Supply Chain Monitor

Q2 - 2023

Invest in sustainability to build a resilient supply chain

pwc

www.pwc.nl

Supply Chain Monitor Q2 - 2023

The supply chain monitor
This is the second edition of our quarterly supply chain monitor, following the *first quarter of 2023 monitor*. Central to this is the supply chain heatmap, which we first published at the end of 2022 in our report *Rebuilding Supply Chains*. This heatmap shows, along the lines of various indicators (freight, production, demand, prices and uncertainty), where the pressure on Dutch supply chains has increased or decreased in recent months since the start of the Covid-19 pandemic.

What developments are visible in the heatmap?
The heatmap makes it clear that:

- There is a link between global disruptions (the Covid-19 pandemic, the Russian invasion of Ukraine, natural disasters, etc.) and pressure on supply chains. For example, in the first quarter of 2020, we see indicators related to uncertainty turning red, and in the first quarter of 2022, we see the pressures increasing due to sharply rising fuel prices.
- There are various causes of pressure on supply chains: some are structural (including some shortages of materials and labour), and others are shorter-term disruptions. However, we can see that supply chain pressures have eased globally to pre-pandemic levels, as most indicators have turned green.

Against what background do we monitor?
Supply chain management traditionally focuses on efficiency. This makes sense: efficient supply chains mean effective production and distribution and significantly lower costs. However, the benefits of efficiency fade into the background when global disruptions occur. Then ‘efficient’ turns out to coincide with ‘vulnerable’. That is why we see resilience (and thereby flexibility) gaining importance in supply chain management and why companies are seeking a different balance. Furthermore, resilience is also an important aspect to consider when making investments in sustainable and digital transformation amidst short-term business pressures.

PwC Supply Chain Heatmap: Q2 - 2023 update

Category	Indicators	2020-Q1	2020-Q2	2020-Q3	2020-Q4	2021-Q1	2021-Q2	2021-Q3	2021-Q4	2022-Q1	2022-Q2	2022-Q3	2022-Q4	2023-Q1	2023-Q2
Global supply chains	Global supply chain pressure index (NY Fed)														
	World trade monitor (CPB)														
	Total global containerized freight volume per quarter (Kiel)														
Uncertainty	World uncertainty index (WUI)														
	World trade uncertainty index (WTU)														
Shipping	Average monthly proportion of goods per quarter that are on waiting container ships (Kiel)														
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Shanghai and Zhejiang, China (Kiel)														
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Hongkong and Guangdong, China (ports of HK, Yantian, Shenzhen and Guangzhou) (Kiel)														
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Georgia and South Carolina, USA (ports of Savannah and Charleston) (Kiel)														
	Average daily percentage per quarter of global container ship cargo capacity in congestions around Southern California, USA (ports of Los Angeles, Long Beach and San Diego) (Kiel)														
	Average daily percentage per quarter of global container ship cargo capacity in congestions around North Sea, Europe (North Sea ports of the Netherlands, Belgium, Germany and the UK) (Kiel)														
	Average total daily capacity per quarter of container ships in the Red Sea and the Suez Canal, Middle-East (Kiel)														
	Baltic dry index - cost of shipping raw bulk materials (Eikon)														
	Port of Rotterdam throughput (IHS Markit)														
Air freight	Total air freight volume from NL (Eurostat)														
Road freight	Total road freight transport volume, NL (OECD)														
Rail freight	Total rail freight transport volume, NL (OECD)														
Inventories	Stock of finished products, NL (CBS)														
Production	Manufacturing purchasing managers' index, NL (NEVI)														
	Percentage of manufacturing firms experiencing shortage of materials, NL (EC)														
	Percentage of manufacturing firms experiencing labour shortage, NL (EC)														
	Observed production trend in recent months in manufacturing, NL (EC)														
	Assessment of current production capacity in manufacturing, NL (EC)														
	Current level of capacity utilization in manufacturing, NL (EC)														
	Construction confidence, NL (EC)														
	Retail confidence, NL (EC)														
	Services confidence, NL (EC)														
	Warehousing confidence indicator, NL (EC)														
Demand	Economic sentiment indicator, NL (EC)														
	Consumer confidence, NL (EC)														
	Consumer confidence, good time for major purchases, NL (EC)														
	Percent change in consumption of goods by households, NL (CBS)														
	Percent change in consumption of durable goods by households, NL (CBS)														
	Percent change in consumption of services by households, NL (CBS)														
	New orders in recent months in manufacturing, NL (EC)														
	Assessment of order book levels in manufacturing, NL (EC)														
	Duration of production assured by current order-book levels in months, NL (EC)														
Costs	World materials price index (IHS Markit)														
	Fuel prices, HWWI (CPB)														
	Primary commodities excluding fuels, HWWI (CPB)														
	Monthly labour costs per quarter, NL (Eikon)														

Sources: Freightos, Port of Rotterdam, Thomson-Reuters, NY Fed, Kiel Institute, European Commission, CBS, CPB, OECD, IHS Markit, WUI, ECB, PwC Analysis.

The heatmap shows Z-scores, computed by subtracting the mean from the observation at time t and dividing the difference by the standard deviation. The mean and the standard deviation are computed for as large historical samples as possible. Observations marked with "-" are not yet available. The colour grading goes from -3 (green), 0 (mean, yellow) to 3 (red) standard deviations.
*Approximate standartization.

Pressure on supply chains stayed low in the second quarter of 2023

During the last two quarters, several eurozone economies have either entered or are approaching recession. Dutch GDP, for example, contracted at the start of 2023 by a substantial -0.7% compared to the previous quarter because of a rise in service imports and a reduction in inventories. Although this is not good news from a general macroeconomic perspective, economic deceleration tends to reduce pressures on supply chains.

In Q2 - 2023, we see these trends developing:

- The Federal Reserve Bank of New York index measuring global supply-chain stresses plummeted to its lowest ever recorded value in May 2023 (the historical series starts in September 1997), eighteen months after reaching its highest value in December 2021. This can be seen as a welcome sign for supply chains as well as an indication that the demand side of the economic environment is weakening.
- According to the CPB World Trade Monitor, world trade growth has remained slightly positive, while the overall trend hints at a potential reduction in world trade in the coming quarters. The eurozone, including the Netherlands, has been increasing import volume (+2.3%), while exports have been decreasing (-2%). In addition, as shown by the eurozone PMI index, business activity contracted in June to the lowest level since the Covid-19 pandemic.
- Despite elevated uncertainty, inflationary pressures and consumption shifts from goods to services, trade volumes and overall demand have remained quite robust so far.
- Regardless of the challenging macroeconomic environment, manufacturers are still struggling with labour and material shortages: 25% of firms experienced material shortages and 39% labour shortages in the latest European Commission's Business and Consumer Survey for the Netherlands.
- A slowdown in orders from big importers has brought shipping prices to 'unsustainable' levels ahead of ocean shipping's busiest season. Furthermore, backlogs and congestions at the major ports are a thing of the past.

- However, there are warning signs as droughts are taking over Central America (Panama Canal) and water levels in the Rhine (a major German shipping route) are approaching problematically shallow levels. Global ocean and land temperatures hit a new record in the last few months, even ahead of El Niño, while southern Europe is bracing for even more intense droughts than last year.

- The World Uncertainty Index has slightly increased from the previous quarter due to economic and geopolitical uncertainty. We see trade tensions for specific supply chains still high between the US and China, with the Netherlands (specifically ASML) in the middle of the tensions.
- China has also announced export curbs on two critical materials, gallium and germanium, starting August 1, 2023. Nevertheless, nearly 59 percent of Dutch exporting manufacturers have indicated they have no concerns about trade policy affecting their export activities in the next twelve months[1].
- Governments, such as those in the Indo-Pacific Economic Framework group, as well as the US and the UK bilaterally, have announced cooperation to bolster economic security and fortify critical supply chains.

1 CBS (2023): Most exporting industries not concerned about trade policy

The point of view of our experts: use the economic slowdown and lower pressure on supply chains to make strategic investments in sustainability

As the pressure on supply chains continues to ease, it is time to incorporate sustainability into supply chains. Despite the complexity, there are good reasons to work on sustainability. First and foremost, increased climate risks mean a growing risk of disruptions. Long-term trends still point to vulnerabilities in supply chains, which can become apparent quickly in the event of any disruption. New regulations such as the Corporate Sustainability Reporting Directive (CSRD[2]) and tax on carbon emissions also add to the urgency of focusing on sustainability.

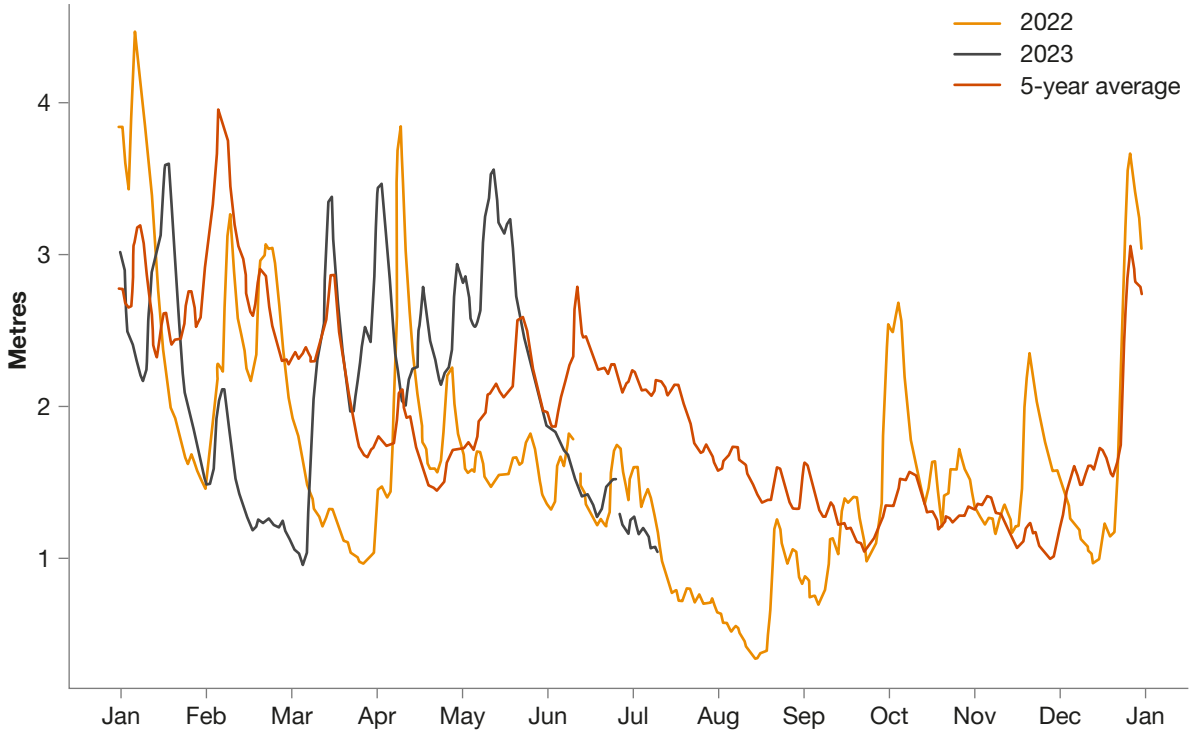
The easing of supply chain pressures, combined with the efforts of the past months to increase supply chain cooperation, visibility and transparency, presents a window of opportunity for companies to evaluate and improve the sustainability of their supply chains. With the economic slowdown in many parts of the world, long-term investments might not be the immediate priority. That is expected, as costs incurred in supply chains are still very high, but companies struggle to earn them back in revenues. However, long-term trends indicate the likelihood of disruptions is continuously increasing. Companies need to prepare while the immediate pressure is low.

This can start holistically: many companies are already exploring what AI can mean for their sustainability goals. Knowing that significant changes in businesses and associated supply chains take time, it is worth starting the exploration to stay ahead of the curve.

Anticipating trends does not always need invasive changes. We see companies also start with easy-to-implement solutions that build better supply chains or improve sustainability positions: for example, complex control towers are not always the right answer to transparency issues. Less complex data analytics tools can also pave a path for enhanced transparency and contribute to CSRD compliance. Rapid network assessment tools can help companies understand their supply chain and associated exposures in terms of risk or emissions. Whether the anticipated topic is big or small, the window of opportunity is there when supply chains are not running in the red. This is urgently needed, not only because sustainable supply chains are more resilient in the face of disruptions but also because they play a crucial role in

2 Look for more information on the CSRD *here*

Water levels at Kaub on the Rhine river (in centimetres) are at their lowest



Source: Rhine forecast, *https://www.rhineforecast.com/kaub/*

achieving climate targets. Supply chain emissions are, on average, 11.4 times higher than operational emissions[3] and without tackling them, reaching climate targets will not be possible.

Slow but dramatic changes in weather patterns are a huge threat to supply chains

The frequency of weather and climate related disasters has been consistently rising. The same is true for state-based conflicts, such as the Russia-Ukraine war[4]. Disruptive events are not necessarily unexpected, either. Slow but dramatic changes to weather patterns are also impacting supply chains. Persistent heat waves in Western Europe have caused record low water levels at Kaub on the Rhine during the summer months, creating a choke point on a critical waterway for Europe. Last summer, this meant that vessels were only able to sail at 25% of their full capacity. This is just one of the trends that is likely to get worse as summers get hotter and can drive up freight prices, adding further strain that would likely be visible in the heatmap in the future. Similar impact can be expected in other parts of the world from increased forest fires, high intensity storms and floods.

Building transparency in supply chains can allow companies to anticipate potential disruptions and prepare for contingencies before they occur. For example, companies can assess their dependencies on critical waterways and find alternative routes before a particularly dry season.

3 CDP: Global Supply Chain Report 2020
4 Our World in Data, State-based conflicts, World, 1996 to 2020

CSRD requires transparency in supply chains

Other changes, such as the CSRD, also put sustainability and long-term focus in the spotlight. It has been in force since January 2023 and qualifying companies will have to apply the new rules for the first time in the 2024 financial year for reports published in 2025. The CSRD emphasises supply chain transparency and due diligence, requiring organisations to disclose information on their supply chains and key and indirect suppliers, including environmental and social risks and impacts.

For the companies in scope of the directive, this will mean building in more transparency in their supply chains in the short term. Supply chain teams will be under renewed pressure to integrate due diligence policies and ensure measuring and monitoring systems are in place to ensure compliance. In the longer term, this will also mean that companies will have to start acting on all the sustainability metrics they report on.

While not adequately investing in sustainability carries significant risks, there are opportunities here as well. Supply chain planning, which has traditionally been a backward-looking exercise, increasingly needs to account for unforeseen circumstances that historical data cannot predict. Recent developments in AI can help build stronger supply chain planning capabilities, in line with the uncertain times we live in. For instance, AI can help predict expected GHG emissions based on weather forecasts and planning can be adapted accordingly.

Many investment opportunities exist, making prioritisation critical

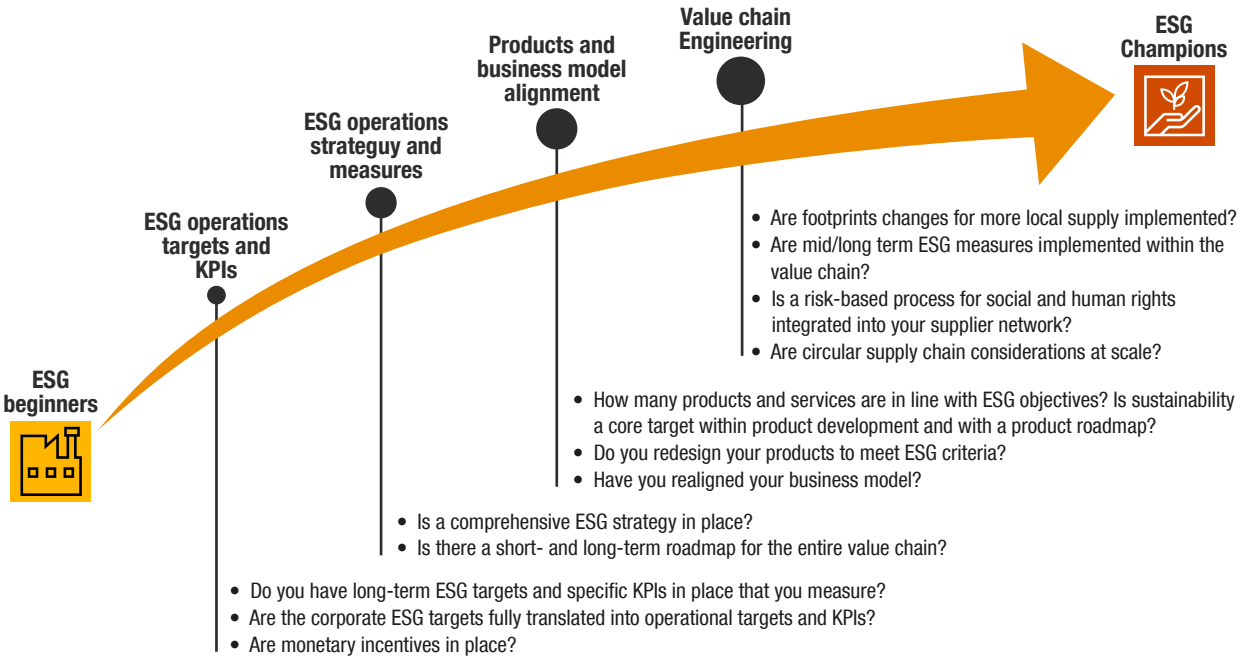
Improving supply chain sustainability can mean a variety of things. Depending on the business, this could mean anything from exploring different means of transport (prioritising low or carbon-neutral fuels), making the manufacturing process more sustainable by exploring alternative materials (that can be sourced regionally), to collaborating with more sustainable partners through the value chain (such as using regenerative crops).

However, before arriving at interventions, it is important to evaluate the business, its strategy, business model and product portfolio to understand where high-impact interventions are needed and, even more importantly, which are feasible. This is the starting point - taking stock of your status and options.

Five steps towards sustainable supply chains

We recommend taking the following five steps[5] towards building sustainable supply chains:

Steps towards sustainability



Source: PwC: *ESG Empowered Value Chains 2025*

- **Look beyond your Tier 1 suppliers to build a holistic value chain**

It's a long stretch from evaluating options to executing a dynamic response across the value chain that includes all trading partners, including Tier 2 and Tier 3 suppliers. Effective execution requires closely coordinating people, streamlining processes, and integrating technology to create the transparency and visibility that participants need. Leading companies are using both advanced and emerging technologies to give themselves clearer visibility, from creating AI-enabled 'control towers' that allow executives to stay on top of key business metrics to creating digital twins, a simulation model of a supply chain's physical assets.

- **Evaluate options and their cost-benefit trade-offs**

As consumer needs and behaviours shift in a polycrisis world, companies have begun looking to their supply chains to drive revenue growth through better customer experiences. Given their influence on revenues, it would be a mistake to see developing supply chain capabilities solely as costs. For decades, excess inventory or production capacity meant wasted costs. There's still no free lunch, but in the right circumstances, increasing inventory 'just in case' or boosting production capacity can support quicker responses to demand spikes and newly emerging sources of growth. However, every choice has a cost trade-off that needs to be managed effectively.

5 Read more in this article on *the smart moves your supply chain needs now*

- **Rein in Scope 3 emissions**

As companies ramp up their decarbonization commitments, the focus is squarely on Scope 1 and Scope 2 emissions, produced directly by companies or indirectly through the purchase of energy, respectively. Yet Scope 3 emissions generated in the upstream and downstream value chains should get more attention, as is required by CSRD. Scope 3 emissions represent 65 to 95% of most companies' broader carbon impact, according to the Carbon Trust, a group that helps companies measure carbon emissions. The problem, of course, is that Scope 3 emissions are out of a firm's control. To build sustainability as a fulcrum for growth, organisations must forge partnerships with suppliers on their biggest sustainability challenges and opportunities.

- **Get control of your data story**

The best supply chains create a virtuous cycle in which more relevant products create more consumer demand, more consumer demand feeds more data into models, and more data is converted into the privileged insights that are needed to inform more relevant products and customer experiences—and smarter decisions about locating infrastructure. Building a dynamic data strategy can take years, but one important decision companies can make immediately is to create a data network that can read, clean, and analyse data from multiple sources. Another sound tactical decision is to share data openly with suppliers. Reducing information delays is the first step in creating a collaborative, future-ready supply chain.

- **Align your leadership**

And lastly, it almost goes without saying that executing across your supplier network will require strongly aligned and collaborative leadership within your own organisation. The multidisciplinary, cross-functional nature of supply chains inherently resists silo-based approaches. It almost goes without saying that executing across your supplier network will require strongly aligned and collaborative leadership within your own organisation. The multidisciplinary, cross-functional nature of supply chains resists silo-based approaches.

Contact

Jan Willem Velthuijsen
Chief Economist
PwC Netherlands
E: jan.willem.velthuijsen@pwc.com

Annemieke Moerkerken
Director Digital Operations
PwC Netherlands
E: annemieke.moerkerken@pwc.com

Rolf Bos
Director Supply Chain Management
PwC Netherlands
E: rolf.bos@pwc.com