Supply Chain Monitor

Q3-2023

How are supply chains reflected in Dutch party programmes?

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The supply chain monitor
This is the third edition of our quarterly supply chain monitor, following the *first quarter of 2023* monitor and the *second 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, Israel-Hamas War, 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 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: Q3-2023 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	2023-Q3
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 third quarter of 2023

During the last two quarters, several eurozone economies have either entered or are approaching recession. The Dutch GDP, for example, contracted by 0.2% in Q2-2023 compared to the previous quarter because of a rise in service imports and a reduction in inventories.[1] Although this is not good news from a macroeconomic perspective, economic deceleration tends to reduce pressures on supply chains.

In Q3-2023, we see these trends developing:

- After hitting an all-time low in the previous quarter, the Federal Reserve Bank of New York's index measuring global supply chain stress bounced back slightly while remaining low for historical standards (the historical series starts in September 1997). This can be seen as a sign that pressures on supply chains have not only reduced in 2023 but are now stabilising between Q2 and Q3.
- In September 2023, the NEVI Netherlands Manufacturing Purchasing Managers' Index had its sharpest month-on-month decline since May 2020. It made the Netherlands the country with the sharpest decline in the EU after Estonia. The low performance of the manufacturing sector is mainly due to weak demand affecting output and new business orders, especially in the machinery and chemical industries. Nevertheless, Dutch manufacturing output still exceeds pre-Covid-19 levels.
- The CPB trade monitor indicated that the world's trade volume declined during Q3-2023 due to low consumer confidence and economic sentiment, reaching a two-year low in July 2023. In the EU, exports and imports have been slightly falling recently, notably with Germany having pronounced weakness in trade. Nevertheless, globally, overall shipping has been 'stable' with high volumes, less congestion and falling freight rates.
- Port congestions remained below the historical average at all ports, except in the US, where they are at the historical average. This could be because of stagnated consumer spending, indicating that sluggish demand is behind the easing of supply chain pressures.
- Confidence indicators remained relatively unchanged from the previous quarter, around their historical averages, while manufacturing capacity utilisation decreased slightly.

1 CBS (2023): Economic contraction 0.2 percent in Q2 2023

- Firms in the Netherlands were still struggling with labour and material shortages: 33% of manufacturing firms are experiencing labour shortages and 21% are facing material shortages.
- Inflation in the euro zone declined to 4.3% in September.[2] However, September US data showed that inflation stayed at 3.7% after not declining at any point since June.[3] This has sparked concerns that interest rates will stay higher for longer than expected, increasing the cost of debt for companies and governments to levels unseen since 2008.[4]

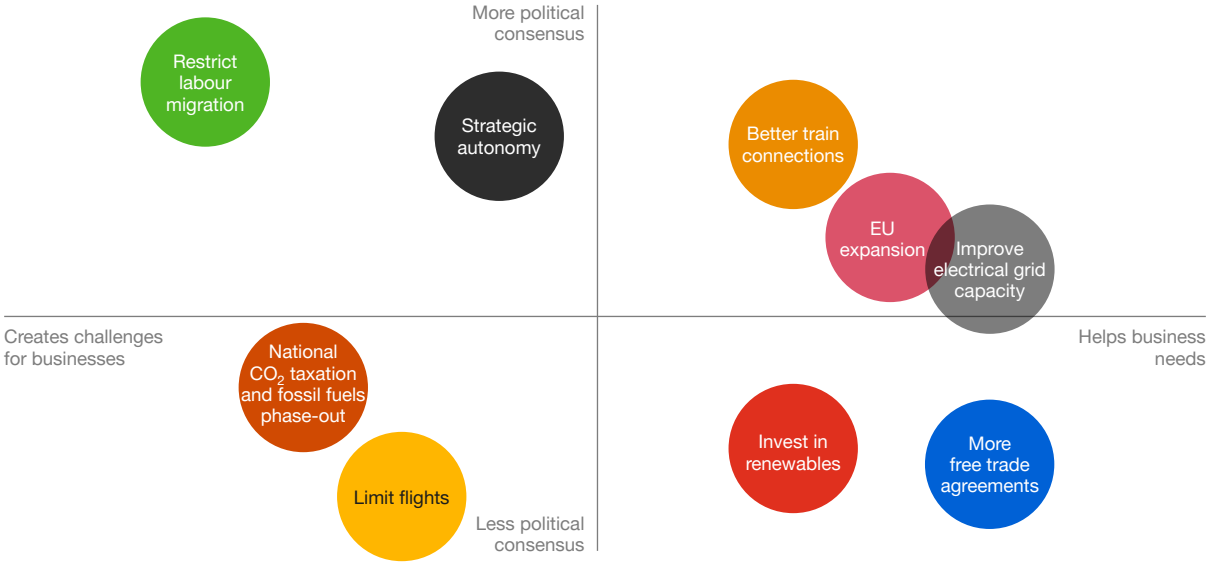
> 33% of manufacturing firms are experiencing labour shortages.

2 Eurostat (2023): Euro area annual inflation down to 4.3%
3 Ibid
4 The Economist (2023): A global surge on bond yields threatens trouble

The point of view of our experts: companies concerns about supply chains are not reflected in the political agenda

In the run-up to the Dutch parliamentary elections on 22 November, we asked if the political agenda takes into account business needs on supply chains identified by our experts. To answer this question **we analysed the election programmes** of the major parties in the polls and identified topics that strongly relate, directly or indirectly, to the functioning of supply chains. We divided them into three groups: **international relations** (EU policy, international trade views and labour migration policy), **the use of incentives to accelerate decarbonisation** (green industrial policy, investments in the energy sector and the phase out of fossil fuels) and **the future of air transport**. On some topics, such as the need to de-risk from China and Russia, parties agree much more than on others, such as phasing out fossil fuels. We identified in which of these topics there is agreement and in which there is disagreement. This allowed us to answer our question and analyse the potential impact of the election on supply chains in more detail.

Political consensus and business challenges



Source: PwC analysis. Political consensus level measured according to party programmes weighted by electoral poll results on October 14th 2023. Business needs level evaluated by PwC supply chain experts.

We concluded that some of the most important business needs when it comes to supply chains are not sufficiently addressed. Some of the topics that are high on the political agenda are sensitive from a societal angle, but their potential impact on supply chains should not be disregarded. Labour migration and climate policies are two examples. The discussion on these topics should take a more comprehensive angle and consider the business needs. Limiting labour migration, an idea that in some form appears in most political party programmes,

> Limiting labour migration, an idea that in some form appears in most political party programmes, could increase labour shortages even more.

could further exacerbate labour shortages. On decarbonisation, there is more disagreement. On one hand, the green transition is necessary and will bring benefits in the long run. However, accelerating the phase-out of fossil fuels and increasing taxes on greenhouse gas (GHG) emissions at the national level (without a coordinated effort with the EU) risks harming the Dutch business competitiveness. Tradeoffs with potential effects on supply chains also exist for de-risking international trade, expanding the EU and limiting the number of flights at Schiphol Airport. In this report, we explain why not considering supply chains when enacting policies that affect them can miss important opportunities and damage Dutch competitiveness.

International relations

> Almost all political parties' programmes refer to the need to de-risk supply chains...

De-risking will be a priority on international trade
The shortages induced by the Covid-19 pandemic and the Russian invasion of Ukraine made governments and companies reevaluate their supply chain configurations, especially for the so-called 'critical supply chains', such as medicines, some raw materials and weapons. Almost all political parties' programmes refer to the need to **de-risk supply chains**, i.e., to reduce dependency on China and Russia and diversify suppliers of critical materials. Firms operating in or having links with the (computing and electrical) machinery, clothing and furniture industries should be particularly attentive, as they rely the most on Chinese suppliers.[5] For instance, China supplies more than 20% of the electrical equipment imports in the Netherlands, as well as a tenth of iron and steel articles.[6] Furthermore, industries connected to coke and refined petroleum are heavily impacted by restrictions on Russian imports.[7]

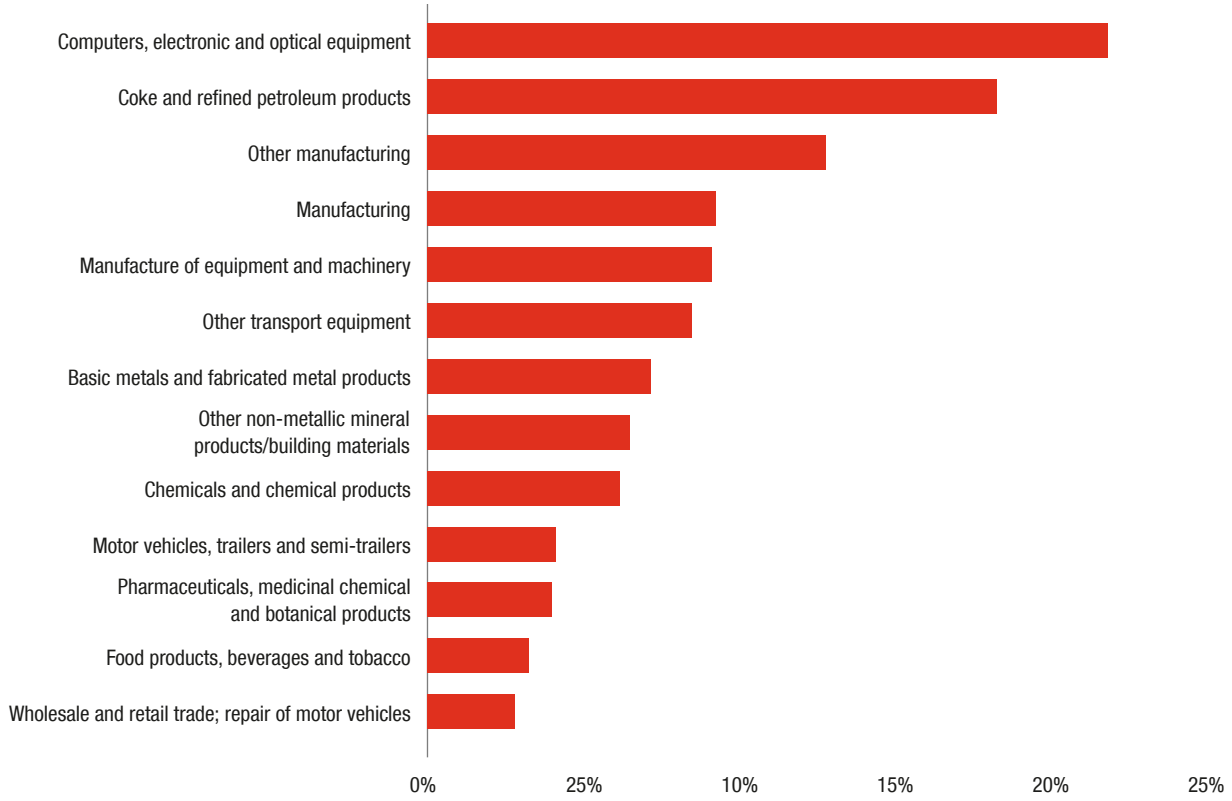
Major disruptions on supply chains are typically caused by external factors, such as the Russian invasion of Ukraine, but these result in policy responses. While Dutch domestic policies tend to not have a large impact on all global supply chains, they could have an outsized impact on some, such as semiconductors, agriculture and horticulture. Importantly, the relevance of trade for the Dutch economy is unlikely to change, as it will remain a hub for European trade because of its location and infrastructure.

In contrast, a Dutch de-risking policy will definitely impact businesses operating in the Netherlands. By reducing reliance on a limited number of suppliers, companies ensure they can operate in times of geopolitical tensions, trade disputes or policy changes. However, diversifying the supplier base also introduces additional complexity into the supply chain. Navigating different trade regulations and adapting logistics and inventory management processes can all add to the complexity. Creating relationships with new suppliers could initially result in increased lead times and costs due to the need to identify, vet and establish these relationships. Furthermore, it may require additional due diligence and quality control measures to ensure consistency and reliability.

An EU expansion can bring new supply chain opportunities
A key topic that the next government, together with other EU member states, will have to deal with is the potential expansion of the EU in the Western Balkans,

5 CPB (2022): Economic interwovenness with China through trade: two sides of the same coin
6 Ibid.
7 OECD (2021): Trade in Value Added (TiVA), origin of value added in final demand

Combined Chinese and Russian share of value added in Dutch industries (2018)



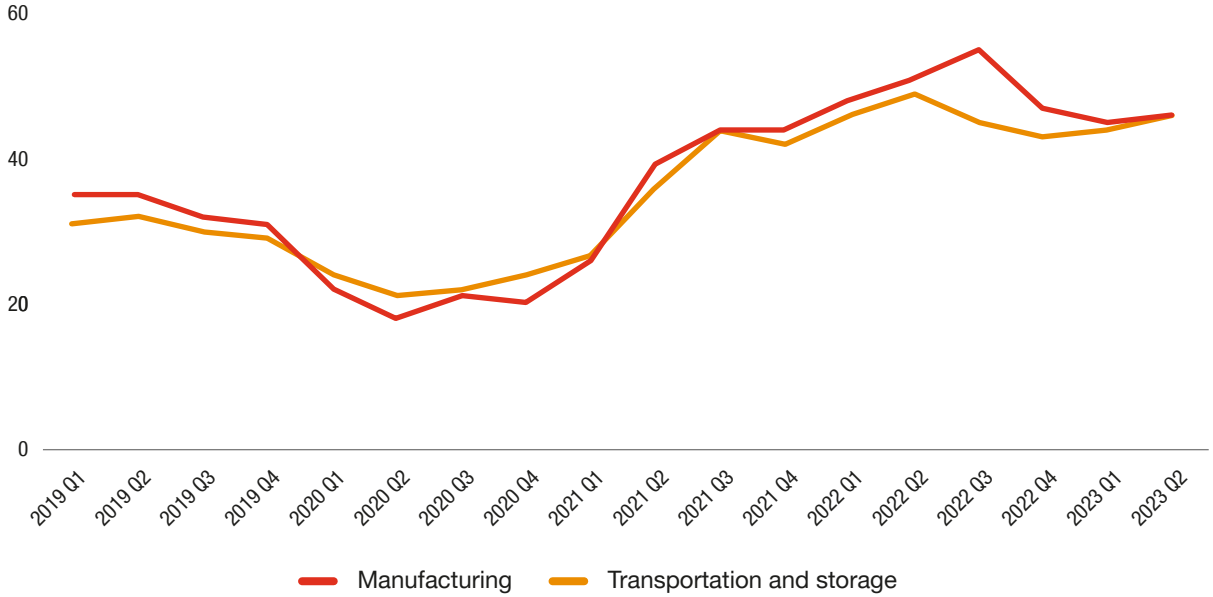
Source: OECD (2021)

Moldova or Ukraine. EU enlargement could have a significant impact on Dutch supply chains. To begin with, new members would mean untapped markets with improved infrastructure and logistic capabilities. Moreover, EU expansion often brings increased political and economic stability to joining countries. Reduction of risks to operate in those markets, increased EU influence in the area and new channels for de-risking would make the region more attractive to Dutch companies. This could lead to an expansion of their supply chains in the region.

In that sense, as European and Dutch companies aim to relocate supply chains closer to home, an expansion of the EU in the Western Balkans has possibilities to contribute to increased strategic autonomy. This is particularly important because, unlike other emerging markets, the EU (and not China) remains the largest economic partner of the Western Balkans.[8] The development of an industrial cluster in the region can enhance the EU's competitiveness, benefiting from lower labour costs, and reduce the cost of de-risking in key areas, such as electric vehicles (EVs) and manufacturing connected to the energy transition. Ports in the Adriatic Sea could also provide alternative trade routes, potentially improving supply chains' capacity to face shocks and remain resilient.[9]

8 EU Parliament (2022): China's strategic interests in the Western Balkans
9 Atlantic Council (2023): Western Balkans 'nearshoring' can turn the region into a strong asset for the EU

Vacancy rate trend in the Netherlands



Source: CBS (2023). Vacancy rate defined as the number of unfilled vacancies per thousand jobs.

However, expansion also introduces new competitors, fostering the need to change pricing and create product differentiation strategies. Regulatory harmonisation, another common occurrence in EU expansion, could lead to increased complexity in supply chain processes. As harmonisation aims to standardise regulations across member countries, new member states have to adjust their operations to comply with new rules, impacting procurement, production and distribution.

The impact of stricter labour migration policies will be significant

Expanding the EU would also increase the potential labour supply. The Netherlands has been experiencing severe labour shortages since 2021. Restricting labour migration, one of the key topics of the next Dutch elections, would probably increase the severity of labour shortages. An even tighter labour supply leads to several effects on the Dutch economy, such as decreased productivity, increased labour costs, and delays in supply.

Supply chains rely on a steady and qualified workforce to meet production demands and maintain operational efficiency. However, the problem also extends beyond production itself. Firms and logistics operators require personnel to transport goods, such as truck drivers, as well as people who can receive and handle the materials in warehouses. Limiting the inflow of workers is likely to cause delays in meeting customer orders and maintaining productivity levels. In the long run, Dutch competitiveness could be harmed leading labour-intensive industries to relocate.

What is on the 'wishlist' of Dutch companies regarding foreign policy?

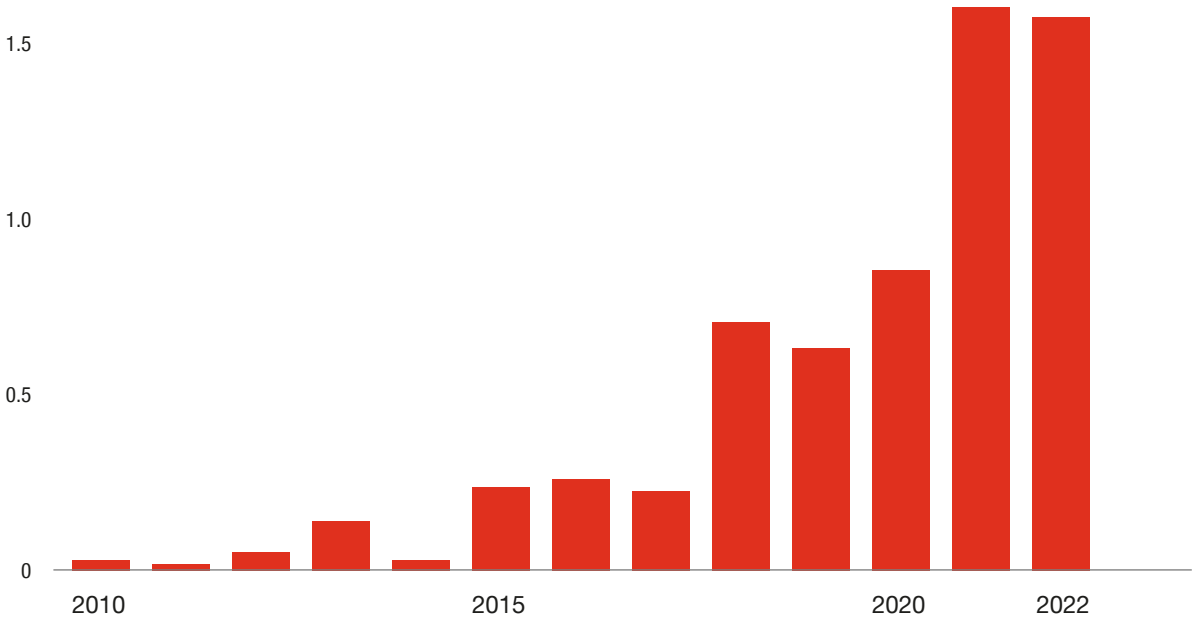
The existence of a large free market means that Dutch businesses have a vast customer base and the opportunity to build a diversified supply chain. This enhances their ability to sell more goods and services, leading to higher revenues and profits. Additionally, a large free market encourages competition, which promotes innovation and efficiency among businesses.

In terms of labour and material supplies, government policy should try to prevent disruptions by putting the right prerequisites in place for a smooth running of the supply chain. EU trade agreements help Dutch businesses secure raw materials at favourable terms. These agreements ensure a steady supply of raw materials, enabling businesses to maintain their production levels and meet customer demands.

A less tight labour supply provides Dutch businesses with a wider pool of talents to choose from, allowing them to hire the best and most suitable employees for their operations. Furthermore, a larger labour supply also reduces the potential negative impacts of labour turnover. Similarly, investing more in education and retraining ensures that Dutch businesses have continued access to a skilled and competent workforce. It also enables businesses to adapt to technological changes by retraining their employees, thus maintaining their competitiveness in the market.

Incentives to decarbonization

Global industrial-policy interventions, ‘000



Source: *The Economist (2023)*

The carrots: industrial policies and investments in renewable energy sources are decisive for production locations

Industrial policy is no longer taboo. With the goals of de-risking and accelerating the energy transition, the United States and the EU provide **incentives for critical industries and green technologies** through the Inflation Reduction Act and the Green Deal Industrial Plan, respectively. These incentives encompass ‘carrots’ such as generous tax breaks and faster permits, as well as ‘sticks’ which include carbon taxation and phasing out fossil fuel subsidies (see next section for more detail).

In Q1-2023, companies in the developed world received around 40% more subsidies than was normal before the pandemic.[10] These policies could transform supply chains since they aim to influence the preferred production locations for firms. There is a clear trend favourable to industrial policies, but it is important to note that they are targeted towards stimulating a reduction of GHG emissions. The use of green subsidies is aimed at accelerating the decarbonisation of Dutch supply chains, but at the short-term cost of increasing budget deficits. In the long run, how the supply chains are configured will determine the power dynamics between regions, countries and businesses.

10 The Economist (2023): Governments across the world are discovering “homeland economics”

> Stricter regulations and taxation could decrease competitiveness.

Increased investments in renewable sources, another key discussion point in Dutch politics, can not only reduce the energy dependence on foreign countries and increase the security of supply but also position manufacturing favourably for the future. As the cost of solar and wind power decreases, low-carbon supply chains have significant cost reductions. These savings could be passed on to consumers in the form of lower prices, or reinvested in the business to drive innovation and growth. Furthermore, reduced energy costs would make Dutch supply chains more competitive on a global scale.

The sticks: GHG emission taxes and a too rapid phase-out of fossil fuels could harm Dutch manufacturing competitiveness

Dutch manufacturing competitiveness, especially in energy-intensive industries, could be decreased by **stricter regulations and taxation of GHG emissions.** If not executed in combination with mechanisms to prevent carbon leakage, such as the Carbon Border Adjustment Mechanism, and in coordination with other EU countries, those policies risk harming Dutch manufacturing with a limited impact on global emissions. Even if stricter regulations do not lead to relocation, they increase operational costs for firms in energy-intensive industries. These production costs would likely be passed on to consumers, adding to inflationary pressures in the short run.

The Netherlands offers 25 fossil fuel subsidies, which can cost up to €46.4bn per year.[11] Phasing them out leads to (at least short-term) price increases and requires a rapid adoption of renewables, as well as major infrastructure and technology investments to ensure uninterrupted operations. These could disrupt supply chains and increase business costs, reducing competitiveness. And the impact on GHG emissions will be very limited if there is no coordination with other EU countries.[12]

Nevertheless, stronger government action towards the green transition enhances the reputation of the Netherlands (and, by extension, Dutch businesses) as leaders in sustainability and environmental responsibility. As responsible corporate behaviour becomes the new licence to operate, this helps to open new markets and improve competitiveness in current ones, driving business growth and profitability.

11 MinFin (2023): Fossiele subsidies: Bi lage bi Miljoenennota 2024
12 Mulder et al. (2023): Europees emissiesysteem bepaalt halen CO2-doelen, fossiele subsidies secundair

> Despite the short-term challenges and costs, phasing out fossil fuels will have significant long-term benefits for Dutch supply chains.

Also, the effect on prices is not necessarily bad as it moves prices closer to the ‘true price’, incorporating the externalities and leading to more sustainable consumer behaviour.

Why do these ‘carrots’ and ‘sticks’ matter for supply chains?

A policy framework with strong environmental standards and sustainability incentives or regulations will continue to reshape the priorities among Dutch supply chains, making sustainability criteria a key part of supplier selection processes. This will require more transparency throughout the supply chain to trace the environmental impact of suppliers and ensure compliance with sustainability standards. Most likely, this involves implementing new systems and processes to track and report on sustainability metrics, adding complexity to supply chain management but also providing valuable insights into the environmental impact of supply chain operations. Overall, this probably transforms the supplier base as companies seek out suppliers that align with their sustainability goals to avoid non-compliance risks.

Despite the short-term challenges and costs, phasing out fossil fuels will have significant long-term benefits for Dutch supply chains. First, it enhances energy security by reducing reliance on imported fossil fuels. For example, the Netherlands is the sixth-largest importer of crude petroleum in the world, which exposes its energy supply to price fluctuations, supply disruptions and geopolitical tensions.[13]

13 OEC (2023): Crude Petroleum in the Netherlands

What is on the ‘wishlist’ of Dutch companies regarding industrial policy and decarbonization?
Most businesses adopt sustainable practices because of regulatory frameworks or profitability factors. If sustainability is not profitable and only implemented as a consequence of regulations, businesses may risk closure or relocation to areas with less stringent rules. A Dutch industrial policy heavily interacts with policies adopted in other EU countries. It is important to avoid discrepancies between a Dutch view and a European view, as it harms Dutch manufacturing and supply chains.

Becoming sustainable while remaining competitive is key. Innovation can help achieve this balance. Incentive schemes for innovation can help businesses develop new, sustainable technologies or practices that also improve their position in the market.

In terms of energy supply, businesses require a reliable and secure energy supply at competitive prices to operate efficiently. This is where the government needs to step in, particularly in areas that are challenging for the private sector, such as the required improvement in the electrical grid. By ensuring energy availability and security, the government can help businesses maintain their operations and competitiveness.

The future of air transport

Limiting the number of flights in the Netherlands will impact industries reliant on air transportation
Similar to sustainability, Dutch parties have contrasting views about reducing the number of flights in the Netherlands. This would directly impact Dutch supply chains, as Schiphol Airport is a key logistical hub for North America and Asia.[14] Reducing the number of daily flights from and to Schiphol Airport will increase costs and demand for alternative means of transport.[15] This could lead to congestion, longer transit times and increased costs, impacting the efficiency and cost-effectiveness of supply chains.

Industries that heavily rely on air transportation or just-in-time inventory management, such as pharmaceuticals, electronics and perishable goods, would face significant supply chain disruptions. These industries are important in terms of value added, exports and employment. Pharmaceuticals and electronics are the second and fifth most important manufacturing industries in terms of value added per employee.[16] Moreover, the perishable goods of horticulture and agriculture account for 17.5% of total Dutch exports and employ 10% of the labour force.[17] These goods require efficient supply chains to secure quality and reliability. The limited availability of flights may lead to delays in receiving essential components or delivering finished products.

On a positive note, the limitation of flights might foster greater collaboration amongst supply chain stakeholders. In the face of transportation challenges, stakeholders might come together to find alternative solutions, such as shared logistics networks. In the long term, this collaboration could lead to supply chains that are more resilient and better equipped to handle disruptions. Furthermore, this approach incentivises firms to look for alternatives that do not rely on aviation, reducing the carbon intensity of their supply chains. For example, it is now possible to transport flowers using sea freight instead of air freight, the latter of which is usually the go-to approach for its speed despite being highly polluting.[18]

14 Schiphol Airport (2022): Traffic Review 2022
15 CEBR (2023): The economic and environmental impacts of reducing the capacity of Schiphol Airport
16 CBS (2023): Output and income components of GDP; activities, National Accounts
17 Government of the Netherlands (no date): Agriculture and horticulture
18 Kuehne + Nagel (no date): Expanding scope: Using sea to ship flowers

What is on the ‘wishlist’ of Dutch companies regarding transportation?

Having a variety of transportation options (sea, air and land) gives businesses the flexibility to switch modes depending on their needs. Currently, the Netherlands offers all of them, which is crucial to its role as a supply chain hub. This is vital for meeting delivery deadlines, accommodating different types of goods and managing costs. If capacity is removed or decreased in any of these modes, it disproportionately impacts certain industries, particularly those that rely heavily on a specific mode of transportation. Reducing air freight from Schiphol Airport can have a significant impact on industries that rely heavily on aviation and for which other modes of transport are not good substitutes. It is important that these industries have a voice in the debate.

A well-connected transportation network for rail, sea and road is also crucial. Smooth handovers between these modes significantly improve the efficiency of goods transportation, as this leads to faster delivery times, lower transportation costs and ultimately higher customer satisfaction. Thus, maintaining a good transportation network is key to the competitiveness and success of Dutch businesses.

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