

WELCOME TO THE BREAKOUT SESSION

SUSTAINABILITY:
**DECARBONIZING EXPRESS AND
AIRFREIGHT TRANSPORTATION**

FLORIAN SCHWARZ
DHL

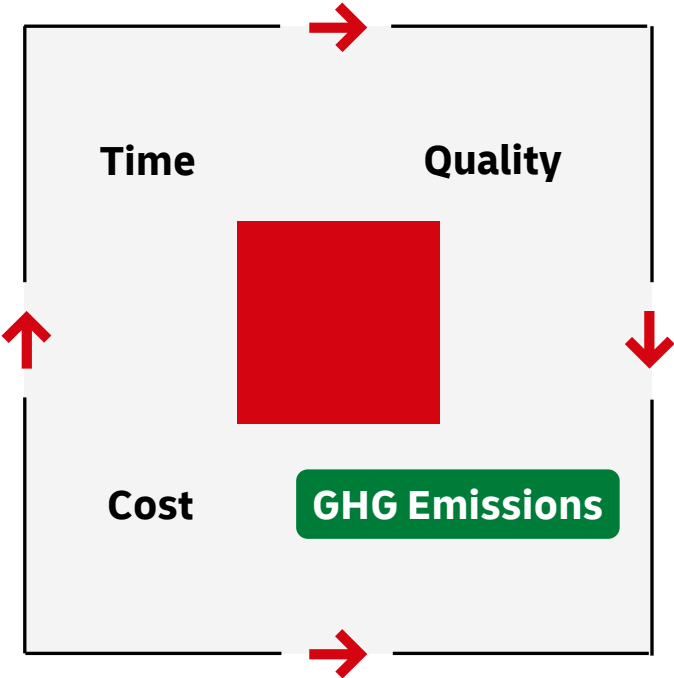
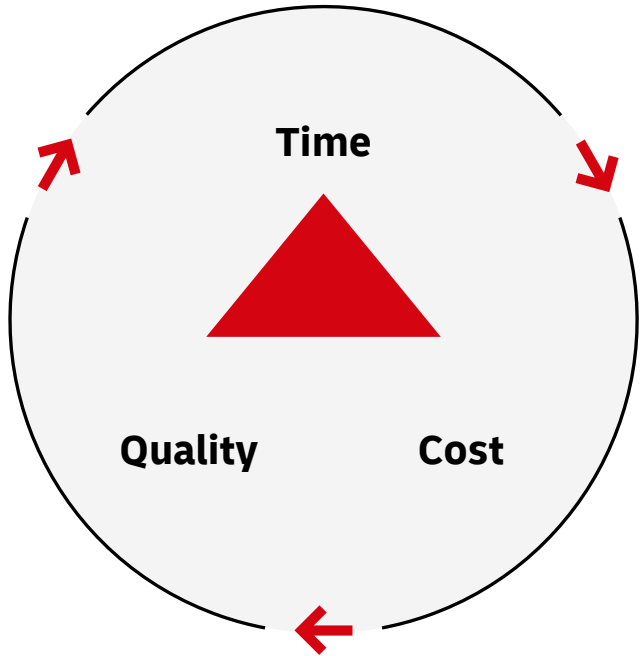
JONATHAN SPEARING
DHL

DECARBONIZING EXPRESS AND AIRFREIGHT

Understanding the levers and technologies and possible first steps

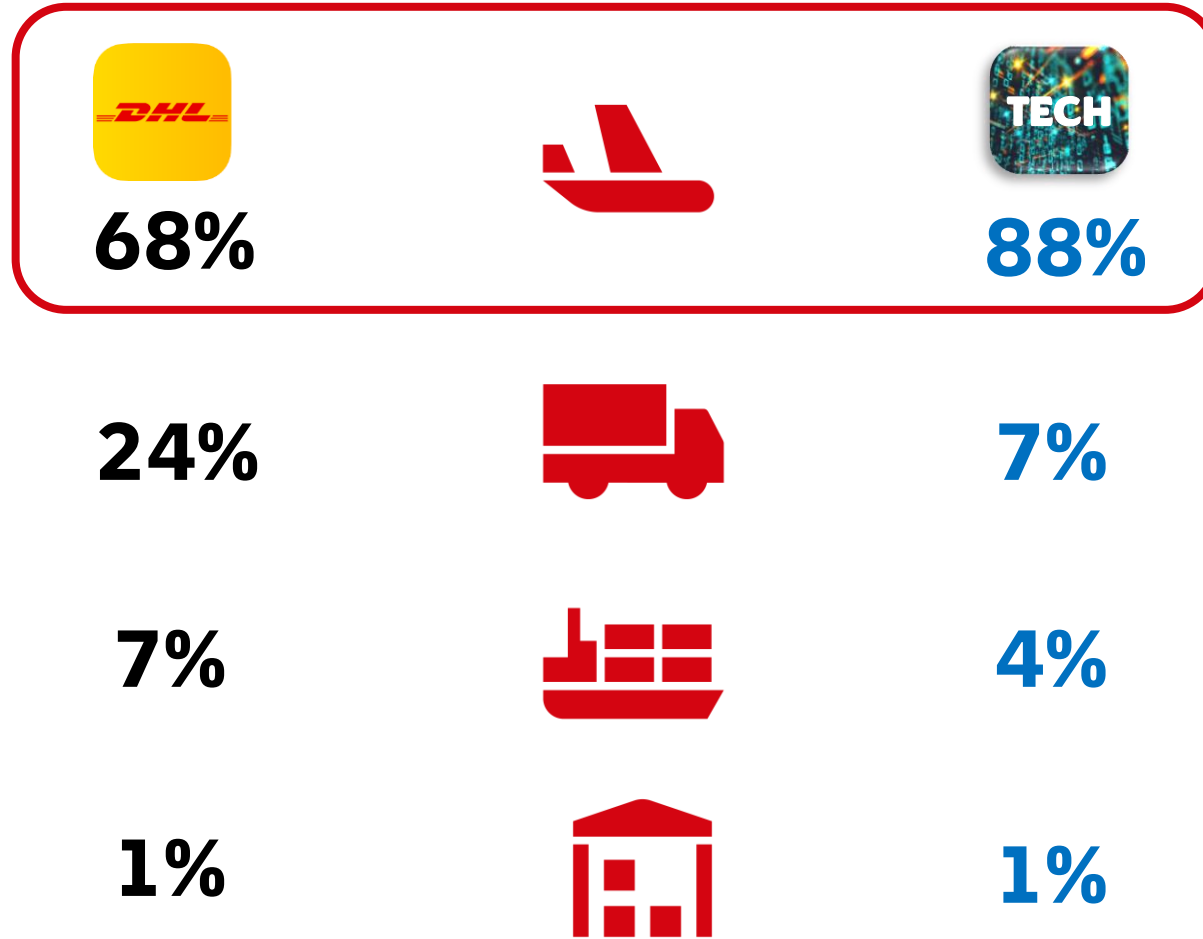
- **The Challenges** of Decarbonizing Aviation
- **Optimization and Operations** as traditional levers
- **Sustainable Aviation Fuel (SAF)** – Nature, Deployment, Outlook
- **Peer Case Study:** Google

SUSTAINABILITY ADDS TO THE COMPLEXITY OF MANAGING SUPPLY CHAINS BY ADDING A NEW DIMENSION

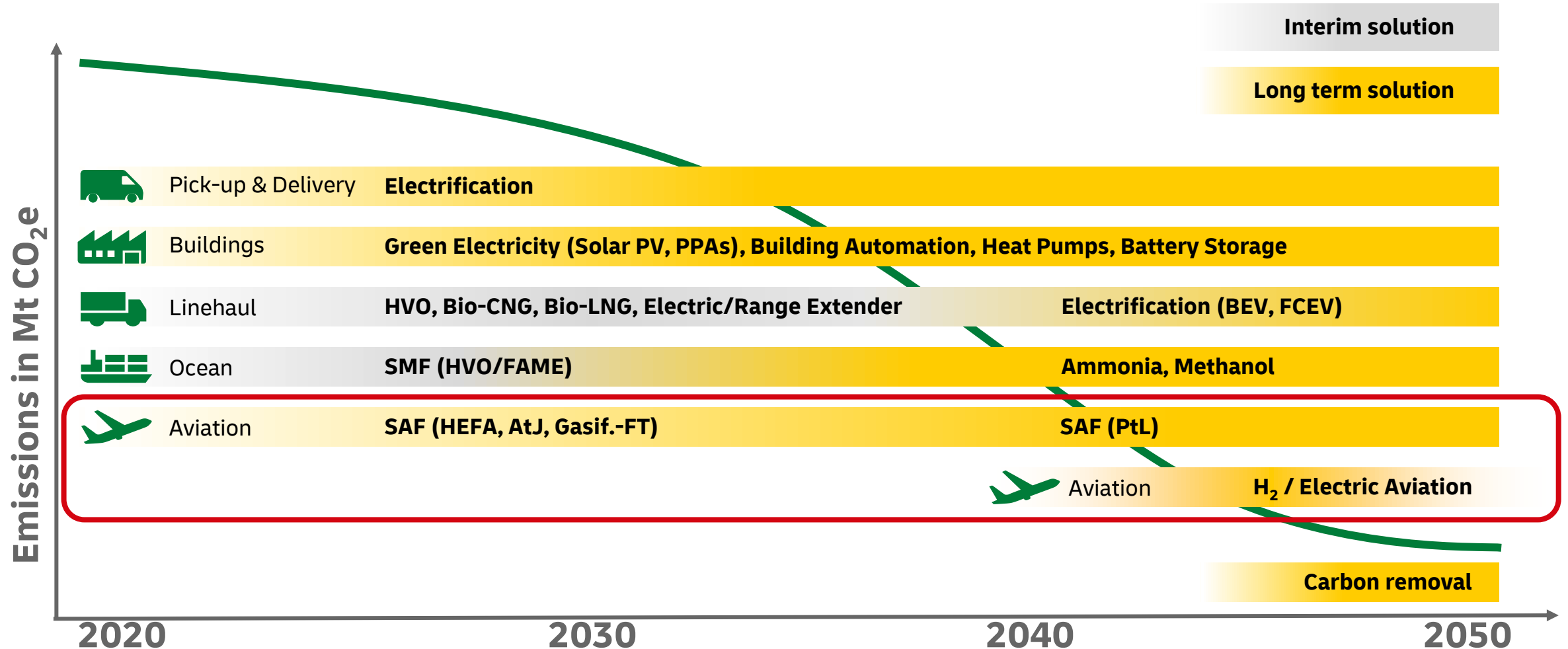


GHG EMISSION SHARE (WELL-TO-WHEEL)

RELEVANCE OF AVIATION RELATED EMISSIONS FOR TECH

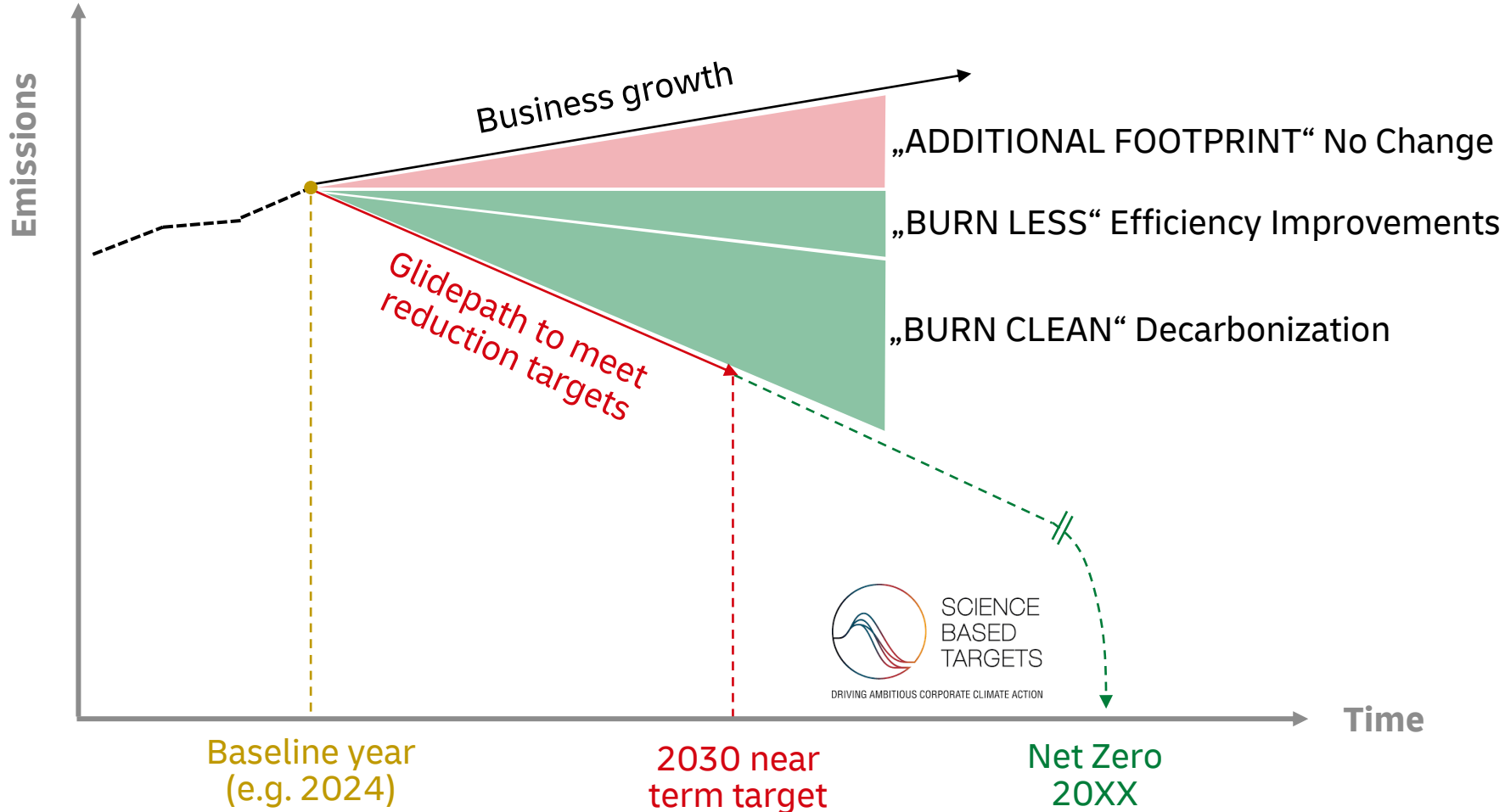


BURN CLEAN: INCREASING NUMBER OF SOLUTIONS AVAILABLE WITH SCALE / TECHNOLOGIES EVOLVING OVER NEXT DECADES



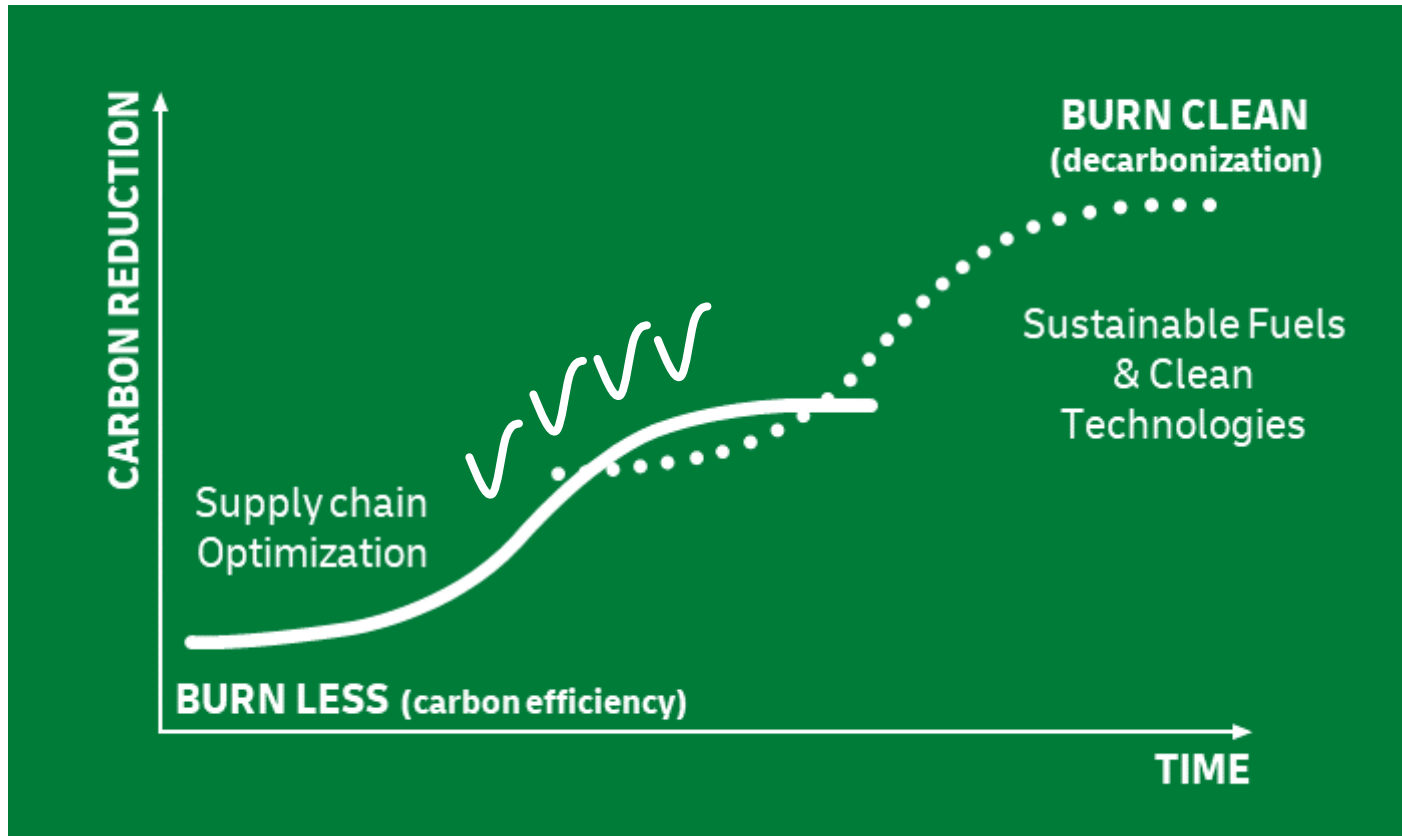
PPA: Power Purchase Agreement, HVO: Hydrotreated vegetable oils, CNG: Compressed natural gas, LNG: Liquefied natural gas, BEV: Battery-electric vehicle, FCEV: Fuel-cell-electric vehicle, SMF: Sustainable maritime fuels, FAME: Fatty acid methyl ester, SAF: Sustainable aviation fuels, HEFA: Hydroprocessed esters and fatty acids, AtJ: Alcohol-to-Jet, Gasif-FT: Gasification-Fischer-Tropsch, PtL: Power-to-liquid

DECARBONIZATION ROADMAP FOR TRANSPORT & LOGISTICS - MEASURES TO CLOSE THE GAP



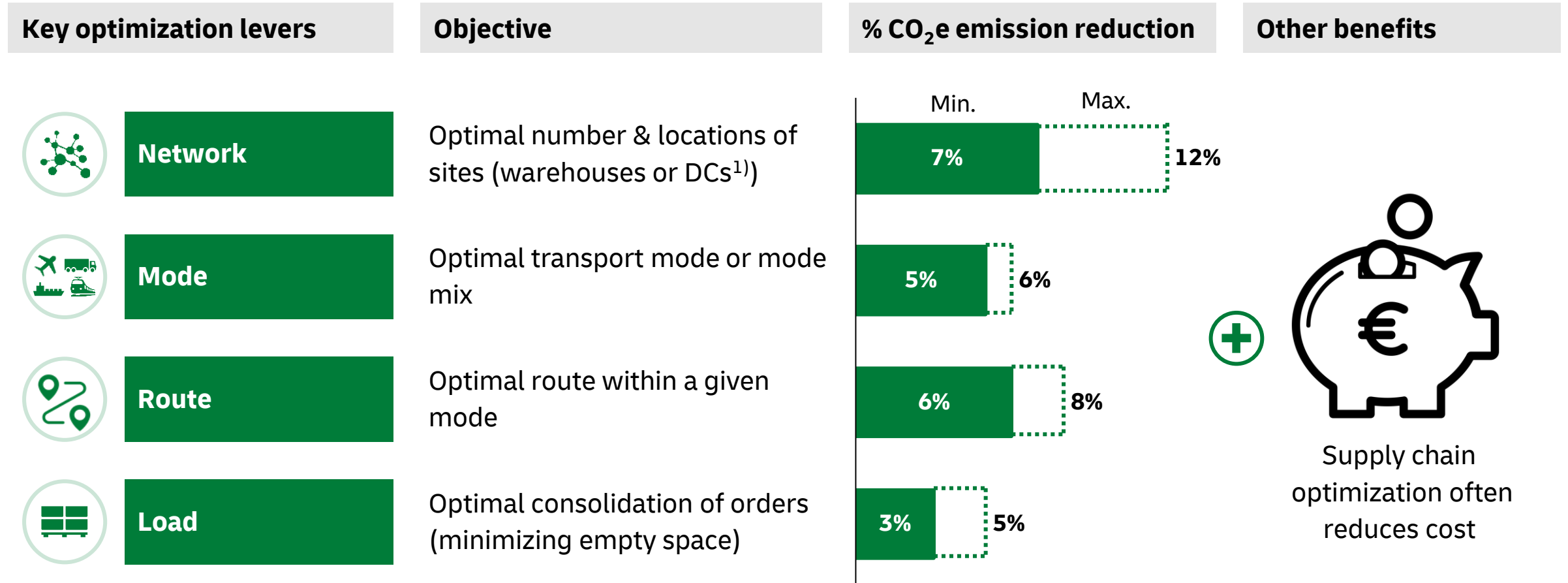
A **program** of selected and customized measures **forms the roadmap** to reduce emissions sustainably

THE PATH TOWARDS NET ZERO EMISSIONS



Burn less and burn clean measures are required to reach net-zero GHG emissions in the long term

BURN LESS: REDUCTION OF EMISSIONS AND COSTS THROUGH OPTIMIZATION



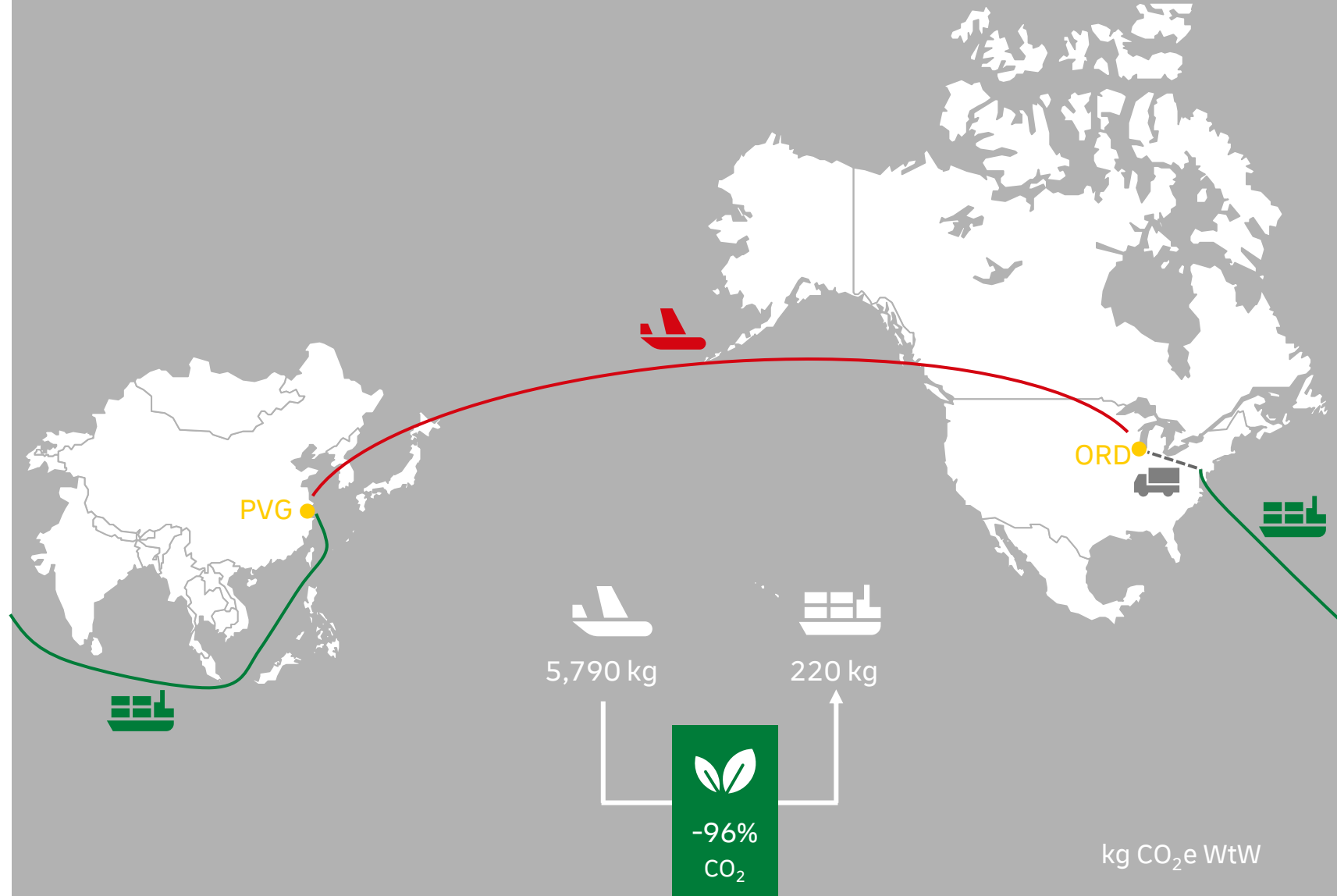
Source: McKinsey, DHL; 1) Distribution Centers

FROM THEORY TO PRACTICE

To reduce the carbon footprint of transport there is no 'one size fits all solution'

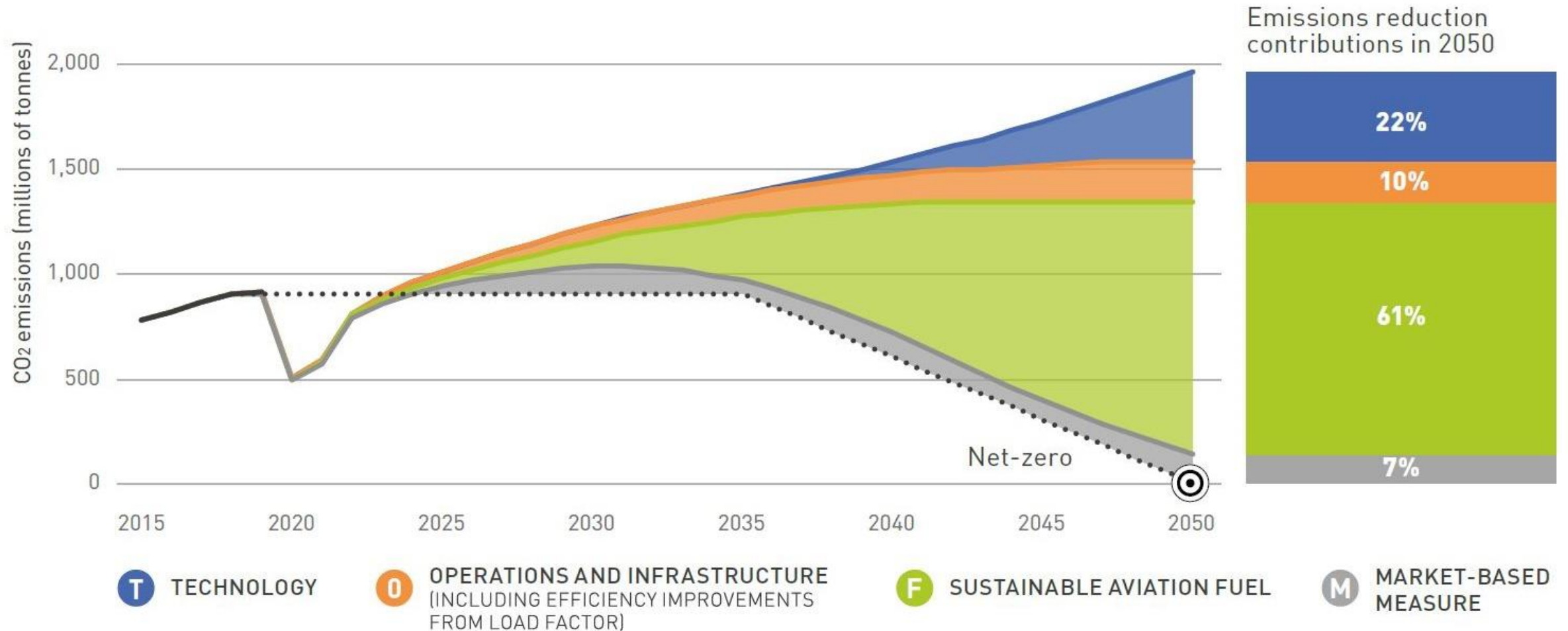
Burn less levers, such as e.g., modal shift or routing optimization, have to be customized for each supply chain

EXAMPLE: MODAL SHIFT



DECARBONIZING AVIATION

Outlook by Air Transport Action Group (not-for-profit association)



SOURCE: Air Transport Action Group (ATAG) – a not-for-profit association that brings together actors and experts from all parts of the air transport value chain.



OUR SUSTAINABILITY STRATEGY

Clean operations
for climate protection



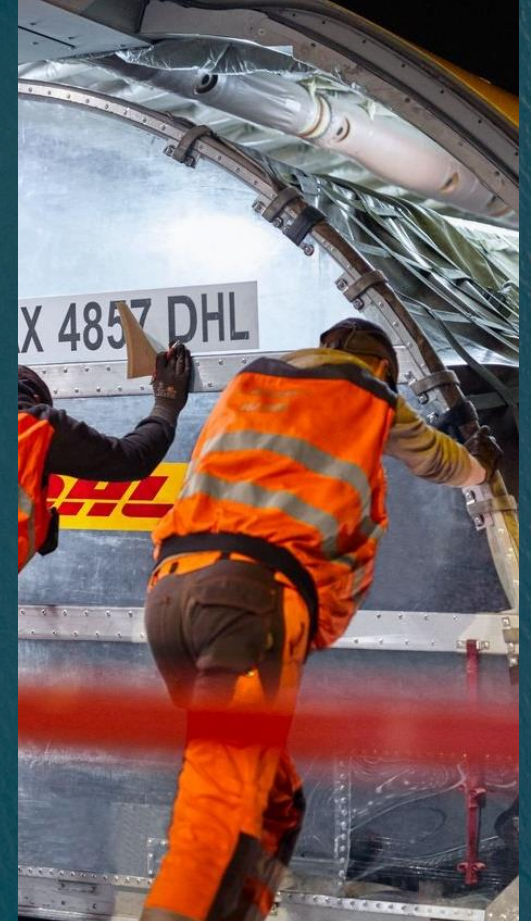
SUSTAINABLE AVIATION FUEL

DHL aims to replace at least **30% of their total fossil** aviation fuel with SAF by 2030



RE-FLEETING

When purchasing new aircraft, DHL will continue to invest in the latest **fuel-efficient**, and alternative power solutions



FUEL OPTIMIZATION

Through plane weight **balance optimization**, further increasing the optimization of network design, and choosing fuel efficient carriers, emissions can be reduced



OUR SUSTAINABILITY STRATEGY

Clean operations
for climate protection



DRIVE INNOVATION

DHL supports the development of electric planes, and SAF production plants. DHL Express is first to order up to 12 **fully electric eCargo planes** to be delivered starting in 2027.



DECARBONIZE GROUND HANDLING

Electrification and **hydrogen technologies** will help tackle emissions in our ground operations



GREEN PRODUCTS FOR CUSTOMERS

DHL's **GoGreen Plus** offering, support customers to **reduce their scope 3 emissions**.



GLOBAL AVIATION FUEL OPTIMIZATION PROGRAM

GROUND OPERATIONS



Center of Gravity

Optimize aircraft loading to better center of gravity



Optimum Planned Payload

When planning flight fuel, apply a refined payload figure



Wait At Stand

Upon arrival at airport, ensure no waiting to park at gate

FLIGHT OPERATIONS



Cost Index Compliance Fly economy mode, lower speeds



Optimum Takeoff Flaps

Optimize flap settings at takeoff



Continuous Descent

On landing approach apply continuous descent



Reduced Flap Landing

Optimize flap settings at landing



Single Engine Taxi

Taxi in after landing with one engine instead of two



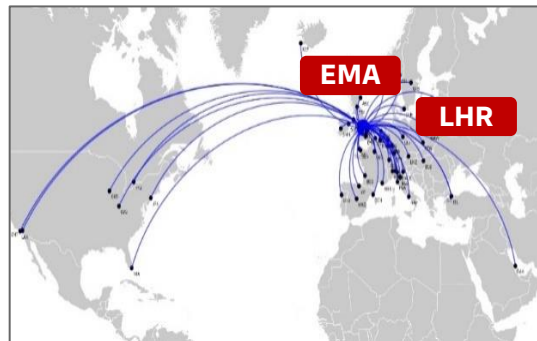
ALICE

FIRST DELIVERIES SCHEDULED
FOR 2027 IN THE US

Sustainable aviation fuel – In use since 2021. First delivery in 2020 and today we uplift SAF at eight different airports.



Netherlands



United Kingdom



Italy



United States



Sweden



Germany



NESTE



Suppliers

1) Pilot Only



DHL IS TAKING ACTION REGARDING SAF

Bloomberg

European Airlines Outpace US Carriers on Cleaner Jet Fuel

Airline	Percentage of sustainable aviation fuel in '23
DHL Group	3.18%
Air France-KLM	1.10%
IAG Group	0.66%
Scandinavian	0.62%
Finnair	0.24%
Qantas	0.22%
Global average	0.17%
United Airlines	0.17%
JetBlue	0.16%
Virgin Atlantic	0.16%
Lufthansa	0.15%
Delta Air Lines	0.09%
American Airlines	0.07%
Alaska Airlines	0.07%
Cathay Pacific	0.03%
Emirates	0.01%
FedEx	0.00%

Source: Airline reports, company interviews

Bloomberg Green

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European Airlines Outpace US Carriers on Cleaner Jet Fuel

Ben Elgin
Mon, Aug 19, 2024, 7:00 AM GMT+2 • 6 min read

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Miami, September 26, 2024

World Fuel and DHL Express set to bring sustainable aviation fuel to MIA

World Fuel Services (World Fuel), a [World Kinect \(NYSE: WKC\)](#) company headquartered in Miami, Florida, and DHL Express, the world's leading international express delivery provider, have entered into a new commercial agreement for the delivery of blended Sustainable Aviation Fuel (SAF) to Miami International Airport. This agreement marks one of the first regular deliveries of blended SAF into the State of Florida.

“ I applaud World Fuel and DHL for making Miami-Dade County the gateway for sustainable jet fuel in the state of Florida and one of only five entry points in the country. Thanks to this groundbreaking agreement, Miami International Airport will continue to pursue having some of the lowest carbon emissions of any U.S. airport, which is amazing news for our residents, visitors, and our local environment.

Miami-Dade County Mayor Daniella Levine Cava. ”

SUSTAINABLE AVIATION FUELS

DIFFER IN AVAILABILITY, PRICE AND RAMP-UP POTENTIAL

HEFA



Technology Maturity

- Mature, commercially available

Feedstock Potential

- Waste materials limited
- Competition with other uses (e.g. HVO/FAME)

Price indication

- **2-3** times more expensive than fossil jet fuel

AtJ & FT



- Early adoption, commercial pilots

- Many waste materials eligible
- Less competition with other uses

- **3-4** times more expensive than fossil jet fuel

Power to Liquid



- Technology still under development
- Large potential
- Competition with other sectors for green electricity
- **4-5** times more expensive than jet fuel

Ramp-up perspective

- Continuous ramp-up to two-digit Mt capacity in 2030

- Relevant volumes expected only after 2025

- Relevant volumes expected only after 2030

SUSTAINABLE FUELS

WILL THERE BE ENOUGH? DEMAND COULD EXCEED SUPPLY.

Exhibit 2

Based on our supply and demand projections, SAF shortfalls could arise by 2030.

Sustainable aviation fuel supply and demand per annum, million metric tons

● Demand ● Supply

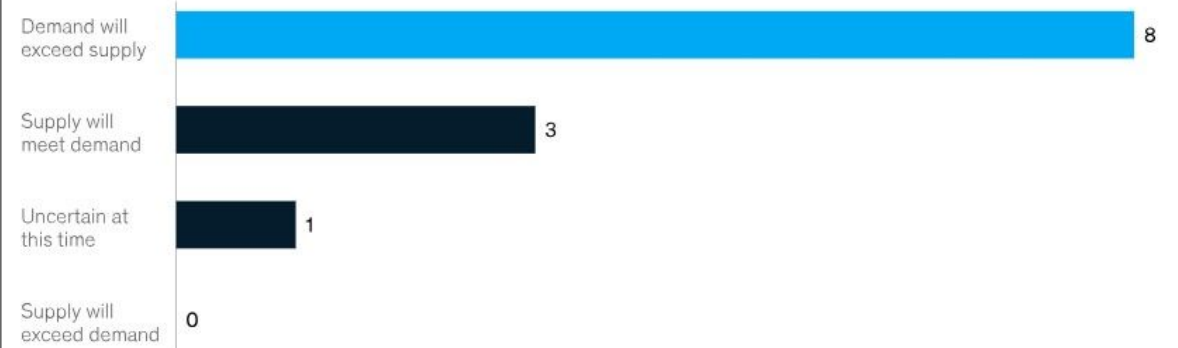


¹This includes the FID and "probable" supply in McKinsey Sustainable Fuel Supply Tracker.

Exhibit 3

Two-thirds of participating chief sustainability officers believe that demand for sustainable aviation fuel will exceed supply by 2030.

Supply vs demand for sustainable aviation fuel by 2030, number of respondents (n = 12)



Source: McKinsey chief sustainability officer surveys and interviews, 2024

SUSTAINABLE FUELS

HOW SUSTAINABLE ARE THEY – AND HOW IS THIS ENSURED?

DHL Group For internal use

Policy on the use of sustainable fuels

Preface
This policy replaces the formerly existing policy with the same name which was released on 7. September 2021 and is effective as of approval by the Operations Board on 15. December 2022.

1. Purpose of this policy
In its Sustainability Roadmap, announced in March 2021, DHL Group has foreseen sustainable fuels as the main driver to reduce emissions in its transport activities. This policy aims to ensure that any sustainable fuels used in DHL operations – be it in own Scope 1 or subcontracted Scope 3 operations – are truly sustainable, contribute to reduction of greenhouse gases and do no significant harm in other areas.

2. Definitions
This policy differentiates between sustainable fuels and lower carbon fuels.

1. Sustainable fuels are of non-fossil origin and have a significantly lower life-cycle greenhouse gas footprint than fossil fuels. The requirements to classify as a sustainable fuel are set out in section 4 of this policy.
2. Lower carbon fuels are usually of fossil origin but have a measurably lower life-cycle greenhouse gas footprint due to below average emissions in its production. Within DHL a lower carbon fuel is defined as a fuel that is recognized with a lower emission factor in carbon accounting than the emission factor that is commonly used for the same type of fuel.

3. Scope of this policy
The requirements set out in this policy apply to use of lower carbon- and sustainable fuels in DHL's own assets in Scope 1 as well as use by DHL's subcontractors on behalf of DHL and reported in Scope 3. They apply to fuels used in liquid or gaseous form and irrespective of if the fuel is physically delivered or as an emission reduction certificate via a book & claim or mass balance transaction.

The requirements set out in this policy always indicate if they apply to lower carbon fuels, sustainable fuels or both.

For sustainable fuels, all types of feedstocks/origins are covered from biogenic, synthetic or any other non-fossil origin and in liquid, gaseous or any other form.

Involuntary use of sustainable fuels resulting from regulatory requirements such as blending mandates is not covered by this policy. Furthermore, use of sustainable fuels by DHL's subcontractors that is not reported to DHL and not claimed as decarbonization measure is not covered.

231206_DHL Group_SF Policy_review 2023_approved 1

Exclusive use of sustainable produced biofuels:

- ↳ Sustainable fuels' production does not contribute to **deforestation** or undesired **land-use-change**
- ↳ With certified LCA GHG⁽¹⁾ an **emission reduction of >60%** according to relevant frameworks (e.g. EU RED, GREET) for each individual contract and targeting average reduction > 75% across the Group
- ↳ No negative impact on **local communities** by feedstock sourcing or processing (e. g. water depletion)
- ↳ No fuels from feedstocks with a high risk of unsustainable production – **ban on palm** oil and palm fatty acid distillate (PFAD) feedstocks.
- ↳ **Third party verification** required – for liquid fuels from ISCC or RSB or equivalent

⁽¹⁾ Life Cycle Assessment of Greenhouse Gas



The Smart Freight Centre framework allows the virtual transfer of characteristics of low-emission solutions (e.g. fuels) or low-emission transport services, not emission reductions. Book & Claim makes this possible.

Example for book & claim transactions:

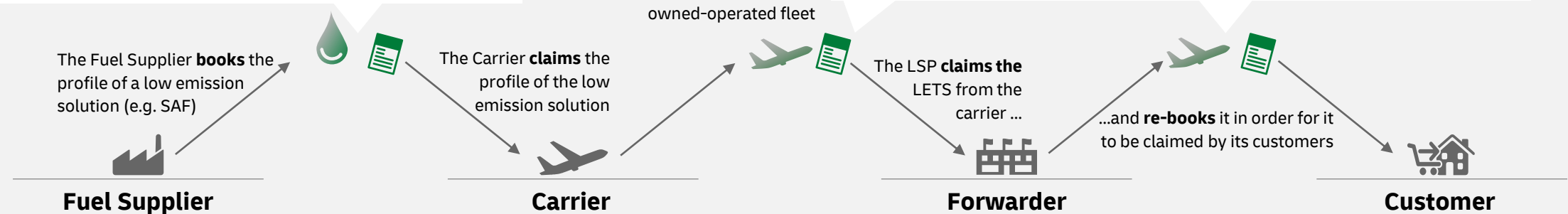
Low Emission Solution (Fuel) characteristics

- **Energy content, mass, or volume** of the fuel
- **Life cycle GHG emission factor** of the fuel
- **Feedstocks** and production processes for the fuel

Low Emission Transportation Service (LETS) characteristics

- **Mode** of transportation
- **Amount of transportation activity**
- **GHG emission intensity** of the LETS
- **total GHG emissions** resulting from the transport activity conducted

The carrier **books** a LETS using the claimed profile of the solution, as if the solution was used in their owned-operated fleet



Important terminology:

Low emission solution (LES): A product to decarbonize heavy transport (sustainable fuel or electric truck)

Low emission transportation service (LETS): transport activity conducted with LES (either physically or virtually)

Book: Recording the characteristics of a LES or LETS in a system tracking these characteristics – a registry is an example of such a system

Claim: Securing the characteristics of a LES or LETS from a system tracking these characteristics



Google and DHL collaborate on sustainable worldwide shipping

07/24/2024, 10:00 AM CEST

The initiative includes express shipping of Google devices in the Devices & Services business unit across the Americas, Asia, and Europe, and is part of Google's push towards encouraging existing decarbonization technologies in air cargo transportation.



- Google will utilize DHL Express GoGreen Plus service and invest in Sustainable Aviation Fuel (SAF) to reduce emissions from air logistic transportation
- The long-term collaboration follows a successful pilot project around SAF from last June to September 2023

Siva Vankineni · 1st

Sr. Manager - Global Transportation at Google

San Francisco Bay Area · [Contact info](#)

Google

University of Virginia Darden School of Business



UNITED STATES GRAND PRIX 2024

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THE RACE TO NET ZERO BY 2030

A NEW ERA OF SUSTAINABLE RACE LOGISTICS



2022

Utilizing fuel-efficient Boeing 777 aircraft



Reducing CO₂ emissions by around 17% vs 747 aircraft

2023

Launch of Biofueled trucks to transport European leg



83% carbon emissions reduction vs diesel on average



Fuelled by HVO100 drop-in fuel



Doubling to 37 trucks in the 2024 season

2024

Piloting Sustainable Aviation Fuel in F1® European leg



Decreasing emissions by an estimated 80% per flight vs conventional aviation fuels



Produced from renewable sources, like agricultural biomass and cooking oil



Approximately 20% of F1 cargo flights use SAF, resulting in a reduction of 4,597 tCO₂e* since Australia

*Tonnes of carbon dioxide equivalent

NEWS

Formula 1 makes first investment in Sustainable Aviation Fuel as part of long-term ultra-efficient logistics strategy

20 September 2024

2024 IMPACT



Formula 1 has announced its first investment in Sustainable Aviation Fuel (SAF) as part of its ultra-efficient logistics strategy and commitment to reaching Net Zero by 2030.

The first phase of investment focuses on SAF purchases through Global Partner DHL for air cargo to and from flyaway races since the Australian Grand Prix in March, and covers approximately 20% of subsequent cargo flights this season.

Using SAF delivers an estimated 80% reduction in associated carbon emissions* per flight, which means that the flights covered by SAF purchases in the 2024 season are estimated to save over 4,597 tCO₂e (tonnes of carbon dioxide equivalent**), compared to the use of conventional aviation fuel.

THANK YOU

A photograph of a city skyline with various skyscrapers and buildings under a blue sky with scattered white clouds. The foreground shows some greenery and a parking lot.

WHAT IS NEXT ON THE AGENDA?

4.30 – 5.00 pm

Shifting Gears - The 70-year-old start up and the new age of F1

From 7.00 pm

Networking Dinner