-EEA (European Economic Area) flights. The ETS has contributed to reducing the sector's carbon footprint by more than 17 MTCO₂e per year and is subject to review in light of CORSIA implementation.

In July 2021, the European Union published its Fit for 55 package, a dozen or so legislative changes proposed in order for the bloc to meet its 55% emissions reduction target by 2030 (vs. 1990). Carbon pricing and border adjustments are central to the plan, although the latter will be lower than originally proposed. In essence, this legislation will put a tax on kerosene for the first time and incentivizes SAF by providing a low tax basis for the fuel. Of note, the Energy Taxation Directive will be revised and, as a result, the tax exemption for kerosene will be phased out. Fuels will no longer be taxed based on volume, but on energy content and performance. For the first time, carbon regulatory measures in Europe will affect airlines that operate there. Outside the EU, China also launched its carbon market in July. For now, the trading scheme covers the power

⁵ Clean Skies Report.

sector, or 40% of emissions, and will expand to other sectors such as aviation over time.

In the United States, the Build Back Better budget reconciliation framework includes nearly \$1 billion for biofuels infrastructure, a four-year extension of the biodiesel tax credit and a new tax credit for SAF. The SAF credit begins at \$1.25 per gallon with an extra 1 cent per gallon for each percentage point by which the lifecycle GHG emissions reduction percentage exceeds 50%.

While both a carbon border adjustment tax and carbon pricing were part of the original plan, both measures were taken off the table for now. However, a number of states have their own trading systems, such as Oregon and California, and the northeast states have formed a regional system called REGI.

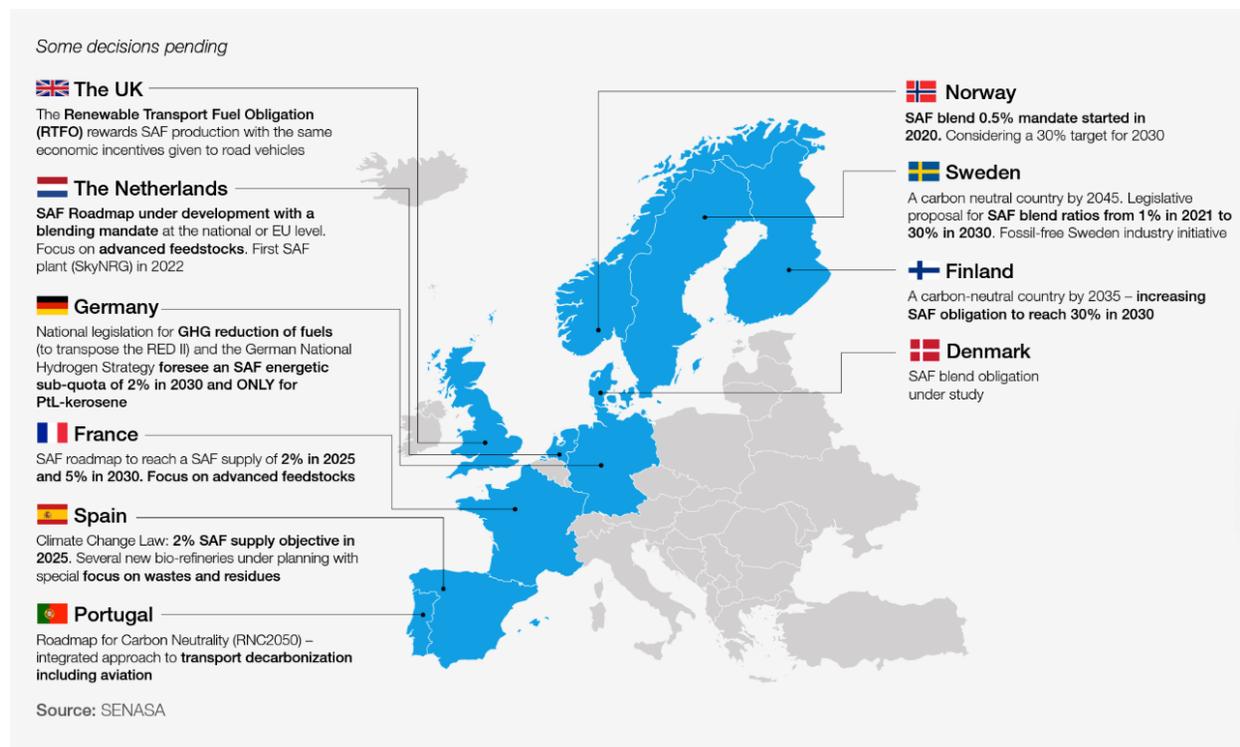
The map below illustrates the state of play in Europe around SAF mandates⁶. As the EU’s Fit

for 55 comes into force, we expect this map to expand.

Emission trading schemes today are priced at under \$10/MTCO₂e. In Europe and California, we are seeing upward pressure on prices as targets become more ambitious and regulatory requirements evolve.

MANUFACTURING FOR THE FUTURE: MORE EFFICIENT AND LOW CARBON FLEETS

On the manufacturing side, significant innovation is in process with both hydrogen and electricity, including battery technology. Many aircraft manufacturers are forging ahead with decarbonization efforts. We highlight a few examples here:



⁶ WEF Clean Skies

Airbus is partnering with other industry players to accelerate the commercialization of SAF in Europe and to increase the certified percentage blend of SAF from 50% to 100%. The company is already flight testing the operational and emissions impacts of 100% SAF and was the first manufacturer to offer customers a SAF blend option.⁷

In January 2021, **Boeing** made a firm commitment to delivering planes that fly on 100% SAF by 2030. The company has been innovating in this space since 2008 and made the first commercial flight (in partnership with FedEx) using 100% SAF in 2018.⁸

Since 2009, **Embraer** has calculated Scope 1, 2, and 3 emissions and regularly has that data independently verified. In 2020, Embraer partnered with EDP, a company that operates in all segments of the Brazilian energy sector, to invest in electric aircraft research (as opposed to SAF).⁹

As of January 2021, **Rolls-Royce** was ground testing its next-generation engines using 100% SAF as a full drop in option, laying the groundwork for full certification of 100% SAF engines.¹⁰

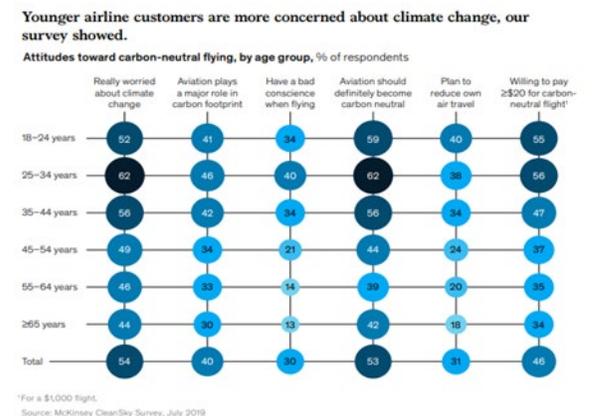
GE Aviation is developing a range of engine technology options that achieve significant improvements in fuel efficiency, investing in technologies like open fan and hybrid electric engines and are paving the way for approval and

adoption of 100% SAF and researching hydrogen fuel.¹¹

SHIFTING CONSUMER SENTIMENT AND PREFERENCES

Another factor in airlines pursuit of net zero emissions is the expectations of their customers who are increasingly concerned about the impact of their choices on climate change. Attitudes among the public toward climate change and air travel, especially among Millennials and Gen Z, are beginning to shift as evidenced by #flyskam (a Swedish term meaning “flight shaming”) and Fridays for the Future (the school student movement where students skip class on Friday to protest for climate action). The data below from a 2019 McKinsey survey of fliers shows concerns about aviation and climate change—of note: younger travelers say that they would be willing to pay extra for carbon neutral flights.

Business travelers may provide the greatest impetus for emissions reductions as their



⁷ Airbus. “Aviation leaders launch first in-flight 100% sustainable aviation fuel emissions study on commercial passenger jet.” News release, March 18, 2021. <https://www.airbus.com/newsroom/press-releases/en/2021/03/aviation-leaders-launch-first-inflight-100-sustainable-aviation-fuel-emissions-study-on-commercial-passenger-jet.html>

⁸ Boeing. “Boeing Commits to Deliver Commercial Airplanes Ready to Fly on 100% Sustainable Fuels.” News release, January 22, 2021. <https://boeing.mediaroom.com/2021-01-22-Boeing-Commits-to-Deliver-Commercial-Airplanes-Ready-to-Fly-on-100-Sustainable-Fuels>

⁹ Embraer. “Embraer and EDP announce joint efforts in electric aircraft research.” News release, November 20, 2020.

<https://embraer.com/global/en/news?slug=1206810-embraer-and-edp-announce-joint-efforts-in-electric-aircraft-research>

¹⁰ Rolls-Royce. “Rolls-Royce to test 100% Sustainable Aviation Fuel in next generation engine demonstrator.” News release, November 12, 2020. <https://www.rolls-royce.com/media/press-releases/2020/12-11-2020-rr-to-test-100-percent-sustainable-aviation-fuel-in-next-generation-engine-demonstrator.aspx>

¹¹ GE Aviation. “Flying ‘Bio:’ GE Aviation Helps Lead Industry Efforts to Advance Sustainable Aviation Fuel.” News release, April 21, 2021. <https://blog.geaviation.com/technology/flying-bio-ge-aviation-helps-lead-industry-efforts-to-advance-sustainable-aviation-fuel/>

employers strive to meet their own net zero objectives. Business travelers represent about 12% of airline passengers, but about 75% of profits. Roughly one-fifth of companies in the Forbes Global 2000 list have made net zero commitments.¹² As companies seek to limit Scope 3 emissions, we anticipate that they will look to limit emissions from business travel which would exert further pressure on the industry.

ESG UNDERWRITING: THE DEVIL IS IN THE DENOMINATOR

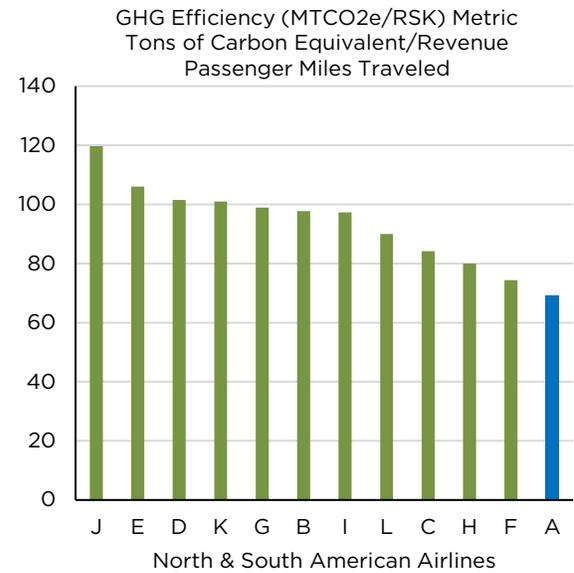
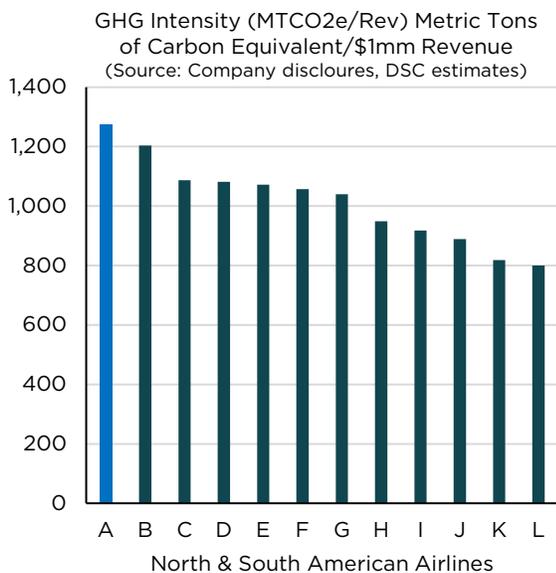
So, all of this begs the question, what are specific carriers actually doing, and how should we assess their performance? Earlier this year we conducted an in-depth ESG assessment of our airline holdings and peers to understand where the companies ranked based on their contribution to rising temperatures.

A conventional approach to carbon intensity is calculating MTCO₂e by \$1mm of revenue. However, in the airline sector, we believe that measurement obscures the true picture. Using

revenue as a scaling factor is skewed by differences in currencies and pricing structures.

Instead, we decided to examine load factor or carbon footprint by revenue passenger miles travelled, which we believe more accurately captures “carbon efficiency” across the industry.

For example, the graph on the left measures carbon intensity of 12 airlines operating in North and South America. Airline A scores as the most carbon intensive business per \$1mm of revenue. However, when you measure the same carbon emissions but change the denominator to “passenger revenue per unit of distance,” airline A actually screens as the “most carbon efficient” of the 12 airlines. We quickly realized that lower cost carriers in emerging markets appeared to be quite carbon intensive when we used revenue, yet very efficient on a seat kilometer basis. This makes sense since their pricing structure is vastly different than that of a multinational long-haul carrier.



¹² Black, R., Cullen, K., Fay, B., Hale, T., Lang, J., Mahmood, S., Smith, S.M. (2021). Taking Stock: A global assessment of net zero targets, Energy & Climate Intelligence Unit and Oxford

Net Zero. https://ca1-eci.edcdn.com/reports/ECIU-Oxford_Taking_Stock.pdf

The work revealed a classic example of the Devil is in the Details or in this case, the “denominator.” By examining the data through a lens that adjusted for currency and business model differences, we captured a more fulsome picture of a company’s actual carbon footprint.

We see a similar issue in the electric utilities sector where we believe that the correct denominator is “megawatt hours generated” (as opposed to \$1mm of revenue) to level the playing field between companies that run 24/7 and those that derive a significant portion of their revenue from payments to provide capacity whether it is needed or not.

PROMISING GREEN SHOOTS

A number of carriers have embarked on the journey to net zero. We wanted to highlight a few examples that caught our attention as we conducted our research:

Aeromexico made aviation history in 2011 by completing the first biofuel-powered transcontinental flight between Mexico and Madrid. In 2016, Aeromexico, Boeing and the Mexican Government joined forces to support SAF research and development. Aeromexico is a member of the Roundtable on Sustainable Biomaterials (RSB) and the Sustainable Aviation Users Fuel Group (of the International Civil Aviation Organization) which is focused on accelerating the development and commercialization of SAF. While the company’s 2020 sustainability report lacks specific reduction targets, it outlines a number of operational efficiency measures, including fleet renewal, to reduce GHG emissions.

Brazil-based **Azul Airlines** set a net zero target in May 2021. The company already has the youngest fleet in the region and has a strong efficiency program in place. Azul added Peter Seligmann to the company’s Board of Directors in April 2021. Mr. Seligmann is the founder and

chairman of Conservation International and brings significant international climate expertise to the Board. In August 2021, the company announced a \$1 billion partnership with Lilium to build an electric air network in Brazil.

Delta Airlines has made a ten-year, \$1 billion commitment to mitigate all emissions, air and ground, from March 2020 onward. The company is capping emissions at 2012 levels and purchasing 16 million verified carbon offsets. Delta is also investing heavily in SAF and in-flight processes and technologies to reduce emissions.

Jet Blue recently announced a set of short and medium-term targets to achieve net zero carbon emissions for its airline operations by 2040, including offsets, decreasing aircraft emissions 25% per available seat mile by 2030 from 2015 excluding offsets, converting 10% of total jet fuel to be blended from SAF by 2030, and converting 40% of three main ground service equipment vehicle types to electric by 2024 and to 50% by 2030.

In August 2020, Brazilian low-cost airline **GOL** committed to setting a net zero target through the Science Based Targets Initiative. The airline is waiting for the SBTi feedback on its methodology and for demand to stabilize in order to set interim targets. In addition to planned compliance with CORSIA, the airline plans to make additional investments in fleet renewal and efficiency and also SAF. It expects SAF to be more broadly integrated into fueling operations by 2025. GOL has a long history of sustainability disclosure and produced SASB and TCFD-aligned fact sheets in April 2021 in addition to its annual sustainability report.

United Airlines was an early mover in sustainable aviation and continues to lead the industry. The airline has improved its efficiency by 45% since 1990 and has set the goal of being carbon neutral by 2050. Instead of purchasing

offsets, the company is investing heavily in SAF development and production and direct air capture technology. The airline has converted 45% of its ground fleet to electric to date and plans to fully integrate SAF into its fueling operations. United has already taken significant steps with respect to SAF. United will purchase an initial 15 SAF-powered supersonic aircraft from Boom (slated for 2029 delivery). On December 3, 2021, United flew the first 100% SAF powered passenger flight from Chicago to Washington DC which represents a huge step forward.

CONCLUSION

Airlines are consumer-facing, and as regulatory shifts combine with consumers' increasing climate awareness, the industry will have an opportunity to make drastic changes that both increase consumer trust and long-term operational efficiency. The challenge today is that zero carbon flights are decades away.

LEARN MORE

If you would like to learn more about DSC Meridian, please contact:

- Jay Blount, Director of Business Development and Investor Relations. jay@dscmeridian.com
- Paula Luff, Director of ESG Research & Engagement. paula.luff@dscmeridian.com

Carbon's impact on the atmosphere is cumulative, so backloading emissions reductions a decade or two hence will not have the desired climate impact.

Yet, we remain hopeful that the timeline could accelerate. After all, ten years ago, who would have imagined that renewables would be cost competitive sources of electricity in the power sector? The trajectory of today's carbon reduction efforts bodes well for the airline sector. We are already seeing a mix of policy initiatives (including subsidies, regulations and credits) consumer demand and company action in aviation similar to what we have seen in the power sector. If history is any indication, we believe that the same combination of factors is at play in the aviation sector across the value chain and that net zero in aviation is within reach.

IMPORTANT DISCLOSURES

THIS DOCUMENT IS NOT AN OFFER TO SELL OR THE SOLICITATION OF AN OFFER TO BUY INTERESTS AND/OR SHARES IN A FUND (THE “FUND”) MANAGED BY DSC MERIDIAN CAPITAL LP (“DSC MERIDIAN” OR THE “FIRM”). AN OFFERING OF INTERESTS OR SHARES WILL BE MADE ONLY BY MEANS OF A CONFIDENTIAL PRIVATE OFFERING MEMORANDUM (A “MEMORANDUM”) AND ONLY TO QUALIFIED INVESTORS IN JURISDICTIONS WHERE PERMITTED BY LAW.

An investment in the Fund is speculative and involves a high degree of risk. The Fund is not intended to be a complete investment program. DSC Meridian employs certain strategies and techniques, such as investing in distressed securities, illiquid securities, short selling and the use of leverage and derivatives, which may increase the risk of investment loss. DSC Meridian’s investment program involves substantial risk, including the loss of principal, and no assurance can be given that the Fund’s investment objectives will be achieved. As a result, the Fund’s performance may be volatile, and an investor could lose all or a substantial amount of his or her investment. The Fund’s fees and expenses may offset trading profits. There can be no assurances that the Fund will have a return on invested capital similar to the returns of other funds or accounts with which Sheru Chowdhry was associated, due to differences in investment policies, risk parameters, economic conditions, regulatory climate, portfolio size, leverage, fee structure and expenses. Past performance is not a guarantee of, and is not necessarily indicative of, future results.

The Fund also has substantial limitations on investors’ ability to withdraw or transfer their shares or interests therein. No secondary market for the Fund’s shares or interests exists or is expected to develop, so investors may not have access to capital when needed. All of these risks, and other important risks, are described in detail the Fund’s Memorandum. Prospective investors are strongly urged to review the Fund’s Memorandum carefully and consult with their own financial, legal and tax advisors before investing.

The development of an investment strategy, portfolio construction guidelines and risk management techniques for the Fund is an ongoing process. The strategies, techniques and methods described herein, and the securities in which the Fund may invest, will therefore be modified by DSC Meridian from time to time and over time. Nothing in this document shall in any way be deemed to limit the strategies, techniques, methods or processes which DSC Meridian may adopt for the Fund, the factors that DSC Meridian may take into account in analyzing investments for the Fund or the securities in which the Fund may invest. Depending on conditions and trends in securities markets and the economy generally, DSC Meridian may pursue other objectives, or employ other strategies, techniques, methods or processes and/or invest in different types of securities, in each case, that it considers appropriate and in the best interest of the Fund without notice to or the consent of investors. Certain information contained in this document constitutes “forward-looking statements,” which can be identified by the use of forward-looking terminology such as “may,” “will,” “should,” “expect,” “anticipate,” “project,” “estimate,” “intend,” “continue,” or “believe,” or the negatives thereof or other variations thereon or comparable terminology. Due to various risks and uncertainties, actual events, results or the actual performance of the Fund’s investments may differ materially from those reflected or contemplated in such forward-looking statements. Nothing contained in this document may be relied upon as a guarantee, promise, assurance or a representation as to the future.

The information in this document is current as of the date listed on the first page (or if there is no date, then the date this document is delivered to you) and is subject to change or amendment. The delivery of this document at any time does not imply that the information contained herein is correct at any time subsequent to such date. Certain information contained herein has been supplied to DSC Meridian by outside sources. While DSC Meridian believes such sources are reliable, it cannot guarantee the accuracy or completeness of any such information.

The information presented herein is confidential and proprietary, and may not be (i) used by, or on behalf of, you for any purpose other than evaluating an initial or continued investment in the Fund, or (ii) disclosed by, or on behalf of, you to any third party, in each case except with the prior written consent of DSC Meridian.

FOR EEA INVESTORS: This document does not constitute an offer of interests or shares in the Fund to investors domiciled or with a registered office in the European Economic Area (“EEA”). None of the Fund, DSC Meridian or any of their respective affiliates currently intends to engage in any marketing (as defined in the Alternative Investment Fund Managers Directive) in the EEA with respect to interests or shares in the Fund. Receipt of this document by an EEA investor is solely in response to a request for information about the Fund which was initiated by such investor. Any other receipt of this document is in error and the recipient thereof shall immediately return to the Fund, or destroy, this document without any use, dissemination, distribution or copying of the information set forth in this document.

FOR SWISS INVESTORS: The Fund does not need to be licensed for distribution to non-qualified investors with the Swiss Financial Market Supervisory Authority (FINMA) as a foreign collective investment scheme pursuant to Article 120 paragraph 1 of the Swiss Federal Act on collective investment schemes of June 23, 2006, as amended (CISA). Accordingly, pursuant to Article 120 paragraph 1 of CISA the shares may only be offered, and an offering memorandum may only be distributed into or from Switzerland by way of distribution to qualified investors as defined in Article 10 paragraph 3 of CISA and its implementing ordinance, if the Fund has appointed a representative and a paying agent in Switzerland. Investors in the shares do not benefit from the specific investor protection provided by CISA and the supervision by FINMA in connection with the licensing for distribution.

FOR UK INVESTORS: This is neither an offer to sell nor a solicitation of any offer to buy any securities in any Fund managed by DSC Meridian. Any offering is made only pursuant to the relevant offering document, together with the current financial statements of the relevant Fund, if available, and the relevant subscription application, all of which must be read in their entirety. No offer to purchase securities will be made or accepted prior to receipt by the offeree of these documents and the completion of all appropriate documentation. This document is not an advertisement and is not intended for public use or distribution. It has not been approved under Section 21 of the Financial Services and Markets Act 2000 (FSMA). In the United Kingdom, this document is being distributed only to and is directed at (i) persons who have professional experience in matters relating to investments falling within Article 19 of the Financial Services and Markets Act 2000 (financial promotion) order 2005 (as amended) (the financial promotion order) or within Article 14 of the Financial Services and Markets Act 2000 (promotion of collective investment schemes) (exemptions) order 2001 (the CIS promotion order) or (ii) high net worth entities and other persons to whom it may otherwise lawfully be communicated, falling within Article 49 of the financial promotion order or within Article 22 of the CIS promotion order or (iii) certified sophisticated investors falling within Article 50 of the financial promotion order or within Article 23 of the CIS promotion order or (iv) other persons to whom it may lawfully be directed under an exemption contained in the financial promotion order or the CIS promotion order (all such persons together being referred to as relevant persons). Accordingly, this document is exempt from the general restriction in Section 21 of FSMA and from the restriction on the promotion of unregulated collective investment schemes in Section 238 FSMA on the grounds that it will be communicated only to relevant persons. Persons who are not relevant persons must not act on or rely on this document or any of its contents. Any investment or investment activity to which this document relates is available only to relevant persons and will be engaged in only with relevant persons. Relevant persons in receipt of this document must not distribute, publish, reproduce, or disclose this document (in whole or in part) to any person who is not a relevant person. “certified sophisticated investor”, for this purpose, means a person: (a) who has a current certificate in writing or other legible form signed by an authorized person to the effect that he is sufficiently knowledgeable to understand the risks associated with participating in unregulated collective investment schemes and of investments of the type described in this document; and (b) who has signed, within the period of twelve months ending with the day on which the communication is made, a statement in the prescribed form.