Analysis of the transportation and storage industry in the Netherlands

June 2025

Can the transportation and storage industry adapt for the future of the Dutch economy?

To become future-proof, the transportation and storage industry needs to boost productivity, decarbonise and prepare to navigate uncertainty, argue PwC's Chief Economist Barbara Baarsma and Transport & Logistics leader Winand Doerga.

In March 2025 we published a study on 'Future-Proofing the Dutch Economy'. We zoomed into the structure of the Dutch economy to assess which industries are future-proof and which need action. This analysis is topical because the Dutch economy is stalled by the lack of physical space, labour shortages, and environmental and infrastructural capacity.

Hence, it is likely that the economic structure will need to change to reallocate scarce production factors. Choices will need to be made to free up growth space for activities that are highly productive, have a low spatial and environmental footprint and that do not rely on lots of low value-added labour. Can the transportation and storage industry adapt along these lines?

Besides stagnating labour productivity, five additional 'lenses' through which we can examine the transportation and storage industry

The transportation and storage industry is an important industry in the Netherlands with 16,000 operating companies (67,000 if including the self-employed).[1] It includes all logistics activities related to the transportation of goods and people, as well as the storage of goods.[2]

Last year we already wrote about the productivity growth problem in the transportation and storage industry: the industry was less productive in 2024 than in 2015. The likely reasons are a shortage of people, slow transition to sustainable fuels, uncertainty and lagging investment in digitalisation and automation.

However, productivity growth, albeit very important, is only one dimension. Here we take a broader view and consider the three lenses that we used in 'Future-Proofing the Dutch Economy' study: **centrality**, **economic importance** and **dependence on scarce production factors**.

In addition, we look at two additional factors that emphasize the contributions of the industry, namely **national strategic importance** and **internationalisation**.

Figure 1: Transportation and storage ranks low in terms of centrality, economic importance and too much reliance on scarce production factors

Industry	Centrality score	GDP share	Labour productivity growth	R&D share	Scarce production factors index	Sum of all factors
High/medium-high tech manufacturing (C3)	100.0	42.5	71.2	100.0	49.3	363.0
Other specialised business services (M)	33.6	70.1	72.9	40.9	84.6	302.1
Wholesale and retail trade (G)	42.2	100.0	66.1	11.9	54.4	274.6
Construction (F)	76.4	35.6	72.9	1.7	86.4	273.0
Low tech manufacturing (C1)	38.7	27.2	100.0	8.4	79.0	253.3
Information and communication (J)	25.0	34.1	64.4	33.0	86.2	242.7
Renting and other business support (N)	13.5	53.4	81.4	2.6	67.6	218.5
Financial institutions (K)	12.7	38.1	55.9	8.4	89.2	204.3
Accommodation and food serving (I)	6.3	11.1	83.1	0.0	100.0	200.5
Medium-low tech manufacturing (C2)	30.1	12.4	50.8	5.8	71.7	170.8
Water supply and waste management (E)	1.5	0.0	64.4	0.4	85.9	152.2
Transportation and storage (H)	**23.3**	**30.9**	**54.2**	**2.4**	**16.7**	**127.5**
Energy supply (D)	1.8	11.6	76.3	1.0	23.7	114.4
Agriculture, forestry and fishing (A)	9.2	10.7	83.1	5.1	0.0	108.1
Mining and quarrying (B)	0.0	4.7	0.0	0.3	96.9	101.9

Note: All scores, except for the sum of all scores, are min-max normalised and scaled to be from 0 to 100.

Source: PwC (2025): Future-Proofing the Dutch Economy. Key Industries for Resilient Growth.

[1] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.

[2] Transportation and storage (H): the sector in the SBI 2008 classification includes these subindustries: land transport, water transport, air transport, warehousing and support activities for transportation, and postal and courier activities.

7th

'Transportation and storage' ranks as 7th most central industry

Centrality: transportation and storage industry is relatively central to the production flows of the Dutch economy

Centrality measures how big of a role an industry plays in national production flows. The more central an industry is, the more influential it is in the economic production network. We consider the average centrality score from 1995-2020.[3]

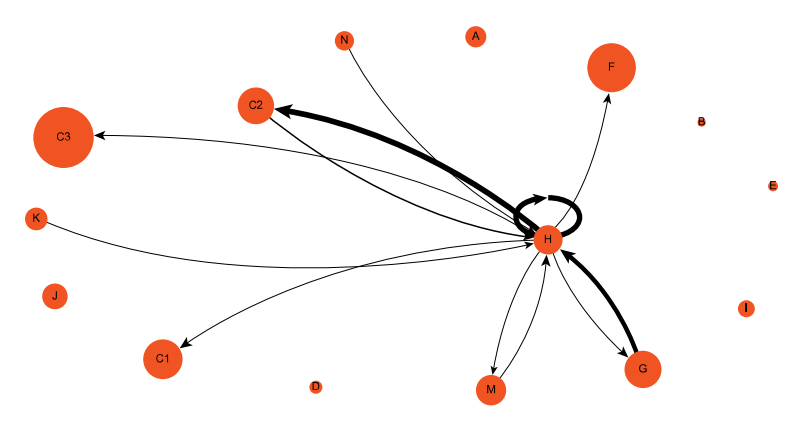
Amongst all 15 industries that are part of the Dutch commercial sector,transportation and storage ranked as the 7th most central.[4] This might seem surprising, as transportation and storage activities touch almost all corners of the economy. That is true, if you only look at the number of connections to other industries. However, in our assessment we also considered the strength of those relationships, measured by gross value added (industry's contribution to the production of other industries).

In that sense, in Figure 2, we see that other industries are connected to a stronger degree, i.e., the value added that is delivered in trade relations is larger. The transportation and storage industry is primarily linked with wholesale and retail trade (G) and medium-low tech manufacturing (C2) industries.

Nevertheless, it can still be considered a relatively central industry, with meaningful implications for the Dutch economy. For example, if a more central industry improved its productivity growth, that would have larger spillover effects. Similarly, if such an industry were to shrink or even leave the Dutch economy, that would impact not only production flows but also the centrality of other closely connected industries.[5]

Figure 2: The transportation and storage industry is primarily linked with wholesale and retail trade (G) and medium-low tech manufacturing (C2) industries

Production flows from transportation and storage (H) industry



The size of the sphere reflects the centrality of the industry
The thickness of the arows indicate the stranght of production flows

		Industry	Centrality score 1995-2020
Primary sector	A	Agriculture, forestry and fishing	0.08
	B	Mining and quarrying	0.01
Secondary sector	C1	Low tech manufacturing	0.29
	C2	Medium-low tech manufacturing	0.25
	C3	High/medium-high tech manufacturing	0.68
	D	Energy supply	0.03
	E	Water supply and waste management	0.02
	F	Construction	0.44
Tertiary sector	G	Wholesale and retail trade	0.25
	H	Transportation and storage	0.16
	I	Accommodation and food serving	0.05
	J	Information and communication	0.12
	K	Financial institutions	0.10
	M	Other specialised business services	0.17
	N	Renting and other business support	0.07

Source: OECD Input-Output Tables 2021 ed., PwC analysis.
Only trade flows that exceed the average (or US$1.5 billion) from 1995-2020 are included. We exclude non-commercial industries.

[3] For more details, p. 39 in PwC (2025): Future-Proofing the Dutch Economy: Key Industries for Resilient Growth.
[4] CBS: Commercial Sector
[5] Dieteren & Nauta (2020): Centraliteit Sector van Belang bij Doorwerking Schok in Economie.

Economic importance: despite a sizeable share of GDP, the industry has sluggish productivity growth and a low share of R&D spending

5%

of the total Dutch economy

5th

lowest productivity growth

Next, we look at the economic importance, considering the industry's share of the gross domestic product (GDP), labour productivity growth and share of private in-house research and development (R&D) spending.

Economic size (share of GDP)

Even though, since 1995, the industry's relative share of GDP has shrunk by 20%, it remains 'in the middle of the pack' in its economic size, ranking 8th out of 15. Amongst the subindustries, in 2022, warehousing services for transportation share of GDP was 2.0%, land transport 1.8%, water transport 0.6%, air transport 0.3%, and postal and courier activities 0.2%.

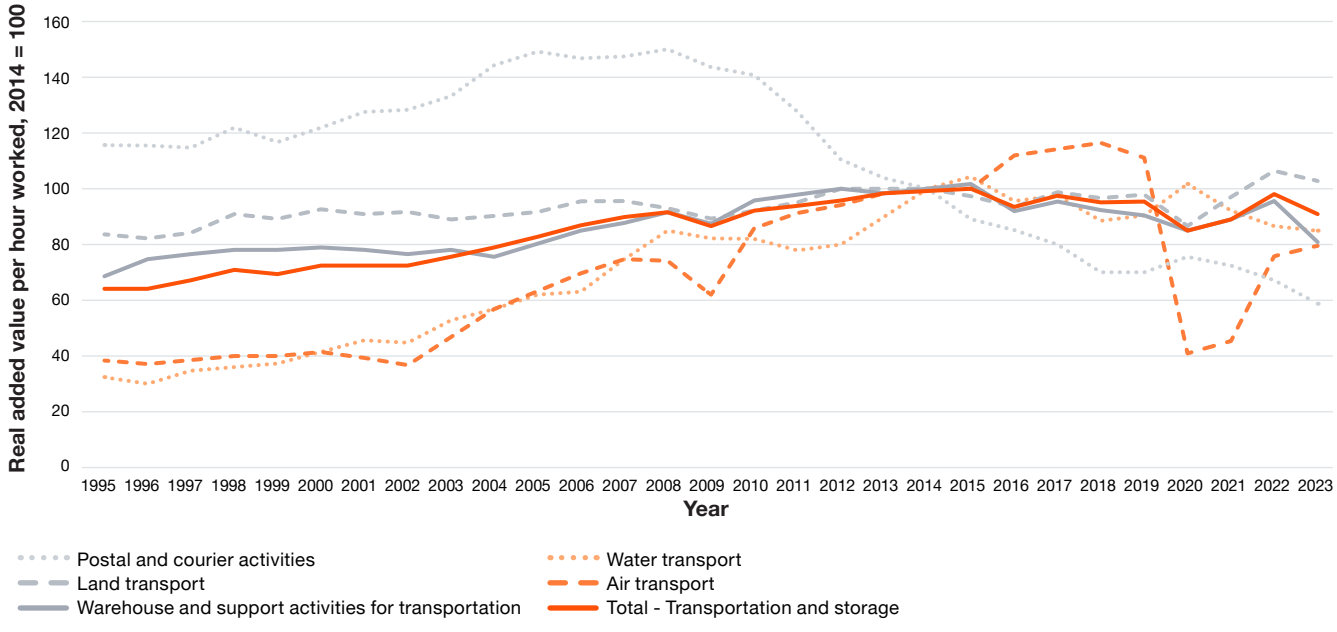
Labour productivity growth

Although we have already written about labour productivity growth in the transportation and storage industry, we make three additional comparisons here. First, the industry has relatively low productivity growth compared to other industries: only 5 out of 15 industries have increased their labour productivity by less.

Second, zooming into the five subindustries of transportation and storage, while the labour productivity of land transport, water transport, and warehousing and support activities has stagnated since 1995, it has even declined for postal and courier activities and air transport (Figure 3).

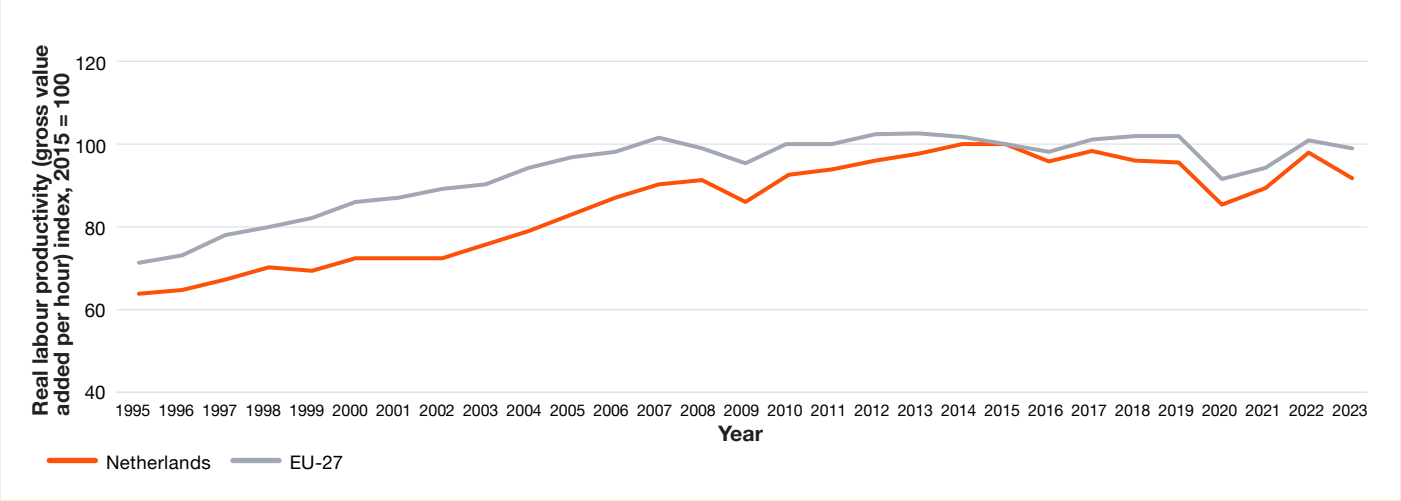
Figure 3: Since 2014 productivity growth has been stagnating in all transportation and storage subindustries

Real value added per hour worked in the transportation and storage subindustries



Source: CBS and PwC analysis.

Figure 4: Dutch transportation and storage industry has increased its labour productivity by relatively less than the EU-27 industry average



Source: CBS and PwC analysis.

1%

of total R&D spending

Third, also in the context of the other European Union (EU) countries, the Dutch transportation and storage industry has grown its labour productivity by relatively less than the EU-27 average of the same industry (Figure 4).

However, the slowdown in labour productivity growth in transport and storage is not unique to the Netherlands. With a few exceptions, labour productivity growth in this industry has declined in almost all high-income countries.[6]

R&D spending

Regarding R&D spending, transportation and storage has consistently made up only 1% of the total spending by the commercial sector, ranking 9th out of 15. R&D spending is vital not only for innovation within the industry but also for creating productivity-enhancing innovation spillovers for other industries.[7] For example, investment in R&D within this sector can lead to breakthroughs in sustainability (e.g., electric vehicles, greener logistics and sustainable fuel) and digital tools (e.g., GPS tracking, inventory management software and autonomous vehicles) that would help other industries innovate and decarbonise. With such low R&D spending, the transportation and storage industry provides the rest of the economy with insufficient innovation spillovers.

[6] CBS (2024): Achtergrond bij de daling van de arbeidsproductiviteitsgroei van Nederland.
[7] Castellani et al. (2016): The Productivity Impact of R&D Investment: A Comparison between the EU and the US.

Scarce production factors: overreliance on scarce production factors is a significant bottleneck for the industry

In this section we consider six areas of scarce production factors: labour, capital, environmental (greenhouse gases, nitrogen and water) and physical space. The lower the rank, the less an industry relies on scarce production factors. When aggregating all the factors in an index, transportation and storage relatively take up 2nd most of all industries (Figure 1).

Labour (share of total employment)

5%
of total FTE employment

With around 5% of total FTE employment, the transportation and storage industry is the fourth-largest employer in the Netherlands, ranking 12th out of 15. Split by subindustries, in 2022 land transport makes up 2.4% of all FTE employment, warehousing services for transportation 1.5%, postal and courier activities 0.5%, air transport 0.3% and water transport 0.2%.[8]

Nevertheless, the industry still deals with labour shortages, ageing of its employees, high absenteeism and insufficient influx of younger employees.[9] Additionally, the industry has been able to rely on relatively low-paid labour from abroad for a long time. This has likely reduced the incentive to invest in labour-saving technologies. With labour migration set to rise less rapidly because of policy choices and more supervision to tackle abuses, labour shortages and wages will increase. This will also increase the incentives to add more value per employee.

Capital (share of total gross capital stock)

4%
of the gross capital stock

In terms of gross capital share, the industry uses the largest share (4%) of the gross capital stock, ranking the lowest for this factor. However, while the transportation and storage industry is relatively asset-heavy, many of the investments in infrastructure have spillover effects on the rest of the economy. To increase those spillovers and solve infrastructure challenges, such as overcrowded roads, railways and the electricity grid, the industry has to cooperate with the government.

Greenhouse gas emissions

16%
of total GHG emissions

When it comes to environmental factors, the transportation and storage industry also performs relatively poorly. In the European context, the industry has actually increased its greenhouse gas emissions since 1990 by 17%.[10] In the Netherlands in 2023, it was the third-largest emitter of greenhouse gases with around 16% of the total, of which 6.9% came from air transport, 5.2% from water transport, 4.1% from land transport, 0.4% from warehousing services for transportation and 0.1% from postal and courier activities.[11] Since 1995, this share has not decreased sufficiently, with most emissions reductions coming from improved fuel efficiency of vehicles.[12]

Companies in the transportation and storage industry are feeling pressure to decarbonise not only from rising fuel costs, but also from rising regulatory pressure.[13] To achieve climate targets, further improving the fuel efficiency and sustainability of vehicles is important. While this is already taking place, there is also a lot of uncertainty, as there is not a suitable fuel alternative for every type of transport yet. Additionally, the transition to electric vehicles is impacted by grid congestion and the limited availability of charging infrastructure.[14]

[8] CBS data.
[9] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.
[10] Draghi (2024): The future of European competitiveness.
[11] CBS data.
[12] Rabobank (2025): Ontkoppeling van broeikasgasuitstoot en economische groei in Nederland tussen 1990 en 2022.
[13] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.
[14] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.

30%

of total acid-equivalent emissions

6th

smalles water user

10%

of total physical space used in economic activities

Acidification (damage caused by excess nitrogen)

Transportation and storage is also second worst in terms of acid-equivalent emissions, with around 30% of the total.[15] In 2023, water transport made up 20.1%, air transport 8.3% and land transport 2.8% of total acid equivalent emissions. The share of the total transportation and storage industry, however, has slightly decreased since 1995.

Water

In terms of water use, the transportation and storage industry scores better, ranking as the sixth-smallest water user, with barely any water use compared to other industries.

Physical space

Last, according to the European Commission's land use and land cover survey (LUCAS), the industry, taking up almost 10% of the total physical space, ranks second. As the definition this database uses of the sector is quite broad, and includes, for example, communication networks and energy distribution, this is probably an overestimate of the spatial footprint. Another approach is to look at the occupancy of traffic and infrastructure (about 7% of total area), and since transport uses about half of this capacity, transport alone requires 3.5%. That's not counting storage capacity yet. In short, this leaves the sector second in terms of occupancy of scarce space.

Many activities of the transportation and storage industry are location-bound, meaning that it would be difficult to move them elsewhere. In addition, as physical space is already scarce, there is not much growth potential in terms of physical space without significant economic restructuring.[16]

National strategic importance: the industry enables supply chains, critical infrastructure and plays an important role in crisis

For many countries, including the Netherlands, the transportation and storage industry plays a role in terms of national strategic importance. This aspect is important and is not reflected in economic statistics.

For example, the transportation and storage industry enables supply chain connectivity and the flow of goods from producers to consumers, including not only commercial but also military and dual use (used both for military and civilian purposes) goods. Additionally, the industry often drives the development and maintenance of critical infrastructure such as roads, railways, airports, and ports. Furthermore, the transportation and storage industry also plays a critical role during crises, such as natural disasters or pandemics, by ensuring the delivery of essential goods and services.

The national strategic importance of the industry will be important to consider in dealing with the geopolitical situation where companies and governments are increasingly preferring to keep at least some production closer to home.[17]

[15] For more details, p. 39 in PwC (2025): Future-Proofing the Dutch Economy: Key Industries for Resilient Growth.
[16] Denkwerk (2025): Kiezen én Delen.
[17] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.

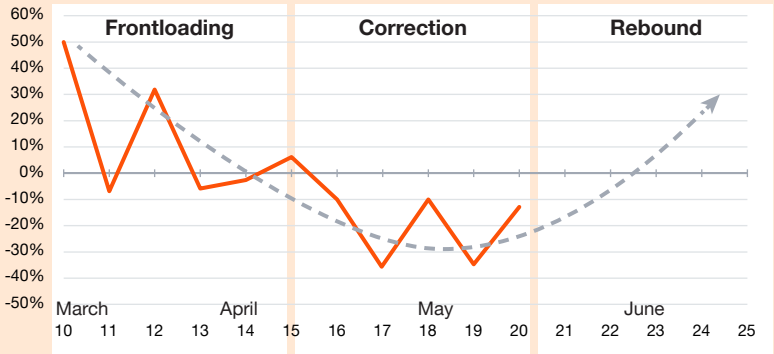
Internationalisation: the transportation and storage industry enables trade and consequently productivity spillovers for the rest of the economy

International transport, advanced storage and developed infrastructure play an essential role in strengthening the global competitiveness of the Netherlands as a trading country located on the sea with shipping, rail and motorways towards the European hinterland.[18] Companies in the transportation and storage industry are intermediaries in a vast number of economic transactions both domestically and internationally, facilitating import and export opportunities and acting as 'the gates to the world'.

International trade boosts productivity, as companies that start to export become more productive by learning, reaching economies of scale and accessing a larger variety of inputs.[19] By enabling this internationalisation channel for companies, the transportation and storage industry provides the rest of the economy with vital productivity spillovers.

Figure 5: From frontloading to correction and back again in the port of Los Angeles

Container throughput (in TEU) in the port of LA per week in 2025 year-on-year, and the expected direction.



Source: Port of Los Angeles, ING Research

This is an important point also in the current highly uncertain economic and geopolitical environment with rising protectionism.

Impact of tariffs

Tariffs can have a significant impact on international trade and exports by European companies. While the scope and timing of such measures is not fixed, it is difficult to determine the extent to which throughput volumes in Dutch ports and at Schiphol Airport will be affected. However, there is one certainty, which is that uncertainty will stay for the time being, and transportation and storage companies will have to deal with that.[20]

For example, Figure 5 shows that before the April 2 Liberation Day tariffs, there was severe frontloading of goods.[21] This can also be seen in the latest economic data, as Americans imported lots of pharmaceutical products from Europe in the first quarter of 2025.[22] Then, after Liberation Day, there was a correction with container throughput severely declining, while tariff policy measures were adjusted and costs of imports in the US rising substantially. Only after the United States lowered tariffs on China from 145% to 30% for 90 days on May 12, shipping activity recovered, again incentivising frontloading of goods.

This example indicates that the transportation and storage industry is the first to be impacted as fewer goods are traded and less transportation and storage infrastructure is used. It is also the first to experience volatility, as it needs to adjust to the latest policy measures. This leads to losses in terms of productivity and profitability. In addition, if the transportation and storage industry shrinks because of a hit to global trade, it will be less able to provide other industries with the same quantity and quality of services for the same cost, impacting their ability to compete internationally.

[18] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.
[19] FD (2024): Opinie Barbara Baarsma: Vrijhandel is onmisbaar voor economische groei.
[20] ABN (2025): Inspirare nodig!
[21] ING (2025): Permanent trade uncertainty leads to ongoing waves across supply chains.
[22] ING (2025): Eurozone industry experiences a Cinderella moment.

Conclusion: to become future-proof, the transportation and storage industry needs to boost productivity, decarbonise and prepare to navigate uncertainty

To summarise the perspective of the three lenses, we can see that the transportation and storage industry is 'in the middle of the pack' in terms of centrality and economic size, labour productivity growth and R&D spending, and at the bottom when it comes to scarce production factors. Nevertheless, it remains a crucial industry for the Dutch economy from national strategic and internationalisation aspects.

The demand for transportation and storage will grow, in line with the growth of the population and economy.[23] However, the industry is not future-proof yet, and it must keep on working to improve not only its economic importance but also its reliance on scarce production factors.

First, investing in technological and digital innovations, such as artificial intelligence, automation, robotics and data solutions, joining innovation ecosystems and improving company management practices are means to deal with low productivity and labour shortages.

Second, either starting or continuing the decarbonisation journey is important. It can be tempting for companies to wait and see in times of geopolitical, technological, regulatory and sustainability uncertainty. However, getting started already and learning from the experience, even if it might be costly, is the key to remaining competitive in the future.

Finally, investing in more intermodal transportation and smart planning can be helpful not only to tackle low productivity, increase utilisation and lower emissions, but also to stay nimble in times of high economic uncertainty. This might be the time when more cooperation within the industry will be necessary to deal with 'the black swans' and 'grey rhinos': unforeseen and expected high-impact events, respectively.

[23] Rabobank (2024): Transport & opslag. Meer efficiency en regie essentieel voor toekomstbestendig transport.

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