SUSTAINABLE LOGISTICS. SIMPLIFIED.

YOUR STEP-BY-STEP GUIDE TO MINIMIZING TRANSPORT EMISSIONS AND DECARBONIZING YOUR SUPPLY CHAIN

Delivered by DHL Global Forwarding

SUSTAINABLE LOGISTICS

YOUR CIRCULAR PATH TO DECARBONIZATION

Sustainability is no longer a subject that companies can afford to ignore. Consumers, suppliers, shareholders, and regulators are expecting to see change.

> *"Customers and investors are no longer only interested in what products and services a company offers or its key financial results, they also want to know what non-financial impact its business activities have. It is becoming increasingly clear that only companies that adopt sustainable business practices can be successful in the long run."*

Melanie Kreis,
CFO, Deutsche Post DHL Group

The good news is that with today's technology we can tackle supply chain emissions and shrink the carbon footprint of virtually any business. What's more:

IT'S NOW POSSIBLE TO DECARBONIZE FREIGHT TRANSPORT.

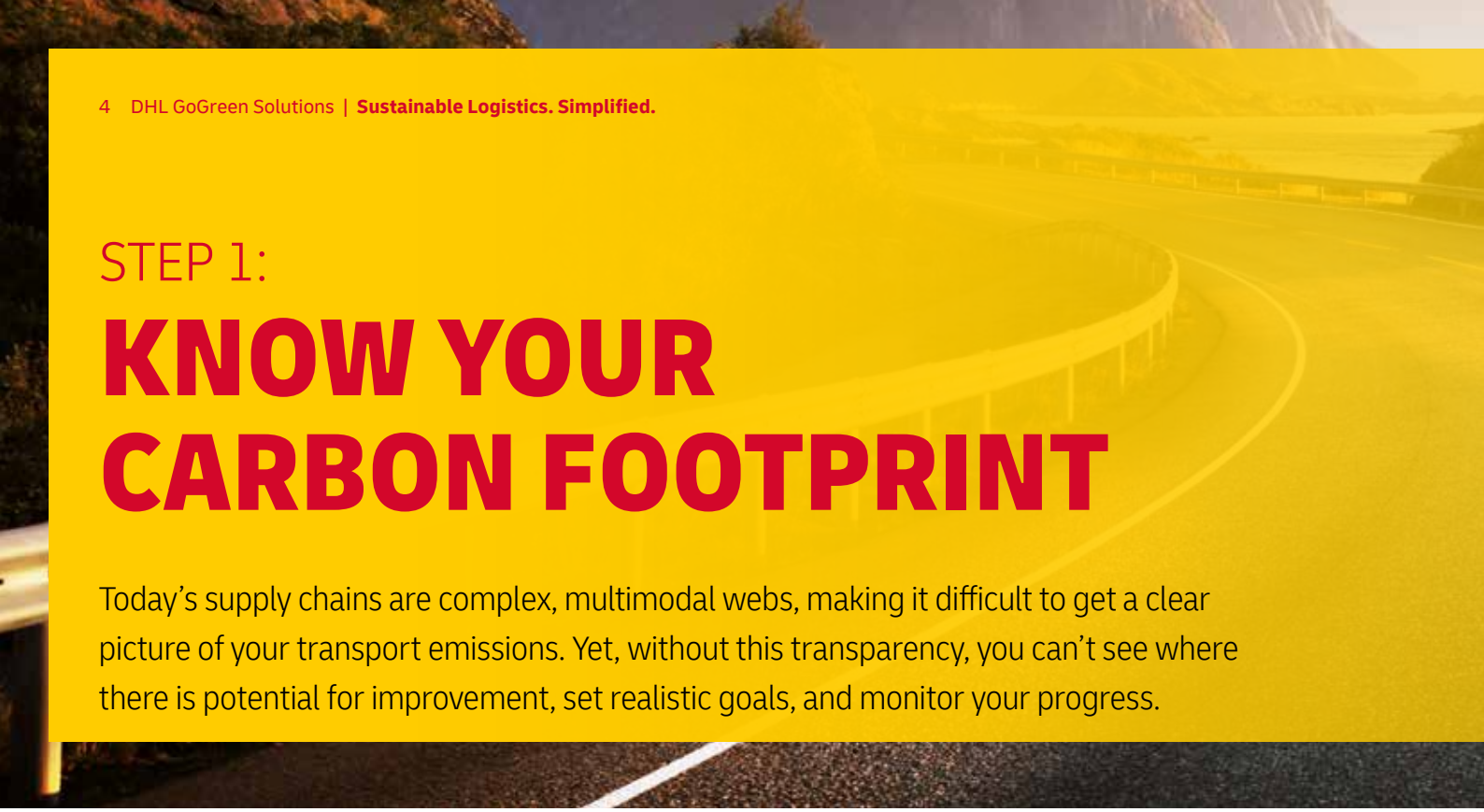
Sustainable logistics solutions can be a game changer for both global climate action and your business reputation. Today, freight transport generates about 3.4 billion metric tons of CO_2 annually, which equals the carbon footprint of some of the world's largest industrial countries. By decarbonizing your supply chain, your business can play an active role in cutting those emissions and make a real impact on your carbon footprint.

However, there's no one-size-fits-all solution to green logistics because each supply chain setup is different. Still most companies face the same broader challenges. By following the steps in this guidebook, you can assess the available methods for calculating, reducing and even eliminating your transport emissions and determine the best fit for your business model and sustainability goals.

This guidebook walks you through each step of the decarbonization process – from getting a clear picture of your carbon footprint and setting science-based targets to understanding and accessing the right carbon reduction tools. You will find best practice examples and questions to ask yourself along the way.

There's never been a better time to decarbonize your supply chain. You may feel that your transport emissions are out of your hands, but it is possible to take control of the carbon emissions generated by your freight logistics. Use this guidebook to discover your options and what could work for you!


STEP 1
Know your
carbon footprint
STEP 2
Set your **CO_2**
reduction targets
STEP 3
Identify **key carbon**
reduction levers
STEP 4
Select key trade lanes
and **evaluate the impact**
STEP 5
Make a decision
and implement it
in those lanes
STEP 6
Extend **to**
other lanes



STEP 1:

KNOW YOUR CARBON FOOTPRINT

Today's supply chains are complex, multimodal webs, making it difficult to get a clear picture of your transport emissions. Yet, without this transparency, you can't see where there is potential for improvement, set realistic goals, and monitor your progress.

LEVERAGE DATA TO INCREASE TRANSPARENCY

Using the latest tools and technology, you can harness a world of data to get quick carbon footprint calculations, estimates of your overall carbon footprint, in-depth reports on the sources of your transport emissions, and even a state-of-the-art dashboard with end-to-end supply chain visibility. With greater transparency across your supply chains, you'll have a solid foundation to make informed decisions.

Carbon calculator

Compares the carbon footprint of various routes or transport modes and provides immediate insights for initial guidance and planning.

Carbon estimate

A top-level estimate of your company's overall freight transport emissions.

Carbon reports

An in-depth, granular look at your environmental impact, including a detailed assessment of your carbon emissions and clarity on what's driving those emissions, in line with the leading global guidelines and calculation standards (available in myDHLi).

myDHLi

State-of-the-art logistics platform that allows supply chain managers to run end-to-end digital supply chains with 360° visibility and complete control over all shipments. myDHLi also delivers the transparency needed to determine your company's transport emissions down to each shipment, run deep-dive analyses of your carbon footprint, and adapt transport modes and lanes to improve efficiency.

DID YOU KNOW?

Comparing greenhouse gas emissions (GHG) across different modes of transport is like comparing apples and oranges. The Global Logistics Emissions Council (GLEC) developed the GLEC Framework to help solve this problem. It is the only globally recognized methodology for harmonized calculation and reporting of logistics GHG across multimodal supply chains. The best part? Shippers, carriers and logistics service providers can use it to calculate their carbon footprint accurately. Using the GLEC Framework, you'll demonstrate to your customers and stakeholders that you're committed to delivering on your sustainability promises.

> *"myDHLi is a major step forward as it provides a new level of transparency on the carbon footprint associated with the logistics of our medicines. Thanks to this tool we are able to dig into the combination of transportation modes and lanes to look where we have the highest CO_2 emissions so that we can effectively identify the areas on which we should intervene first."*

Sabina Reggioli, Healthcare Transportation Expert, Merck Group

CHECKLIST

Answer these questions to help you determine if you're working with accurate and valuable data:	**Yes**	**No**
Do you have full visibility of your transport emissions?		
Are your transport emissions calculated in line with leading global standards (e.g., GHG protocol, GLEC Framework, ISO 14083)?		
How detailed are your carbon calculations? Do they include defaults or vehicle and routing-specific parameters?		
If calculated by a third party, do you know the underlying calculation methodology?		
If calculated by a third party, is your carbon report verified by an independent auditing body?		

STEP 2:

SET YOUR CO_2 REDUCTION TARGETS

No two businesses have the same supply chain setup or follow the same path to low-carbon logistics. Many companies want to understand how to align their sustainability goals with the Paris Agreement, set realistic targets, and achieve meaningful progress.

JOIN THE SCIENCE BASED TARGETS INITIATIVE (SBTi)

One way to achieve meaningful progress with your climate targets is to join the Science Based Targets initiative (SBTi) – a step-by-step process for setting science-based targets for your company and mapping out a clearly defined path to reducing GHG emissions. We recommend joining the SBTi because it ensures your targets are based on what the latest climate science deems necessary to meet the Paris Agreement goals. In addition, by going through the process, your company will benefit from the detailed feedback and support from the SBTi's technical experts. The SBTi also provides the opportunity to show accredited progress, which boosts investor confidence and demonstrates tangible sustainability commitments to increasingly carbon-conscious consumers.

THE SBTi'S FIVE-STEP PROCESS FOR SETTING SCIENCE-BASED TARGETS:

1. COMMIT:
Submit a letter establishing your intent to set a science-based target ✓

2. DEVELOP:
Work on an emissions reduction target in line with the SBTi's criteria ✓

3. SUBMIT:
Present your target to the SBTi for official validation ✓

4. COMMUNICATE:
Announce your targets, inform your stakeholders, and be included on the SBTi's online target dashboard ✓

5. DISCLOSE:
Report your company-wide emissions and track your progress annually ✓

> *"Companies with science-based targets are already cutting emissions at scale – all businesses must now align with science and join the race to zero."*
>
> **SBTi "Taking the Temperature" report,** June 2021

CHECKLIST

Not convinced? If you answer "No" to any of these questions, we highly recommend following the steps above to develop and validate science-based targets:	**Yes**	**No**
Do you know how to set GHG emissions reduction targets?		
Do you know how best to disclose your targets and assess your progress?		
Are your targets aligned with the Paris Agreement?		
Do you know which carbon reduction levers can help you achieve your targets?		

STEP 3:

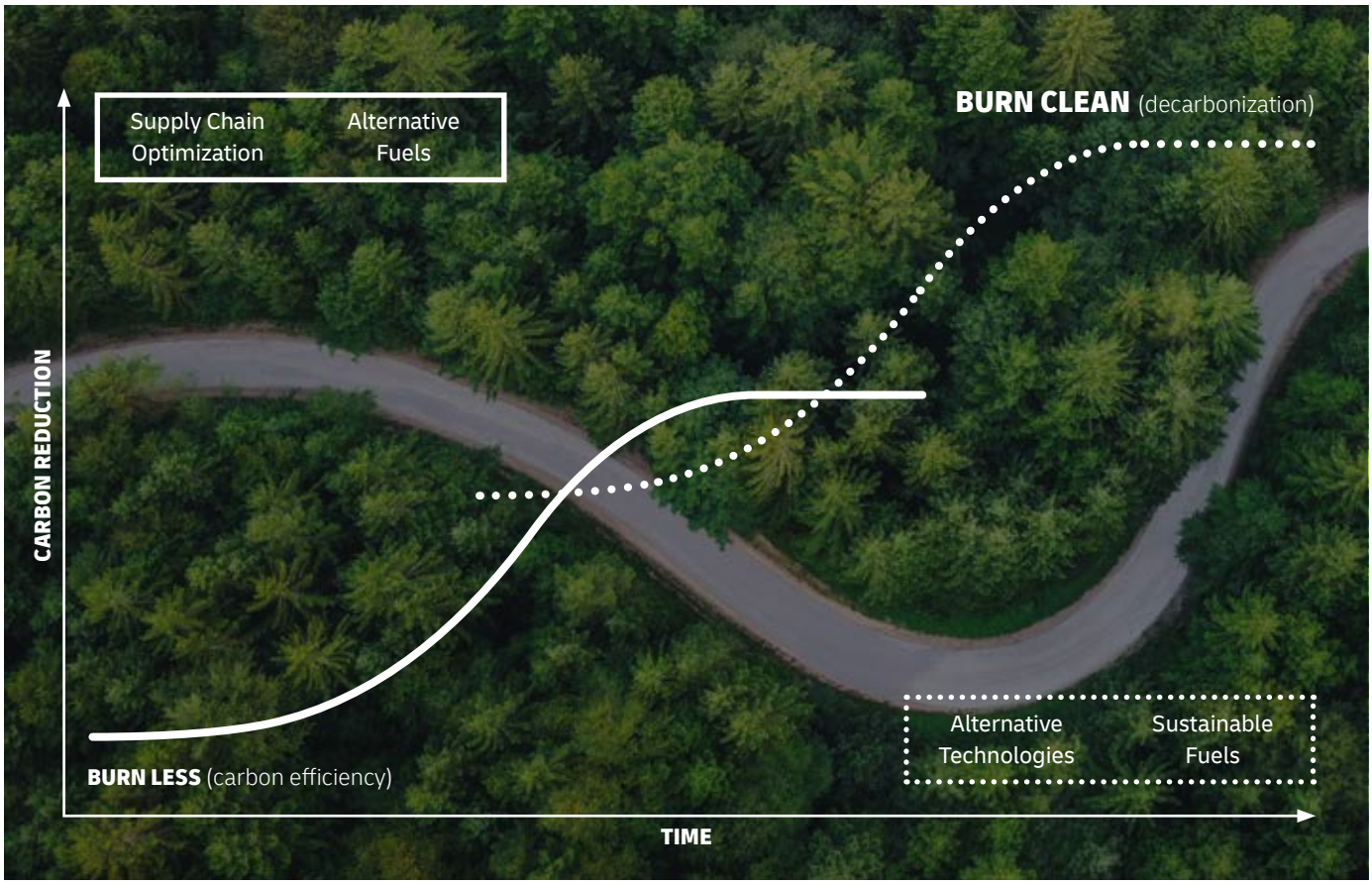
IDENTIFY YOUR CARBON REDUCTION LEVERS

It's an exciting time! With a complete toolbox of levers to reduce emissions and new technologies coming online, we now have a full range of solutions to maximize carbon efficiency and continually create carbon-neutral links in supply chains.

BURNING LESS AND BURNING CLEAN

As you can see in **Figure 1,** efficiency gains have increased rapidly in recent years but are now slowing. That's because technological improvements in conventional engines have mostly been exhausted. In addition, improved design and more efficient operations have optimized carbon efficiency in air and ocean freight. In the last decade, the industry has steadily improved carbon efficiency by more than 5% each year. But these options are reaching their limits.

FIGURE 1 – The path towards zero emissions



Although this may sound like bad news, it means that we have a complete set of tools to burn less and ensure freight shipments use the least amount of fuel possible. **Figure 2** shows some of the options at our disposal. Using state-of-the-art technology, we have unprecedented visibility across global trade lanes, which enables consolidation, modal shifts, routing optimization, carrier selection, and even complete network re-designs. As a result, it's possible to maximize carbon efficiency down to individual shipments.

While the solutions to burn less are used to keep carbon emissions to a minimum, the growing availability of sustainable fuels and alternative technologies present viable solutions to burn clean and fully decarbonize freight transport – from individual shipments to entire supply chains. **Figure 3** shows some of the technologies and fuels available and in testing.

In road freight, for example, light-duty electric vehicles are already in operation for short-haul transport and last-mile delivery in some places. And the development of long-distance electric trucks is accelerating. In air and ocean freight, sustainable "drop-in" aviation and marine fuels are playing a pivotal role because we can use them in today's aircraft and ocean vessels. And both production and accessibility are being scaled up.

FIGURE 2 – Optimization solutions to burn less

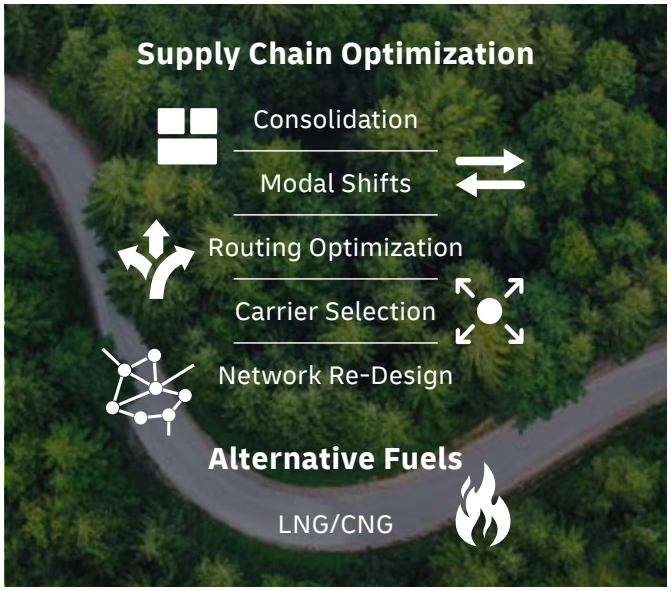
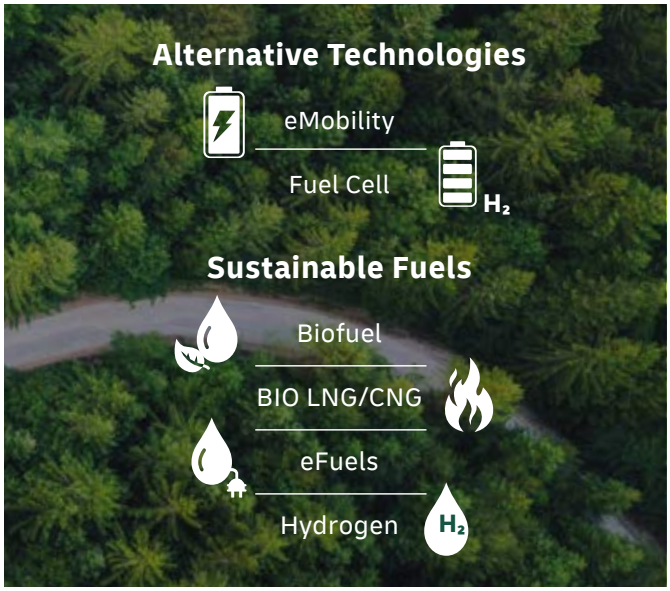


FIGURE 3 – Alternative technologies to burn clean



"With alternative technologies and sustainable fuels becoming more available, our path towards zero emissions is clearer than ever: still leverage "burn less" levers but accelerate "burn clean" levers. And most importantly: We must put our commitments into action now – while we are between those two development curves."

Kathrin Brost,
Global Head GoGreen, DHL Global Forwarding

CARBON REDUCTION LEVER CHECKLISTS:

For each of the carbon reduction levers on the following pages, you'll find a list of questions to help you determine if it's a good fit for your supply chain.

LEVER 1: MODAL SHIFT AND MULTIMODAL SOLUTIONS

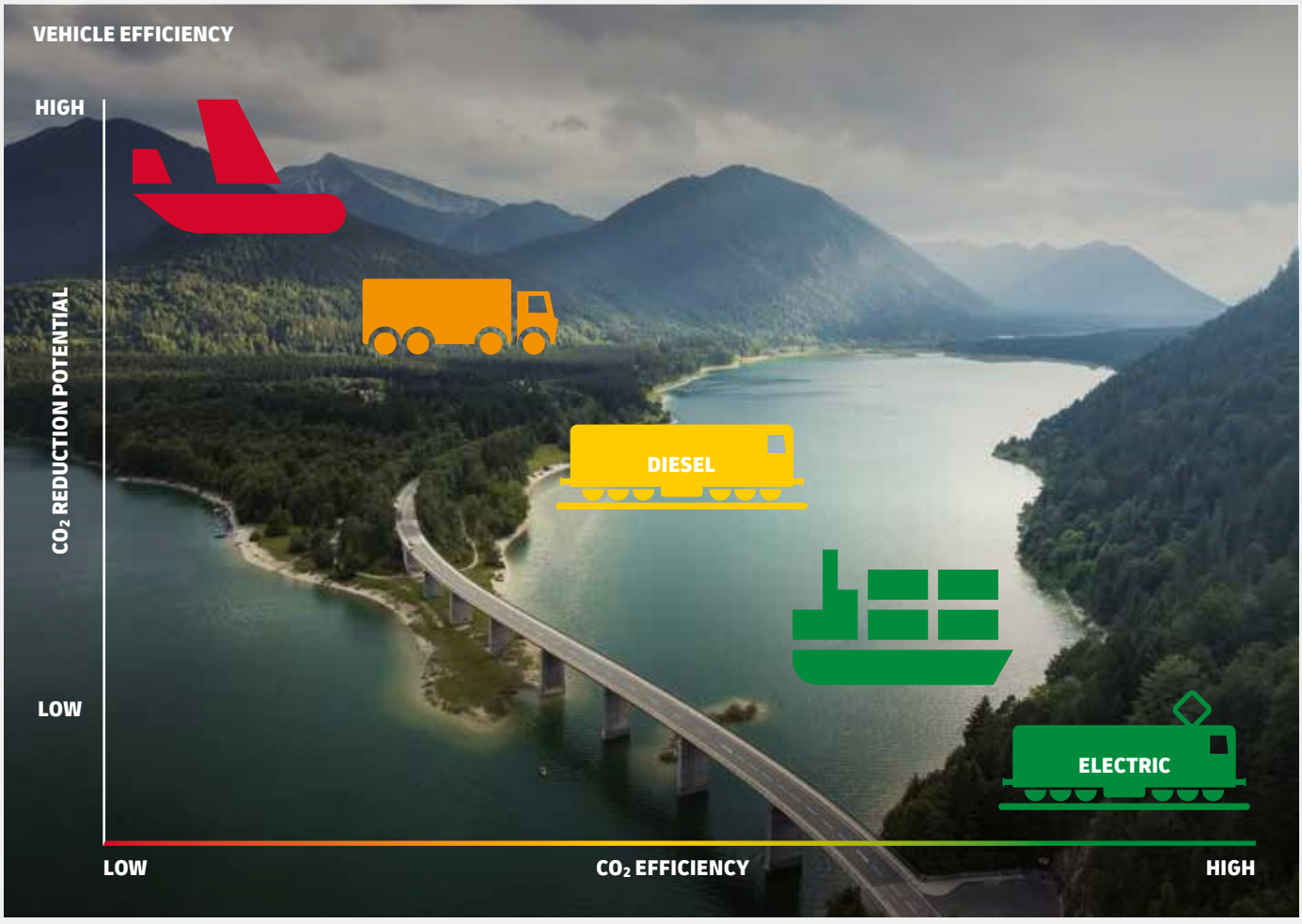
SHIFT INTO SAVINGS

Modal shifts are the most straightforward carbon reduction lever, but they also present challenges and require solid planning. Exploring and aligning the available options with your needs and goals can lead to substantial CO_2 and cost savings.

COMPARING TRANSPORT MODES

As shown in **Figure 4,** air freight is the most carbon-intensive mode of transportation. A shift from air to road, rail or ocean alternatives could potentially reduce your carbon emissions by up to 90%. Changing transport modes also affects transit times. To reduce emissions, you'll often have to factor in more time to get your goods from A to B. However, you can leverage multimodal solutions (see **Figure 5**) and optimized routing (see carrier selection and routing optimization) to find the right balance between cost, carbon, and transit time efficiency.

FIGURE 4 – The difference between planes, trains and ships

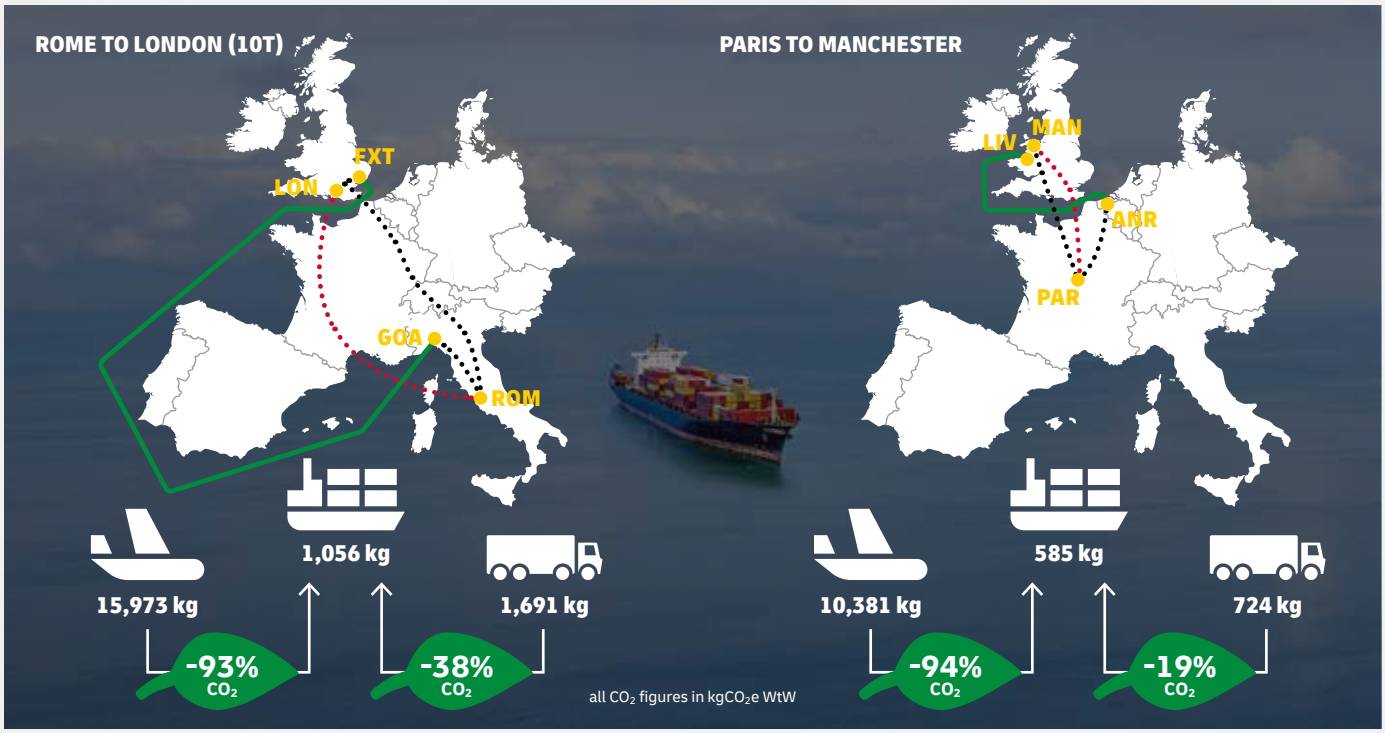


MULTIMODAL SOLUTIONS

Multimodal solutions are an innovative way to strike the right balance between cost efficiency, transit time, and lower emissions. The best solution to meet your needs is often not the most obvious or direct route from origin to destination.

Figure 5 shows two examples of DHL Short-Sea transport from Rome to London and Paris to Manchester. While they prioritize cost efficiency, the solutions also reduce emissions while ensuring transit time still meets customer expectations.

FIGURE 5 – DHL Short-Sea transport examples (Green line indicates ocean freight, red dotted line indicates air freight, black dotted line indicates road freight)



> *"Fast, secure and cost-efficient transportation is of key importance to our company. With the increasing importance of sustainable transport options, we found rail fright to be a truly beneficial modal shift alternative to achieve our KPIs and carbon reduction at the same time."*
>
> **Marcin Drab,** Regional Commodity Manager
> Freight & Distribution (F&D) Supply Chain Signify Poland Sp. z o.o.

CHECKLIST

Answer these questions to help you determine if a modal shift or multimodal transport is right for you:

	Yes	No
Do all your shipments need to get from A to B in the same amount of time?		
Can you place orders earlier and accept longer transit times?		
Can you separate standard stock shipments from more urgent items?		

LEVER 2: CARRIER SELECTION AND ROUTING OPTIMIZATION

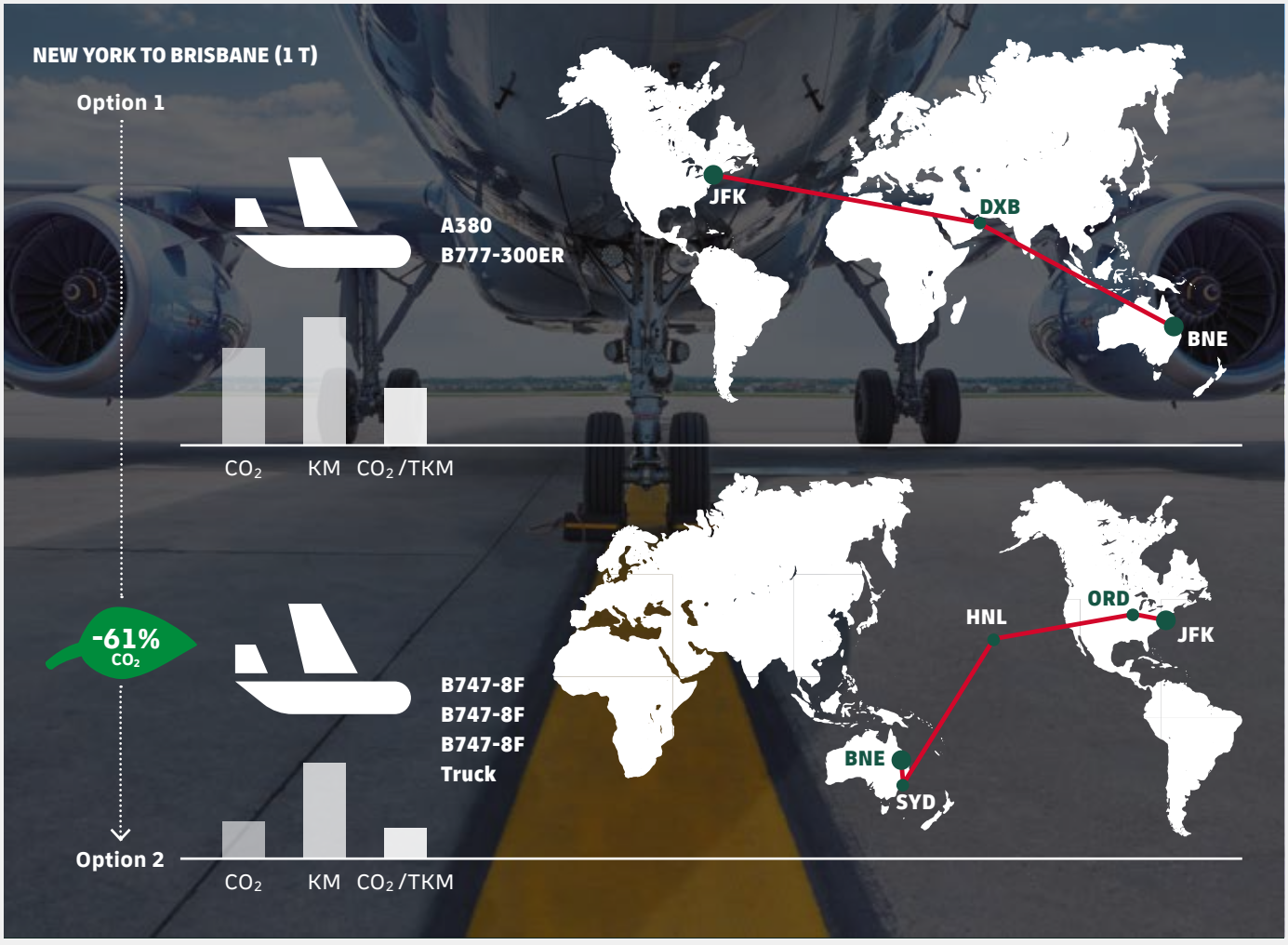
SELECT THE BEST

The amount of fuel needed to carry your freight, which determines the carbon emissions of each shipment, partly depends on the vehicle types and shipping routes. Considering these factors when selecting a carrier can result in carbon reduction.

CARRIER SELECTION

With access to the right data, your forwarder can identify the aircraft and routes available from the point of origin to the final destination. The example in **Figure 6** shows how selecting a different air freight carrier and an alternative route can lead to significantly lower emissions. Option 2 includes an additional road freight leg, choosing a different carrier that operates more efficient aircraft and routing via Honolulu and Chicago, resulting in a 61% carbon reduction.

FIGURE 6 – A different carrier (aircraft type) can make a difference

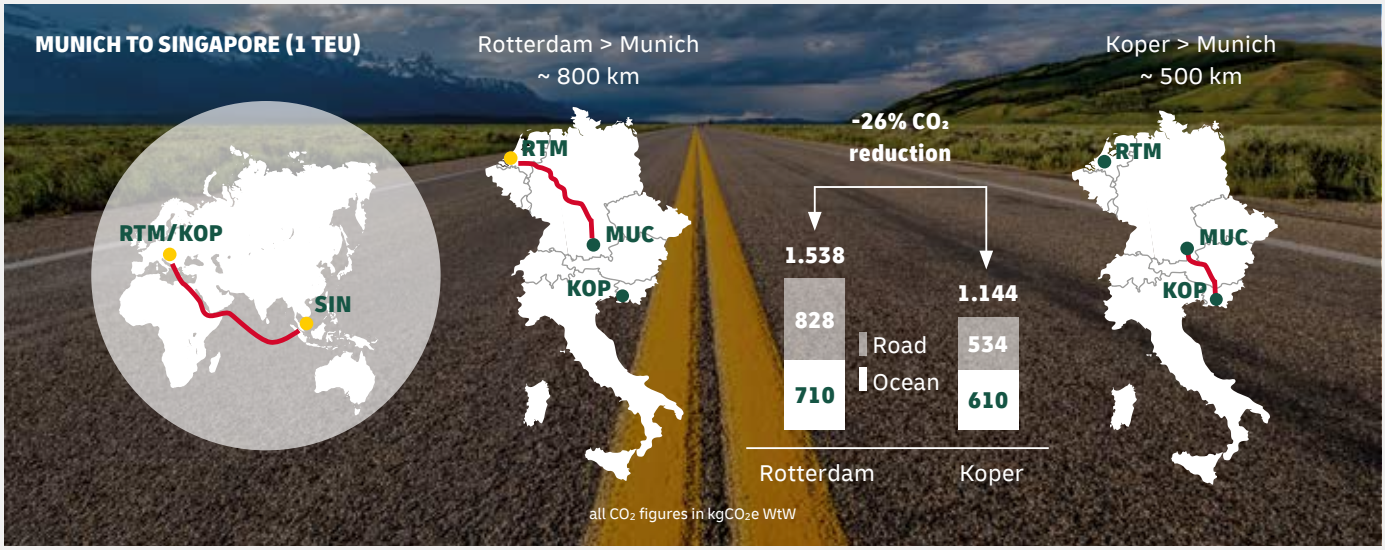


ROUTING OPTIMIZATION

Finding the most carbon-efficient route for road, rail, and ocean freight shipments can also make a big impact. **Figure 7** shows an example of two routes between Munich and Singapore. As you can see, routing through Koper rather than Rotterdam reduces the overall carbon footprint by 26%.

Although the ocean freight emissions generated from Koper to Singapore are only somewhat smaller (14%), the substantially shorter truck route from Munich results in a 36% reduction in road emissions.

FIGURE 7 – Finding just the right route



"Sustainability has always been at the heart of Kering's strategy. Far more than an ethical necessity, it is a driver of innovation and value creation for the Group, its Houses, and its stakeholders. As part of that strategy, we regularly review our transport carbon footprint – especially air freight emissions. Optimized routing and more carbon-efficient aircraft make it possible to significantly reduce our CO_2 footprint."

Roberta Tosi, WW Transport Administration Manager KERING

CHECKLIST

Answer these questions to help you determine if carrier selection and routing optimization are right for you:	**Yes**	**No**
Do you know which carriers transport your shipments?		
Can you evaluate them and the routes they take based on carbon efficiency?		
If not, can your freight forwarder evaluate carriers and routes?		
Can you operate with different routings and lead times?		
Would you compromise on speed to reduce emissions?		

LEVER 3: SHIPMENT CONSOLIDATION

SHARING IS CARING

Shipments may come in all shapes and sizes, but shipping containers do not. There are only a few standard types. Your transport emissions are mostly measured by container, regardless of how full they are. By sharing container space, you can immediately increase the carbon efficiency of individual shipments.

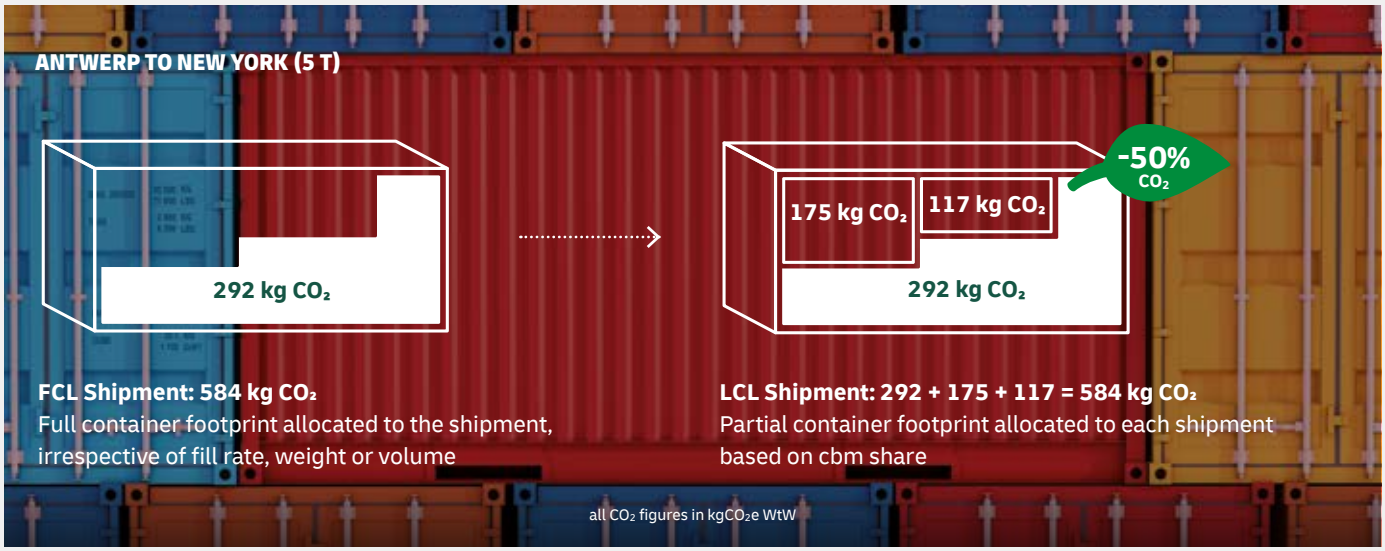
THE POTENTIAL OF CONSOLIDATION

Figure 8 shows an example of a container being shipped from Antwerp to New York. The five-ton container will generate 584 kilograms of CO_2 while crossing the Atlantic, even if it is just over half full (e.g., a full-container-load or FCL shipment).

By sharing the space and filling the container (e.g., less-than-container-load or LCL shipment), we can achieve carbon savings of 50%.

The concept is simple: maximize the use of space and minimize the carbon footprint of your shipments. However, implementing this is not always easy because it requires additional order management and network planning. Consolidation may require an extra leg or alternate secondary transport. Transit times may also be affected. But the environmental benefit is immediate, making it an ideal option for companies looking to achieve real reductions in the short term.

FIGURE 8 – The potential of FCL vs. LCL



> *"The global LCL setup of DGF is a very good role model for a carbon-neutral transportation business."*
>
> **Andreas Sedlatschek,** Director Global Logistics, J.M. Voith SE

CHECKLIST

Answer these questions to help you determine if shipment consolidation is right for you:	Yes	No
Can you hold shipments until your container is full?		
Can you share container space with other shippers (i.e., is your cargo suitable)?		
Can you modify your supply chain management to accommodate consolidation?		
Can your freight forwarder manage the consolidation process?		

LEVER 4: LEVERAGING SUSTAINABLE FUELS

DON'T JUST MINIMIZE, DECARBONIZE

Logistics can play a significant role in the global effort to stop climate change by quickly increasing the share of clean transport movements. Until recently, it was only possible to send carbon-neutral shipments by offsetting the transport emissions. Now, sustainable fuels can be used to fully decarbonize freight transport and even entire supply chains.

WHAT EXACTLY ARE SUSTAINABLE FUELS?

There are two types of sustainable fuels, biofuels, and synthetic fuels. The environmental impact of sustainable fuels depends on their raw material (biomass or electricity).

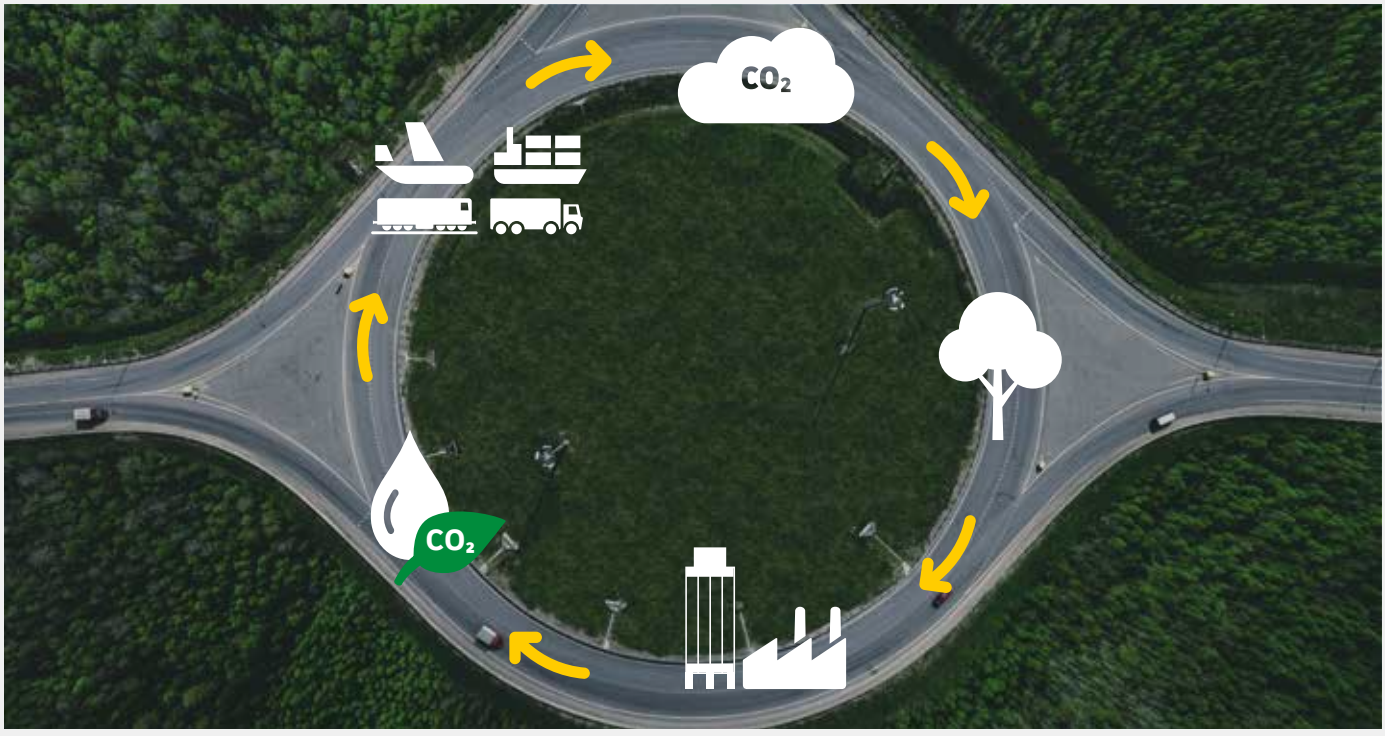
Biofuels

- ✓ Made from biomass, such as cooking oil or residual waste
- ✓ When burned, they emit the same amount of carbon they absorbed, making them 100% carbon neutral
- ✓ An emerging solution is now available, but availability is limited and dependent on feedstocks

Synthetic fuels

- ✓ Created from water, gas (e.g. CO_2), and a significant amount of energy
- ✓ Carbon neutral if green electricity is used and gas is captured from the atmosphere
- ✓ Will likely become the most widely available sustainable fuel once enough green electricity is available

FIGURE 9 – Carbon neutral cycle of biofuel



USE CARBON "INSETTING"

Now that sustainable fuels are commercially available, sustainability leaders have an opportunity to invest in decarbonization projects that directly impact the sectors where the emissions originate. This process is known as carbon "insetting," which physically replaces fossil fuels in supply chain networks.

How insetting works

- ✓ The use of sustainable fuels, such as biofuels, for use in freight transport
- ✓ Investment increases demand and drives the expansion of infrastructure to support wider adoption
- ✓ Shippers use a book & claim process to account for GHG emission reductions from sustainable fuels

SHIP 100% CARBON NEUTRAL

Carbon insetting is a real game changer because it allows you to ship 100% carbon neutral **without changing your supply chain setup.** How? Using services such as GoGreen Plus allows you to replace fossil fuels with sustainable biofuels on any air and ocean freight shipment and receive monthly carbon and GoGreen Plus reports. This will provide you with a detailed overview of your overall emissions and reductions. Currently, we offer sustainable aviation fuels (SAF) for air freight and sustainable marine fuels (SMF) for ocean freight, both less-than-container-load (LCL) and full-container-load (FCL) shipments. Although biofuels won't necessarily be used to carry your shipments, you will receive an externally verified CO_2 reduction certificate that you can immediately apply to your business and reduce your carbon footprint. Any remaining emissions, such as from the first or last mile, can be offset to make your shipment 100% carbon neutral.

> *"When it comes to decarbonizing transport the time to act is now. Offsetting is meaningful but it only shifts the focus and will not help us decarbonize the freight shipping industry. Insetting can help all supply chain stakeholders reach their climate goals by using sustainable fuels or renewing fleets with more efficient aircraft, vessels, and vehicles."*
>
> **Jacob Moe,** Senior Vice President, Global Head of FCL and OCC, DHL Global Forwarding

CHECKLIST

Answer these questions to help determine if sustainable fuels and carbon insetting are right for you:	Yes	No
Is decarbonization part of your corporate strategy?		
Do you have a strategy for integrating sustainable fuels?		
Have you exhausted all other carbon reduction levers but want to cut more or even eliminate transport emissions?		
Does your company have a sustainable fuel policy?		
Can your auditors verify carbon emissions reductions through a sustainable fuel switch in your annual audit?		

DID YOU KNOW?

When insetting sustainable fuels is not an option, you can still use **carbon offsetting** to compensate for CO_2 emissions. This involves purchasing carbon credits that support environmental projects like reforestation, wind farms, or solar panels.

STEP 4:

SELECT AND EVALUATE KEY TRADE LANES

Every supply chain is different and has unique potential. It's important at this stage to reflect on your needs, assess where you can make the most significant impact, and balance your requirements in terms of costs, transit time, and desired emissions reductions.

IDENTIFY QUICK WINS AND GREATEST IMPACTS

Reducing your transport emissions may seem like a daunting task because there's not just one, simple solution. Look for things that you could change. Can you modify your processes to allow for alternative routing or transit times? Does the benefit of cutting your carbon emissions outweigh the costs? Could a small change make a big impact on high-volume routes? There are so many options at this point, but the best way to proceed is to look for those that are easy to implement or can make the greatest impact.

CONSULT WITH YOUR FREIGHT FORWARDER

Ask your freight forwarder for help. With the option to calculate the carbon footprint of your shipments in detail and experience in applying the carbon reduction levers, they can align your supply chain setups with the available options to determine which options could maximize your carbon efficiency while still meeting your cost and transit time requirements. With their recommendations and support, you can take steps toward both reducing and eliminating emissions across your supply chains.

> *"Our roadmap to zero emissions is clear: In the short term, we will focus on burning less and scaling up sustainable fuel usage. After 2030, clean technologies and e-fuels will become increasingly available and will pave the way to zero-emission logistics. So, let's begin the journey together by taking advantage of carbon-reduction levers. Getting started is the most important thing!"*
>
> **Thomas George,** Chief Commercial Officer, DHL Global Forwarding

CHECKLIST

Answer these questions to help you get started:	**Yes**	**No**
Can you identify carbon hot spots in your supply chain?		
Which trade lanes have the highest carbon footprint?		
Are your highest emissions caused by one-off shipments, special circumstances, or regular transport flows?		
Which carbon reduction levers could you use to reduce emissions on your key trade lanes?		
Once emissions are minimized on a specific trade lane, what would it cost to invest in sustainable fuels to decarbonize it completely?		

STEP 5:

DECIDE AND IMPLEMENT

After evaluating your options and selecting the carbon reduction levers that meet your needs, it's time to put them all into practice. But it's crucial to include sustainability aspects in procurement processes if you want to achieve your sustainability targets.

UNDERSTANDING SUSTAINABLE PROCUREMENT

It's one thing to decide to go green, but it's another to make sure you buy green. But what exactly is sustainable procurement, and why is it necessary? These resources can help focus your procurement process on sustainability and get all stakeholders on board.

Smart Freight Procurement Guidelines
Released in 2019, the guidelines explain how climate action can be integrated into the procurement process. They contain decades-worth of practical experience and best practices highlighting how sustainable procurement can contribute to reducing GHG emissions.

Smart Freight Procurement Questionnaire and Instruction Manual
Released in May 2020, this is a set of standard questions and KPIs that are designed to be meaningful to buyers, while being clear and practical for suppliers. The questionnaire supports the planning (RFI), tendering (RFQ), contracting, and contract management processes and covers the guiding principles from the guidelines: Transparency, Collaboration, and Leadership and Innovation.

DHL Webinar Series: Integrating Sustainability into Your Logistics Procurement Process
In this three-part series, sustainability experts from renowned international organizations share knowledge and insights to help you overcome the real challenge of assessing the sustainability performance of logistics service providers and tendering for and buying green solutions. The recordings are available upon request.

> *"As businesses leaders, we all have an obligation to make sustainable business decisions and, to ensure both human and environmental health, all stakeholders in global transport supply chains need to collaborate. This is why we want to engage with our suppliers to make sure that sustainability is a core part of our joint strategy. Selecting partners based on their carbon reduction maturity level is therefore a logical next step."*
>
> **Andre Battaglia,** Head of Global Distribution and Customer Service, UCB Biopharma

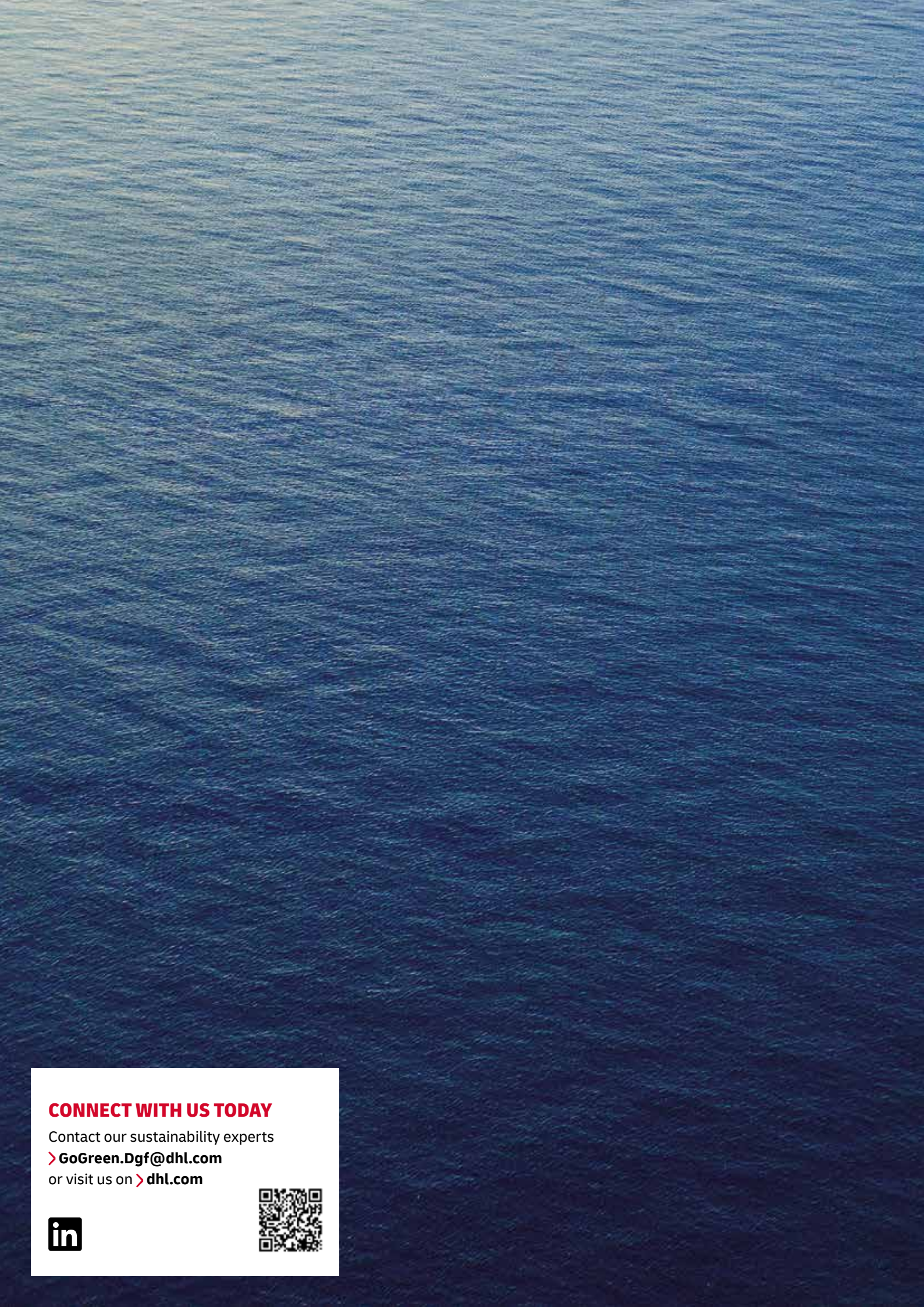
CHECKLIST

Answer these questions to help you determine if you're using sustainable procurement practices:	**Yes**	**No**
Does your procurement team know how to buy green?		
Are you making purchasing decisions in line with your sustainability targets?		
In addition to cost and transit time, do you also factor in carbon emissions during the procurement process?		
Which stakeholders are involved in your procurement process?		
Can you identify and target easy-to-implement levers?		

STEP 6:

EXTEND TO OTHER LANES

Congratulations! You've successfully followed Steps 1-5 and reduced or even eliminated your carbon emissions along one or more trade lanes. Now it's time to repeat the process in other lanes and even across your entire supply chain to achieve your sustainability goals.



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