

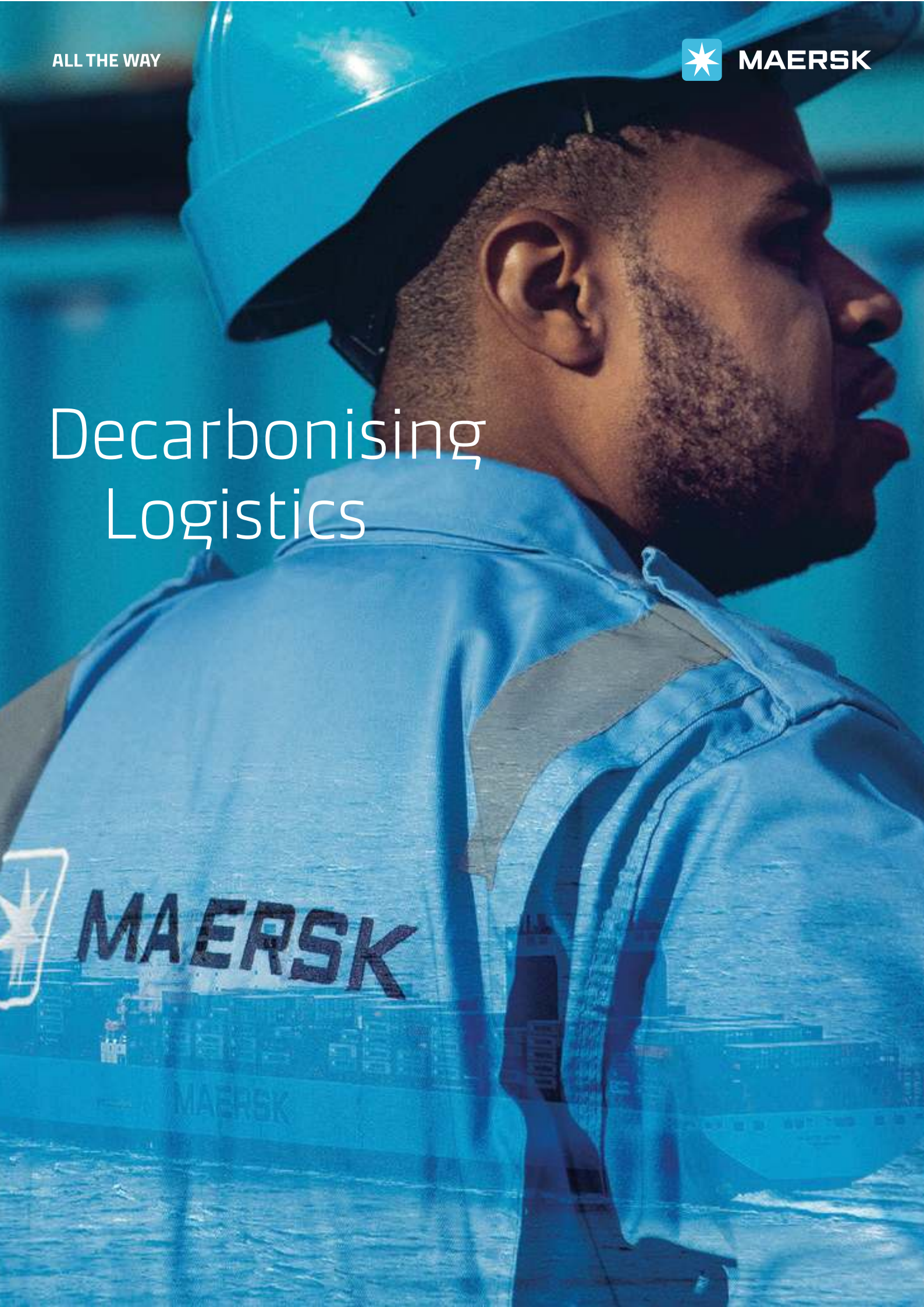
ALL THE WAY



Decarbonising Logistics



MAERSK



Decarbonising Logistics

The latest scientific assessments indicate that we must move away from our reliance on fossil fuels. This goes for shipping as well, and we have taken steps to respond.

Executive Summary

Climate change is undoubtedly one of the world's most pressing challenges, which is why sustainability has been a vital topic among most companies in recent years. An effective response from leaders will shape how the next few decades play out. However, limiting global warming to 1.5°C will require unparalleled transformations to businesses, industries and supply chains. Investors and citizens are demanding action, and companies are responding, with more signing on to bold targets grounded in climate science.

The goal of decarbonising logistics will support our business in living up to the demands of our customers for low-carbon transportation. In this Decarbonising Logistics report, we will explore how companies can embed sustainability into their culture and operations, engage with suppliers for responsible sourcing, as well as effectively measure, analyse, transform and scale their sustainability initiatives.

We draw insights from Dr Sreepadaraj Karanam, Director of Sustainability Strategy at SABIC, and Jackie Hong from LG Energy Solutions, to share how companies can implement sustainability strategies in their supply chain. We also speak with industry leaders from A.P. Moller - Maersk, Lee Sissons, Regional Head of Ocean Management, Asia Pacific; James Savagar, Head of Retail and Lifestyle, Greater China, and Mads Stensen, Global Sustainability Development Manager, to discuss how sustainability has impacted the industry, and how we are intensifying efforts on decarbonisation while integrating sustainability even further into our business strategy.

Key learnings:

- Despite some promising developments, the need for climate action has grown even more urgent, calling for industry leaders to step up and make a change.
- Supply chain is a key area that some companies overlook when decarbonising their footprint, and more can be done to transform the industry.
- Sustainability efforts can vary across industries, but after working with many different partners, we have found key areas, uniform throughout all sectors, that can be improved.



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Towards a more sustainable supply chain

At Maersk, we are taking numerous steps to enable us to achieve carbon neutrality in logistics. A prime example is Maersk Eco Delivery, which was launched in 2019 and is still one of the only options for carbon-neutral emissions in shipping on the global container market so far. Many of our customers who have used the service have experienced a positive impact on their business. Brands such as H&M, Levi's and many others are shipping goods around the world using the Maersk Eco Delivery products. Powering this service is actual waste oil used within the cooking process – a practical source of fuel that has shown to deliver results for customers.

As we looked back at 2020, we found that it was an important year for Maersk as we launched the Maersk Mc-Kinney Moeller Center for Zero Carbon Shipping through our A.P. Moller Maersk Foundation. Building this non-profit, independent, leading-edge research and development centre was an important step towards our commitment to achieving carbon neutrality in logistics.

The centre will mobilise around 100 of the best and brightest minds within the industry – logistics as well as academia, energy, fuel and ship technology, regulatory affairs and finance. We will also work to create pathways, not only for our company but also for the industry and customers, to achieve a significant reduction in carbon emissions across the supply chain.

The involvement of this wide range of stakeholders is crucial because we cannot change the industry on our own. We have to collaborate and work together within regulatory, finance and across the more academic and scientific parts of the industry, to put into place the practical frameworks to enable decarbonisation of logistics.

As Maersk's presence on land and air broadens around the world, our responsibility to drive decarbonisation across the end-to-end supply chain expands as well. We take that responsibility seriously and are working towards putting practical reductions and innovative methods to enable the decarbonisation of logistics across the entire end-to-end supply chain.



How are we shaping and shipping a sustainable future

In 2020, the top five risks which the World Economic Forum published were all connected to climate and climate-related environmental issues. The shipping industry contributes 2% to 3% of the world's emissions, which is around 940 million tons of CO₂. If shipping were a country, it would be the world's sixth-biggest greenhouse gas emitter.

Decarbonising logistics is the one commitment through which we can make a major contribution as a global integrated logistics provider. Between 2008 and 2020, we reduced more than 40% of our CO₂ emissions. Sustainability continues to be at the top of our agenda, and we are fully committed to a 60% reduction by 2030 and carbon neutrality by 2050.

Decarbonising Logistics

To reduce CO₂ emissions, we have significantly invested resources to save energy and improve our environmental performance, including slow steaming of ships, waste heat recovery systems, vessel hull design and even a low friction paint.

Waste heat recovery systems are standard on all our new ships and reduce CO₂ emissions by around 10%. Optimised vessel hull designs resulted in an almost 8% reduction in CO₂ emissions. Slow steaming, which is sailing a vessel at a lower speed on coastal or long-haul routes, has reduced CO₂ emissions by up to 20%. Slow steaming requires re-engineering of the vessels – techniques that Maersk pioneered and made available to the industry.

We also pioneered ship recycling. In 2010, Maersk worked to design the largest and most CO₂ efficient container ships. The capacity of each ship was 18,000 twenty-foot containers. At the time, these were the largest container ships built. However, the major step forward was not the size, but the technology to make them the most CO₂ efficient container vessels. These ships were labelled Triple E Class for three reasons.

1. Economy of scale - The additional vessel capacity was not matched by a need for extra engine power.

2. Energy-efficient - The hull shapes of these ships were optimised for lower speeds, and the energy-efficient engine was combined with the waste heat recovery system.

3. Environmentally optimised - These ships reduce CO₂ emissions by 50% per container, compared to the industry average at the time on the Asia-Europe routes.

Technology increases our ability to push CO₂ reduction targets, and many innovative solutions are being tested, such as biofuels, optimised propellers, air lubrication, fuel switches, new voyage planning systems and battery packs for vessels' electrical systems, just to name a few

We are also working with a broad and expanding range of partnerships. Maersk has been instrumental in setting standards for CO₂ emissions and working with customers on product development. Some of these collaborations include working in alliances such as the Trident Alliance, the Getting to Zero coalition and The Clean Cargo Working Group.

Key partnerships

We remain engaged in a wide range of partnerships and are members of different organisations working towards sustainability goals.



In our way forward, we aim to further leverage our expertise on decarbonisation in shipping. Due to the fragmented nature of the logistics industry, we foresee the road ahead consisting of many initiatives that will help solve challenges with partners, suppliers and our customers.

These actions are important to consumers who are increasingly focused on the sustainability footprint of the goods they buy. We see the rise of the conscious consumer, and today, sustainability represents one of the most important challenges for many industries – especially global logistics.

Achieving net zero

Maersk aims to deliver a 60% relative reduction in CO₂ emissions by 2030 compared to 2008 levels. By then, we also aim to have our commercially viable, net zero carbon vessels already operating in our fleet. In fact, we are raising our ambitions to have our first vessel ready by 2023. This would lead us to 2050, having completely net zero CO₂ emissions from our ocean operations.

While this was considered ambitious when we first announced our goal in 2018, the 2050 net zero target is now achievable, and we will continue leading the way to decarbonise logistics as fast as technically and commercially possible.

Moving forward, we will engage in a high level of collaboration with customers, suppliers and industry partners. We cannot achieve decarbonisation without our customers, and we need active involvement from every front to meet our sustainability goals.

However, we need to ramp up our speed of progress. Customers are expecting us to help decarbonise their supply chains now. Investors and financial institutions are looking to us to be sustainable, and employees prefer to work for sustainable companies. This is why we are preparing for our first carbon-neutral vessel to be deployed by 2023. The vessel will have a capacity of 2,000 TEU and will utilise a dual-fuel engine to run on either methanol or standard fuel. This is just the beginning, as we will only build ships that can run on carbon-neutral fuel from now on.

How decarbonisation affects consumer prices

While the need for decarbonisation is apparent, some companies tend to shy away from taking the step to go green in fear of losing sales from their consumers due to the price increase. However, an analysis from the Energy Transitions Commission shows that for most product categories, price increases for end consumers will be negligible, even though the intermediate costs are higher.

This means that a pair of US\$100 running shoes would only be US\$0.06 more expensive when a company decides to opt for green shipping. In addition, when a company communicates to their consumers that the small increase in price is because of a more sustainable process, the consumers are more willing to pay the premium.

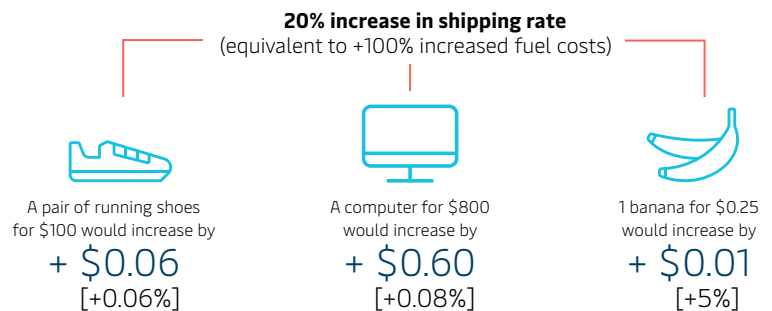
The climate emergency: ramping up sustainability

Global temperatures and the amount of CO₂ emitted to the atmosphere are rapidly increasing despite various efforts put in place. This became evident when we experienced the hottest year ever recorded, in 2020.

According to science, we are approaching catastrophic tipping points in our climate system and we need to limit the global temperature from increasing 1.5 degrees as stipulated in the Paris Agreement on climate change. But it is heartening to see that all our stakeholders are becoming more vocal and demanding in their requirements to fight climate change.

This goes for investors, governments, NGOs, the public in general and most importantly, our customers – who we at Maersk are fully committed to.

How decarbonisation affects consumer prices



Source: Calculations by Maersk

In summary, *"an increase in price does not correlate to a reduction in sales. It could mean an increase instead when a brand captures an audience that values sustainability,"* says James Savagar, Head of Retail and Lifestyle at Greater China Area, A.P. Moller - Maersk.

Putting sustainability front and centre of the supply chain agenda

We have seen a growing interest in sustainability across all industry sectors, making it an absolute necessity for companies. It has become a license to operate and an important factor for the longevity of businesses.

In the past, companies tended to focus primarily on the parts of their businesses within their direct control for sustainability, this included their own factories and products. But many companies are realising that the biggest part of their sustainability impact comes from the supply chain that helps make their business tick. Leaders are now learning that the supply chain is a crucial element of their sustainability strategy.

As a global integrator in supply chain management, we have experienced this first-hand, as customers are increasingly requesting sustainability improvements from us. This shift from looking internally at what they control to looking outwards at their supplier is not a new trend, but it is one that is getting much stronger.

However, companies are also faced with challenges that we noticed are common across industry sectors. These areas are namely:

1. **Eliminating sustainability risks in their supply chain:** This covers sustainability areas such as labour conditions, anti-corruption, safety, diversity, and inclusion, to name a few. We are also bringing substantiality to materials used across industries but varying in importance depending on the nature of their business.

2. **Importance of decarbonisation:** It has simply grown more valuable for all stakeholders –from consumers to politicians, NGOs, and companies.

With decarbonisation specifically, we know that 90 of our top 200 customers have either set or are setting zero carbon targets for their own business. This means that transport and logistics suppliers will need to decarbonise their business for these companies to meet their goals. It is also important to note that the number of companies setting up zero carbon targets is increasing.

After setting up targets, companies also need to show progress on their commitment. Thankfully, in 2020, we saw many front running companies go beyond target setting and willingness to invest in decarbonisation solutions. This was proven by a huge uptake in volumes of the Maersk Eco Delivery solution, which is our option to transport containers based on carbon-neutral and sustainable biofuels.

Industry customers are starting to move and partner with us in joint innovation initiatives that go beyond this year and aim into the future. A good example of this is the LEO coalition, through which we are focusing on developing new types of sustainable biofuels together with several of our customers, and other industry initiatives.

There is also more focus on longer-term collaboration, especially from our larger customers who are more interested in looking at how we can scale up commitments over the coming years instead of only looking at year-to-year contracts. Others are starting conversations about scaling up and using decarbonisation solutions for 100% of their volumes in the future.

As a global integrator of container logistics, we operate using all transport modes beyond shipping. We have started looking into landside transportation and airfreight by identifying and rolling out decarbonisation solutions in those areas. These initiatives are currently at the pilot stage, but we do believe that they will see rapid momentum soon.

Sustainability across industries

We have also learned that B2C brands are reacting faster and are more mature compared to other sectors. Particularly, fashion companies are the clear frontrunners, and in the last few years, they have taken leaps in sustainability.

Namely, H&M and Nike have invested in our ECO Delivery solution, alongside most companies in the fashion industry. They have made a commitment to decarbonise by 2050 as part of the UN Fashion Charter on climate change. Almost every popular fashion company we do business with has shown great interest in a sustainability collaboration.

However, sectors like FMCG, tech and healthcare are not far behind as well. One prime example is Novo Nordisk, the leading Danish multinational pharmaceutical company, which recently joined Maersk as a customer because of our zero-carbon shipping solution. This shows that sustainability is a deciding factor for companies when choosing their logistics partner.

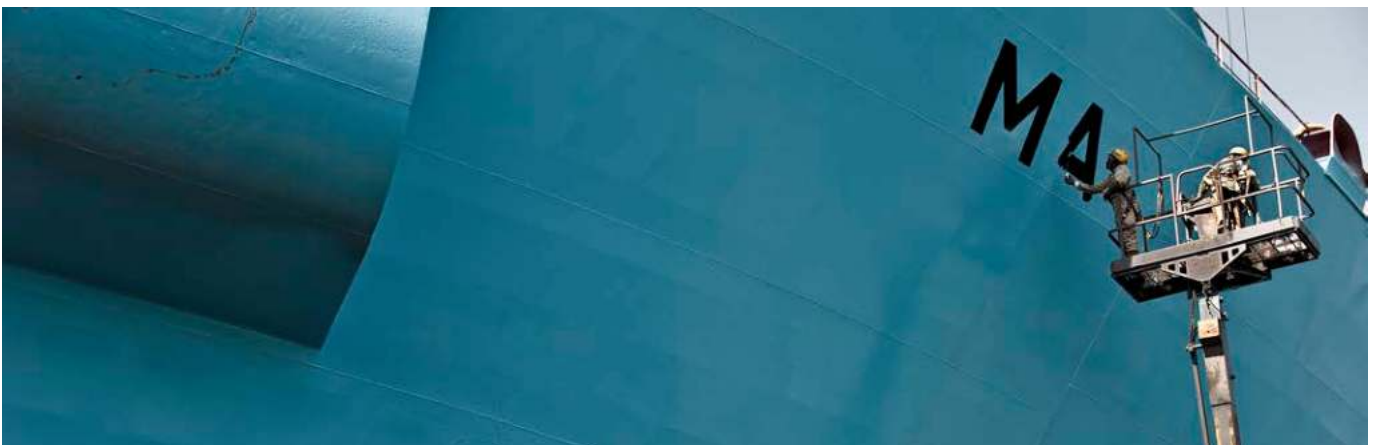
One of the biggest challenges that companies face is measuring their carbon emissions and having the right level of visibility on their footprint across their supply chain. This means integrating data from across multiple actors – from carriers, truckers, warehouses, ports, etc. Only then can companies take action to address these key areas in their supply chain.

Sustainability with SABIC

SABIC is a global chemical manufacturing company specialising in petrochemicals, chemicals, industrial polymers, fertilizers, and metals. They have also made sustainability one of their core elements within their 2025 corporate strategy. With their aim to be a global leader in the sustainable supply chain for petrochemicals and polymers, they have prioritised environmental and social responsibility at every stage.

In their ocean fleet, they have already introduced two next-generation dual-fuel ships based on natural gas, to reduce carbon, nitrogen oxide and sulphur emissions. Their innovative design maximises weight distribution and carrying capacity, stabilises voyaging, and reduces fuel consumption. In 2020, SABIC saved a total of 13,000 tons of CO₂eq emissions from these two ships.

On land, SABIC has also been working to decarbonise their vehicle fleet in China by using electric trucks to transfer materials between plants and external warehouses. In 2020, they conducted the first E-Truck pilot with their strategic service provider to deploy two electric transport trucks in Shanghai. With more than 45,000 tons moved, the E-TRUCKS saw a 16-ton reduction in CO₂eq emissions, which benefited the surrounding communities and environments.





Communicating with the consumers and stakeholders

To convey your company's commitment to your consumers, leaders in the company need to genuinely believe in sustainability. Consumers know if a brand is serious about the issue or not. This means brands need to communicate a sincere purpose that their consumers can connect with and not because it is a trend.

Leaders also need to set quantifiable targets that can be around carbon emissions reduction or work practices, just to name a few. But the important aspect here is to have these targets communicated across the whole company and not just one business unit or department. In the supply chain aspect, having your logistics and sourcing partners work closely together on your goals can go a long way as well.

Fashion brands, in particular, have gone beyond just looking at their supply chains during production but are also focusing on the lifecycle of their products after consumer purchase. They are now looking at how to extend a product's lifespan and how consumers can even recycle old, worn-out clothing. One company that does this well is Levi's, which recently launched their spring campaign rallying people to "Buy Better, Wear Longer" – aimed at raising awareness and speaking to our shared responsibility on the environmental impacts of apparel production and consumption.

Sustainability with LG Energy Solution

LG Energy Solution is the only chemical-based company in the world and has become a global powerhouse in the EV and energy storage system (ESS) sector. Like Maersk, they aim to become carbon neutral by 2050 under the strategy 'Carbon-Neutral Growth 2050'.

To achieve this, LG Energy Solution is introducing more renewable energy to its ESS facilities in its domestic market and overseas business sites. For energy self-sufficiency, they have installed photovoltaic systems at domestic business sites.

LG Energy Solution is the first domestic company in the chemical industry and is pushing for 100% renewable energy utilisation in their production under the RE100 (Renewable Energy 100) in all operations across the world. They are able to do this by sourcing renewable energy to their operating plants and engaging in sustainable management activities in every direction.

LG Energy Solution's Poland plant has already been using 100% renewable energy since 2019 and its Michigan plant in the US has also started to use 100% renewable energy since July 2020. In Asia, its Ochang plant in Korea and Nanjing plant in China will adopt 100% renewable energy by 2025 as well.

Insights from our experts

Q: How has SABIC been pivotal in shaping the industry landscape towards a sustainable future?

Dr Sreepadaraj Karanam: We participate in two groups led by the World Economic Forum (WEF). The first one focuses on the use of innovative low-carbon emitting technologies at commercial scale in chemical production. We are also leading an initiative of 16 companies at the World Economic Forum to build and drive a circular economy for plastics, including new recycling technologies, development of circular products and circular business models.

In addition, SABIC is a founding member of the World Plastics Council and the Alliance to End Plastic Waste (AEPW) to find scalable solutions to the recycling of used plastic. Together with AEPW and our industry peers, we are working on four strategic pillars – infrastructure, innovation, education and engagement, and clean up. In the last 15 months, through this partnership, we developed projects in 23 countries, accelerating the recovery and recycling of plastics at a global level (development and use of cutting-edge products, designs, and recycling technologies). We are also a partner of The Ocean Clean-Up along with Maersk.

Q: As sustainability shifts from being a 'good to have' to a 'must have', what challenges does LG Energy Solution face in eliminating sustainability risks in your supply chains?

Jackie Hong: The recycling rate of battery waste is less than 5%, which has a negative effect on the environment in terms of the circular economy. With the increasing distribution of electric vehicles, over 10 million tons of battery waste is expected to be produced by 2030.

In preparation for such market change, LG Chem is preemptively operating a process scrap-centred circular economy system. Business sites in China have established a closed-loop in partnership with suppliers. Business sites in the Republic of Korea and Poland will establish a closed-loop by 2021. Based on our technology and experience, we will expand our business to battery waste recycling.

Reuse of battery waste requires cooperation with a variety of stakeholders such as customers, central and local governments, and suppliers. The demand for the reuse of battery waste from second-generation electric vehicles is expected to grow dramatically from 2025. Therefore, we are establishing a business model for R&D activities on the prediction of residual values and the performance of batteries and cooperating with customers.





Q: The financial community also picked up the interest in climate change. How does that affect the future of sustainability innovations?

Mads Stensen: We see the same significant interest from investors as from our customers. They have clear and increasing demands for transparency on what companies are doing to eliminate and handle sustainability risks as well as how companies plan to meet their sustainability ambitions. These requirements are very similar to those of our front-running customers.

CFOs in companies are taking notice of this development and are aware of the repercussions such as limited access to financial markets and increase cost of capital if they do not comply. In addition, regulators are increasingly establishing carbon emissions regulations and subsidy schemes for development of decarbonisation solutions. Paired with investor requirements, this is expected to be a true catalyst for change.

Key examples include our new Green Deals in the EU and an infrastructure deal in the US. In Asia, China is also committing to reach net zero by 2060. More announcements are expected at the COP26, which will take place towards the end of this year. The UN's International Maritime Organization (IMO) is now discussing how to further strengthen its established carbon emission reduction goals in the shipping sector.

There is monetary value in decarbonisation, but also financial costs that come with a bad reputation if companies fail to take action.

Q: What are the main emissions areas across the supply chain? Shipping? Factories?

James Savagar: There are 3 main emissions areas in the apparel and footwear lifecycle. The first is raw material production. Cotton is typically the biggest component. This is where sustainable, ethical sourcing is important.

The second is in manufacturing – how factories cut, sew and pack the finished product. Water and chemicals are traditionally used, but manufacturers have more potential for reduction.

Lastly, the consumer needs to evaluate when they buy and how they use the product. These are two important metrics to monitor their CO2 footprint. How they use it, how long they use it for, do they dispose it after just a year of wearing it? From there, you can see how much waste is produced if the consumers only use the products for a short time.



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