Acceptance of electric trucks in the German logistics industry

Results of a standardised survey

Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

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Authors: Schreiber, Jonathan; Göckeler, Katharina; Hacker, Florian.

Institution: Oeko-Institut e.V., Merzhauser Straße 173, 79100 Freiburg, info@oeko.de

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Summary (1/2)

1. **Road freight transport** is globally and in Germany the **second most significant source of CO_2** emissions **in the transport sector**. It is still mainly dominated by diesel-powered combustion engines. A particularly large share of emissions comes from heavy long-haul trucks, which are characterized by high mileage and high energy consumption. Against this background, it becomes clear: A successful decarbonization of the transport sector is only possible if road freight transport is consistently included.
2. **In summer 2025, 204** complete **interviews** were conducted **with leaders from the logistics industry.** Participant selection focused primarily on companies with the WZ code (Wirtschaftszweig Code: economic sector code) 49.41, which refers to freight transport by road, and additionally on the code 52.29.1 for freight forwarding companies. The sample was quota-based on available information regarding the composition of the logistics sector by company size. The results can be generalized with this context and further limitations in mind.
3. **Compared with survey data from 2021, the logistics industry views the future of all alternative drives as being with battery-electric trucks**. Hydrogen has significantly lost relevance in recent years.

Summary (2/2)

4. A substantial number of logistics **companies** show **gaps in** their **knowledge about** the German **toll regulation and the total cost of using electric trucks**. There is a significant need for knowledge transfer regarding alternative drives and related political measures in the transport sector.
5. Approximately a **quarter of** the **companies plan** to make smaller or extensive **investments in charging infrastructure** at their depot locations. There are significant gaps in knowledge regarding grid connection capacities and electricity prices.
6. Logistics companies have **mixed views about the future** of their industry. In addition to the positive aspects of electrification, resulting from efficiency gains and environmental benefits, challenges such as rising costs and the driver shortage are also addressed. Political initiatives to support electrification are considered crucial. The most frequently mentioned policy measures are the expansion of charging infrastructure and the acceleration of related approval processes. However, other policy measures, such as toll exemptions, also enjoy strong support.

Background

Aims

The research project ‘Accompanying research on the use of battery-electric heavy commercial vehicles in regular logistics operations – ELV-LIVE’ (funding code: 16EM6003-1) surveyed logistics companies about their perspectives on the ramp-up of electric mobility, regardless of any previous experience with electric trucks.

The standardised survey was designed to...

1. Map the current state of German logistics companies → see Chapter 1
2. Examine the market acceptance of alternative drive technologies → see Chapter 2
3. Record the framework conditions for charging in depots → see Chapter 3
4. Obtain the industry's view of the future and politics → see Chapter 4
5. Enable the identification of areas where action is needed → see Chapter 5

Methods

- **Between 9 July and 27 August 2025, Aproxima GmbH conducted a total of 204 complete interviews** to achieve a representative survey of logistics service providers and freight forwarders. Participant selection focused mainly on companies with WZ code 49.41, which relates to the carriage of goods by road, and additionally on 52.29.1 for forwarding agents.
- **Samples were drawn at random from contact databases**. To ensure the sample was balanced, distribution was carried out according to a predefined quota scheme based on company size. In addition, screening questions were used to confirm the suitability of the contacted companies, particularly regarding sector affiliation and the decision-making authority of the respondents. Specifically, respondents were excluded if they did not assign their company to the stated sectors, were not decision-makers in the company, or related to a quota that had already been filled.
- **The composition of the sample follows available information on the structure of the logistics sector by company size**. Compared with figures from the German Association for Freight Forwarding and Logistics (DSLV), which as an association tends to represent larger companies (Göckeler et al., 2022), large companies are underrepresented in the ELV-LIVE sample. Compared with figures from the Federal Office for Logistics and Mobility (BALM), smaller companies are underrepresented in the sample (Federal Office for Goods Transport [BAG], 2020). A stronger inclusion of small companies was not achievable even after exhausting 8,495 company contacts. Larger companies can only be interpreted quantitatively as a combined group with more than 100 employees.

Sample

Employees per company	Sample ELV-LIVE (2025)	StratES (2021)[1]*	BALM (2020)[2] **	HBS (2018)[3]	Companies in BGL (2020)[1]	Companies in DSLV (2015)[1]*
1 to 9	**33 %, n = 68**	16 %	46,7 %	72 %	95 %	17 %
10 to 49	**42 %, n = 85**	37 %	44,1 %	24 %		36 %
50 to 99	**10 %, n = 20**	19 %	9,2 %	4 %	5 %	20 %
100 to 199	**5 %, n = 11**	11 %				13 %
200 to 249	**2 %, n = 4**	17 %				14 %
Over 250	**8 %, n = 16**					
Total	**100 %, n = 204**	100 %	100 %	100 %	100 %	100 %

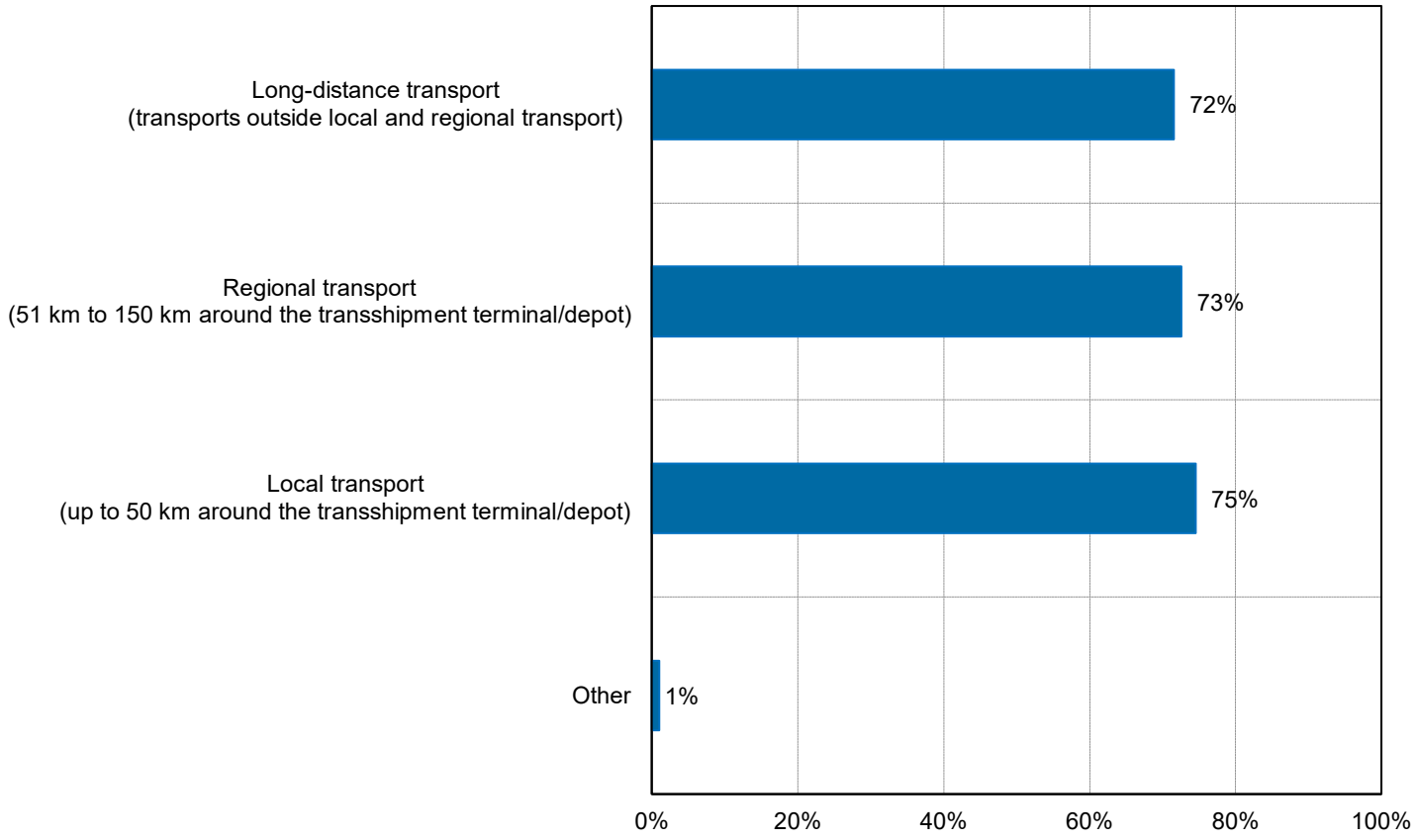
Source: Öko-Institut e.V. based on:
1.K. Göckeler, J. Heinzelmann, F. Hacker, L. Lesemann, L. Ziegler, T. Bernecker (2022): Anforderungen der Logistikbranche an einen Umstieg auf klimaschonende Fahrzeugtechnologien. Ergebnisbericht einer standardisierten Befragung. Zweiter Teilbericht des Forschungs- und Dialogvorhabens StratES. Berlin, Heilbronn: Öko-Institut, Hochschule Heilbronn.
2.Bundesamt für Güterverkehr (2020). Struktur der Unternehmen des gewerblichen Güterkraftverkehrs und des Werkverkehrs. Band USTAT 19. Köln.
3.HBS (2018): Zanker, C. Branchenanalyse Logistik., Der Logistiksektor zwischen Globalisierung, Industrie 4.0 und Online-Handel. HBS. Hans-Böckler-Stiftung (Hg.), 2018.
*Different interval boundaries: 1–10, 11–50, 51–100, 101–200, over 200. ** Companies from freight forwarding, logistics, warehousing and cargo handling.

Chapter 1
Logistics companies

Majority covers a very wide range of transport distances

- More than **70 %** of the companies surveyed **operate** in **local**, **regional**, **or long-distance** transport.
- **47 %** of respondents operate in **all three areas** of operation (97 cases).
- **15 %** of companies operate **only** in **local** and **regional** transport (31 cases).
- **4 %** operate **only** in **regional** and **long-distance** transport (9 cases).
- **4 %** operate **only** in **local and long-distance** transport.
- **7 %** operate **only** in **local** transport (15 cases).
- **5 %** of companies (11 cases) operate **only** in **regional** transport
- **15** % (31 cases) only in long-distance transport.

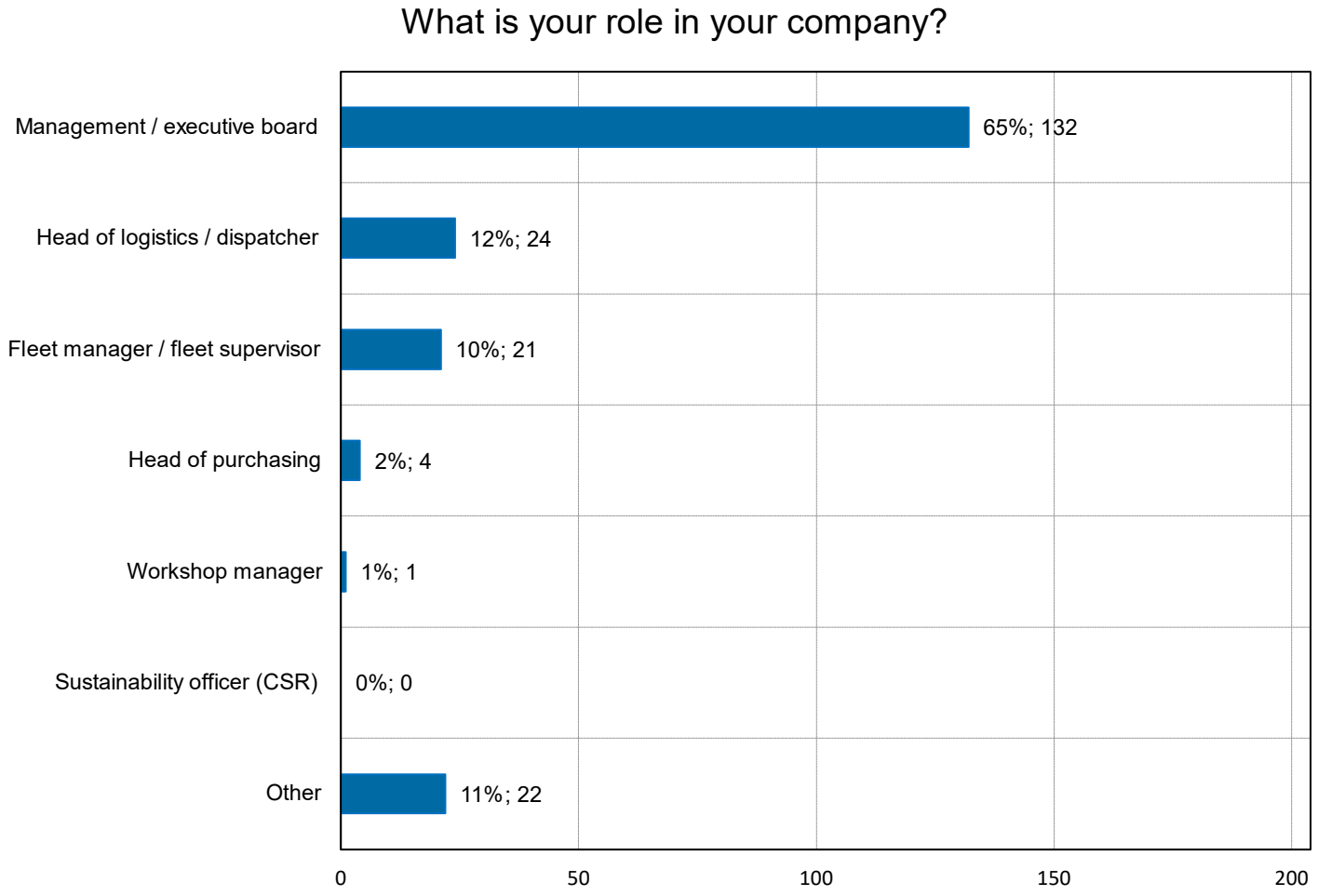
Which of the following truck operation areas does your company cover?



n = 204.

Majority of respondents in decision-making positions

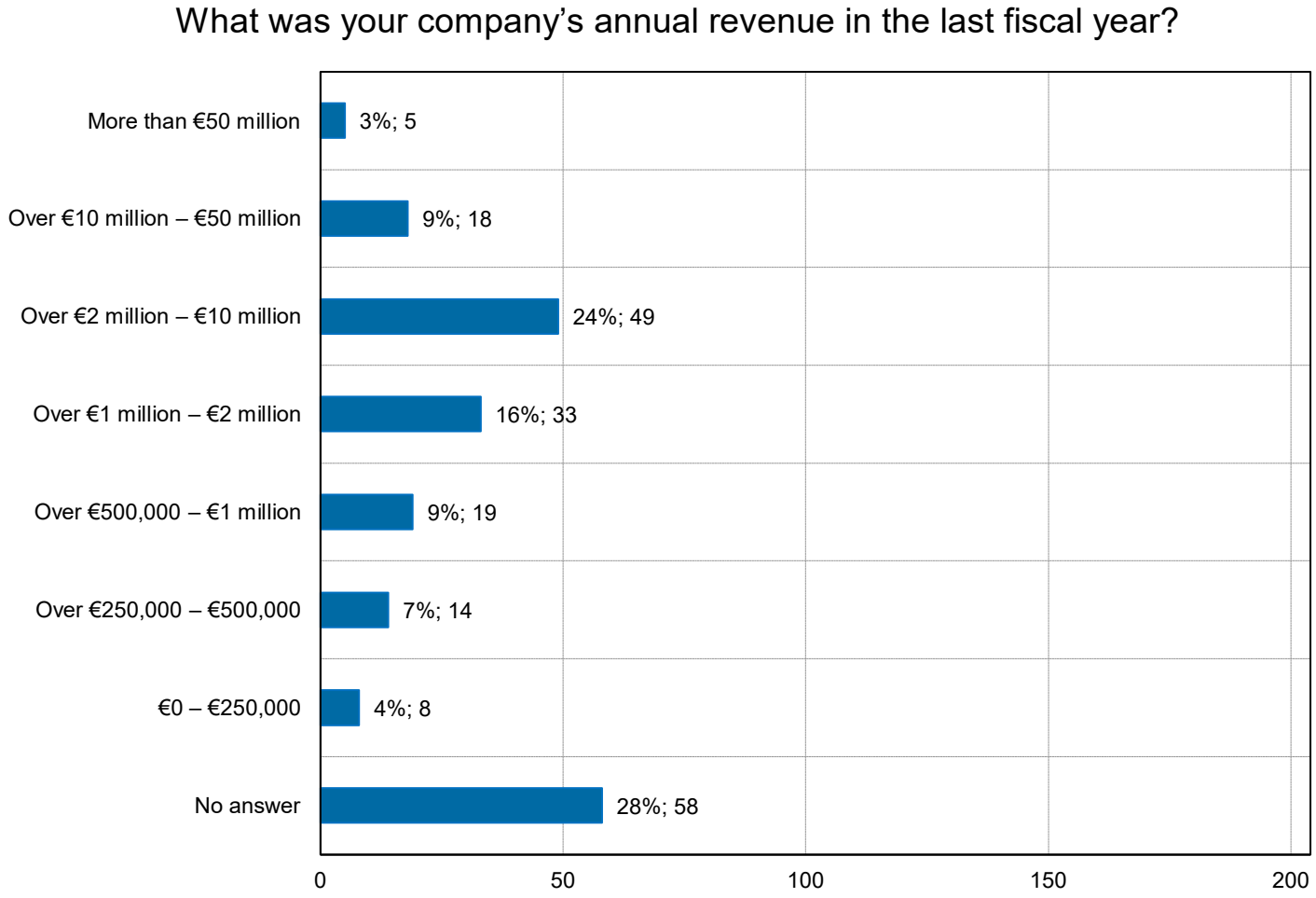
- **All respondents hold decision-making positions** within their company.
- **65 %** of respondents serve in **executive** management.
- **12 %** work as **logistics managers** or dispatchers.
- **10 % manage** the vehicle **fleet**.
- A small share are responsible for procurement or the workshop.
- The "Other" category comprises additional management roles, such as executive assistant, operations management, or authorised signatory.



n = 204.

Annual turnover of the companies covers a broad spectrum

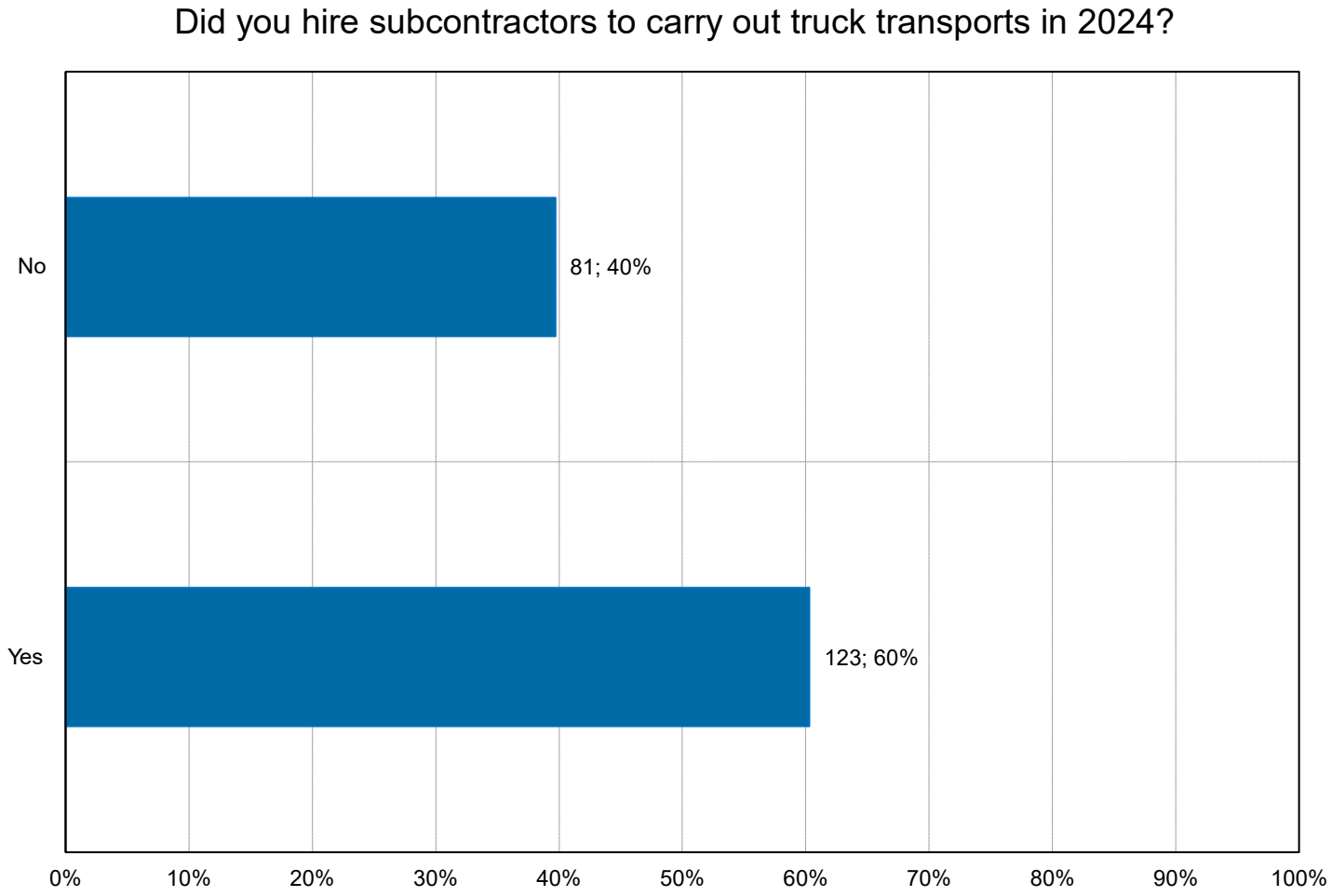
- With regard to annual turnover, it is apparent that there are only a **few companies** in the dataset that seemingly operate as one-person businesses. As only 8 respondents reported an annual **turnover of up to €250,000** in the most recently completed financial year.
- **Two thirds** of the company representatives surveyed report an annual **turnover of more than €250,000.**
- Nearly a **quarter** of all companies report an annual **revenue between €2 million and €10 million**.



n = 204.

Majority engage subcontractors for transport services

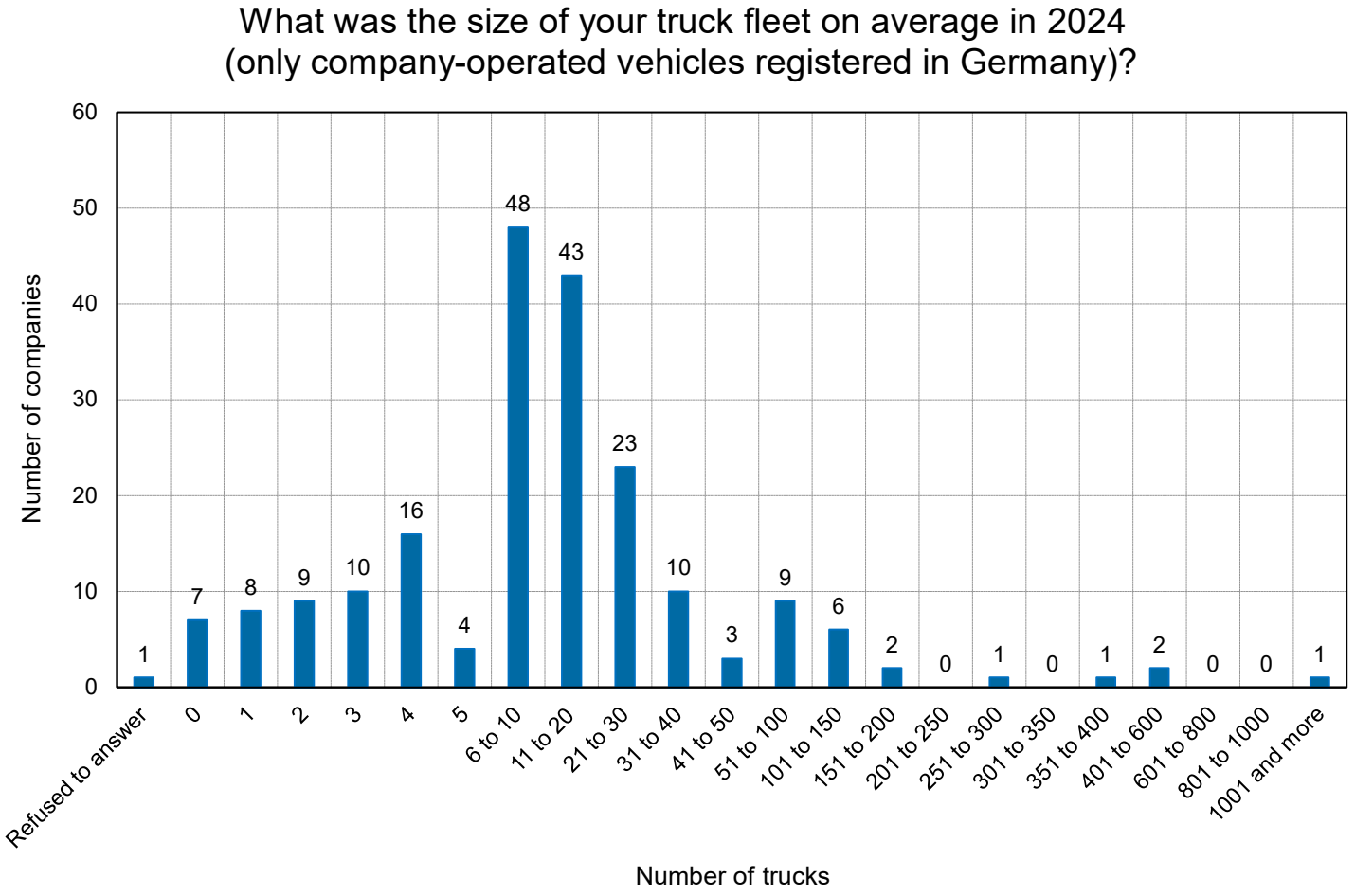
- **60 %** of the companies surveyed also **have transports carried out by subcontractors**.
- **Smaller companies tend to outsource only a smaller share of their transport tasks to subcontractors.** In companies with more than 49 employees, outsourcing large portions of transport tasks is comparatively more common.
- **Only a quarter of the companies surveyed did not perform any transport orders as subcontractors in 2024** (of these, 9 cases provided no information). **Three out of four companies therefore operate at least partly as subcontractors**. Smaller companies are, in tendency, more frequently active as subcontractors. The conditions for handling transport orders are thus not always in the hands of some logistics companies.



n = 204.

Wide range of fleet sizes – 33 trucks on average

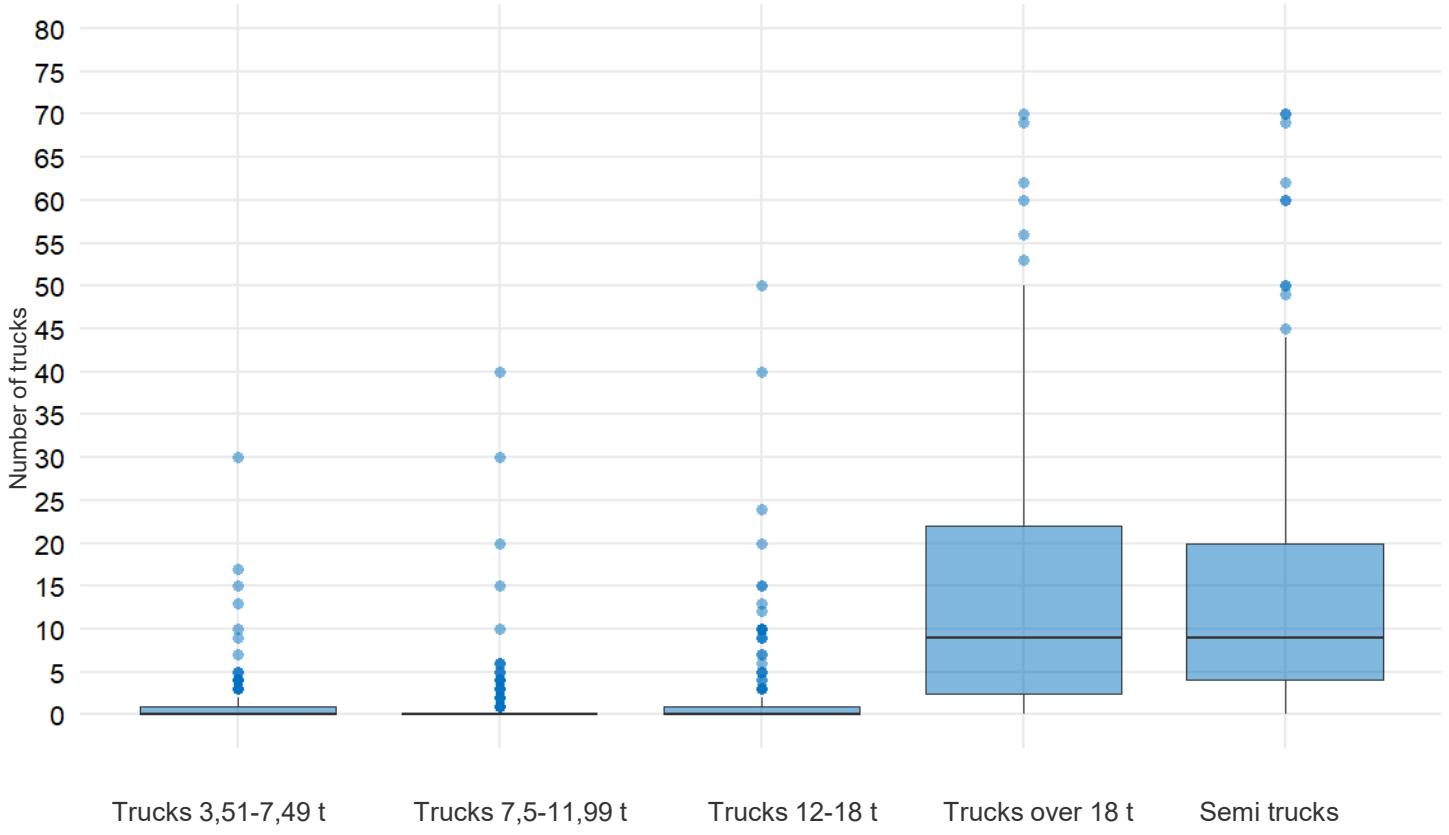
- **On average,** the **companies** surveyed **have around 33 trucks in their own fleets**. Half of the companies have up to 10 trucks, and **75 percent have up to 30 trucks**. Some companies with very large fleets therefore push the average upwards.
- It is also striking that, on average in 2024, 7 companies did not operate any trucks of their own. No consistent patterns can be identified in these cases. For example, they still state that they serve local, regional or long-distance transport. Notably, however, five of the seven cases outsource 81–100 percent of their transport orders to subcontractors. Since no uniform reason for this is apparent, these 3 percent of the surveyed companies (n = 204) are not generally excluded from the sample. Where relevant, they were filtered.



n = 204.

Clear focus of the fleets is on trucks over 18 tonnes

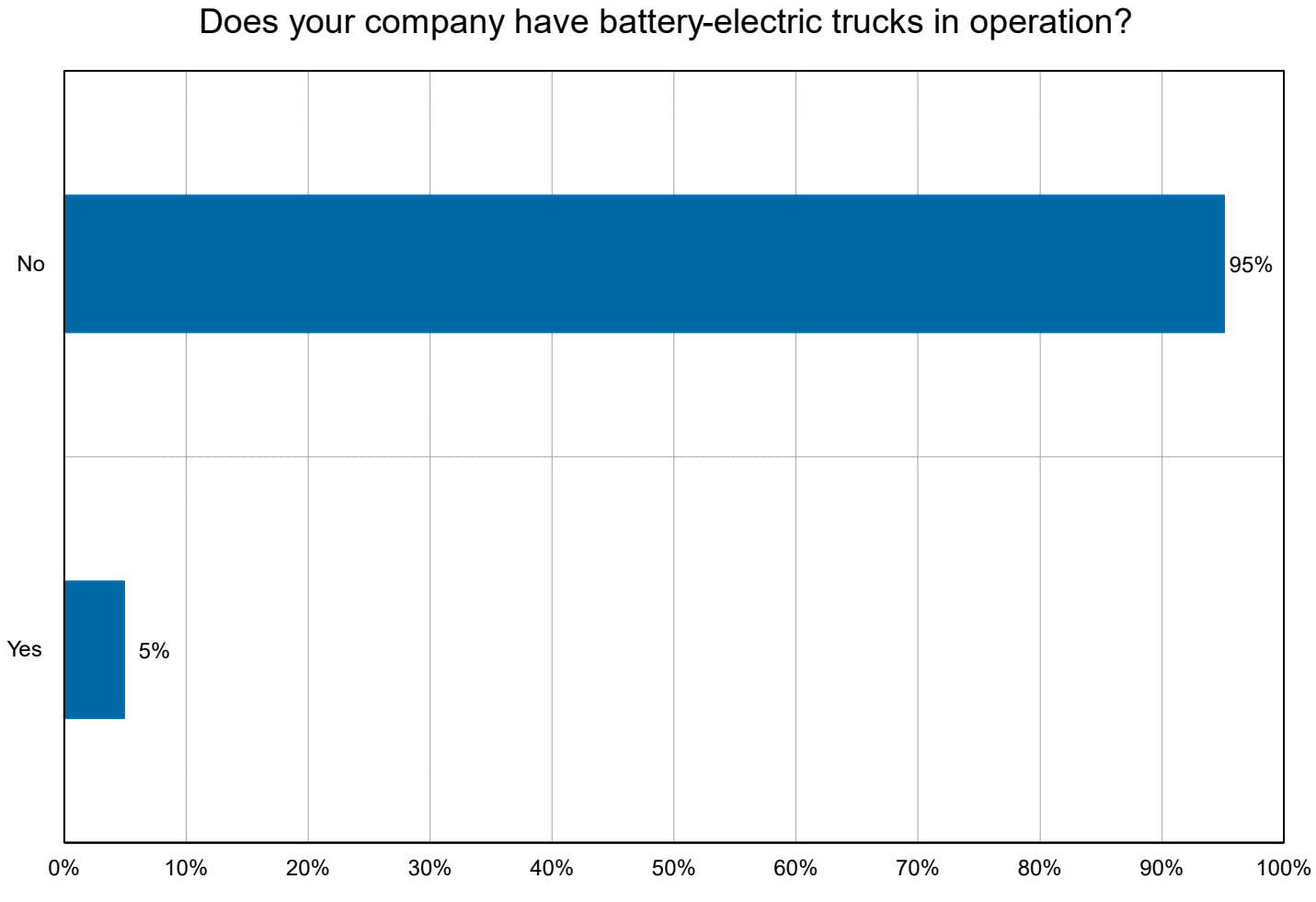
- A large proportion of companies, around 75 %, have no trucks up to 7.5 tonnes. An equal share of companies have no trucks in the 7.5 to 12 tonne range. **80 % of companies have at least one truck over 18 tonnes. Of these, 73 % have semi trucks** (overlaps with previous category).
- 18 companies have more than 50 vehicles in the over-18-tonne class, which may also be semi trucks. The maximum for trucks over 18 tonnes is 1,015 vehicles. The maximum for semi trucks is 439 vehicles.
- **Taken together**, the companies surveyed have 208 vehicles under 7.5 tonnes, 206 vehicles in the 7.5 to 12 tonne range, 362 vehicles in the 12.01 to 18 tonne range, and **5,844 vehicles over 18 tonnes**. In the over-18-tonne category, the companies have 4,185 semi trucks.



*n = 195. *Companies with more than 80 vehicles are not shown in the figure but are included in the calculation. These cases/data points not shown are listed under "Outliers > 80". Reading aid: Bottom of the box (Q1): 25th percentile, 25 % of the data lie below this. Top of the box (Q3): 75th percentile, 75 % of the data lie below this. Box height (IQR): interquartile range = Q3 − Q1 → shows the "middle 50 %" of the data.*
Trucks 3.51 t to 7.49 t: Q1 = 1, Median = 0, Q3 = 1, Maximum = 30. Outliers > 80: 0. Trucks 7.5 t to 11.99 t: Q1 = 0, Median = 0, Q3 = 0, Maximum = 40. Outliers > 80: 0. Trucks 12.00 t to 18.00 t: Q1 = 0, Median = 0, Q3 = 1, Maximum = 50. Outliers > 80: 0 Trucks over 18 t: Q1 = 2, Median = 9, Q3 = 22. Outliers > 80: 107, 110, 123, 140, 141, 188, 200, 252, 400, 400, 439, 1015. Semi trucks: Q1 = 4, Median = 9, Q3 = 20. (n = 169). Outliers > 80: 107, 123, 140, 141, 190, 200, 252, 400, 439.

Only a small proportion already operates e-trucks

- 10 companies, around **5 % of the sample, are already operating their own electric trucks**.
- 7 companies already operate battery-electric trucks with a gross mass of more than 18 tonnes totalling 190 vehicles.
- Official numbers for the survey period in 2025 found that e-trucks accounted for 0.36 % of the total truck fleet of 12 tonnes and above (DENA 2025). The sample examined in this paper shows 6,206 vehicles in that range. Of these, 191 vehicles are battery-electric, which would result in a very high share of 3.07 %. However, one company reported having more than 140 battery-electric trucks over 18 tonnes. If this case is excluded, the share of e-trucks over 12 tonnes falls to just 0.82 %. If a further case with 26 vehicles is excluded, the e-truck share over 12 tonnes is around 0.4 %.

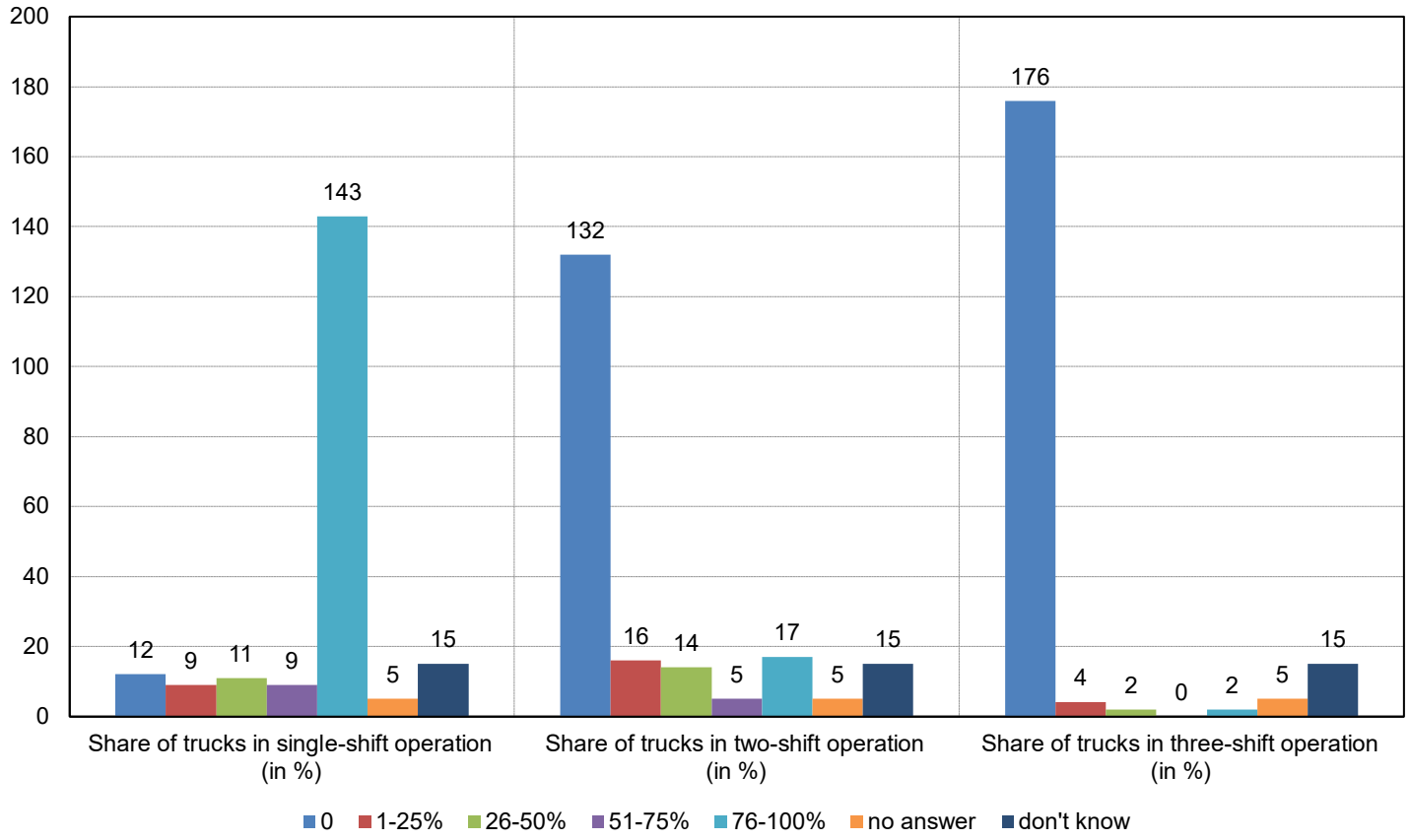


n = 204.

Single-shift is standard, multi-shift operation is exception

- Only a **few companies operate most** of their **trucks in multi-shift operation.**
- **At 70 % of companies, more than 75 % of all trucks run in single-shift operation**.
- By contrast, such a **high level of two-shift** operation is achieved by **only 8 %** (17 cases) **of companies** (n = 204).
- **Three-shift operation** remains the **exception** in the sample.

What percentage of your trucks are used in the following shift models? Please estimate an annual average.

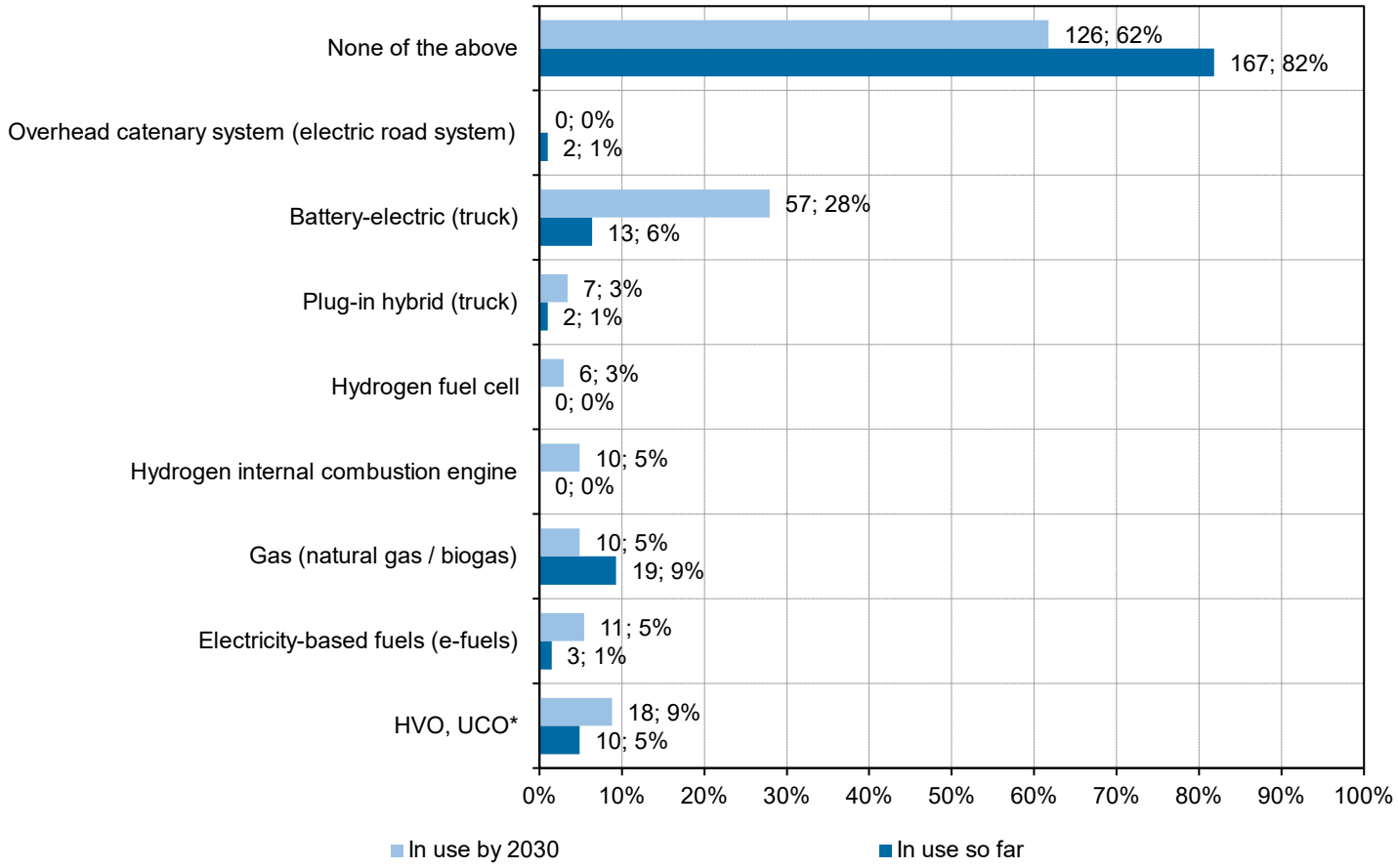


n = 204.

Little experience with alternatives, largest plans for e-trucks

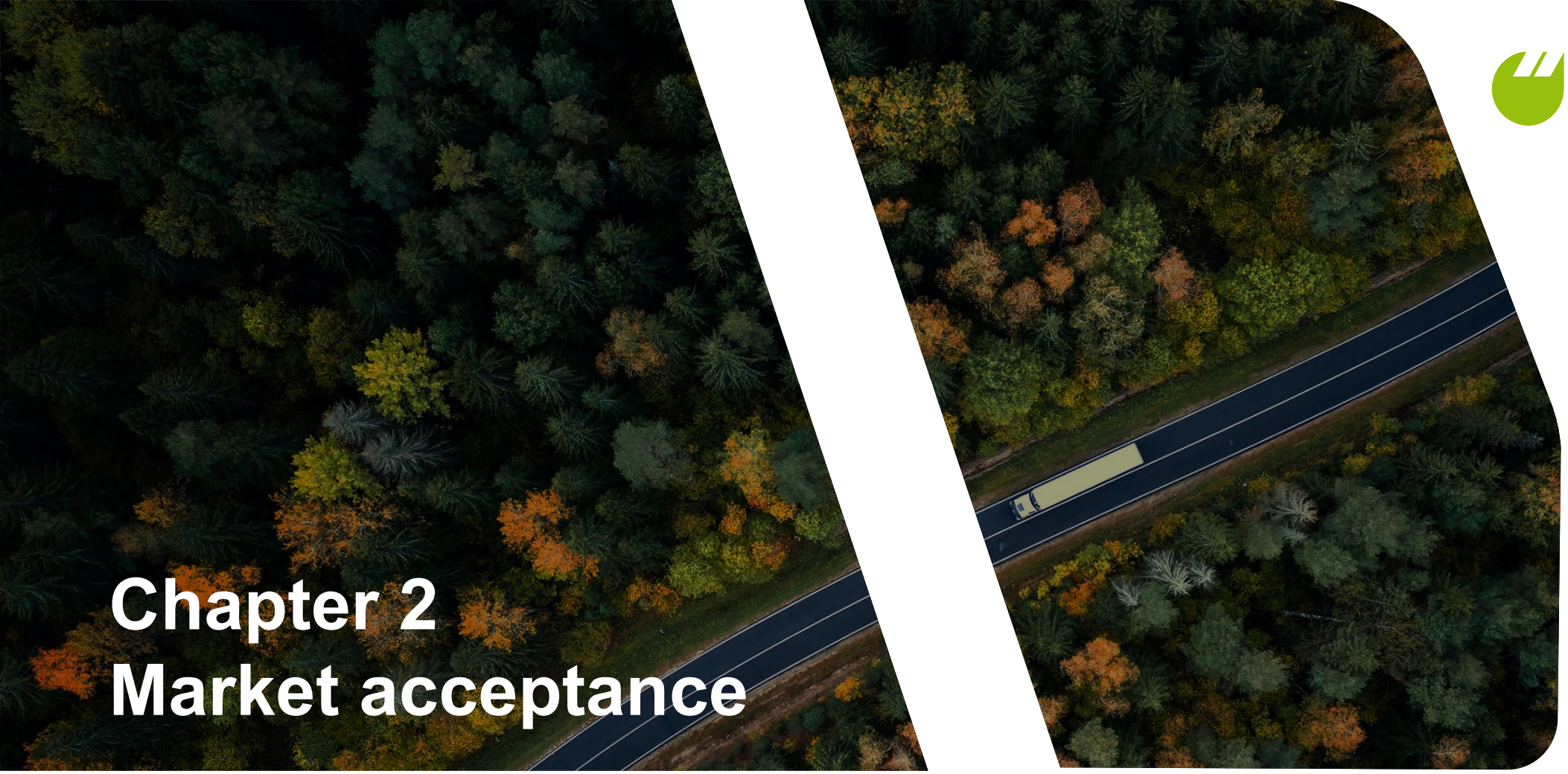
- In general, companies' **experience with alternative drive technologies and fuels** is **limited**.
- Beyond experience with battery-electric drives, companies have had experience with gas-powered vehicles, biofuels, electricity-based fuels (e-fuels; not commercially available), and overhead catenary e-trucks (not commercially available).
- Procurement plans show a clear favourite: **more than a quarter of companies (28 %) plan to deploy battery-electric trucks by 2030**. Biofuels are to be used in roughly one in ten companies by 2030. All other alternative powertrain and fuel technologies interest no more than 5 % of companies to the extent that concrete deployment by 2030 is planned.

Alternative powertrains used to date and in the future



n = 204.

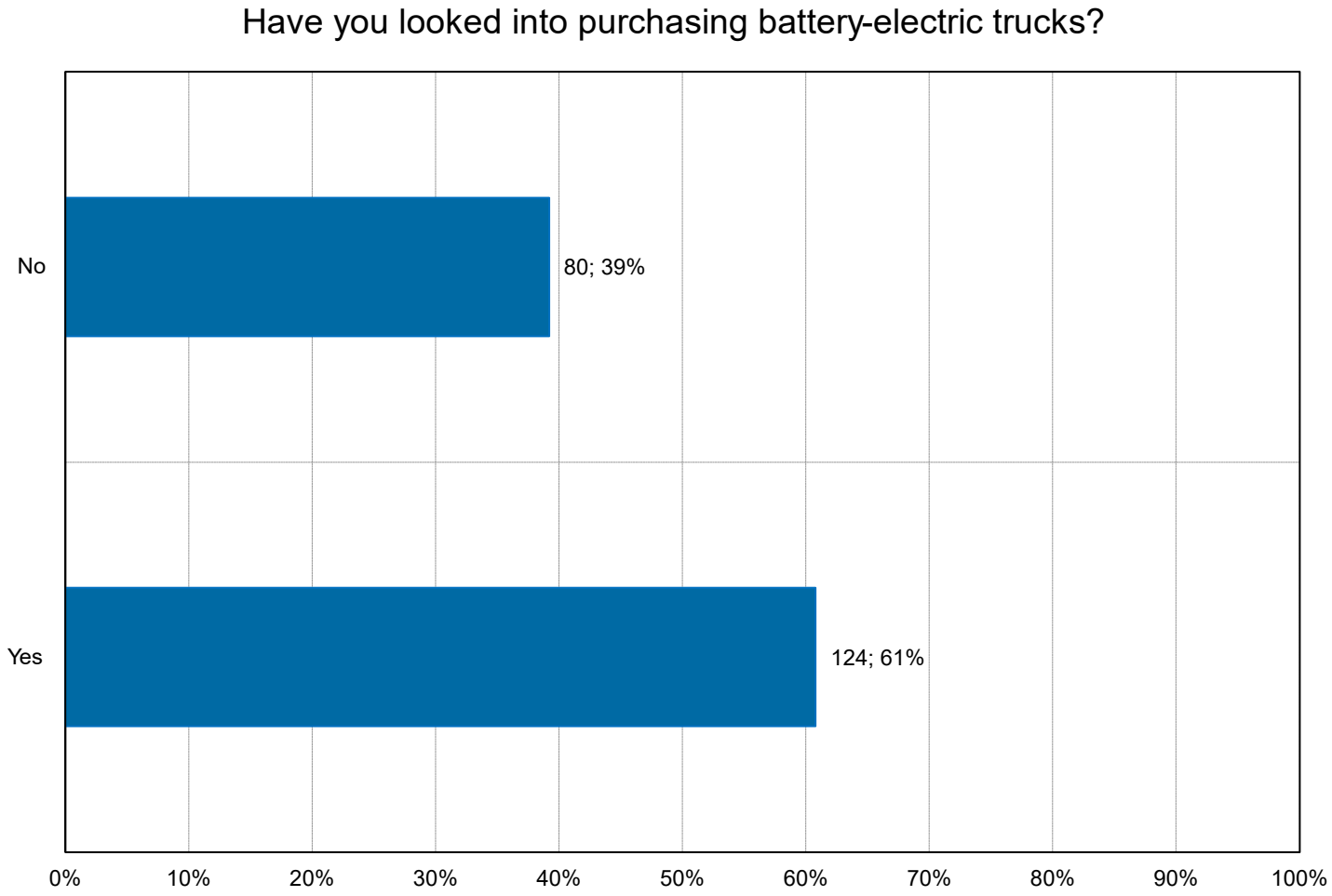
**HVO: Hydrotreated Vegetable Oil / UCO: Used Cooking Oil*



Chapter 2
Market acceptance

Majority have already investigated procurement of e-trucks

- Most companies in the German logistics sector have **looked into** procuring **battery-electric trucks** (61 %, n = 204).
- By contrast, 39 % of the company representatives surveyed state that they have not yet considered acquiring e-trucks.
- ➢ Only a few companies plan to procure e-trucks under 18 tonnes gross mass by 2030. Overall, **around 8 % of companies plan to acquire at least one e-truck under 18 tonnes by 2030**.
- ➢ By contrast, procurement plans are somewhat higher for **vehicles over 18 tonnes gross mass: here, 18 % of companies have concrete procurement plans** by 2030.

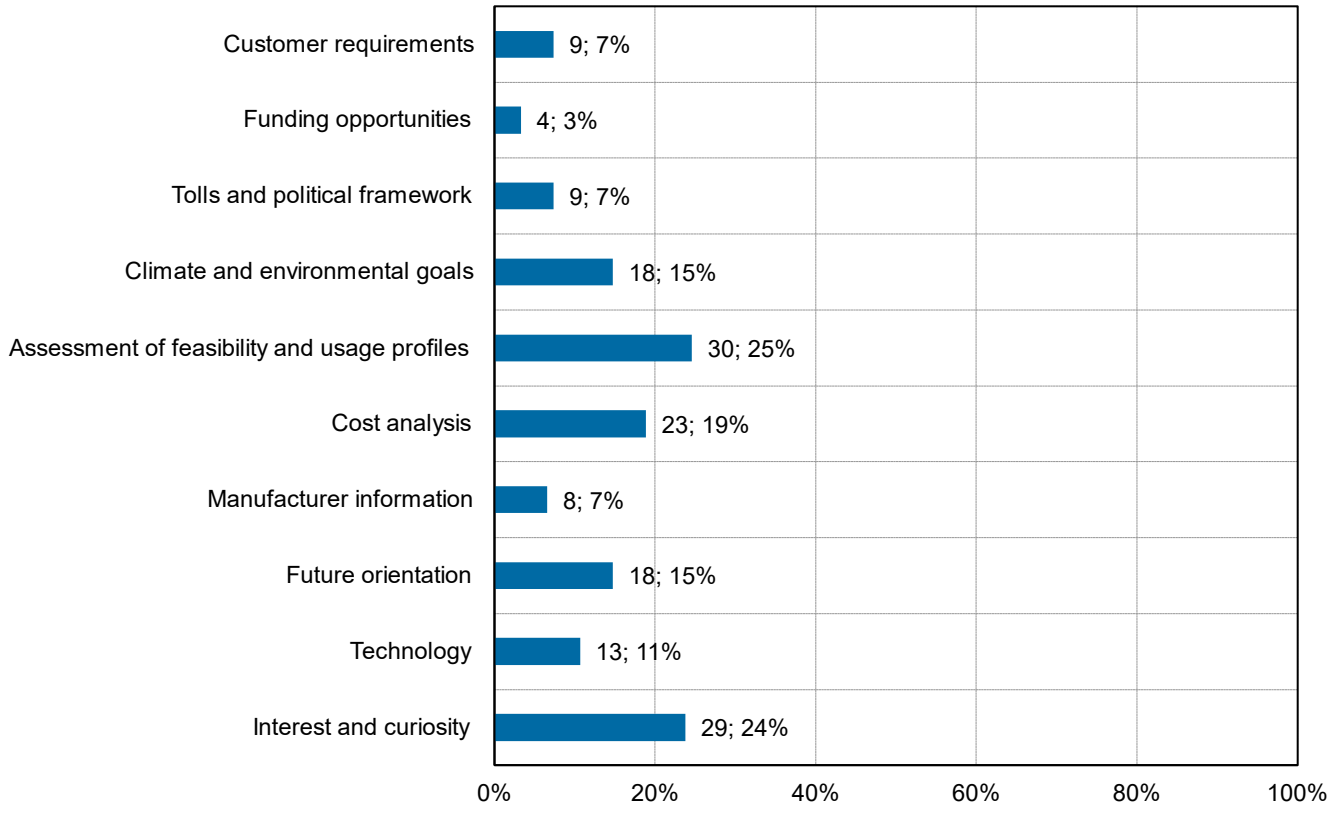


n = 204.

Motivation for looking into e-trucks still without a clear focus

- Alongside general interest in the topic and curiosity, feasibility and potential use cases lead companies to engage with e-trucks. Other drivers for engaging with the topic include cost considerations, future orientation, companies' climate and environmental targets, interest in the technology, customer requirements, the truck toll, political framework conditions, as well as manufacturer information and funding opportunities.
- **Many companies (39 %) have not yet engaged with e-trucks**. The most prominent motives are, from the respondents' perspective, insufficient vehicle range, lack of profitability, and insufficient availability of charging infrastructure. In addition, unsuitable profiles, workplace climate, doubts about the technology, and company size being too small for the financial investments.

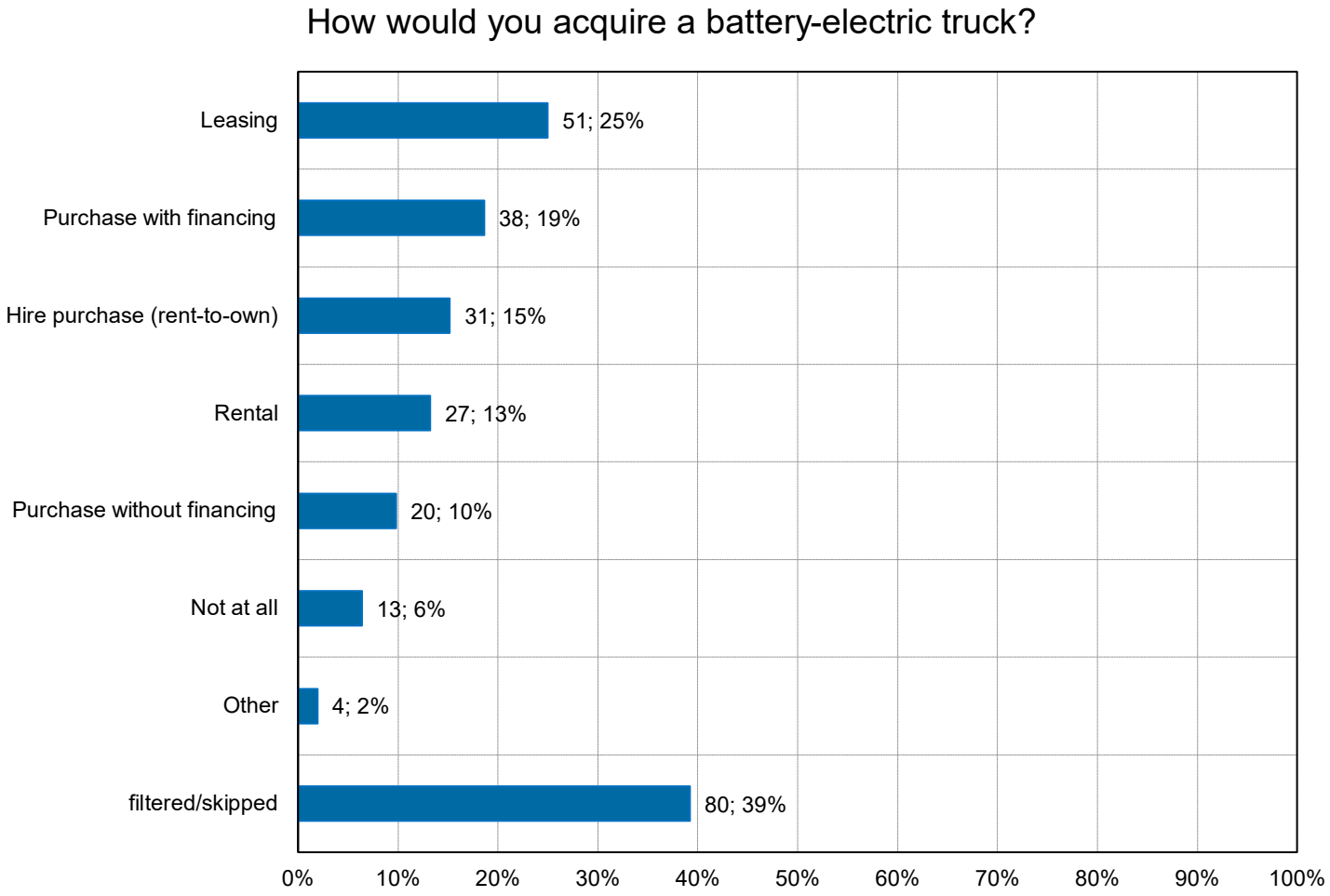
Why have you considered procuring electric trucks?



n = 122.

Alternative financing models beyond purchase of importance

- **Leasing** is particularly **popular** among companies for the future procurement of e-trucks. **A quarter of logistics companies would acquire e-trucks via leasing.** Around a fifth of companies can envisage purchasing an e-truck with financing. Hire purchase is interesting for 15 % of companies, and rental for 13 %. One in ten companies would purchase without financing. For 6 % of companies that have engaged with e-trucks, acquiring a vehicle is not an option at all (n = 204).
- Overall, companies therefore prefer financing models that provide financial flexibility and avoid high upfront investments. Buying e-trucks without financing is less attractive by comparison.



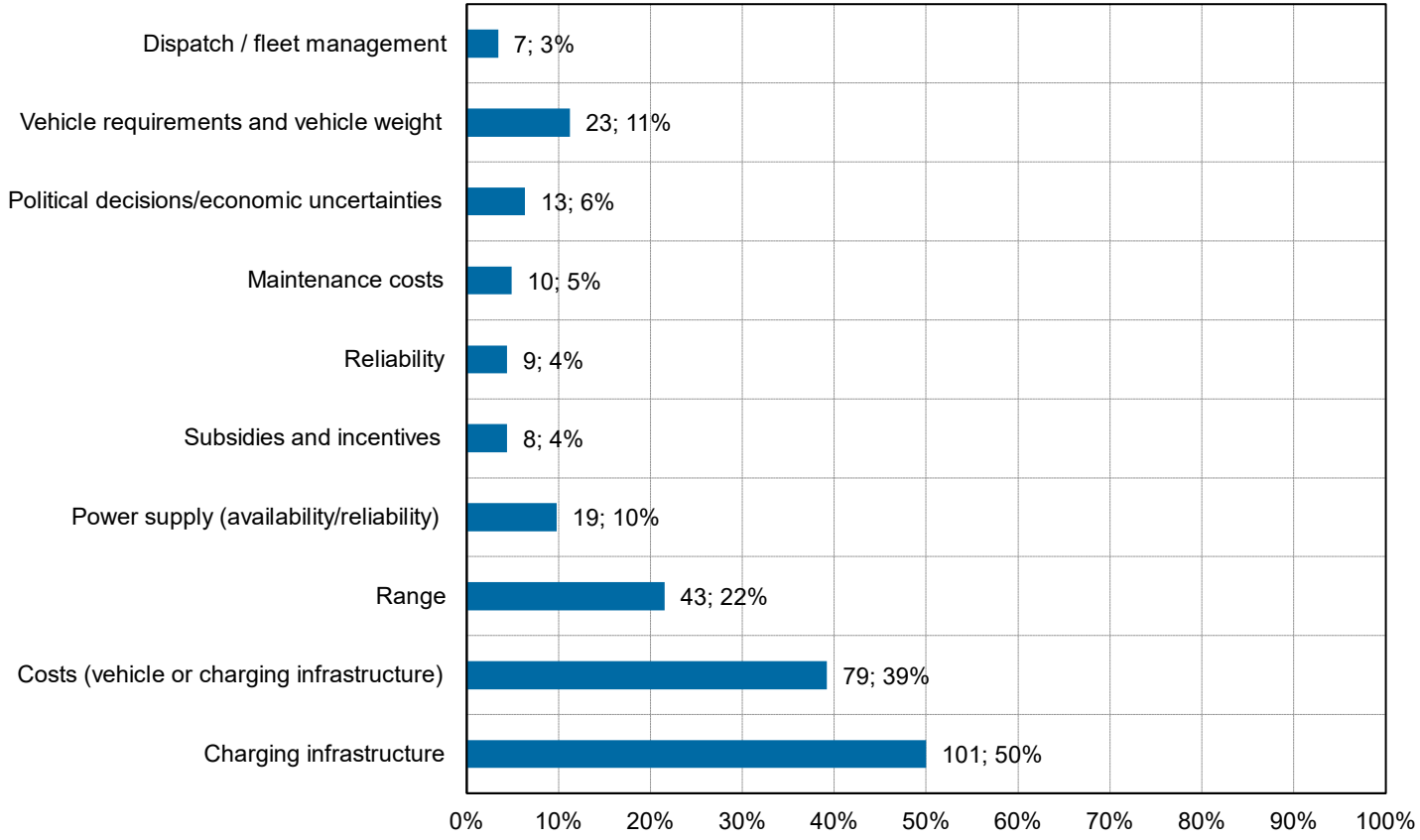
n = 204. 80 respondents did not receive the question, since they so far did not engage with e-trucks.

Obstacles to procuring battery-electric trucks

Charging infrastructure and costs as the main challenges

- Almost all **companies** (n = 197, 97 %) **provided information on obstacles to** the (further) **procurement** of battery-electric trucks. The analysis of these open responses shows that the availability and reliability of a nationwide charging infrastructure are of great importance to companies.
- **Every second company sees charging infrastructure as a key to procuring additional e-trucks**. The costs of the vehicles, as well as of installing their own charging infrastructure, are an important obstacle for roughly two in five companies. Around one in five companies views the limited range of the vehicles as a hurdle to procurement. About one in ten companies sees the power supply and their own vehicle requirement profile as central hurdles.

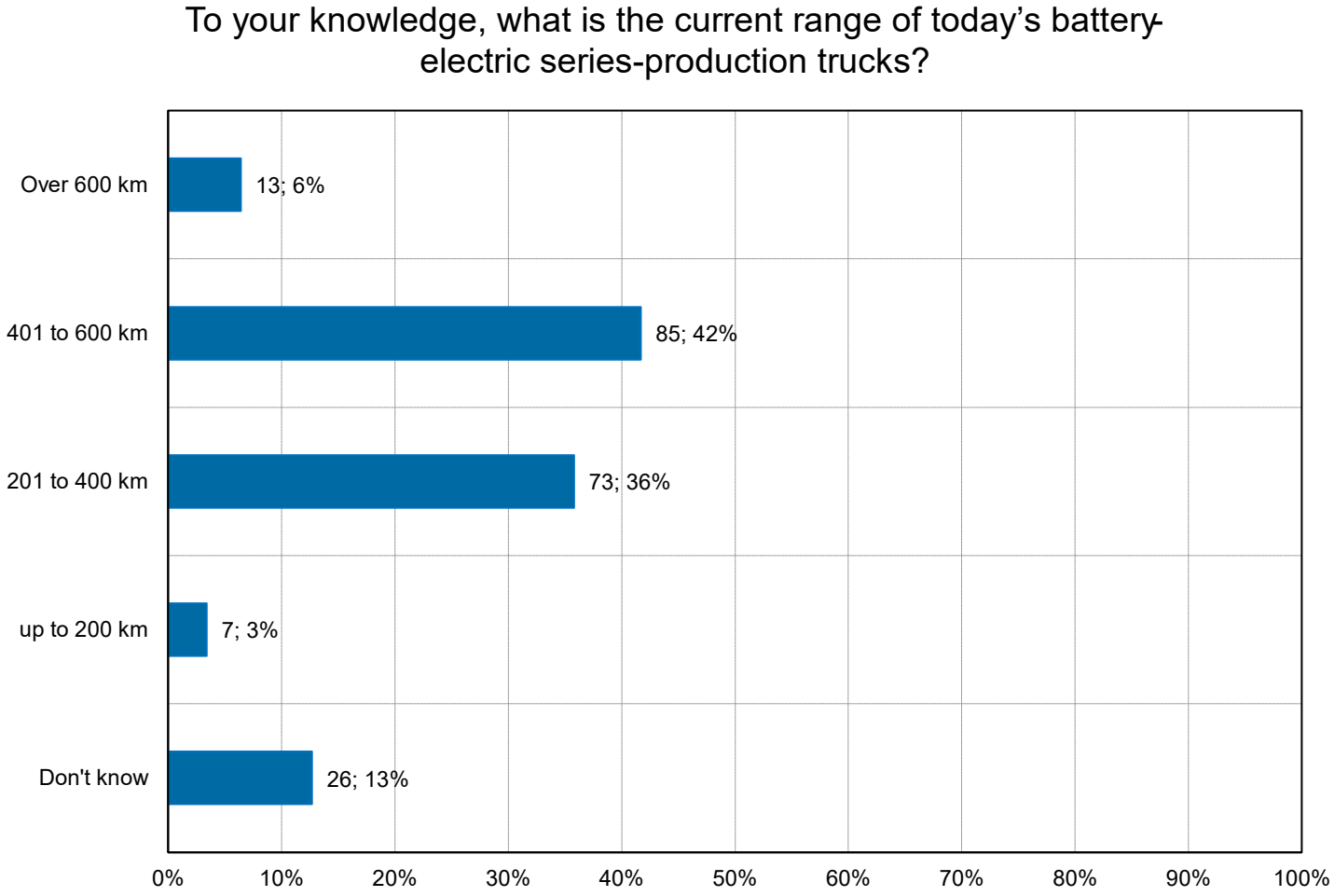
What challenges do you see for your company to purchase (additional) battery-electric trucks?



n = 197.

Good knowledge of the range of current e-trucks

- Although only around 60 % of companies have engaged with e-trucks to date, the **vast majority can provide a correct estimate of the range of current vehicle models.**
- Only 9 % of the company representatives surveyed gave incorrect information, and a further 13 % did not wish to answer the question (“don’t know”).
- Notably, almost all respondents who answered “don’t know” had also not previously engaged with e-trucks.

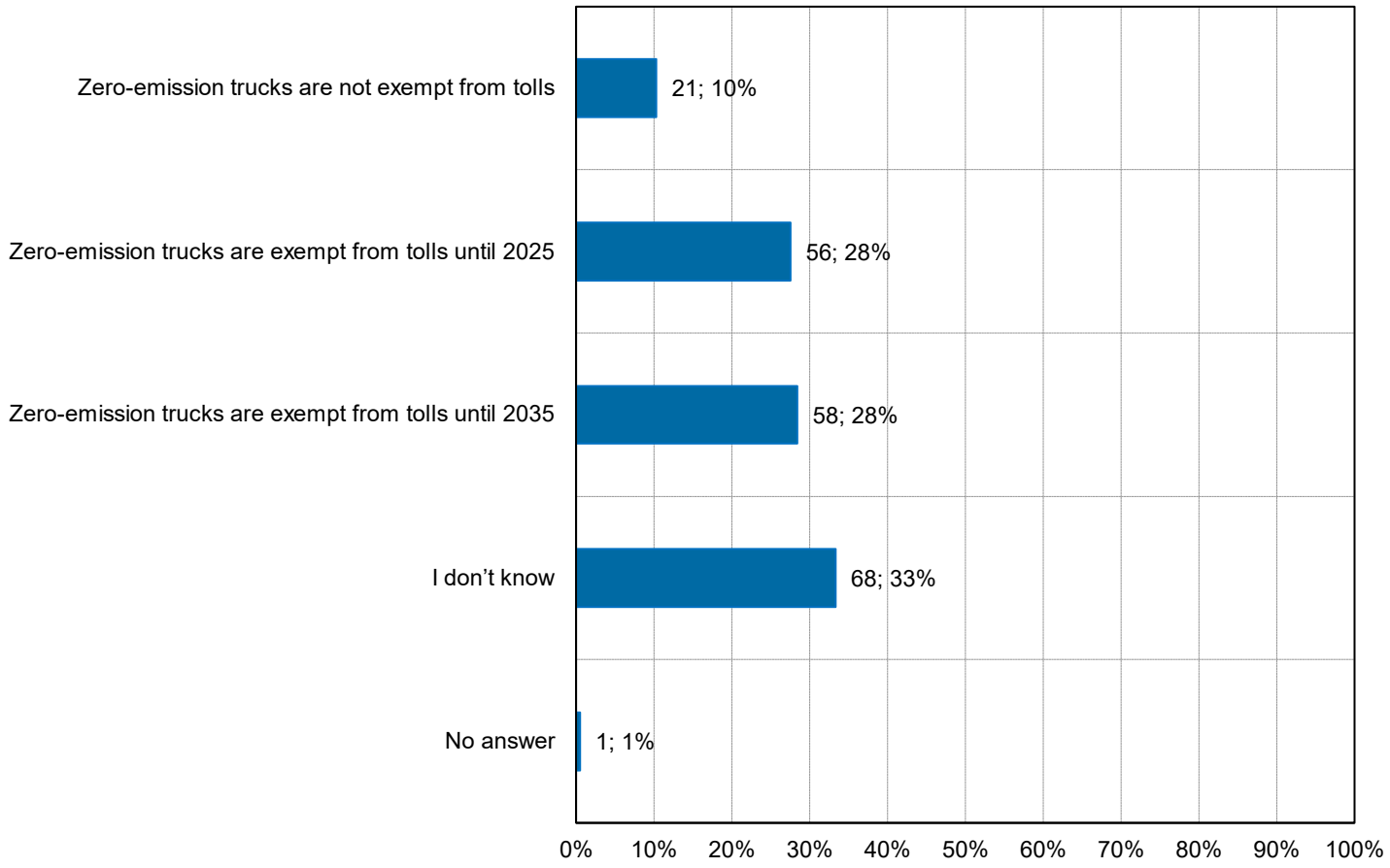


n = 204.

Major gaps in knowledge about toll exemption for e-trucks

- Surprisingly, logistics professionals show a **lack of knowledge about the German truck toll regulation**. At the time of the survey, zero-emission trucks were exempt from tolls until 31 December 2025.
- An extension of the toll exemption until mid-2031 was under political discussion. Of all logistics companies surveyed, one third were unable to state the current truck toll regulation for zero-emission trucks.
- **One in ten companies believed zero-emission trucks were not toll-exempt**. Only 28 % of respondents assessed the truck toll regulation correctly at the time of the survey.
- **Information deficits are particularly large among companies that have not yet engaged with e-trucks.**

Which toll regulation currently applies to zero -emission trucks?

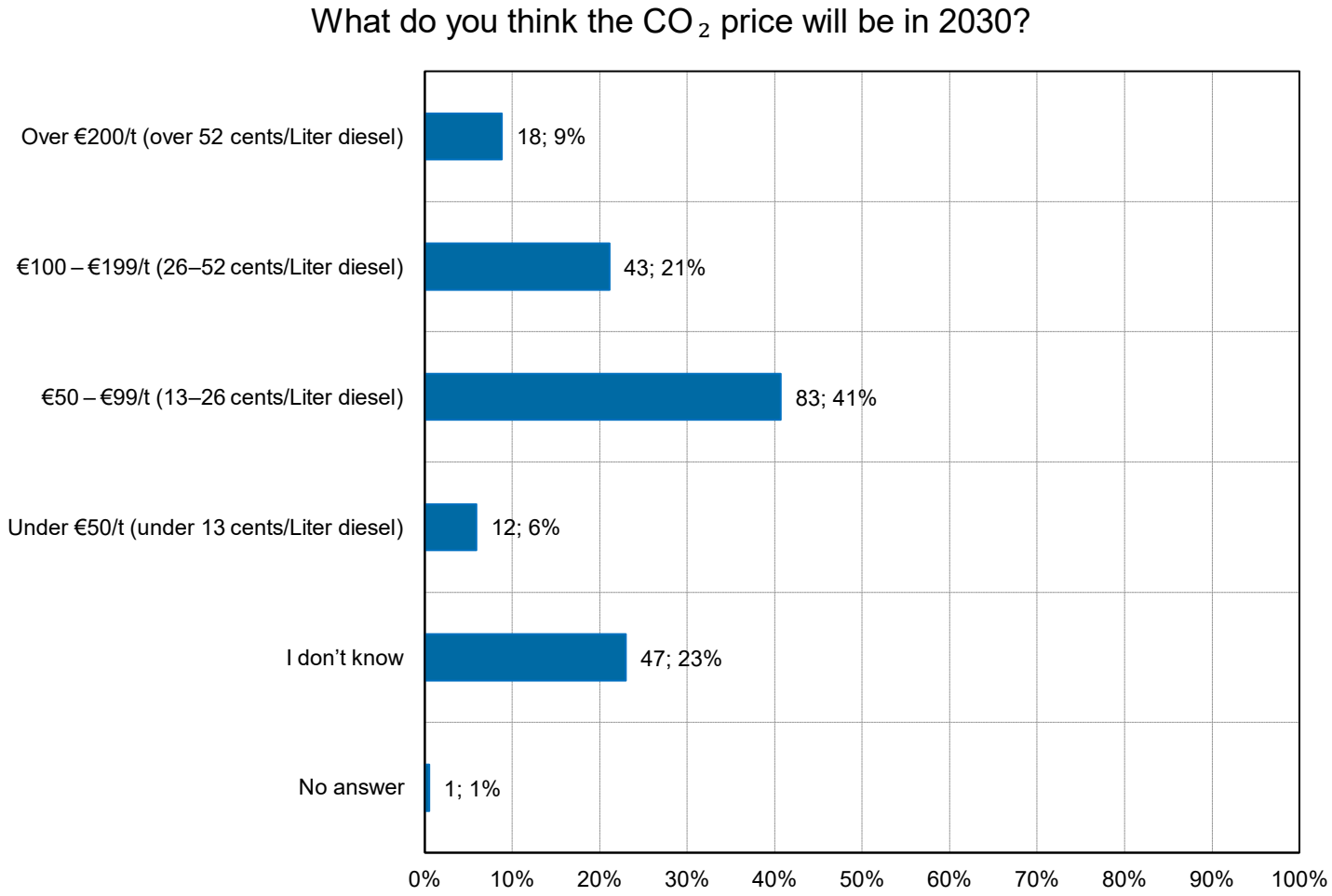


n = 204.

Knowledge of carbon price

Broad range of assumptions on the future CO_2 price

- Logistics companies **assess the development of the CO_2 price up to 2030 very differently.**
- More than half of the companies assume the CO_2 price in 2030 will be up to 99 euros per tonne CO_{2e}.
- At the time of the survey, research for 2030 expected CO_2 prices between 100 and 300 euros per tonne (Pahle et al., 2025).
- Overall, it is striking that **a third of respondents estimate the CO_2 price as likely too low (under 50 euros per tonne) or cannot provide an estimate (“don’t know”).**
- Conversely, 71 % of respondents expect an increase in the CO_2 price compared with today’s level.



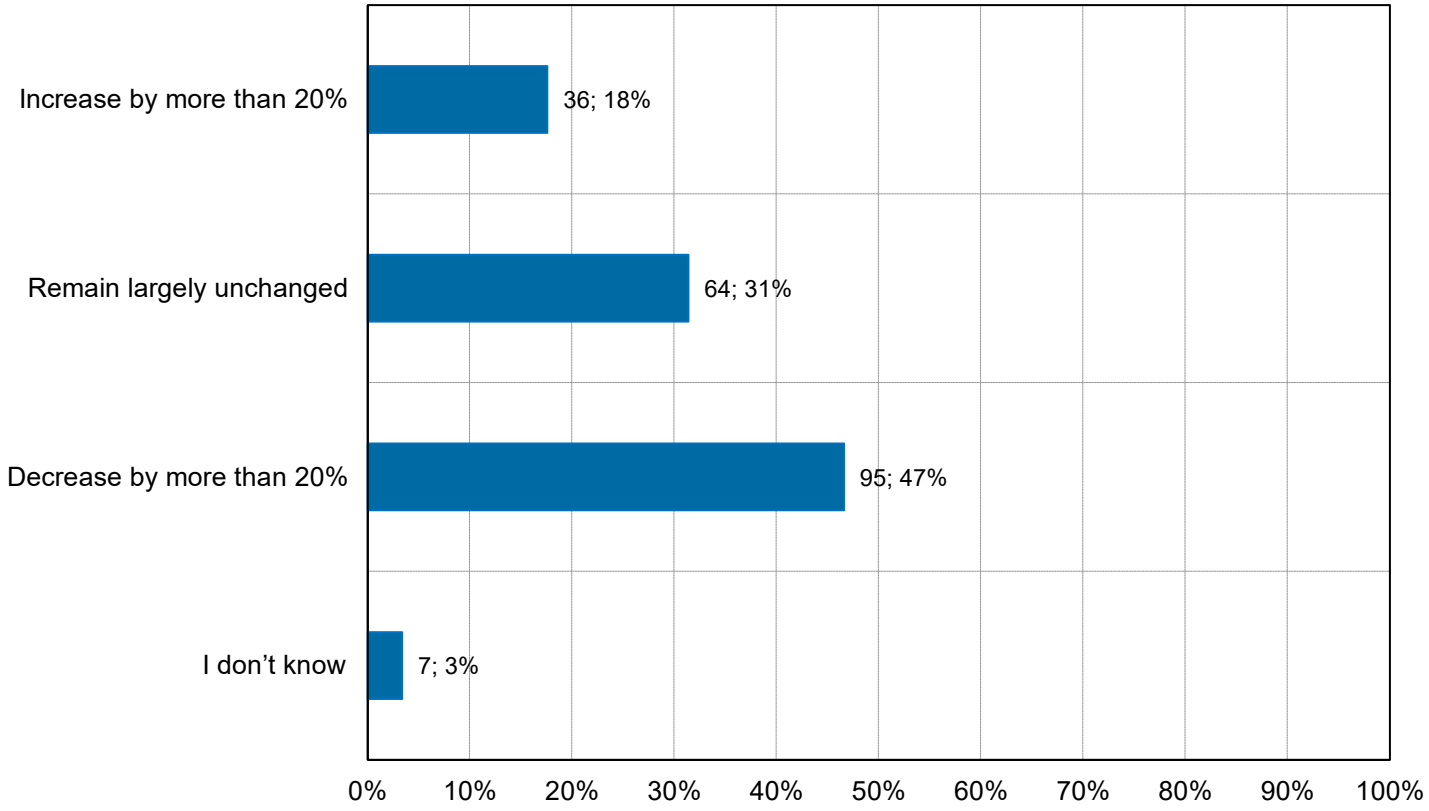
n = 204.

Expectation of vehicle price development

Majority do not expect prices for e-trucks to fall by 2030

- Purchase prices for e-trucks in 2025 are still significantly higher than for conventionally powered vehicles.
- **The majority of companies do not expect substantial price decreases by 2030.** Almost a fifth of companies even expect a substantial increase in the purchase costs for electric trucks by 2030.
- Research anticipates declining e-truck prices by 2030 (Tol et al., 2022). It is likely that e-truck prices will fall markedly compared with today due to economies of scale and technological advances (e.g., in batteries) by 2030.
- For the ramp-up of electromobility and its acceptance in road freight, it could be helpful to reach companies that are pessimistic about purchase price developments.

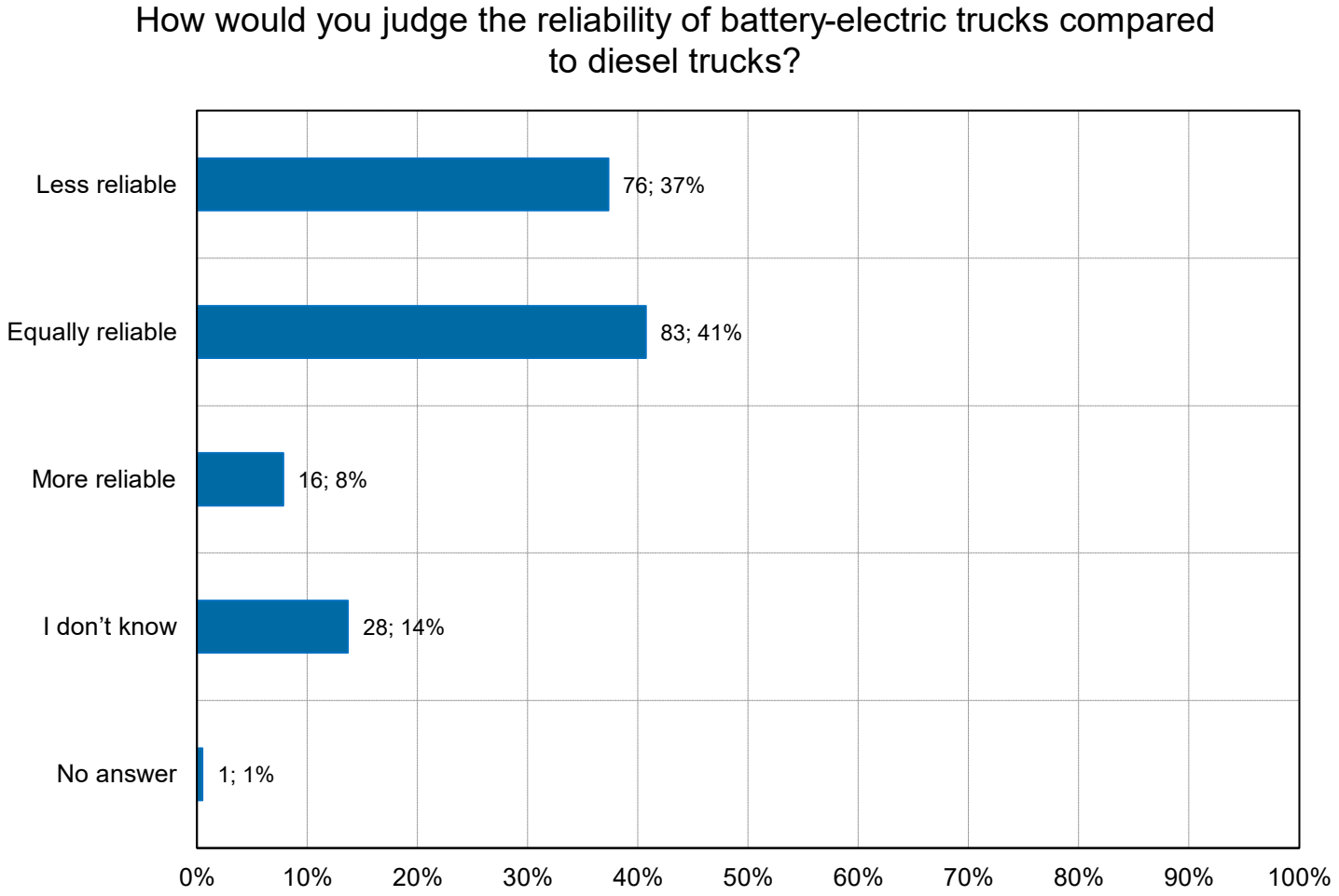
Regardless of your personal preferences or goals: What development in the purchase prices of battery-electric trucks do you consider most likely by 2030? These will…



n = 204.

Trust in reliability, reservations regarding driver acceptance

- Of the logistics companies surveyed, **41 % assume that e-trucks are just as reliable or even more reliable (8 %) than diesel trucks.** A little over a third believe that diesel trucks are less reliable than e-trucks. First real-world reports attesting to the high reliability of e-trucks in operation, therefore seem not yet to have reached all logistics companies (Hacker et al., 2025).
- It is also noteworthy that **59 % of respondents assume that battery-electric trucks are less popular with driving staff than diesel trucks.** Only 23 % think e-trucks are equally popular, and just one in ten companies think e-trucks are more popular (8 % answered “don’t know”, n = 204). In contrast, **early adopters** of battery-electric trucks in Germany (Hacker et al., 2025), **highlight very high driver satisfaction.**

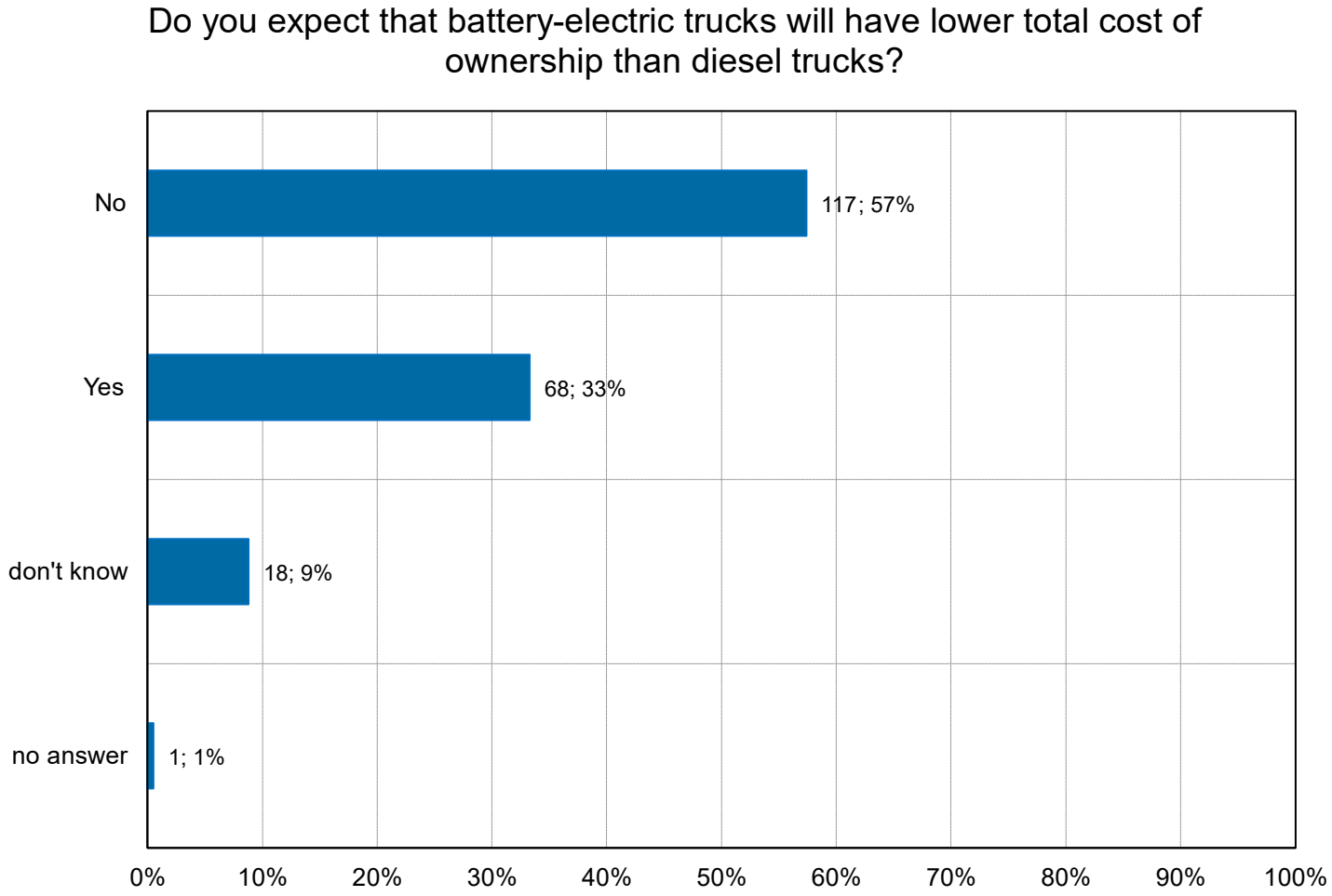


n = 204.

Knowledge of the total cost of ownership (TCO)

Little involvement with TCO, reservations regarding e-trucks

- **The majority of companies (61 %, n = 204) have not yet compared the total cost of ownership (TCO) of an e-truck with that of a diesel truck.**
- Research has shown that the TCO of e-trucks is likely to be lower than that of all other powertrains across many use cases by 2030 (ICCT, 2023). Nevertheless, only **one third of the companies** surveyed **assume that e-trucks are cheaper than diesel trucks when considering TCO**.
- No direct correlation could be identified between companies' general engagement with vehicle TCO and their associated cost assessments. It therefore appears that only 39 % of companies have engaged with the TCO of e-trucks to date, and even those that have, do not uniformly reach a conclusion favourable to e-trucks.



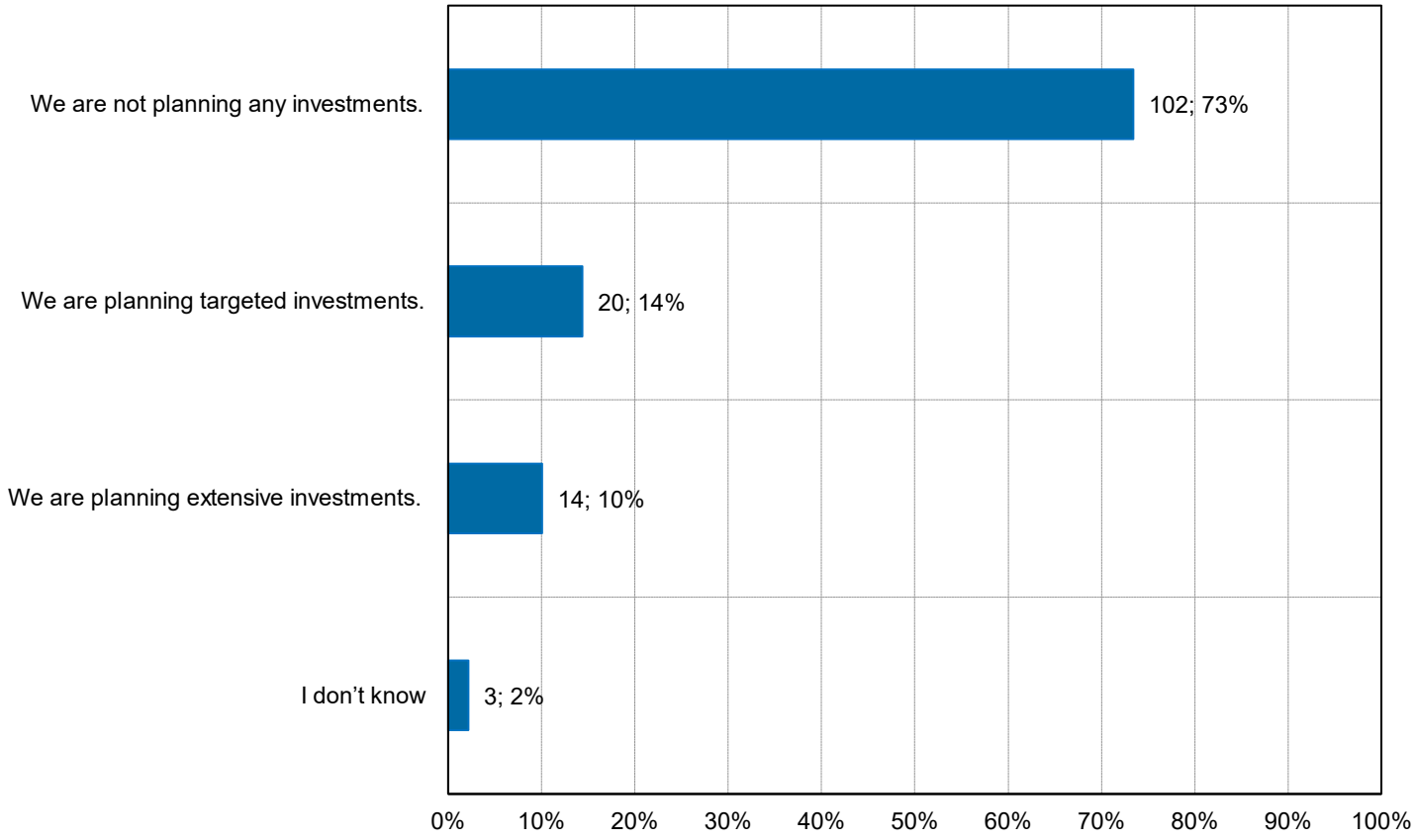
n = 204.

Chapter 3
Depots and charging

Majority have own depots, few plan charging infrastructure

- Around **two thirds (68 %) of the companies surveyed have at least one depot of their own.** For the vast majority of these 139 companies with their own depot, the largest depot site is company-owned (69 %). Almost all of the remaining companies rent their largest depot (27 %, n = 139).
- 83 % of companies with their own depot, have not yet invested in building their own truck charging infrastructure. Nevertheless, **11 % of companies** have **made selective investments, while 7 % have invested extensively in building their own truck charging infrastructure (n = 139).**
- The majority, **73 %, do not plan to invest in truck charging infrastructure at their largest depot site.** Around a quarter of companies, however, plan selective (14 %) or even extensive (10 %) investments in truck charging infrastructure. Overall, 45 % of companies have not invested in truck charging infrastructure to date and do not plan to do so in future (n = 139).

To what extent is your company willing to invest in developing its own truck charging infrastructure under the current framework conditions?

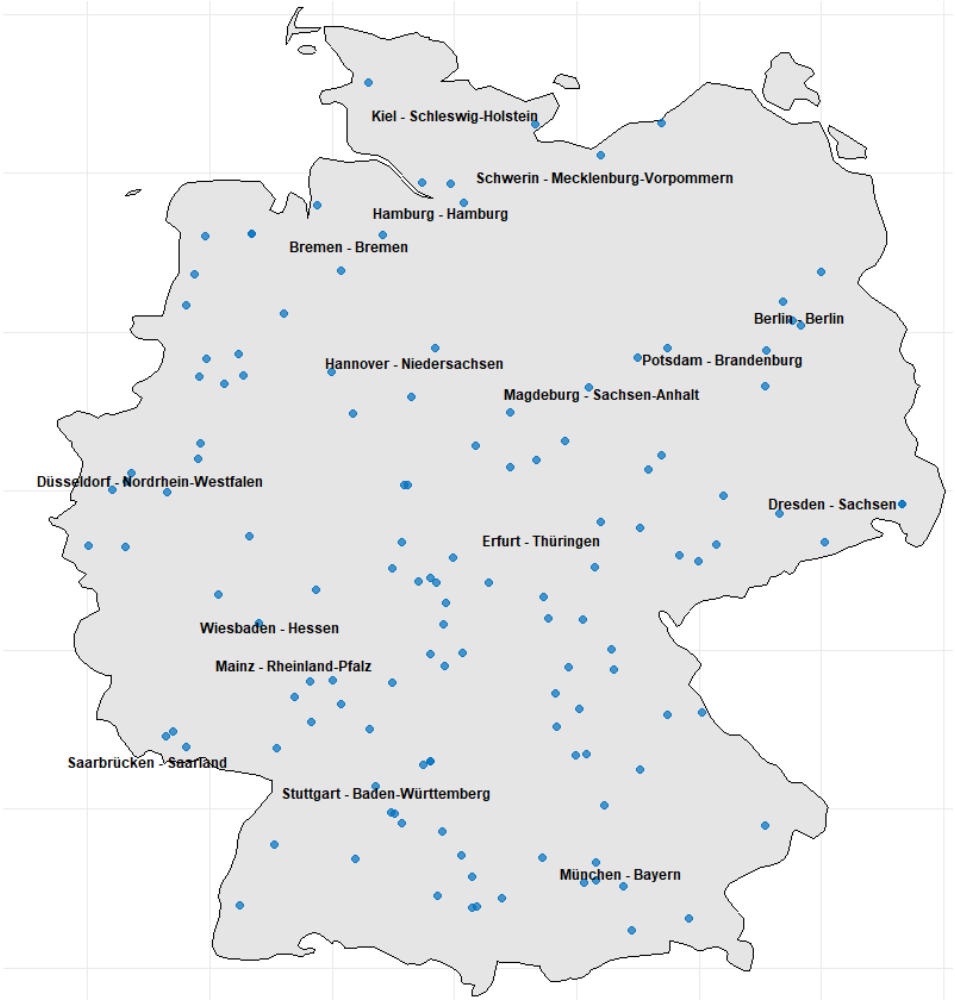


n = 139.

Depot distribution

Majority of companies with a depot have one or two

- In most companies with their own depot, the fleet is distributed across 1–2 depot sites (86 % of companies, n = 139).
- Companies with more than 2 depot sites mostly have a turnover of more than €1 million.
- Only 8 % of companies have 3–4 depot sites, 2 % have 5–6, and 2 % have 7 or more.
- **It can** therefore **be assumed that expanding truck charging infrastructure at depots will primarily involve 1–2 depot sites.** The companies' largest depots are spread across Germany.

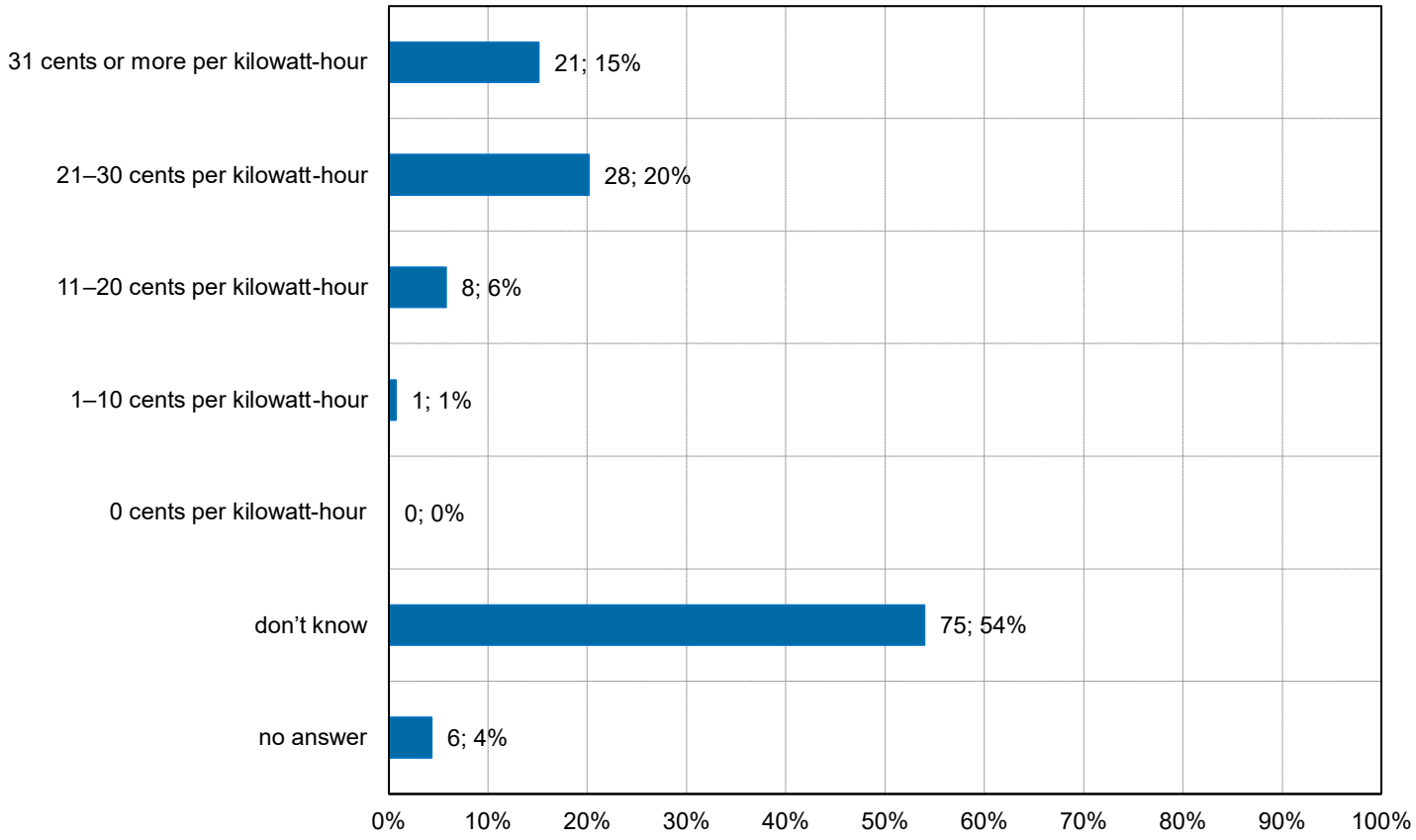


n = 139.

Little knowledge of own grid connection and electricity price

- **The majority of surveyed companies with their own depot do not know the grid connection capacity of their depot sites** (67 %, n = 139). A good third know the grid connection capacity partially (7 %) or fully (25 %, n = 139).
- Most companies with their own depot cannot state their electricity prices. Among the companies that can state the electricity price at their largest depot site, the average price is 29.5 cents per kilowatt-hour (median = 24). Against the backdrop of this information gap on electricity prices, it can be assumed that an adequate cost assessment of e-trucks is possible in fewer than half of the companies with their own depot.

What are the electricity prices your company currently pays per kilowatt-hour at its largest depot location?

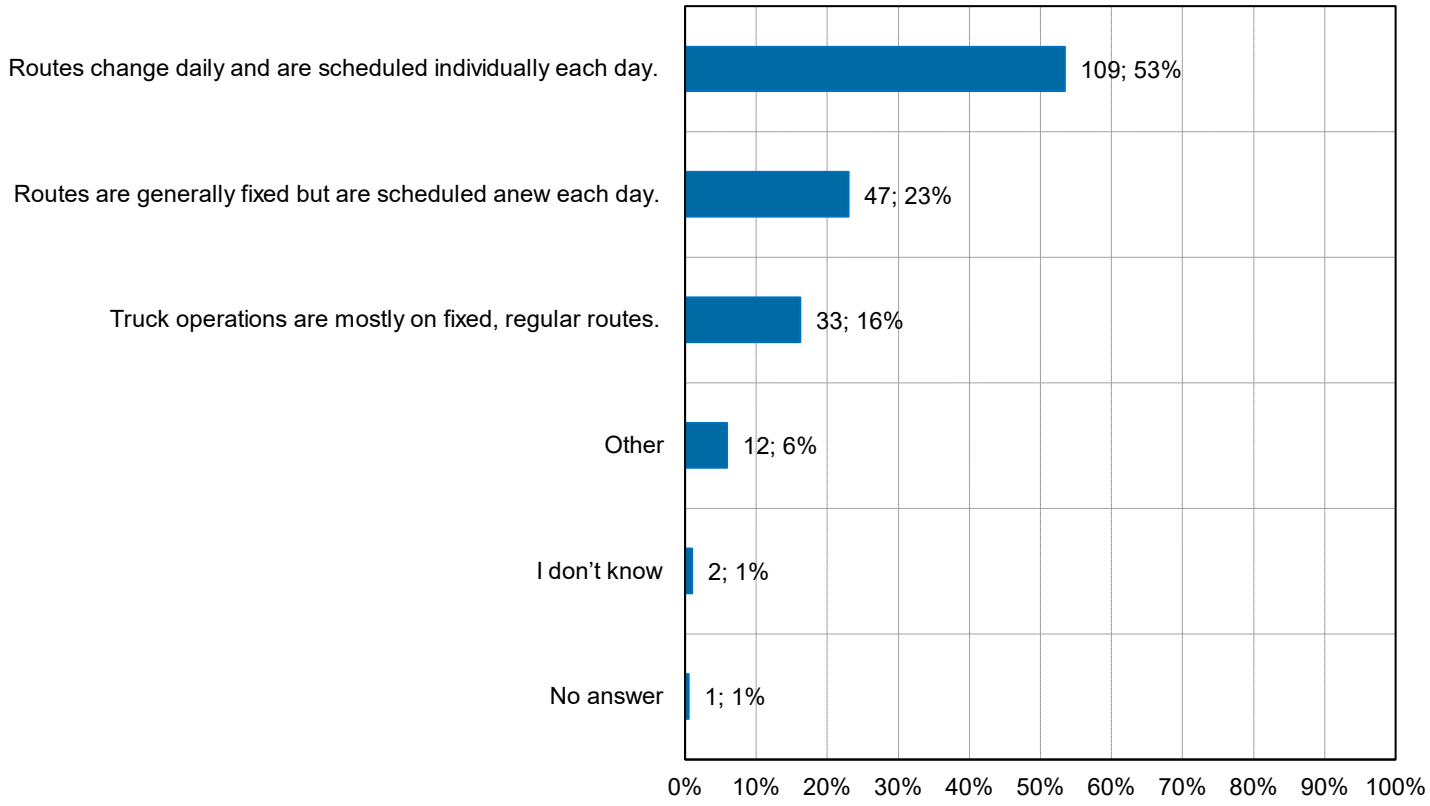


n = 139.

Many vehicles in the depot at night, variable use in daytime

- Across cases, **an average of 42 % of trucks are at their depot overnight**; in each of roughly a third of companies, either none or almost all trucks are there (n = 204). About 6 % of trucks are at a third-party depot overnight. About 18 % of trucks are publicly parked overnight, although at 59 % of companies this does not apply to any trucks. On average, 29 % of trucks are on the road overnight; this is not the case for 45 % of companies, while for 17 % it applies to almost all trucks. On average, 5 % of trucks are at other locations overnight.
- In around half of the companies routes change daily and are newly scheduled each day. In 23 % of companies, by contrast, routes are fundamentally fixed but are rescheduled daily. In 16 % of companies, deployment is primarily on fixed, regular routes.

How well can you plan the use of your trucks in advance?
I will give you some options – please tell me which best applies to your operations.

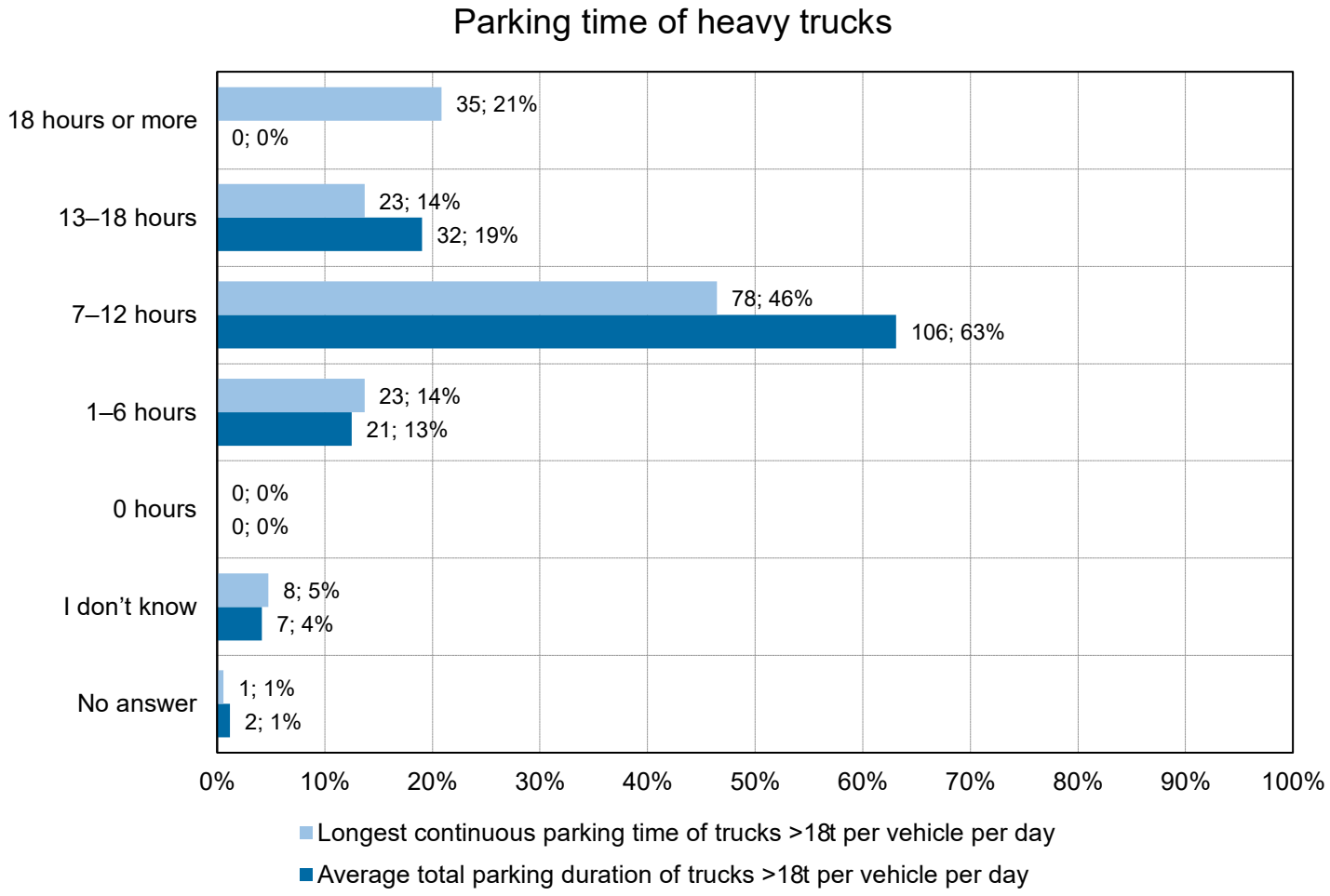


n = 204.

Parking duration of heavy trucks

Only a small proportion of trucks with very low downtimes

- At 169 companies, trucks with a gross mass over 18 tonnes were present, and 168 of these companies were willing to provide information on the parking duration of these vehicles.
- **The average total parking time and the longest continuous parking period can provide insights into user requirements and the charging infrastructure needed for e-trucks.**
- Fewer than 15 % of trucks have such short parking times that fundamental challenges for electric operation could arise.



n = 168.

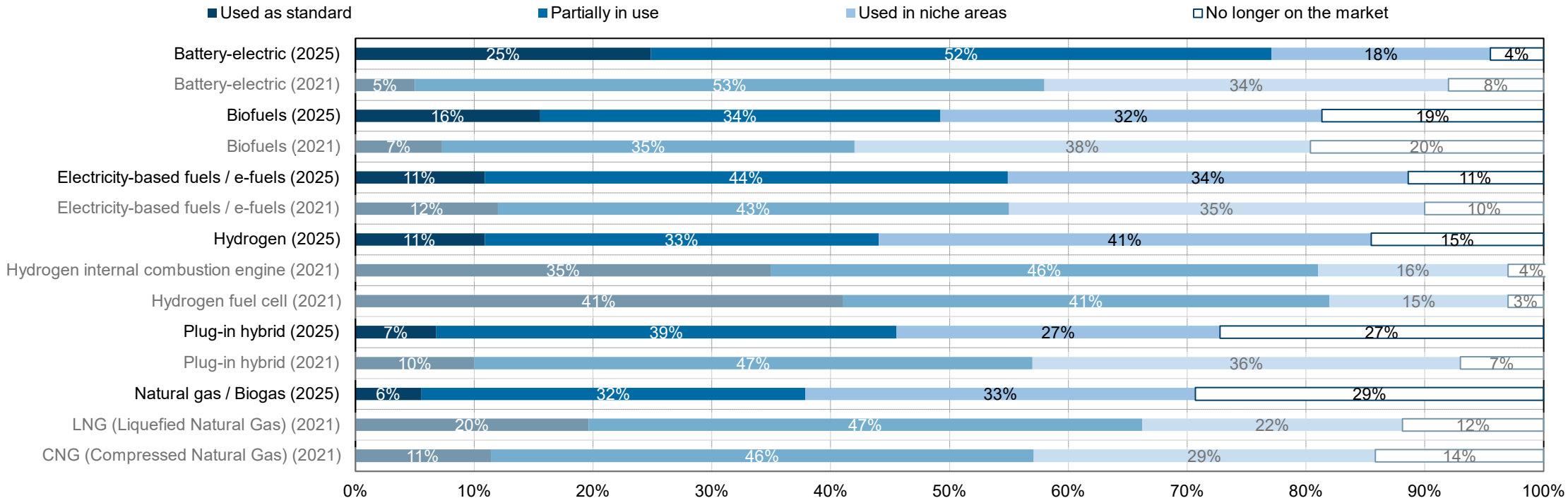
Chapter 4
Future and policies

Changing technology preferences (1/2)
Battery electric trucks with largest market potential by 2030

- In a major survey of the logistics sector in 2021, companies were able to give their outlook on alternative fuels and powertrains (Göckeler et al., 2022). Since then, the sectors answer to the question “What importance will the following alternative fuels/powertrains have for road freight transport in Germany in 2030?” has changed.
- First and foremost, **battery-electric trucks have gained in importance.** In 2021, only 5 % of respondents believed the technology would be standard in use by 2030; by 2025, this had risen to 25 %. A further 52 % see battery-electric trucks at least partially in use (53 % in 2021). Biofuels have also seen a slight increase in perceived importance: in 2021, 42 % of the sector expected them to be standard or partially in use in future; in 2025, this rose to 50 %. The assessment of the future relevance of electricity-based fuels has changed little between the two surveys: 55 % of companies see them as standard or partially in use by 2030. By contrast**, hydrogen in road freight has lost importance over the past four years**. In 2021, around 80 % of logistics companies still thought hydrogen-powered trucks would be standard or partially in use by 2030; in 2025, only 44 % held this view. The perceived importance of plug-in hybrid powertrains and gas has also declined.
- Overall, it is clear that **logistics companies see the future of alternative fuels and powertrains in battery-electric drives.** Around 95 % of logistics companies see battery-electric powertrains in use in 2030. No other alternative powertrain or fuel enjoys a comparable level of future expectation.

Changing technology preferences (2/2)
E-trucks gain importance, hydrogen loses most significantly

In your opinion, what importance will the following alternative fuels/powertrains have for freight transport in Germany in 2030?

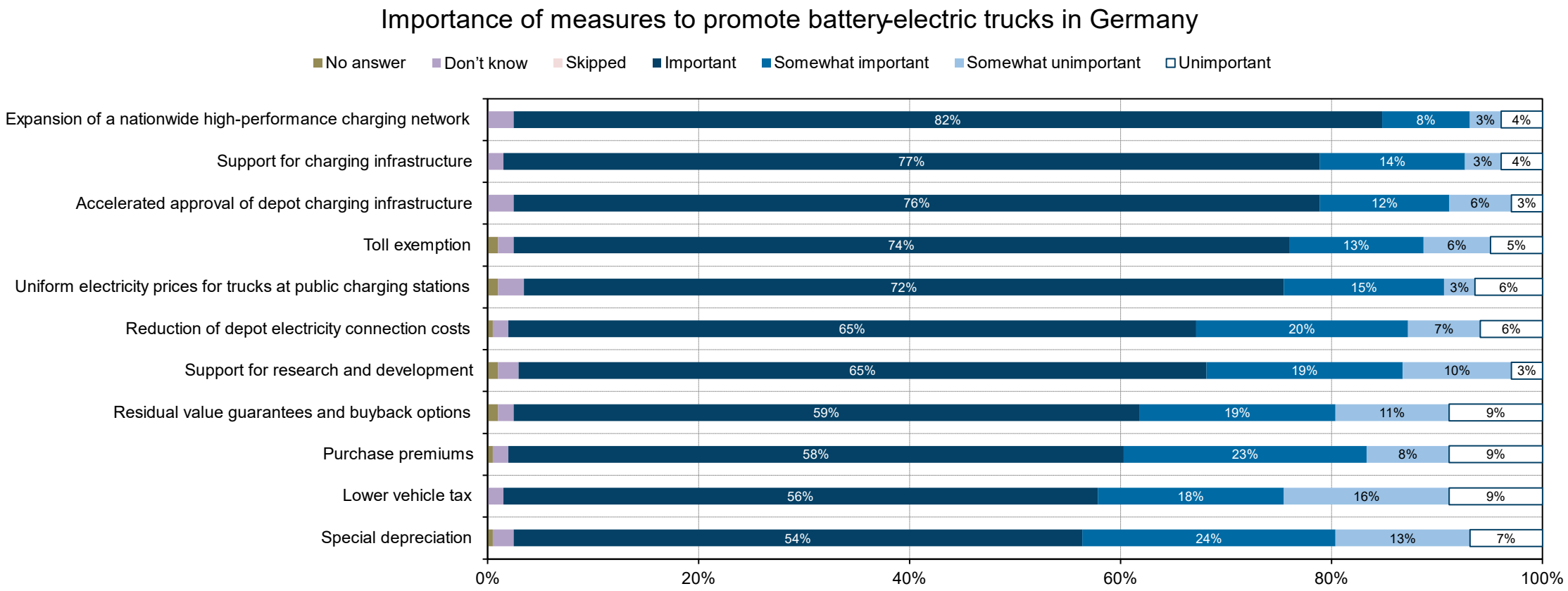


Source: Figures for 2021 from the study: K. Göckeler, J. Heinzelmann, F. Hacker, L. Lesemann, L. Ziegler, T. Bernecker (2022): Anforderungen der Logistikbranche an einen Umstieg auf klimaschonende Fahrzeugtechnologien. Ergebnisbericht einer standardisierten Befragung. Zweiter Teilbericht des Forschungs- und Dialogvorhabens StratES. Berlin, Heilbronn: Öko-Institut, Hochschule Heilbronn. The case number for 2021 is consistently n = 216. Figures for 2025 from the present study. The case numbers for 2025 vary between n = 191 and n = 201. The response categories were harmonised across both surveys. Deviations from 100 % are due to rounding.

Policies (1/2)
Promotional measures of great importance for success

- All the logistics companies surveyed were able to provide their assessment of the importance of policy measures in road freight transport. From the companies' perspective, the **most important measure is the expansion of a nationwide high-power charging network for trucks, closely followed by the promotion of charging infrastructure**. Accelerated permitting procedures for building depot charging infrastructure are also seen as essential for promoting battery-electric trucks in Germany. Each of these three points is considered important or rather important by 90 % of respondents.
- **From the companies' point of view, the fourth most important measure for promoting battery-electric trucks in Germany is toll exemption**; 87 % of companies consider this important or rather important. All other measures put to the vote are also important for the majority of companies. In descending order of importance, these are uniform electricity prices for trucks at public charging stations, reducing the costs of depot grid connections, and funding for research and development. Residual value guarantees and buy-back options, purchase subsidies, lower vehicle taxes, and special depreciation are seen as important by fewer companies – but still by more than half of respondents – and as rather important by a further roughly 20 %.

Policies (2/2)
Most important: Charging infrastructure and toll exemption



n = 204.

Chapter 5
Conclusion

Chapter 1: Logistics companies

- In its current form, road freight transport contributes significantly to the transport sector's emissions. Decarbonisation of road freight is essential for a climate-compatible transport sector. It is currently being driven by regulatory frameworks and financial incentives and supported by technological progress in key components. For the logistics sector, switching to vehicles powered by post-fossil energy sources is a profound change. Due to the long dominance of diesel technology and the still nascent market development for e-trucks, there has so far been only limited robust evidence on the specific impacts of the powertrain transition on operational practice. Based on a large-scale standardised survey of decision-makers in logistics companies in Germany, this study has been able to provide insights into this practical perspective.
- **The majority of companies surveyed serve local, regional and long-distance transport. At the majority of companies, most of the truck fleet operates in single-shift mode. Profiles likely to be difficult to electrify – where more than 50 % of vehicles operate in two- or three-shift mode – affect only 12 % of companies.** In general, companies' experience with alternative powertrain technologies and fuels is limited. **Procurement plans, however, show a clear favourite: more than a quarter of companies plan to deploy battery-electric trucks by 2030. Biofuels are to be used in roughly one in ten companies by 2030. Other alternative powertrain and fuel technologies interest no more than 5 % of companies each.**

Chapter 2: Market acceptance

- The companies' responses allow a clear assessment of market acceptance of e-trucks. **A majority of logistics companies (61 %) are looking into the potential procurement of battery-electric trucks. However, only 28 % plan to deploy e-trucks by 2030**. 18 % have procurement plans for vehicles with a gross mass over 18 tonnes. Overall, companies prefer financing models that provide financial flexibility. A quarter of logistics companies would acquire the vehicles via leasing. Around a fifth can envisage purchasing an e-truck with financing. Hire purchase and rental are also of interest.
- Questions on the technological prerequisites for e-trucks and the policy framework for climate-friendly road freight reveal **substantial knowledge gaps in the logistics sector**. On average, these gaps are larger among companies that have not yet engaged with e-trucks. Most companies can give a broadly correct estimate of e-truck range. By contrast, fewer than a third correctly identified the toll exemption for zero-emission trucks in Germany. Around a third estimate the CO_2 price in 2030 to be far too low. More than half (61 %) of the logistics companies surveyed have also not yet compared the total cost of ownership (TCO) of an e-truck with that of a diesel truck. The sector is characterised by low margins and high cost pressure. Against this backdrop, a lack of background knowledge on vehicle TCO is a challenge, especially amid an ongoing technological transition.

Chapter 3: Depots and charging

- **Most companies with their own depot have not yet invested in building truck charging infrastructure** and do not plan to do so in future.
- By contrast, around a quarter of companies are planning selective or extensive investments in charging infrastructure. Most companies have one to two depot sites.
- Overall, two thirds of companies do not know the grid connection capacity of their depot sites. Slightly more than half also do not know the electricity prices at the depot. Only a small share of companies have parking times so short that they could pose a major challenge for electrification. Around one third of companies do not have their own depot and are therefore particularly dependent, going forward, on charging infrastructure provided by third parties.

Chapter 4: Future and policies

- The companies' perspective on the future relevance of alternative powertrains and policy frameworks shows that e-trucks are, from the sector's viewpoint, emerging from their niche. Compared with survey data from 2021, **battery-electric trucks have gained significantly in importance**. The majority of companies – 77 % – expect e-trucks to be standard or partially in use by 2030. Relative to 2021 data, the **importance of hydrogen for road freight has clearly declined.**
- Overall, the sector advocates a variety of policy measures to electrify road freight. Foremost among these are expanding charging infrastructure and accelerating associated permitting procedures. Other measures, such as toll exemption, also enjoy strong support.
- The logistics sector's outlook is divided: around one third of companies see the future positively, around one third view it neutrally, and around one third see it negatively. Companies balance the numerous challenges of electrifying road freight with corresponding opportunities.

Outlook

1. There are still considerable **knowledge gaps** at logistics companies regarding key technical, regulatory and economic planning parameters for e-trucks. The goal should be to close these swiftly through appropriate measures, enabling informed, future-oriented decisions.
2. The survey provides initial indications on **depot availability**, electricity prices and other relevant planning parameters for fleet electrification. This knowledge should be expanded in future to determine the challenges and potential of fleet electrification on a data-driven basis.
3. In many assessments, there are clear **differences** compared **with early-adopter companies** with e-truck experience (Göckeler et al., 2025; Hacker et al., 2025). This shows how important it is for companies to come into contact with the technology at an early stage, to reduce reservations and to understand the relevance of key factors (e.g. grid connection).
4. Practical trials show that implementation of electrification cannot be accelerated at will (see, for example, grid-connection upgrades). It is therefore important to **create early awareness within companies of implementation timelines**. For implementation to succeed, new approaches are also needed that can only be realised cooperatively – for example, charging solutions for companies without depots and financing models for small companies.

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