

Logistics in China: An All-inclusive Market?

A study on the logistics activities of companies in the automotive, retail and consumer goods, chemicals, mechanical engineering, and construction and plant engineering industries



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The results of this survey and the contributions from our experts are meant to serve as a general reference for our clients. For advice on individual cases, please refer to the sources cited in this study or consult one of the PwC contacts listed at the end of the publication. The opinions expressed herein are those of the authors.

Preface

China is no longer the underdeveloped manufacturing country it once was. The China of today is more exciting than ever and is focused on building up its logistics industry. In August 2011, the Chinese State Council issued new directives aimed at the sustainable development of the country's logistics sector. In addition to calling for increased investment and the redistribution of logistics resources, the Council ensured that logistics companies will enjoy greater tax relief.¹ In order to grow with this market, it is crucial to identify and tap into the growing potential of the national economy. The study "Logistics in China: An All-inclusive Market?" looks at the characteristics of China in this regard.

The survey is based on interviews with customers of logistics service providers in the automotive, retail and consumer goods, chemicals, mechanical engineering, and construction and plant engineering industries. With the data we collected and through our own expert opinions, we aim to support logistics companies and their customers in China in their efforts to stake out a strategic market position. The study reveals both the potential for entering the market and for expanding existing activities. However, the survey also shows that there is room for improvement in terms of customer satisfaction in all the industries included. This customer assessment applies equally to all logistics service providers. Both retail and manufacturing companies in China remain very conservative in terms of outsourcing. They are still not taking full advantage of the services offered by logistics service providers.

Today, logistics entails much more than the simple handling, transport, and storage of goods. Logistics service providers have long since developed intelligent solutions for the entire supply chain providing them with capacities to effectively organising production, distribution, finishing, and other value-added services in shared-work processes. The companies, for their part, expect a service provider with a high degree of technological competence, and therein lies the opportunity for experienced logistics providers to expand their activities in China. I hope you enjoy reading this study and wish you every success in your endeavours in China.

Düsseldorf, January 2012

Klaus-Dieter Ruske
Global Industry Leader
Transportation & Logistics

¹ China Daily, August 19th 2011, online at: http://www.chinadaily.com.cn/china/2011-08/19/content_13154636.htm.

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A Summary

Supply chain needs in China have changed dramatically in recent years. To be successful in the long term, companies have to be able to offer high-quality services that meet the steadily increasing standards set by customers. But even those logistics companies that think they have missed their chance will find that the market is still rife with opportunities.

The vast majority want to stay in China

The trade flows between China and companies based in Germany will continue to be an important factor for logistics companies. It should also be noted that China is becoming an increasingly significant sales market. These days, China is no longer merely considered a location with cost-saving potential, but rather a strategic mainstay. Foreign companies still operate predominantly in the coastal regions. The survey clearly shows that they also plan to stay there.

Low marks for logistics companies

Logistics and purchasing managers gave lukewarm responses when asked about the level of development of logistics service providers in the Chinese market. Less than 20% of respondents rated the level of development for quality management, staff qualifications, just-in-time deliveries, and security standards as “high”. Shipment tracking was the only function to receive good marks, from one in four respondents.

Easy to find qualified staff?

A total of 64% of respondents said that they were able to find enough qualified logistics staff in China. The figure was even higher in the automotive industry at 80%. This result is surprising given that other recent publications suggest that China lacks enough qualified staff.

Price is not everything

The companies surveyed reported that reliability was a crucial criterion when choosing a logistics service provider. Punctuality, flexibility, adequate capacity, and quality management are the four most important criteria when awarding contracts. Price was actually ranked fifth in terms of importance. Although environmental and other sustainability issues were not among the most important selection criteria, 40% of respondents still considered these to be significant points.

Quality standards put the brakes on outsourcing

Some of the surveyed companies handle their logistics tasks internally, while others contract them out to external service providers. The majority of companies manage their own warehousing operations. Customs clearance is mostly outsourced, with companies showing a preference for Chinese suppliers. Most companies also prefer to manage their own supply chain monitoring. Companies listed quality requirements, flexibility requirements, security aspects, and costs as reasons for not outsourcing logistics functions.

High marks for logistics companies

Overall, the companies surveyed expressed satisfaction with the way in which service providers handle traditional logistics tasks. More than half the respondents report being highly satisfied with transport management and customs clearance services. Companies gave a less positive assessment of supply chain monitoring services.

Contract logistics still in early stages

Only a quarter of the companies surveyed outsource functions to contract logistics providers in China. The most common value-added service is the packaging of goods, followed by procurement, materials recycling, and packing (in that order). Logistics service providers are seldom retained for manufacturing and assembly or complaints handling. Many companies cite their own superior level of efficiency as the reason for not using logistics service providers. A whole 42% reported not even having considered outsourcing certain subsegments to logistics service providers.

Returns management and quality control have potential

When asked which functions they would consider outsourcing, around 40% of respondents said they would potentially contract out returns management and quality control. About a third would consider outsourcing services in procurement management or complaints handling to qualified suppliers. Surprisingly, some 12% could even imagine outsourcing a core area like sales planning.

Few environmental protection measures planned

The companies surveyed have been timid in implementing environmental protection measures in the logistics area in China to date, and do not report having extensive plans to do so. The most common activities are recycling, route optimisation, and switching to other modes of transport. At the moment, carbon accounting for logistics chains in China is not widespread. Not even one in ten companies takes processes in China into account when determining its carbon footprint.

Government regulations expected

Nevertheless, the majority of companies assume that environmental protection standards in their industry will rise significantly in the next two to three years. Most companies attribute this development to government environmental requirements, although respondents consider customer demands to be a significant factor as well.

Economic crime remains an issue

Just 17% of the decision-makers surveyed expect that economic crime can be reduced in the medium term. Product piracy is the most burning issue, with 41% of respondents having reported being affected by this crime to date.

The PwC study “Logistics in China: An All-inclusive Market?” is based on the results of a telephone survey of 250 companies. Five industries were surveyed, with each representing one-fifth of the total sample. The industries were automotive, retail and consumer goods, chemicals, mechanical engineering, construction and plant engineering industries. The 250 interviews were conducted from 26 May to 27 June 2011 by an independent market research firm (TNS Emnid), which guarantees the protection of data and ensures the anonymity of the respondents.

B Logistics processes in China

In 2009, China generated some \$1.2 trillion in exports, beating out Germany for the first time to become the world's leading exporter. The next year its exports grew even more, by 30%, to \$1.58 trillion. China is also ahead of Germany in terms of imports, coming in second only to the US. In fact, the Asian powerhouse saw imports rise an impressive 38.7%; a rate of growth that is significantly higher than the global average of 25.2%. These figures leave little room for doubt that Chinese foreign trade will continue to be important to many international companies. What is striking about China's export sector is that it is dominated by manufactured goods – they make up 95% of all exports. The biggest categories of goods are machinery and vehicles, electronic products, and clothing. On the import side, China is seeing growth in the following areas: passenger cars (101.3%), packaging machinery (90.8%), mining and civil engineering machinery (69.6%), textile machinery (65.3%), and inorganic chemicals (72.1%).² Accordingly, the leading industries are retail and consumer goods, electronics, mechanical engineering, construction and plant engineering, chemicals, and automotive.

Fig. 1 Breakdown of Chinese imports
(in millions of \$; change over previous year in%)

Class of goods	2010	Change
Total	1,394,829	38.7%
Primary products	432,556	49.3%
Chemical products	149,636	33.5%
Iron and steel	25,058	-5.4%
Machinery	124,864	39.8%
Electronic products	277,705	29.9%
Electrotechnology	81,645	31.4%
Road vehicles	49,265	74.5%

Source: Chinese customs statistics calculated by Germany Trade & Invest.

Facilitating trade flows is crucial, and this all-important role falls to the transport and logistics industry. But to transport goods efficiently, the industry needs a well-functioning infrastructure. China is aware of this and has allocated resources for continual improvement; the country's 12th five-year plan details both the development and funding of various infrastructure projects. In 2010, China had a

² Source: Germany Trade & Invest (ed.): VR Chinas Außenhandel mit hohen Zuwachsraten (People's Republic of China's foreign trade sees high growth), appendix A. 23/02/2011.

total of 502 airports, placing the country at number 15 among countries with the most airports. Land transport statistics are even more impressive: China has 77,834 km of railways, the third-largest rail network in the world; and 3,583,715 km of upgraded roads as of 2010, giving the country second place worldwide. What is more, China is the undisputed number one for inland water transport with 110,000 km of navigable waterways.³ Nevertheless, the absolute length of China's transport routes must be considered in relation to the country's size. Furthermore, the market economy is still not able to make full use of the entire infrastructure. For instance, railways are still subject to heavy restrictions; on some routes, the only products that may be transported are raw materials.⁴ The World Bank's Logistics Performance Index shows China in a somewhat different light. At an international rank of 27, China leads the developing countries, but still lags significantly behind the major industrial nations, and is far behind the world's top three, Germany, Singapore, and Sweden.⁵

Fig. 2 Breakdown of Chinese exports
(in millions of \$; change over previous year in%)

Class of goods	2010	Change
Total	1,577,932	31.3%
Primary products	81,717	29.5%
Chemical products	87,587	41.2%
Textiles	76,882	28.5%
Iron and steel	39,567	67.2%
Machinery	117,133	28.3%
Electronic products	448,539	26.4%
Electrotechnology	127,098	34.7%
Road vehicles	44,319	54.1%
Clothing	129,830	36.3%

Source: Chinese customs statistics calculated by Germany Trade & Invest.

³ Source: CIA – The World Factbook (ed.), <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>. (last retrieved 01/2011).

⁴ Source: The China Greentech Initiative (ed.): The China Greentech Report. 2009.

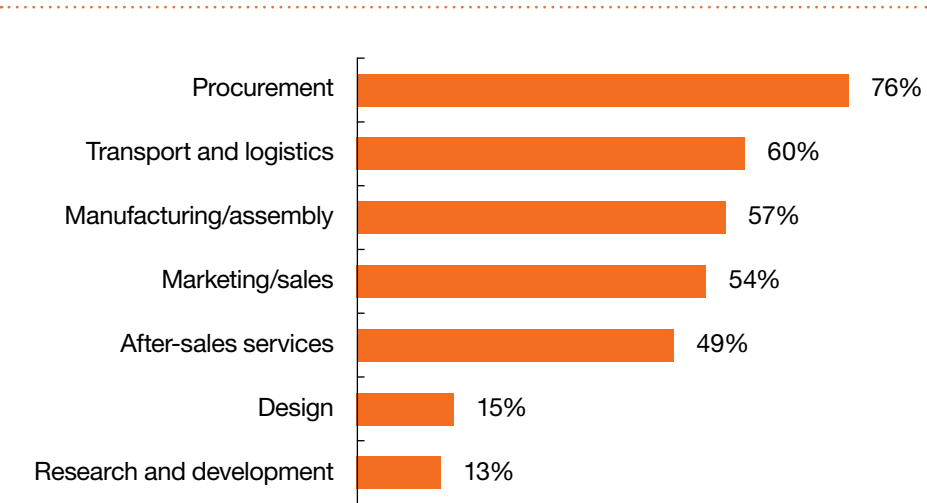
⁵ Source: World Bank (ed.): Logistics Performance Index, <http://www1.worldbank.org/PREM/LPI/tradesurvey/mode1b.asp> (last retrieved 05/2011).

C 250 shippers: Where things are headed

1 As they say, “we’re here to stay”

The number of German companies operating in China is growing rapidly. China is no longer just a procurement market, as manufacturing and assembly have picked up considerably. Nevertheless, procurement is still king; of the companies surveyed, 76% source products in China. As a result, companies also have transport, logistics, and distribution functions there. While outsourced manufacturing brings with it marketing and sales, the design, research, and development functions still play a very minor role at the moment. This could change, however, if manufacturing for the Asian market grows in the future.

Fig. 3 Parts of the value chain carried out in China



Of the industries surveyed, the **automotive industry** is the leader in procurement (84%), while at the same time coming in last in terms of after-sales services (36%). In terms of manufacturing and assembly, the automotive industry is still behind the retail and consumer goods industry. But given that China is a booming market for the automotive industry, these activities are likely to grow. As it stands, international automotive concerns are continuously expanding production capacity in China.

The **construction and plant engineering industry** is not as active in China in procurement, manufacturing/assembly, or research, development, and design as other industries. It is, however, highly active in marketing and sales and after-sales services. Even though the share of its activities in China is relatively low compared to that of other industries, this favourable positioning in sales shows that companies take China seriously as a market.

When it comes to marketing and sales in China, the **mechanical engineering sector** leads the pack. A large number of its customers are located in Asia, a rapidly growing market. However, in terms of research, development, and design; the mechanical engineering sector turns up at the other end of the spectrum.

This may stem from concern about the protection of intellectual property or even from past experience with product piracy.

Manufacturing is the most important area in China for the **retail and consumer goods industry**; it is by far the leader in this area. In marketing, after-sales services, and distribution, however, the retail and consumer goods industry lags behind. Finished products are generally exported to other countries, as China's domestic market is still relatively insignificant. Yet this could change soon; the companies surveyed made a number of statements on the topic of design that point to a pioneering role. Retail and consumer goods companies occupy first place by a significant margin.

When asked where in China they operate, the companies surveyed named on average three of the six regions given.

The companies surveyed are located primarily in China's eastern coastal region around the Yangtze River Delta and Shanghai. A survey conducted in 2008 by PwC and the German Association Materials Management, Purchasing and Logistics (Bundesverband Materialwirtschaft, Einkauf und Logistik, or BME) found that this area was already highly popular then; 72% of the companies surveyed were located there. Northeastern China, around Beijing and Changchun, along with Taiwan, is also a preferred region especially for smaller enterprises with less than €250 million in annual revenue.

The retail and consumer goods industry has operations across various regions, whereas the automotive industry is much more concentrated.

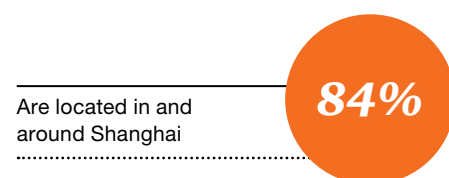
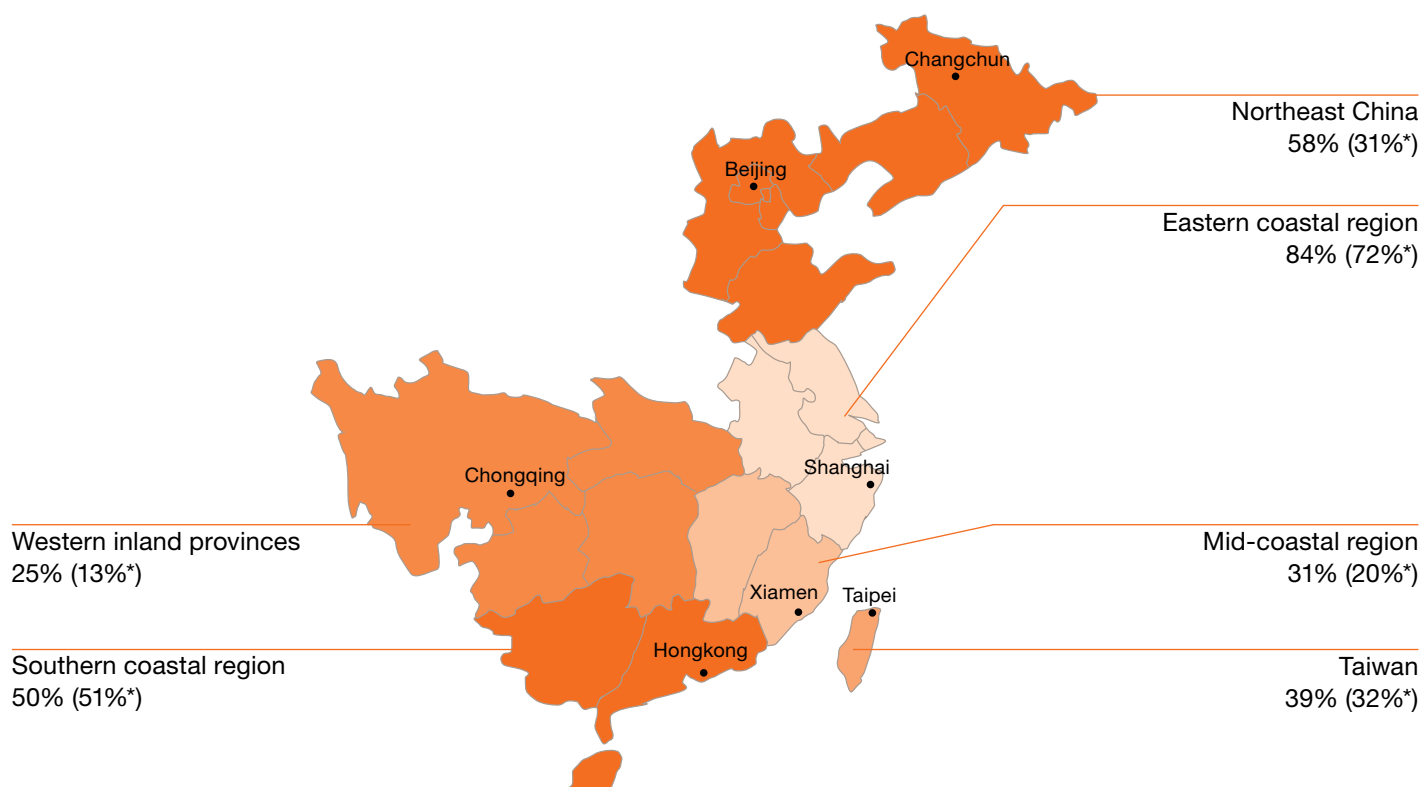


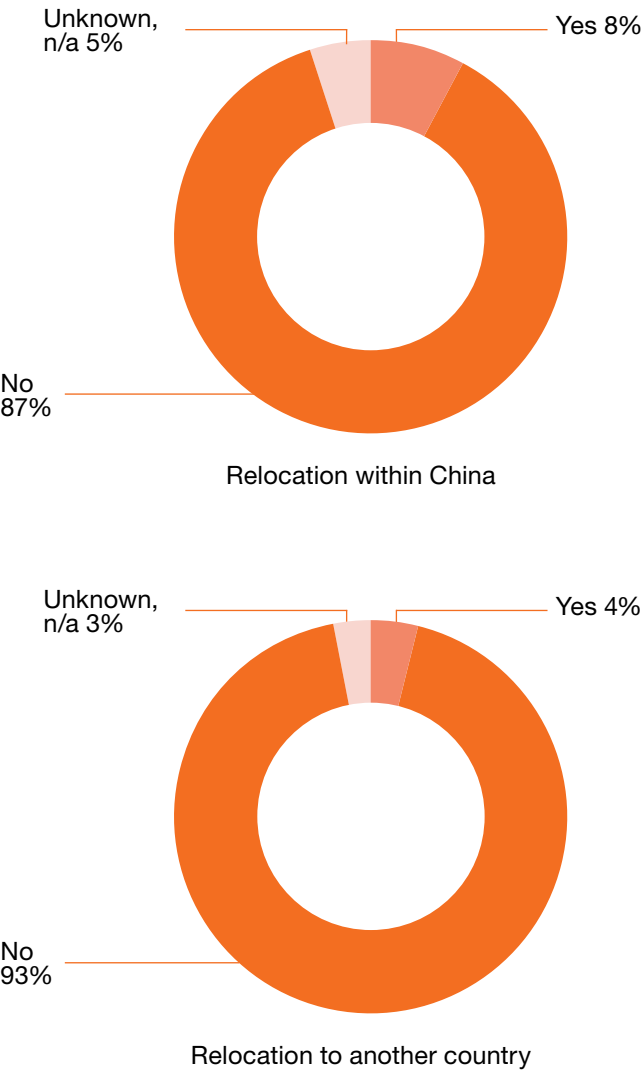
Fig. 4 Regions in China where companies are active



* Source: PwC and the German Association Materials Management, Purchasing and Logistics (BME) (ed.): "Beschaffungslogistik im China-Geschäft – Kosten – Prozesse – Strategien." 2008.

The companies appear to be quite satisfied with their choice of locations. There are no current plans to move, which demonstrates a clear commitment to China as a business location. Just 19 of the participants in the survey indicated a reason for a location change in the near future.

Fig. 5 Company plans for relocation



Six of the 19 companies plan to relocate to the eastern coastal region, five to northeast China, and four to the southern coastal region. Only two companies plan to move west to inland provinces. For both companies, their Chinese operations represent more than 20% of their total business. In general, relocation tends to be taken more into consideration by companies whose Chinese operations make up a significant share of their total business worldwide.

The two most important reasons for relocating within China are cost considerations (“a more favourable cost structure at the new location”) and customer retention aspects (“we are following our customers to a new location”). One out of three companies also expect a better infrastructure at the new location. “Qualified employees” and other reasons were considered less important.

There are virtually no plans to relocate outside of China. Just 11 of the 250 companies surveyed plan to leave their location in China in the near future. These companies are also among those whose operations in China make up a larger part of their international business. Of the 11, two automotive and two construction companies want to return to Germany, three retail companies plan to go to Southeast Asia/Vietnam, and one chemicals and one mechanical engineering company plan to relocate to (East) European countries.

Six of the 11 companies listed costs, infrastructure, and staff as reasons for leaving China (“a more favourable cost structure”, “better infrastructure”, and “qualified staff” at the new location). One chemicals company reports moving to a new location to follow its’ (East European) customers.

Want to stay in China

93%

2 High and low marks for logistics companies

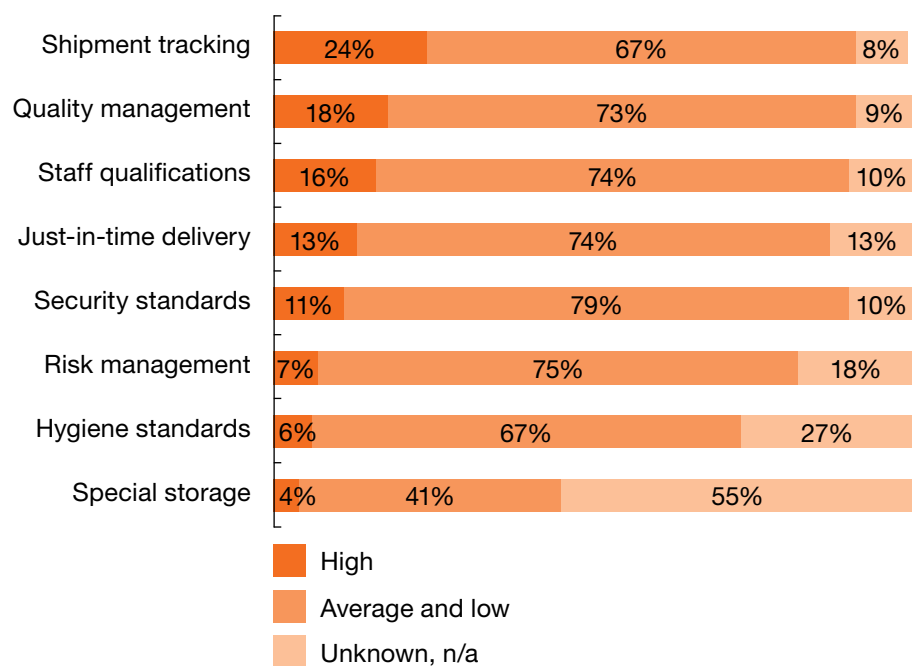
The results of the survey show that the participating companies are investing in China in the long term. An increasing number of stages in the value chain are being carried out there. The logistics function is the common thread that runs through the entire supply chain. Given the importance of logistics, the survey respondents were asked to assess the competence of Chinese logistics service providers and to state their level of satisfaction with these service providers.

When asked to evaluate the level of development of logistics providers for certain subsegments of the Chinese market, the logistics and purchasing managers of the companies surveyed gave lukewarm responses. The shipment-tracking subsegment appears most likely to be viewed positively, although even here only 24% of the companies gave a “high” rating. In the mid-range are quality management, staff qualifications, just-in-time delivery and security standards.

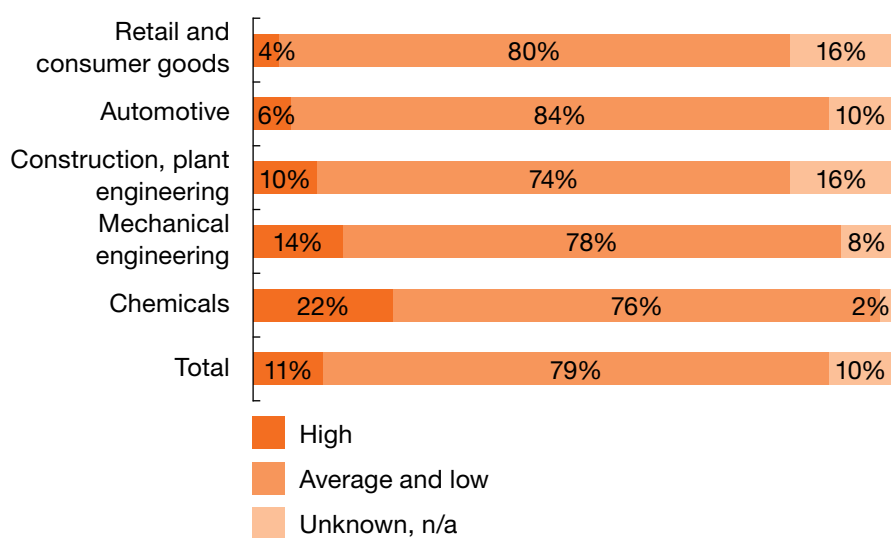
According to the survey results, 73% of the companies rated the quality management of the service providers as average to poor. Only 6% of respondents gave hygiene standards good marks. The topic of special storage presents an exception, since a very large percentage of respondents were not able to provide any information. Special storage appears to be most relevant for the chemicals industry playing a very minor role for all others.

Rate the logistics providers' average level of development as “high”

Just 12%

Fig. 6 Level of development of logistics services providers in China

In general, companies whose Chinese operations represent a larger percentage of their total business tend to give more positive assessments for shipment tracking, security standards, and quality management.

Fig. 7 Level of development of security standards

Security standards in the global supply chain are an on-going theme for the transport and logistics industry, where the ability to make rapid and reliable deliveries is crucial. These days, security concerns go far beyond the mere protection against loss. Rather, the security needs of the global supply chain increasingly extend along the entire value chain. These concerns include security of supply (e. g., metals and earth), as well as protection against organised crime, international terrorism, and piracy. In this sense, process security means securing processes against threats that exist along the entire supply chain. Effective risk management becomes increasingly important in this context, too.

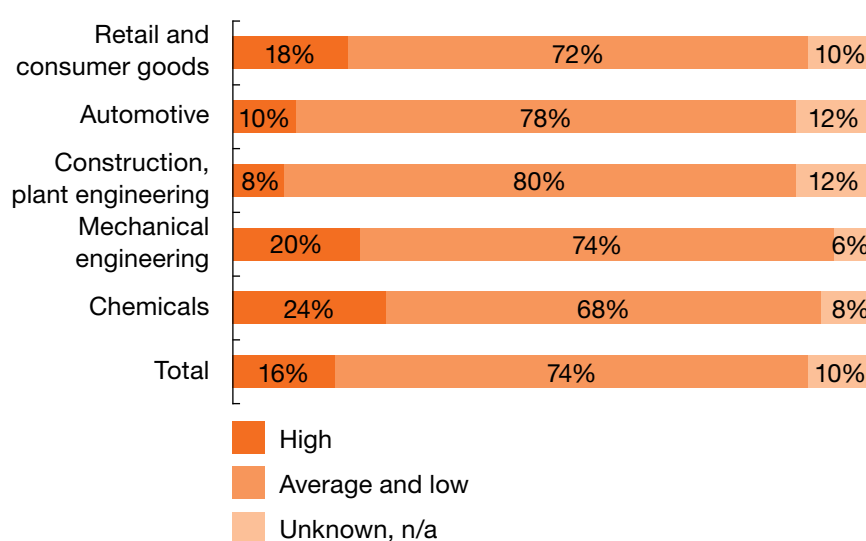
Respondents across all industries take a critical view of staff qualification levels. Only in the chemicals industry are employees considered to have a “high” level of qualification. Since hazardous substances are common in the industry, logistics service providers need to know how to handle them appropriately.

Only 16% of respondents rate staff qualifications at logistics providers as “high”. Respondents from the construction and plant engineering industry are particularly sceptical in this regard.

Rate the level of staff qualifications at logistics providers as average to low

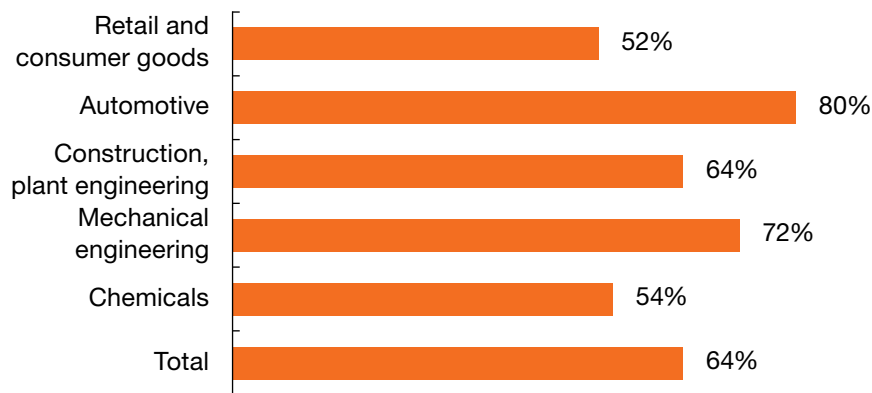
**Over
74%**

Fig. 8 Level of development of staff qualifications



Given the rather negative assessment of staff qualifications, responses to the question “whether companies can find enough qualified staff in China” reflect a mixed picture across all industries. Considered to be the “workbench of the world”, China seems to have an almost inexhaustible reservoir of skilled workers. This is the current view of the logistics and purchasing managers surveyed.

Fig. 9 Sufficient qualified staff available in China



Find enough qualified staff in China

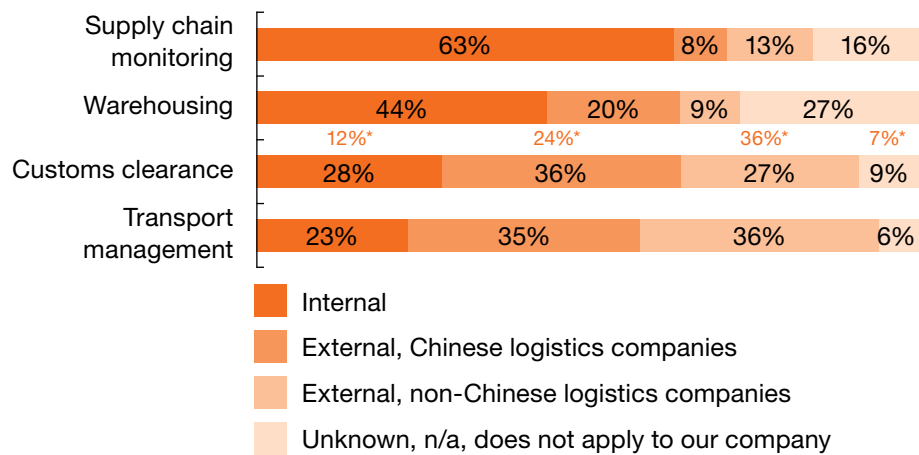
64%

The respondents' statements on the availability of skilled workers in the logistics arena are truly surprising. In the automotive industry, more than two-thirds of respondents say that there is a sufficient skilled workforce.

The companies appear to be able to handle both the expansion and turnover of qualified staff without any major problems. However, the survey did not explicitly enquire about the situation for less-qualified staff. In the longer term, requirements for staff qualifications are expected to rise, making it more difficult to recruit qualified staff. This trend can already be observed in the chemicals industry and in the retail and consumer goods industry.

Almost two-thirds of the companies surveyed monitor the supply chain in China themselves. This function is contracted out to Chinese logistics services providers only in exceptional cases.

Fig. 10 Internal vs external management of logistics processes



* Responses taken from the 2008 PwC and BME study for the customs category (The missing 21 percentage points are attributed to a deleted survey category where companies reported that the customs clearance function was executed both internally and externally.)

Of the companies surveyed, 44% manage warehousing themselves. One out of every five companies outsources the function to Chinese service providers. Two interesting changes become apparent when the current survey results are compared with the study on procurement logistics in China that was conducted in 2008 by PwC and the BME (“Sourcing and logistics in China: Costs, processes and strategies of German companies procuring in the Chinese market”). First, there is a clear trend towards internal customs clearance; and second, companies that use external brokers, as a majority of those surveyed still do, are increasingly using Chinese service providers. Familiarity with local regulations and language proficiency are two advantages here, and this is most likely what is prompting companies to change.

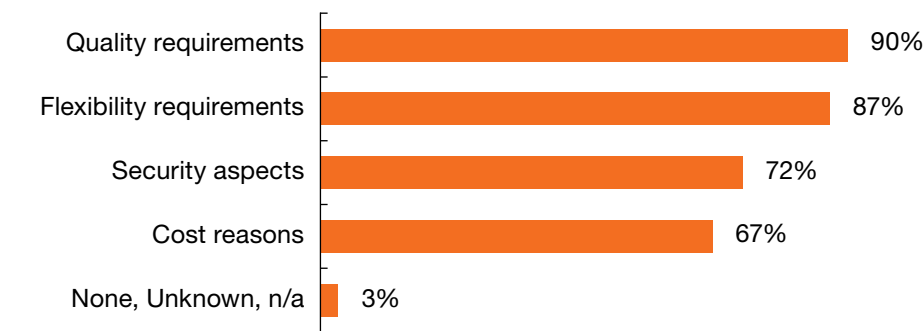
Many companies are willing to outsource the transport management function to an external service provider. Companies choose Chinese and international providers in almost equal measure.

There are, however, clear differences from industry to industry. The automotive industry – along with its suppliers – uses Chinese logistics services providers much more often than other industries do. The bulk of retail companies, on the other hand, tend to choose non-Chinese logistics companies for transport functions.

The survey asked decision-makers in companies that manage their logistics processes internally to list their reasons for not outsourcing. The main reasons given for handling logistics processes internally have to do with meeting the standards required in terms of quality and flexibility. Security concerns and costs are less important.

Quality requirements are a critical issue for all companies.

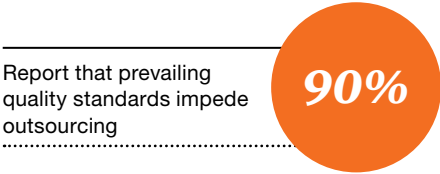
Fig. 11 Reasons for choosing internal customs clearance



Logistics is more than simply transporting goods from point A to point B. Even though respondents do not consider logistics services providers in China to have reached a very high level of development, most report a relatively high level of satisfaction with transport services, warehousing and customs clearance.

Out of all the functions listed on the survey, companies are by far the most satisfied with customs clearance, especially those that outsource this function to non-Chinese service providers.

Companies that outsource their transport management to non-Chinese providers also report an above-average level of satisfaction. The same goes for the warehousing function.



The management and monitoring of the supply chain are among the logistics processes that are predominantly performed internally (see Figure 10). Here, the companies surveyed in this area are significantly less satisfied than they are with the traditional logistics services.

Fig. 12 Satisfaction with customs clearance

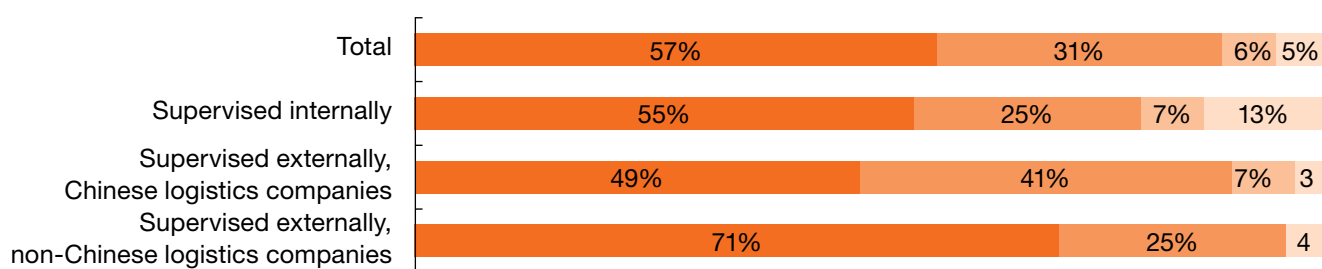


Fig. 13 Satisfaction with transport services

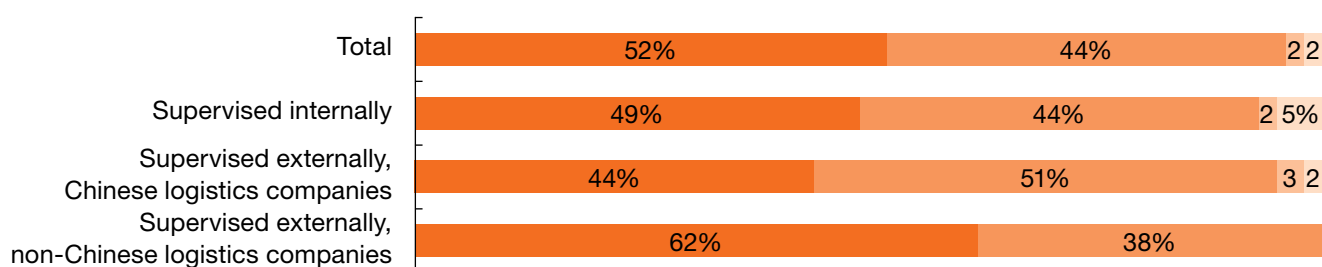


Fig. 14 Satisfaction with warehousing services

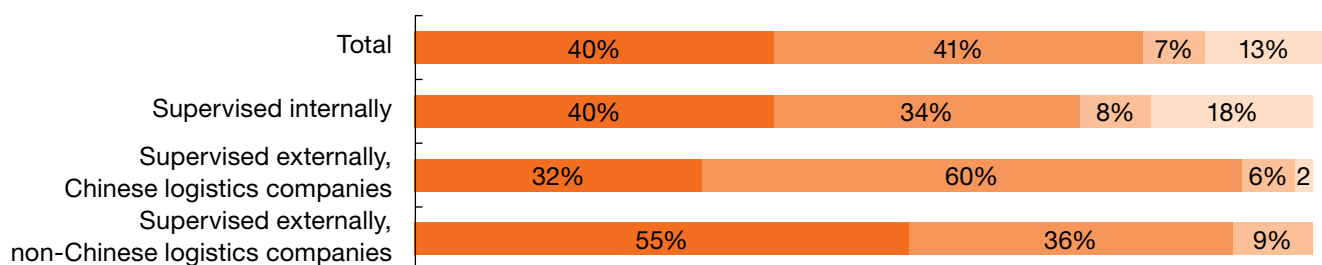
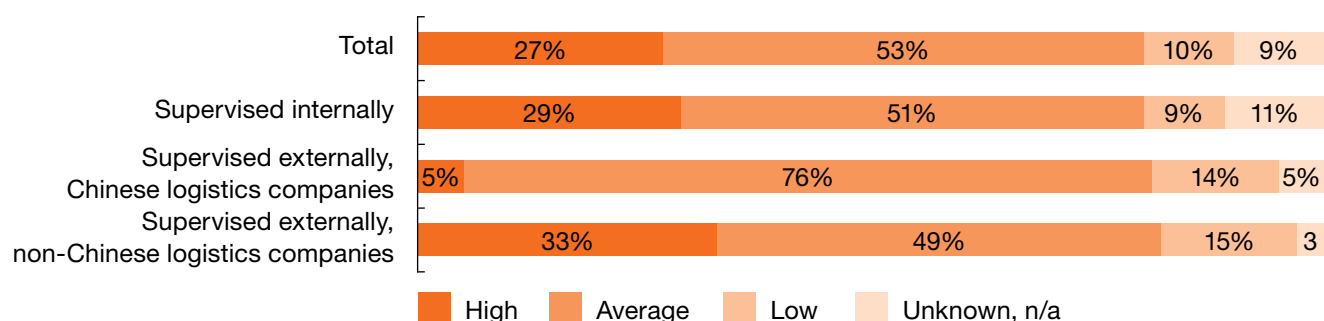


Fig. 15 Satisfaction with supply chain monitoring

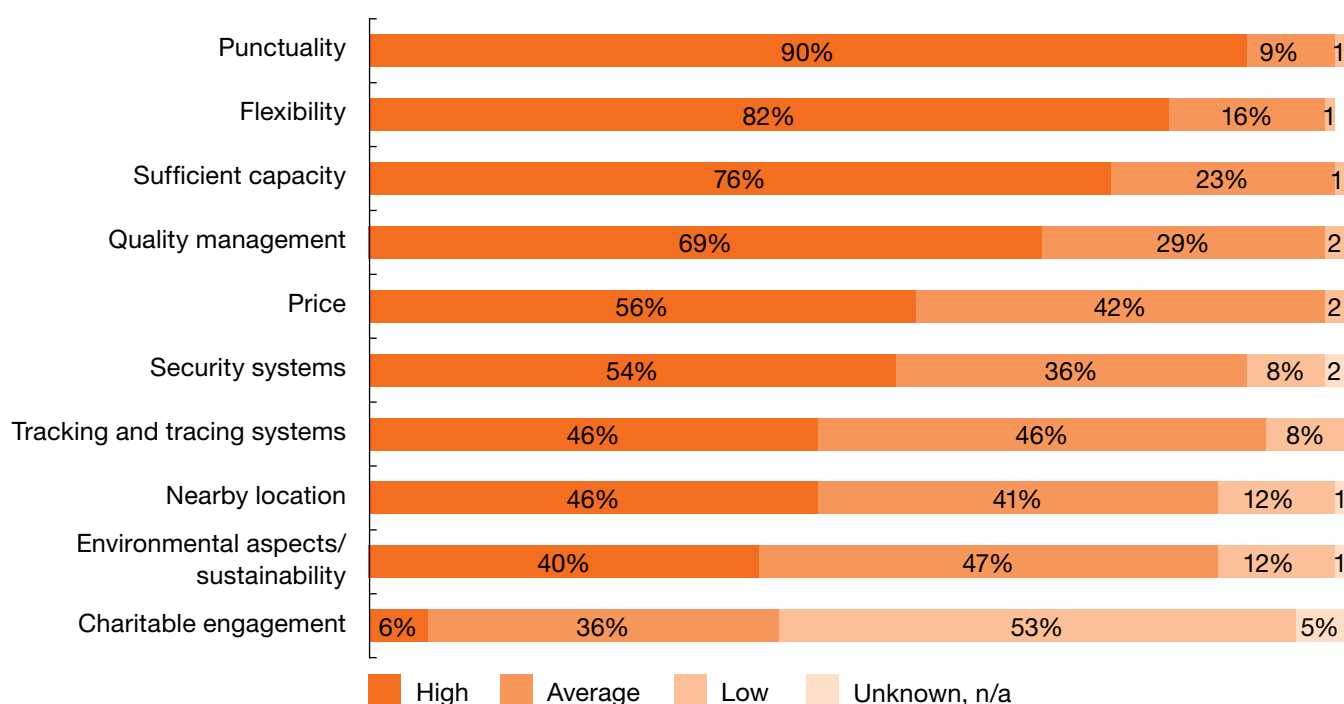
Companies report that punctuality, flexibility, and adequate capacity are the most important criteria when selecting a logistics partner. Quality management, price, and security systems fall in the mid-range of the categories given. In general, companies consider tracking and tracing systems, nearby location, and sustainability considerations to be less important. Whether the logistics services provider is engaged in charitable activities plays a minor role.

Punctuality is the top criterion

For 90%

Punctuality is consistently cited as the most important characteristic of logistics service providers. Nine out of ten of the manufacturing companies surveyed consider this an important criterion for selection.

Among the industries considered, the automotive industry, along with its suppliers, and the chemicals industry appear to be significantly more price-sensitive than the mechanical engineering sector. Price is also a more important criterion for smaller enterprises than for enterprises with higher turnover and a larger number of employees worldwide.

Fig. 16 Criteria for selecting a logistics services provider

3 Contract logistics: “A high-potential area – that still receives little attention”

Do not outsource any contract logistics services

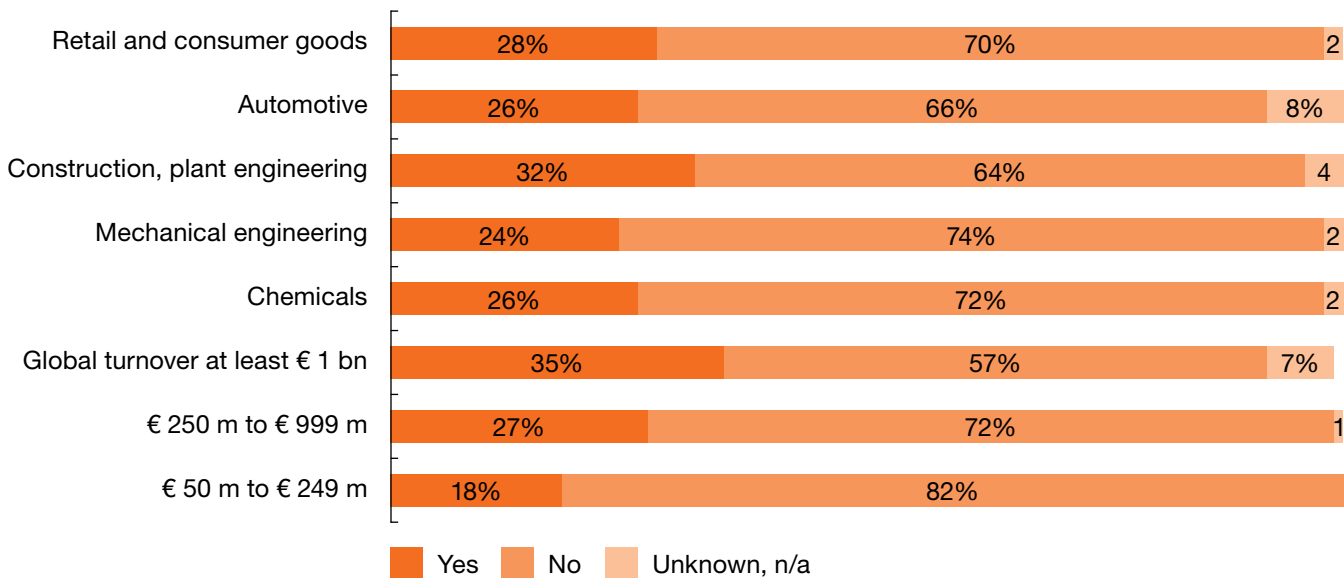
69%

Contract logistics is a rapidly expanding business area for logistics services providers in Germany. Things look different in China: 69% of the companies surveyed do not use contract logistics providers in China.

Only about one in four companies engage contract logistics providers. High-turnover companies in all industries, but primarily in construction and plant engineering, tend to be more open to this option.

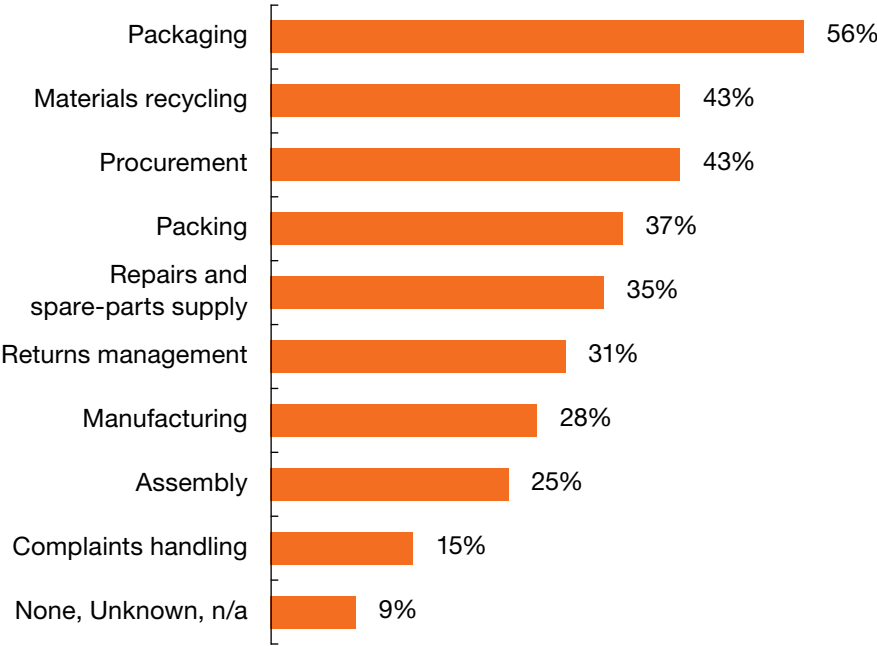
The majority of companies that engage contract logistics providers for subprocesses in pre- and after-sales logistics outsource the packaging function.

Fig. 17 Awarding of contracts to contract logistics providers by industry



Packaging is one of the services that are traditionally part of the transport and logistics industry. Recycling and procurement orders each play a role for 43% of the companies surveyed. Only around a third of companies engage contract logistics providers for repairs, spare-parts supply, and returns management. Manufacturing and assembly processes are contracted out by one in four companies. The monitoring of customer satisfaction and the handling of complaints play a minor role.

Fig. 18 Awarding of contracts to contract logistics providers



Contract logistics services are conducted mainly by Chinese companies. Just one-quarter of respondents use non-Chinese service providers. A further 18% of the decision-makers surveyed report using Chinese and non-Chinese service providers in equal measure.

Of the 250 companies surveyed, 173 do not use contract logistics providers. The respondents listed two main reasons for this: first, they consider their own internal structure more efficient; and second, they want to avoid becoming too dependent on suppliers.

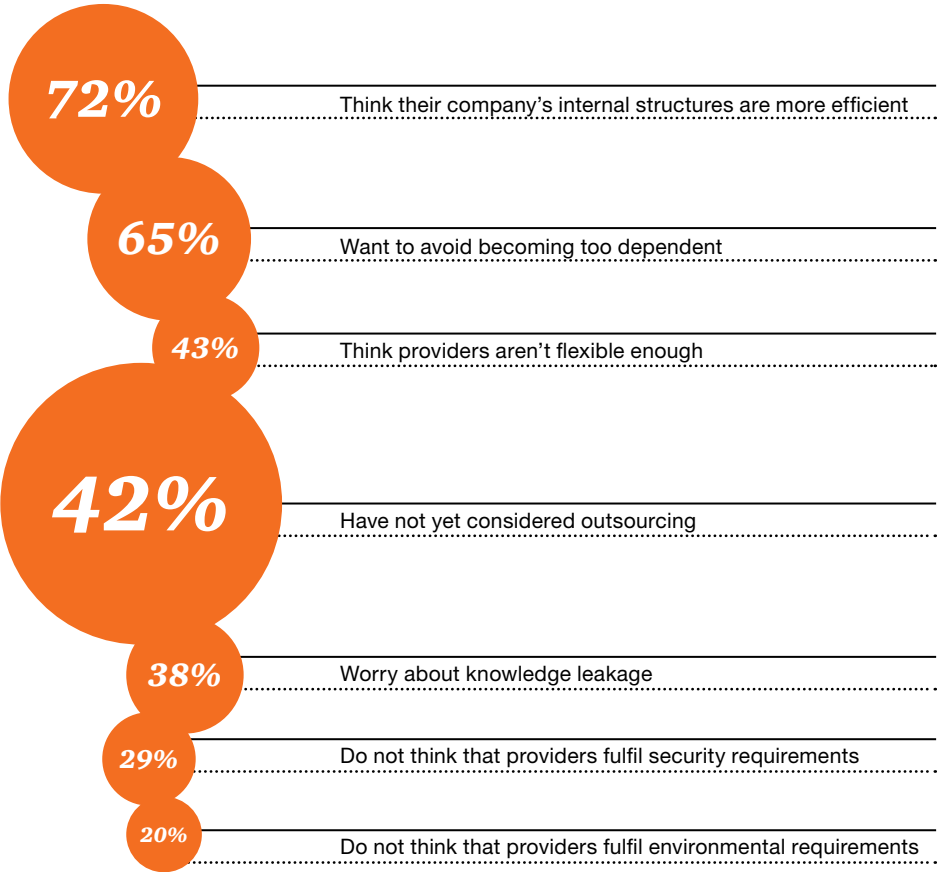
Four out of ten decision-makers report that they worry about leakage of know-how, or that the service provider will not be flexible enough, or both.

A whole 42% of respondents have not yet looked into working with contract logistics providers. Apparently, contract logistics is still considered a very new area in China.



The **retail and consumer goods area** in particular appears to show relatively little interest in contract logistics. Half of the decision-makers surveyed reported not even having looked into the option yet. While there is concern that contract logistics providers may not comply with security or environmental requirements, this aspect does not play a decisive role. Nevertheless, one in four respondents did list this as a factor in their decision. Environmental concerns tend to be more of an issue for larger companies.

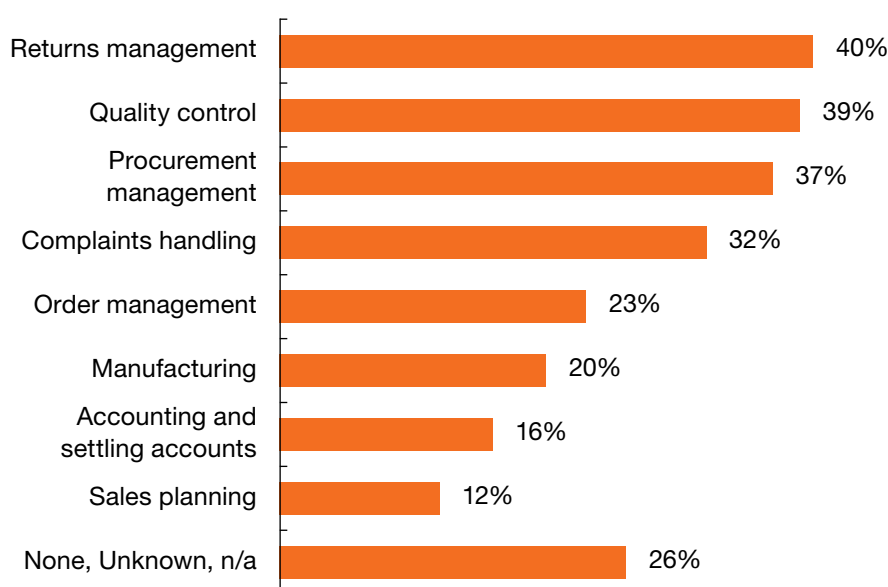
The **automotive industry** has more experience with contract logistics than other industries do. But even here, one out of three decision-makers has not considered this option. At the same time, automotive manufacturers stand the greatest risk of knowledge leakage and are concerned that contract logistics providers may not be able to provide enough flexibility.



The **mechanical engineering sector**, much like the retail and consumer goods industry, has yet to fully explore the possibilities offered by contract logistics. Environmental requirements also play a lesser role here.

The majority of companies in the **construction and plant engineering industry** and in the chemicals industry, think that their own internal structures are more efficient.

Fig. 19 Potential for contract logistics providers



So how much potential is there for contract logistics in China? Which function areas would companies be willing to outsource? Decision-makers in all the industries surveyed are most likely to consider outsourcing returns management. Respondents also saw potential for outsourcing procurement management, quality control, and complaints handling, assuming there are qualified providers on the market.

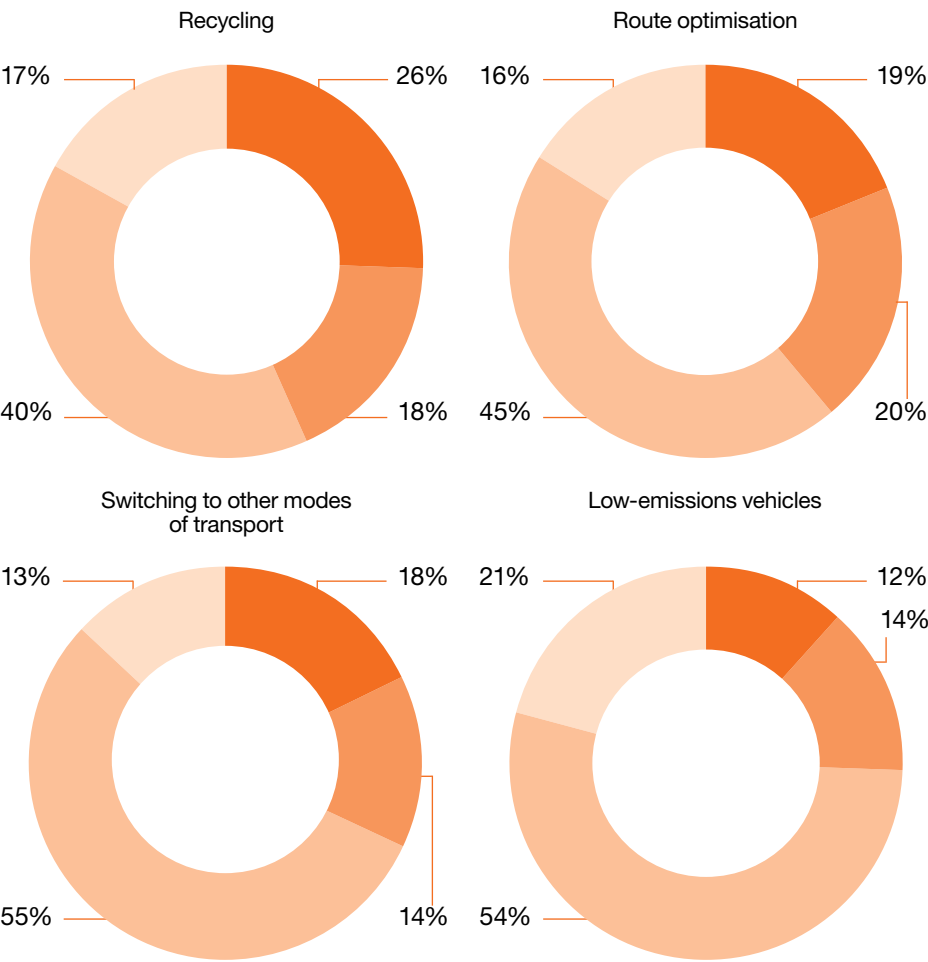
One in five companies can imagine outsourcing order management and some production processes, and 12% would consider outsourcing the core area of sales planning to contract logistics providers.

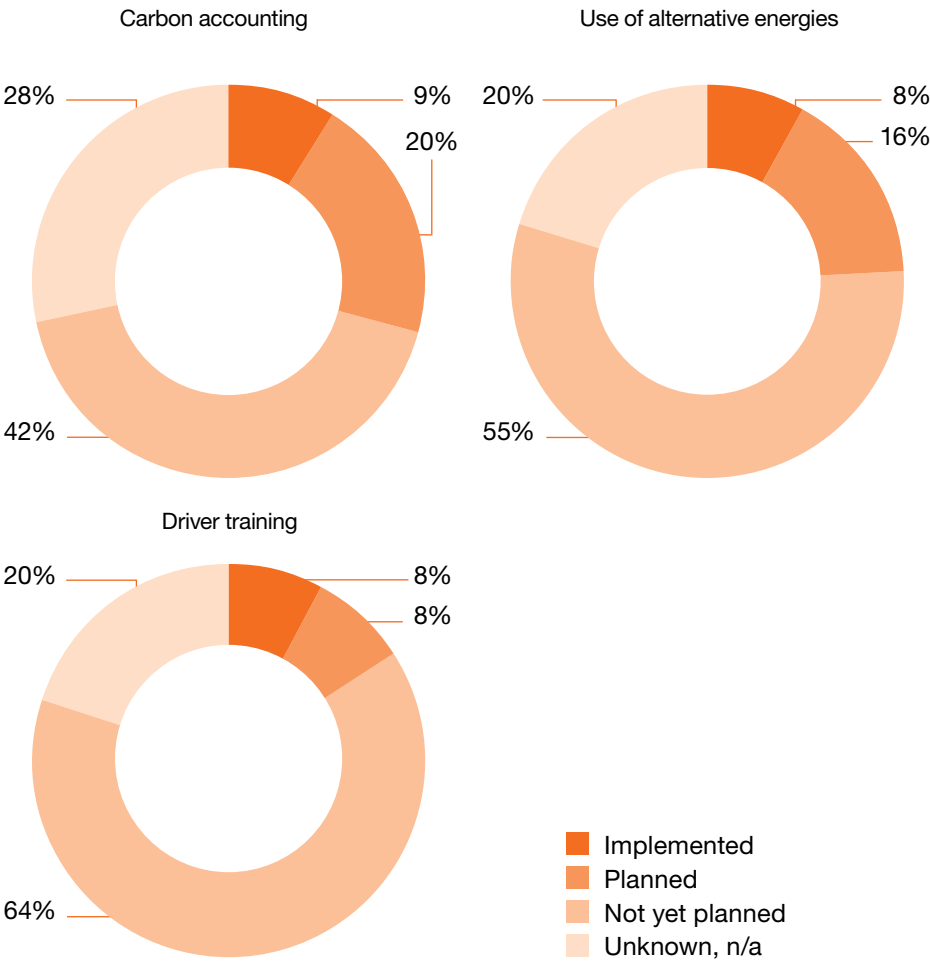
4 Environmental protection: “Regulations and customers are the drivers”

To date, environmental protection measures have been implemented in the logistics operations of major German companies in China to a limited extent only. Recycling measures are the most common, adopted by a good quarter of the enterprises in China. Route optimisation and switching modes of transport – for example, to railways or inland waterways – also play an important role for German companies in China. One out of ten companies is already using low-emissions vehicles in China. However, hardly any company to date has implemented efforts to measure the carbon footprint of its supply chain.

Nevertheless, the fact that one in five companies is already planning to measure their carbon footprint in the medium term shows that environmental protection is indeed a salient issue in China. The trailblazers here are the companies with higher annual turnover.

Fig. 20 Prevalence of environmental protection measures in companies in China





Companies are also looking to use alternative energy sources in the future; 16% of the companies surveyed plan to do so. German companies in China have primarily implemented low-cost measures that have high cost-saving potential. Plans to measure carbon emissions, however, are mainly a reflection of the strategic aims of companies that either want or need to take greater responsibility over the value chains of their products. Customers are increasingly demanding that companies determine global product carbon footprints.

Of the five industries surveyed, the **chemicals industry** leads in terms of environmental protection activities in all of the areas listed. The reason for this above-average performance has to do with the strict regulations in place for handling highly sensitive products and hazardous substances.

Expect an increase in environmental protection activities in China

57%

Expect no changes in environmental protection

39%

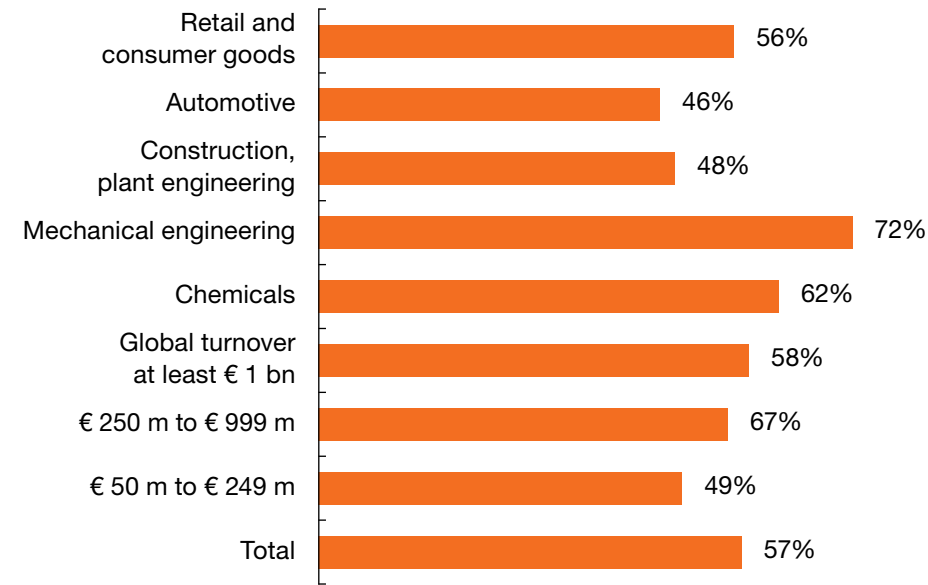
The **mechanical engineering sector** and the **construction and plant engineering industry** are tied for last place. Route optimisation, switching modes of transport, and using alternative energy play minor roles for mechanical engineering companies, while recycling measures, carbon accounting, and low-emissions vehicles are of marginal interest to construction and plant engineering companies.

When it comes to route optimisation and carbon accounting, the **retail and consumer goods industry** currently ranks second. Many retail and consumer goods companies have ambitious future plans for carbon accounting, though. Once these are taken into account, the industry will be on par with the chemicals industry in this area.

The majority of the decision-makers surveyed expect companies in their industry to significantly increase the amount of environmental protection activities in China in the coming two to three years. Nearly two in three decision-makers in the chemicals industry expect such an increase, as do three out of four in the mechanical engineering sector.

Overall, it appears that it is mainly major companies with higher annual turnover that expect a shift towards more environmental protection measures. Executives in the automotive and the construction and plant engineering industries are the only ones who see a smaller likelihood of increased environmental protection in China in their industries.

Fig. 21 Expectations of stricter environmental regulations by industry



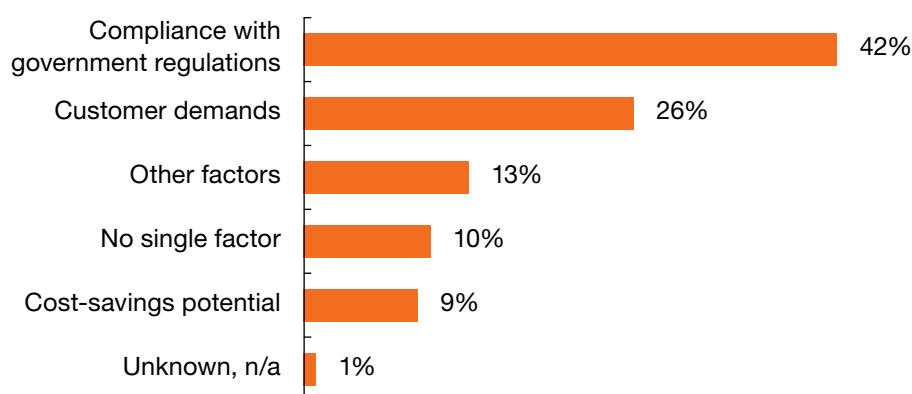
The executives surveyed see increasing state regulations as one driver for the growing focus on environmental protection. Almost half expect that the state will tighten environmental standards. Companies with higher annual turnover, particularly companies in the mechanical engineering sector expect to see stricter regulations.

These expectations are in line with the Chinese government's current five-year plan, which set a series of ambitious environmental protection and energy efficiency targets. To this end, for example, the plan calls for foreign companies to use the same technology in China that they do in Europe.

Environmental protection measures are becoming more important on the international level as well, and carbon accounting is of particular importance. This is where the second biggest driver of rising environmental standards comes into play; customer demands. End users are increasingly demanding information on all of the direct and indirect environmental impacts, including those arising from logistics activities of every single product they buy.

The decision-makers surveyed stated that they are not yet fully aware of the positive economic effects that may arise from, for example, energy efficiency measures. Just 9% named cost-saving measures that would decrease environmental impact as a primary motivation.

Fig. 22 Primary motivation for more sustainability



5 Economic crime: The problem of plagiarism

Corruption and other economic offences are a big problem in China. Transparency International's Corruption Perceptions Index ranks China 79th among 180 countries. Transparency International is a global civil society organisation that works to fight corruption; its annual Corruption Perceptions Index compares known corruption in 180 countries. The current rank of 79 shows that the Chinese government still has a long way to go in the fight against corruption, although the government has affirmed that it is intensifying efforts to fight corruption by instating preventive measures and a corresponding scheme.⁶ The results of our study show that 25% of major German companies in China also consider corruption and bribery to be problematic aspects of doing business there. Patent infringement is an issue that was frequently cited by respondents. According to the statements given by logistics and procurement managers participating in the survey, 41% of companies have already experienced product piracy in China. The percentage of respondents who did not want to provide information on the kinds of economic crime they had encountered in China is, at 43%, very high.

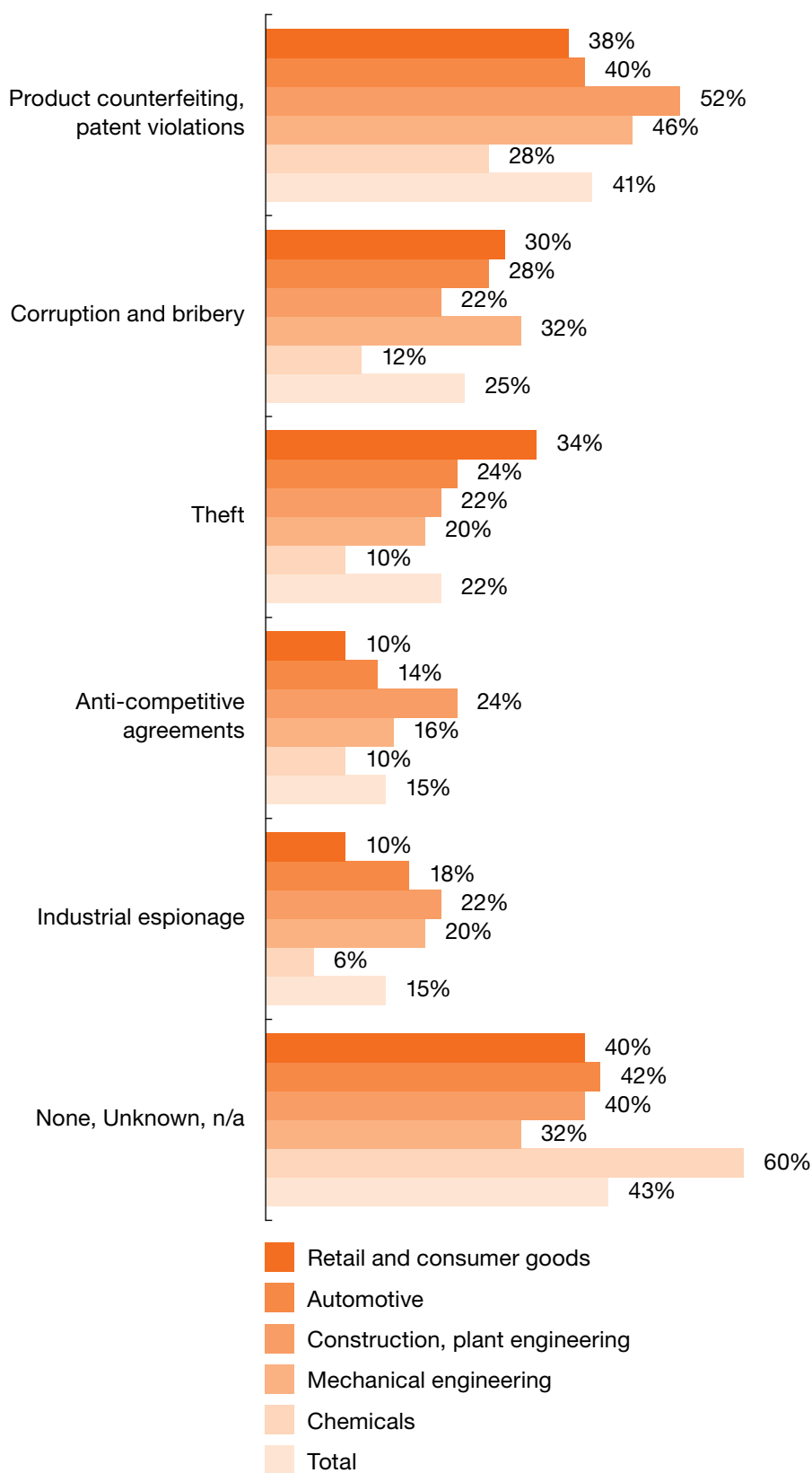
The survey results show that it is primarily medium-sized companies (those with an annual turnover of €250 million to €1 billion) that are affected by economic crime in China. They are closely followed by the companies with the highest annual turnover. Companies with a global annual turnover of less than €250 million had significantly fewer encounters with economic crime in China.

The **chemicals industry** is less affected by economic crime than are the other industries.

Companies in the **construction and plant engineering industry** are affected the most. More than half of respondents in this industry have already experienced patent infringement. The construction and plant engineering industry also reports an above-average number of encounters with anti-competitive agreements.

The **mechanical engineering sector** is, as expected, confronted with product counterfeiting and patent piracy more often than average. No industry has as many problems with corruption and bribery as the mechanical engineering sector.

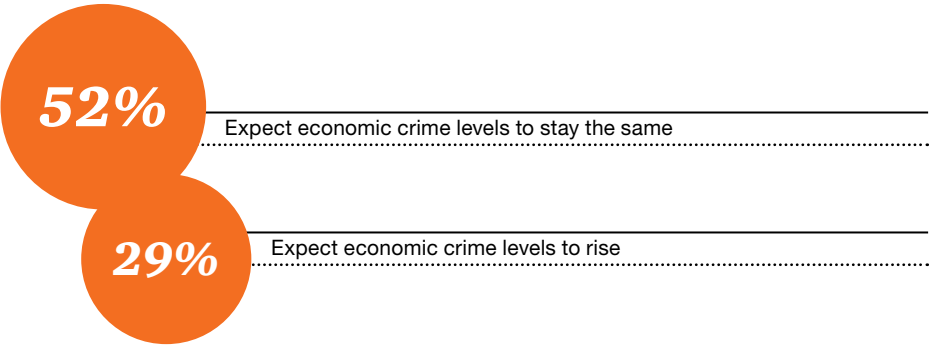
⁶ Source: President Hu Jintao's speech at a celebration of the Communist Party's 90th anniversary on 1/07/2011.

Fig. 23 Experience with economic crime

Just 17% of the decision-makers surveyed expect that economic crime in China can be curtailed in the medium term. The majority of executives expect that economic crime in China will remain at the current level or increase.

However, representatives of the companies with the highest annual revenue – of at least €1 billion globally – tend to believe that economic crime can be curtailed in the medium term more than their counterparts in smaller companies do.

One in three decision-makers in the automotive industry expects to see an overall increase in economic crime in the next three to five years. Decision-makers in the chemicals industry and the retail and consumer goods industry are even less optimistic about crime rates dropping.



D Experts: Outlook with a view

1 Logistics companies still have lots of potential in China

The logistics market in China, with a volume of \$400 billion and growth of 30% in 2010⁷, has bright prospects ahead. Logistics companies do not have to worry about an exodus of their customers from China. On the contrary, the increasing importance of China as a market is bringing more and more companies to the country and emboldening the established players to deepen their involvement.

Global logistics

China is a very attractive market for logistics companies not only because it is the world's leading exporting nation but also because the logistics market in China – like that in Europe – offers significant growth opportunities and a strong trend towards profitable value-added services.

**Klaus-Dieter Ruske, PwC,
Global Industry Leader
Transportation & Logistics**

The results of this study clearly show that the contract logistics business in China has enormous potential, especially since only a quarter of respondents currently make use of such services.

Just as in Germany and Europe, companies rarely contract out for logistics services in the segments of procurement management and production/assembly. Consequently, there are significant opportunities for specialised logistics

companies. Packaging tops the list of contracts awarded to external service providers. However, it remains to be seen, if quality assurance and certain subsegments of after-sales service (including returns management and complaints handling) will become future growth drivers of the logistics industry in China. This is especially the case as these areas in particular require trust in and satisfaction with the service provider. A logistics provider must be both trustworthy and competent in order to make the jump from being a mere carrier to being a warehouse manager, responsible for the organisation, coordination, and quality control of complex logistics processes.

The concept of contract logistics is not yet firmly anchored in German companies operating in China. This is reflected in the large number of companies that have not yet considered outsourcing certain service packages. A look at the websites of the major logistics service providers reveals a wide range of contract logistics services specifically for China. The question remains why these services are not being utilised.

For contract logistics companies, this means increasing market presence and winning over new customers with effective marketing schemes and efficient sales methods.

⁷ Source: Germany Trade and Invest (ed.): Transport und Logistik VR China/Hongkong (SVR) (Transport and Logistics Peoples Republic of China/Hong Kong), Dr Roland Rohde, Hong Kong, 08/2011.

Contract logistics

Logistics companies must be able to demonstrate extensive industry experience and excellent product knowledge, both of which require well-trained staff.

Ulrich Lorchheim, PwC

A potential lack of properly qualified staff could represent an obstacle for the further development of the contract logistics business in China.

The companies surveyed in this study, together with their industries, represent a large share of total trade with China. Every sector has unique characteristics, and therein lies the opportunity to break in – and that goes for logistics companies whose business in China is still in its infancy. Specialisation and industry experience provide tremendous competitive advantages.

The survey shows that many companies still organise their logistics processes internally. With the exception of supply chain monitoring, all outsourced functions are contracted out to Chinese service providers. Despite the fact that the logistics and purchasing managers surveyed expressed relatively low levels of satisfaction with how Chinese service providers handled logistics processes.

Price is not everything

According to the survey participants, price is not the most important criterion when selecting external service providers. Given the quality deficit revealed in the survey, Chinese service providers might not be the best equipped to handle contract logistics.

Companies typically only decide to undertake a long-term division of labour with a logistics service provider if they have already had good experiences with the service provider. Companies are even more cautious when the contract involves a complex bundle of services.

The reason for this is clear: contract logistics service providers are entrusted with long-term logistics and logistics-related tasks, including project management, along the entire value chain. They represent a link between all parts of the chain.

Reliability is everything

Before working with a carefully chosen partner, it is important to develop business plans to verify and reconcile the underlying assumptions on both sides, and to use the resulting plans as the basis for the cooperation. Outsourcing can only be successful if the project is carefully evaluated in advance. In addition to the financial, legal, and organisational aspects, staff must also be factored into the equation. It is not seldom the case that the outsourcing company also furnishes employees in addition to operational resources.

Furthermore, outsourcing projects necessitates that compliance with various requirements be continually reviewed by independent experts in order to guarantee the security and above all the reliability of business processes.

Environmental protection requires goals

A greater commitment to environmental protection on the part of logistics companies still does not appear to be obligatory. While environmental issues have drawn increasing attention from the public and the government alike, the survey shows quite clearly that customers do not currently insist on environmental protection measures and even regard them as less important selection criteria. Although the respondents generally expect their own customers to make greater demands in this direction, they still do not feel required to implement environmental protection measures in the short term.

Sustainability

It would be beneficial for logistic companies to standardise central environmental solutions, integrating them as a key component and implementing them uniformly across the company – including in China.

**Michael Werner, PwC,
Sustainability Leader**

Nevertheless, among the German companies surveyed that do not attach any great significance to environmental protection in China, there is consensus that state regulations on environmental issues may indeed be tightened in the coming years.

Thus from a strategic perspective, the still very neglectful stance on environmental protection in China should be addressed head-on. If companies only respond after regulation is tightened, they will be subject to much greater pressure – pressure that could have been avoided. After all, customer requirements can change very quickly. But it can take a company quite some time to be able to meet them.

Beyond environmental concerns, there are numerous other issues unique to China that need to be considered before entering the market or planning an expansion.

Product piracy is a persistent problem

Persistent economic crime in China, especially corruption, counterfeiting, and patent violations, could prove a challenge, especially for new entrants. The vast majority of respondents anticipate that fraud will lead to economic stagnation. Almost one in three expect the situation to worsen. Caution, especially as concerns the theft of intellectual property, is advised. The results of the survey showed that respondents were particularly sensitive to and concerned with this issue.

That said, almost half of the German companies surveyed indicated that they had not yet encountered any type of economic crime in China. In this regard, the results of the survey are not intended to be frightening but rather to serve as a helpful reminder for international companies to keep their guard up.

Forensics

The government in China is making significant efforts to strengthen the fight against corruption. While this may tighten the legal framework and increase the risk of prosecution – also for foreign companies – it will also increase the risk of compliance violations.

Claudia Nestler, PwC

Logistics facilities are in demand

As with the overall Chinese real estate market, the market for logistics properties is developing extremely dynamically. The demand, particularly for high-quality facilities in attractive locations, exceeds supply in many places leading to rising rent and purchase prices. This is true not only for the well-known cities of Beijing, Shanghai, and Shenzhen, but especially for second-tier cities. In most cases, these cities are the capitals of provinces and have particularly high economic growth, massive state-sponsored local infrastructure projects, and, consequently, an increasing demand for logistics facilities. The latest regulatory restrictions on the allocation of land and real estate loans, introduced last year by the government to cool the property market, sometimes make it difficult even for project developers to handle the high demand for adequate logistics facilities. As a result, vacancy rates remain low.

In principle, foreign companies in China can choose from several options: they can lease existing warehouse facilities; construct a building themselves; or work with a project developer and, using a build-to-suit approach, have a bespoke building constructed and lease it long term.

It should be noted that the quality of construction varies greatly among existing properties. In modern industrial parks, logistics properties are being built to the latest standards, thanks to the increasing involvement of international investors. Many pre-existing properties, however, are a far cry from Western standards, both in terms of the general quality of construction, and the layout, flexibility, and interior of the buildings. Most likely, these old buildings will gradually give way to new logistics properties, as demand for high-quality facilities increases. One example of the growing demand for logistics facilities is the rapidly growing e-commerce sector. In China's major cities, there is still a number of pre-existing, high-quality logistics facilities available, which means that companies do have the option to find and lease an appropriate facility. However, in the second- or even third-tier cities, often there are simply not enough existing properties that meet the requirements of international companies. Consequently, the growing number of companies that are coming to these cities – in order to capitalise on the dynamic developments playing out there – frequently have no other option other than to build their own facilities.

This may be one reason why 44% of the companies surveyed reported organising storage themselves.

Real estate

Although foreign companies are allowed to own their warehouse and logistics buildings, it still isn't possible for them to acquire ownership of the land plots in China. Private use is limited to the acquisition of temporary land use rights.

Florian Hackelberg, PwC

The purchaser may acquire the right to use a particular plot of land by making a one-off payment at the beginning of the contract term. This right of use is restricted to a specific purpose for a specific period of time – usually 50 years for industrial properties.

The current legal framework stipulates that at the end of the period, the property, along with all the buildings and outdoor facilities built on it, reverts to the state without compensation. Because the commercial life of logistics properties in China is comparatively shorter than other types of properties, such as residential or office buildings, it is unlikely to exceed the 50-year period. As such, the length of the term is generally not problematic in itself, but rather with regard to future modifications or extensions, or new buildings on sites with older land use rights.

Customs

It is essential for companies to have unobstructed access to the Chinese market. Rapid and straightforward processing is especially important in customs.

In conclusion, the study shows that external expertise in customs matters in China is of great benefit and preferred by companies. However, given the levels of satisfaction, it remains unclear whether this expertise is best provided by Chinese logistics companies.

Jochen Schmidt, PwC

Given the complex Chinese import and export regulations, this is not always easy. The study clearly shows that companies are increasingly turning to Chinese experts (both external Chinese logistics service providers and customs brokers who work internally). Presumably, the companies expect these (external) experts to deliver easy access to the Chinese market, in part because of language and cultural competences. Thus it is highly surprising that companies still report being dissatisfied with the customs clearance services provided by external Chinese logistics companies. In contrast, non-Chinese external service providers received the highest marks in terms of overall satisfaction.

2 China: Growth market for industrial production

Industrial production

Long-term, costly, and complex – these are the most common descriptions of projects in the industrial production sectors, especially in construction and plant engineering.

**Martin Theben, PwC,
Industry Leader Industrial
Products**

Due to the growing pace of globalisation, foreign investments and activities are increasingly becoming part and parcel of large, project-based businesses. Seen in this context, the boom in China – which is driven by a steadily growing middle class and a prosperous economy – represents both a lucrative business opportunity and a logistical challenge for German industrial production companies.

Construction and plant engineering

Compared to other industries, the construction and plant engineering industry is significantly more sceptical towards Chinese logistics service providers. The main reason is quality. The construction industry is very conservative in terms of undertaking functions in the value chain in China, and also in its assessment of the level of development of logistics companies and individual related aspects, such as quality/risk management and security standards. This is rooted in the business itself. Complex projects require optimal and seamless coordination coupled with a guarantee of high standards of quality. The sceptical attitude of the industry can also be seen as a result of intensive collaboration with logistics service providers. Ultimately, the construction and plant engineering industry depends

on these external companies to help execute such complex projects. None of the other industries surveyed works more frequently with contract logistics companies, which are often required to transport large quantities of heavy, awkward goods.

Research and development stays in Germany

While more than half of the construction and plant engineering companies already conduct materials procurement, transport, assembly, sales, and even after-sales services in China, these companies only implement research, development, and design functions there in exceptional cases. In the construction and plant engineering industry, this is a normal state of affairs; the commodities come from the country in which the projects are executed and the expertise from the home country (in this case, Germany).

Market potential: Green building

There is enormous market potential for German construction and plant engineering companies in the areas of sustainability and environmental protection. Due to rapid urban growth, by 2030 over 220 Chinese cities will have more than 1 million inhabitants. Faced with a shortage of raw materials and increasing pollution in cities, the Chinese government has made ecological construction a goal in its 12th five-year plan. According to this plan, new buildings should consume 65% less energy than existing structures.

Although the industry is largely critical of existing and planned environmental protection measures in China, the fact is that they will increase local demand for green buildings.

Construction and plant engineering

Green building represents a particularly interesting opportunity for German companies, because their strength lies in the construction of complex buildings and the services connected with the life cycle of a property.

**Martin Nicklis, PwC,
Coordinator Engineering &
Construction**

There is a potential market for all green-building services, from pre-planning to construction, from operation to revitalisation, and even demolition. In the same vein, the growing green building market presents a wealth of opportunities for the logistics companies in China that offer comprehensive services and that can adapt their service portfolio to the transportation, storage, and assembly of eco-efficient materials. Specialising in this area can not only improve a brand's image, but also help consolidate and expand their market position.

Mechanical engineering

The realisation of the value chain in China is relatively advanced in the mechanical engineering industry. A comparison of industries shows that mechanical engineering companies are more active in the areas of sales, marketing, and after-sales services than companies in other industries. This is not surprising.

Mechanical engineering

Traditionally, mechanical engineering is one of the first industries to make its mark in emerging and new markets by setting up or modernising production locations. Owing to this early market entry, the mechanical engineering industry quickly develops a continuous value chain which is characterised, among other things, by the construction of local manufacturing facilities.

**Martin Bork, PwC,
Coordinator Industrial
Manufacturing**

This is particularly true in China, whose large production capacity has solidified its reputation as “the factory of the world”.

Logistics services for the mechanical engineering industry normally centre around the transport and delivery of machinery or components that are produced, in whole or in part, and assembled locally. However, the fact that just half the companies execute the transport, logistics, and/or distribution step in the value chain in China – and that only a quarter of mechanical engineering companies outsource to contract logistics companies – suggests that the industry is highly sceptical of external service providers. In reality, this result must be interpreted within the context of protecting specific product knowledge and intellectual property.

Counterfeiting is a serious problem

Contrary to the common perception that consumer goods manufacturers and media companies are the biggest targets for counterfeiters, it is actually the mechanical engineering and construction and plant engineering companies, along with automotive companies, that are most affected by product counterfeiting, patent rights violations, theft, and industrial espionage in China. The mechanical engineering industry has a large amount of expert knowledge and intellectual property. These aspects are

decisive factors in sales, particularly in the segments for special machinery and automation systems. Special knowledge is an essential factor for the middle-market structures of the industry and the key to lasting success in the market. The protection of patents and knowledge is of vital importance and understandably a priority for any mechanical engineering company.

In-house management preferred

Most mechanical engineering companies operating in China prefer to manage their own logistics processes, such as monitoring all or parts of the value chain, customs clearance, or transport management. As such, only simple services are contracted to external service providers, suggesting that closer collaboration is not a priority. Even warehousing operations, which in Germany are often performed by external service providers, are mostly managed internally in China. Clearly, China-based logistics providers are not considered capable of designing processes more effectively. This attitude may stem from the companies' experience in setting up their own internal structures in China.

China considered a growth engine

Despite these difficulties, the top players in mechanical engineering continue to see the Chinese market as a growth engine for their industry. In addition to developing consumer-oriented product innovations, challenges include recruiting qualified staff locally and overcoming market-entry barriers, such as customs regulations. The task facing logistics service providers will be to support these processes and, in doing so, quell the industry's scepticism.

Chemicals industry

China is currently the world's third-largest manufacturing base for chemicals and is expected to become the largest by 2015.

Chemicals industry

The annual growth rate of the chemicals industry in China is between 10% and 20%. In addition to important domestic chemicals companies, there are a number of cooperation projects with companies from Germany, the US, the UK, and other countries.

Volker Fitzner, PwC, Coordinator Chemicals

Since the economic crisis of autumn 2008, product prices have fallen by as much as 50% in many chemicals industry segments such as plastics production. Customers from overseas have placed few orders for chemicals in China, causing many factories to shut down. Nevertheless, China remains an essential factor for sustainable growth in the chemical industry - more so than for other industries. In the meantime, investment in new chemicals plants, for example, for pharmaceuticals, plastics, or rubber, has picked up considerably. Investments in the construction of refineries are especially high with more than 20 plants in the pipeline.

Companies require high safety and security standards in logistics

The concept of logistics in China traditionally tends to cover only transportation and warehousing services. So far, however, uniform logistical standards have not materialised. There remains a lack of appropriate service offerings; modern IT systems for planning and managing supply chains have been used only in exceptional cases to date. But when international companies set up in China, their requirements differ little from the customary high standards in Western Europe or the US. Safety and security systems are a particularly important factor in the selection of logistics service providers, mainly due to the prevalence of hazardous materials, such as those found in the fertiliser industry. Here it is worth mentioning that the chemicals companies

cite a higher standard of development among Chinese logistics providers in the area of safety standards than do other industries.

Environmental protection is moving ahead

Compared with other industries, the chemicals industry puts greater emphasis across the supply chain on sustainability and environmental protection measures, such as recycling, route optimisation, the use of low-emissions vehicles, and switching to other modes of transport. In contrast to its public image as a polluter, the chemicals industry increasingly sees itself as a driver of sustainability (i. e., in the transition from fossil fuels to renewable resources). This is primarily due to regulatory pressure and the strict environmental standards demanded by the buyers of Chinese goods abroad. Chinese consumers are also expressing a desire for healthier products, and the Chinese government is playing an important role as it tries to get companies to adopt more eco-friendly production methods. Last but not least, REACH (Registration, Evaluation, Authorisation of Chemicals), the new chemicals safety programme of the European Union, and the labelling rules of the Globally Harmonized System are forcing the Chinese chemicals industry to adopt higher standards. In the meantime, though, the chemicals industry has shown an independent interest in complying with limit values and environmental standards.

Spinning off design, research, and development

Chemicals companies also differ from other sectors of industrial production in the realisation of certain stages of the value chain. They have, for example, intensified their design, research, and development efforts in China more than other companies. The underlying reason for this is that despite the strength of German chemicals research, competition with the booming markets of Asia has increased. Many Asian countries are greatly expanding their research

capabilities. Almost half of the large German chemicals companies surveyed now plan to intensify their research in emerging Asian countries, in order to adequately respond to customer needs.

China is the growth market for industrial-production companies. The country has become more than just the “work-bench of the world”. In addition to being an important manufacturing base, it is also an increasingly significant trading partner and sales market. The market potential is now there for companies in sectors that previously ranked lower on the agenda in China, for example, consumer-oriented and sustainable products and services or technological know-how in matters of energy and energy efficiency. Given this context, China should also be of interest to the logistics service providers of industrial-production companies. They should endeavour to align their product and service portfolio with these developments, as the opportunities available here are far from exhausted. On the contrary, this area is considered to have a great deal of development potential.

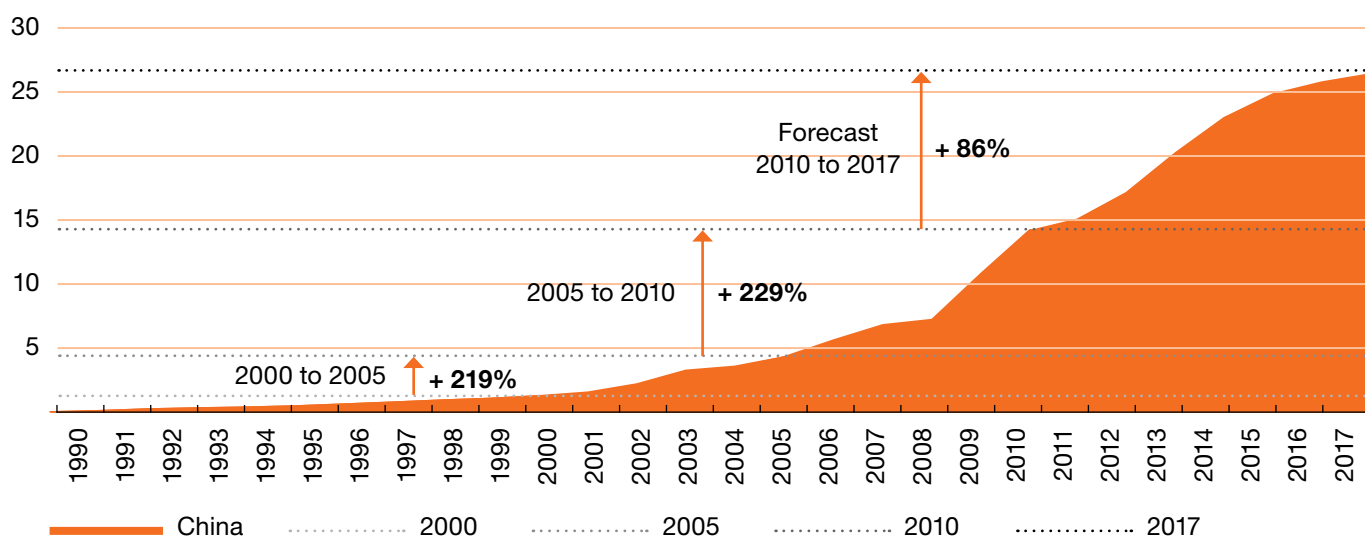
3 Car manufacturing – Growth in China requires stable logistics and transport structures

Some 27 million vehicles are expected to roll off assembly lines in China in 2017. If this forecast materialises, China will account for nearly a quarter of global production and be bigger than NAFTA or the EU-27 has ever been. To supply factories with components and assemblies at the right time and in the right order, complex supply structures will be required. For that purpose, however, China does not always have the right conditions for that purpose.

Global production and logistics is now standard in the automotive industry

National boundaries are largely irrelevant in today's automotive industry. The international OEMs have achieved a very high degree of globalisation and manage complex production and logistics networks worldwide. As the recent crisis showed, regional diversification is a factor for stability and success, and accordingly, all major manufacturing groups are represented in all regions of the world, whether with their own factories or via partnerships.

China plays an increasingly important role in the automotive industry. Within 10 years, China has become the world's largest auto market, with approximately 14.5 million vehicles. From 2005 to 2010, production grew by an astonishing 229%, not dissimilar to the 219% growth seen between 2000 and 2005. In absolute numbers, this means that China was able to increase its vehicle production about tenfold in 10 years. PwC Autofacts forecasts further growth of 86% until 2017. This corresponds to an absolute increase of approximately 12.5 million units and an annual average growth rate of 9.3%. The main drivers for this impressive development are strong growth throughout the economy, the rising purchasing power of nearly all segments of the population, and growing consumer demand for personal mobility by car.

Fig. 24 China's manufacturing growth (PwC Autofacts Base Case), 1990–2017 (f)

Source: PwC Autofacts Q3/2011.

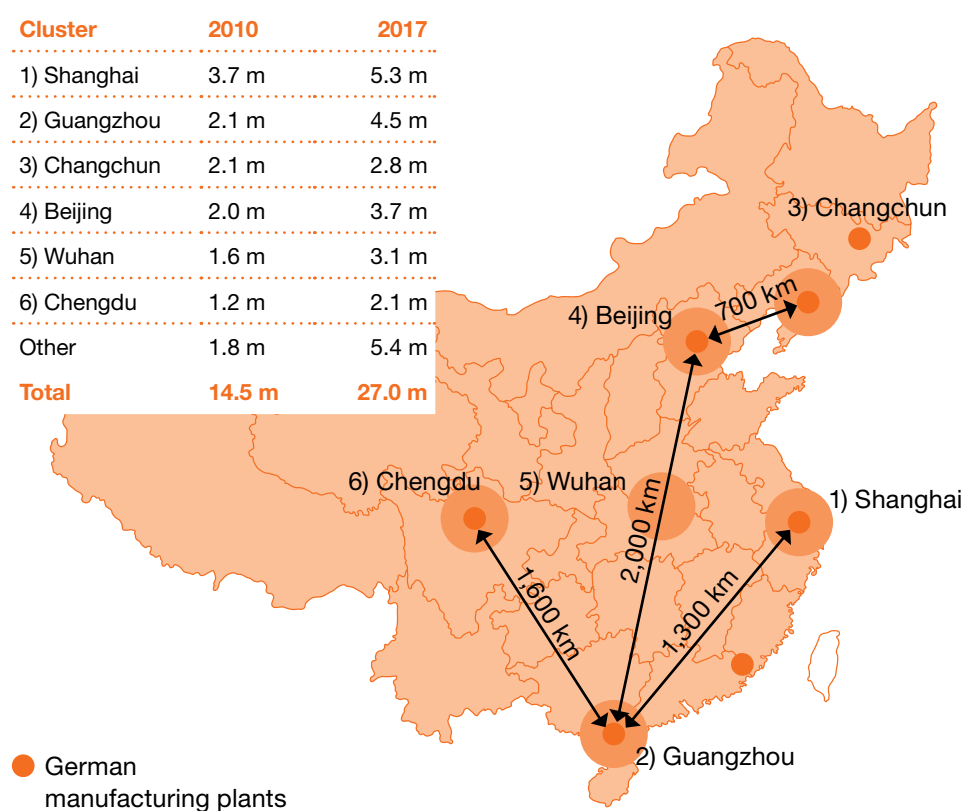
Automotive industry

China's strong growth is spurring on the automotive industry as a whole. Almost all manufacturers will be able to take advantage of it and achieve much higher growth rates than in the mature markets of Europe and America.

Jan Maser, PwC

But in order to sell a lot, you also have to produce a lot. This requires the development of new capacities and above all, stable supply networks, in order to be able to supply individual plants with the corresponding components and units at the right time, in the right quantity, and at the right location. But in a country like China, with an area of 9.6 million km² and wildly varying infrastructure conditions, this is not always easy.

Vehicle production in China is concentrated in six major clusters: Shanghai, Guangzhou, Changchun, and Beijing on the coast; inland Wuhan; and Chengdu, the capital of Sichuan province in western China. All of the clusters will benefit from the rapid development of the Chinese market and the growth in capacity on the part of manufacturers. Particularly high growth rates will, however, be seen in southern Guangzhou and Wuhan in central China. By 2017, these sites will double their manufacturing capacity.

Fig. 25 China's automotive clusters and production volumes, 2010 and 2017

Note: clusters include all plants for the production of light vehicles within a 300-km radius.
Source: PwC Autofacts Q3/2011

Following this trend, many manufacturers, especially German OEMs, are expanding their car manufacturing networks into the southern and western provinces. These new plants will be supplied by existing components and supplier plants, especially when it comes to system-relevant parts, which means that delivery distances can be expected to increase by up to 2,000 km.

Of course, this will present new logistical challenges. In order to meet the just-in-time (JIT) and just-in-sequence (JIS) requirements, it is crucial to select a logistics service provider that has

adequate capacity, is highly flexible, and above all, can guarantee punctuality. Moreover, the varying infrastructure conditions in the provinces could lead to a significant increase in logistics costs. This is mainly due to the lack of developed road networks outside the metropolitan areas and to the poor quality of railway lines, which restricts cargo trains to low speeds.

In established markets, these logistical challenges are often faced by strategic partners who also take on such value-added process steps as module assembly or welded assembly. These contract

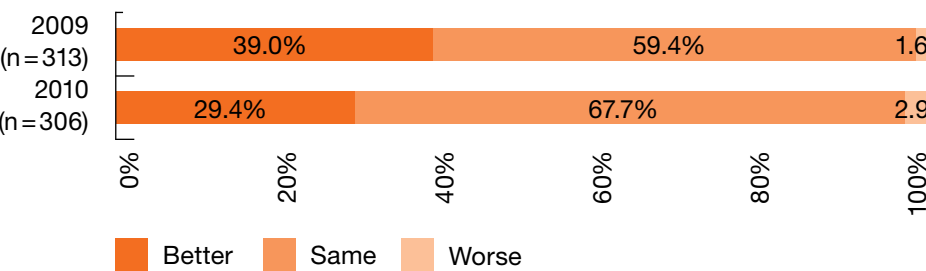
logistics companies have their supply centres in the immediate vicinity of the car manufacturers, giving the contract logistics companies insight into the organisations of their individual customers. Especially in the Chinese market, there are concerns among German manufacturers about cooperation with local contract logistics companies. In particular, fears about the transfer of knowledge make this kind of partnership difficult.

technologies in the Chinese market, many manufacturers have legitimate concerns about opening the door to imitators and counterfeiters.

In 2010, a survey of US companies with operations in China found that 30% believe the situation surrounding intellectual property has improved over the previous year. In 2009, just under 40% had already seen an improvement.

In the automotive industry, the combination of technology, knowledge, and China, gives rise to a familiar dilemma: the protection of intellectual property. Even when introducing new

Fig. 26 Protection of intellectual property



Note: survey of assessments by US companies
Source: American Chamber of Commerce in Shanghai (ed.): 2010–2011 China Business Report.

The European Chamber of Commerce published a study in 2011 in which 73% of European companies based in China rated the legal environment as adequate to very good. But again, rules are one thing, reality quite another. A similar percentage sees an enormous need for action in enforcing existing laws. Based on the companies’ perceptions, it can be assumed that the contract logistics business in China will have a less important role for car manufacturers than it does in Germany.

Automotive industry

If the German automotive industry wants to achieve its growth objectives and, accordingly, expand its capacity in China, it will have to secure stable and reliable logistics structures.

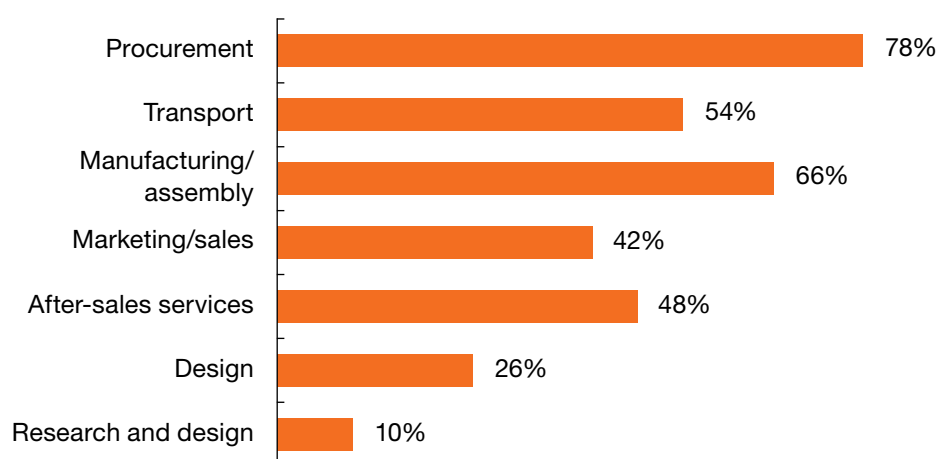
**Felix Kuhnert, PwC,
Industry Leader Automotive**

4 The retail and consumer goods industry: The long road from the shopping centre to the Chinese market

China is one of the most important procurement markets for German retailers and consumer goods manufacturers, especially for companies with more than €1 billion in annual turnover. Almost 80% of the retailers and consumer goods manufacturers surveyed procure goods from China, and

two-thirds produce in China. This reflects the highest percentage in any industry. The main import goods are electrical and electronic equipment, furniture, jewellery, toys, and clothing. A quarter of the companies have even outsourced their design function to China.

Fig. 27 Parts of the retail and consumer goods industry's value chain carried out in China



China is becoming an increasingly attractive market

While on average 57% of companies in the other industries surveyed sell their products in China, only 42% of German retailers and consumer goods manufacturers do so. Nevertheless, China is a market with enormous potential for retailers and consumer goods manufacturers: the retail market has grown steadily by more than 10% for years, and a prosperous middle class interested in Western brands has emerged, with some 200 million potential consumers. According to current projections, China will overtake the US in 2015 as the largest food market in the world. Online

retail is also booming: increasing internet penetration, more secure payment methods, and improved product delivery have led to an increase of 105% from 2004 to 2010. Moreover, the new five-year plan seeks to strengthen domestic consumption;⁸ increasing incomes for the nearly 900 million Chinese currently living below middle-class standards will boost annual consumer spending by approximately €70 billion.

⁸ Source: PwC, China (ed.): Navigating the Twelfth Five-Year Plan – Growth through indigenization, Summer/Fall 2011, page 3.

Concepts require localisation

These superlatives should not obscure the fact that the consumer market is subject to different rules than the business-to-business market (for example, in the machinery or plant engineering industries). Many leading international retailers and consumer goods manufacturers have had to learn that successful business models, retail formats, and products from their home markets or other markets in Asia could not simply be transferred to the Chinese market as they were. As obvious as it may sound, adapting to Chinese consumer habits is absolutely essential for acceptance and success in the Chinese consumer market. A few Chinese consumer goods manufacturers even manage to compete with international companies by leveraging better concepts and a certain amount of government support. Prominent examples are the beverage companies Wahaha and Tingyi, which have snatched away market shares from Coca-Cola and PepsiCo. Also, the detergent manufacturers Nice Group and Guangzhou Liby Enterprise Group, with a combined market share of 35%; and the electronics giant Haier, the world's fourth-biggest appliance maker and a world leader in the production of refrigerators.

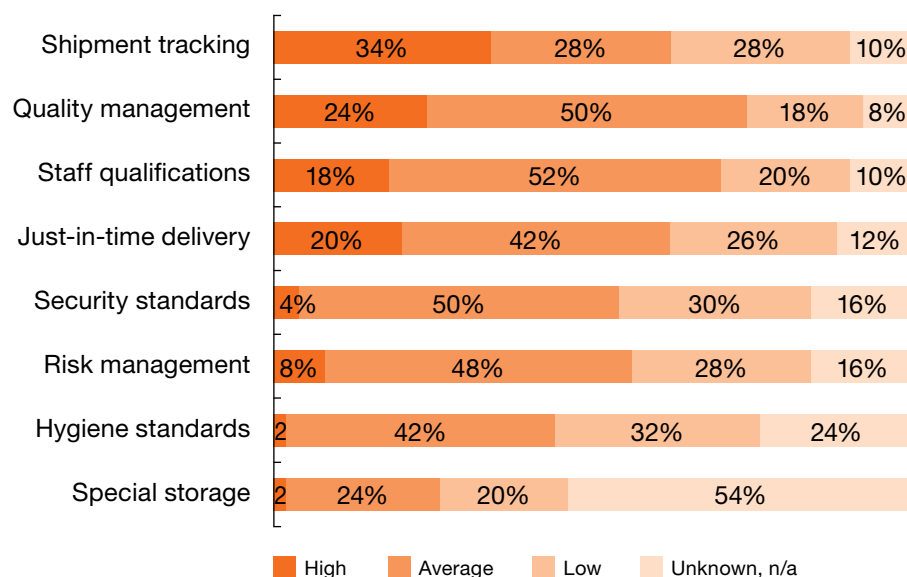
International corporations have laid the foundation for modern food retailing

An example of the successful introduction of Western retail formats can be found in the retail food business. Although it has taken nearly a decade, supermarkets, hypermarkets, and convenience stores have now become established modern formats in major cities, alongside corner shops and street markets.

The major international retail companies and consumer goods manufacturers have also long since begun to tap into the big cities of the western interior provinces. This expansion, referred to in industry circles as “the last great industrial adventure”, has one primary requirement: functioning logistics structures and processes that form the backbone of inventory management systems.

And it is in the retail food business in China that international retailers Carrefour, Metro Group, Tesco, and Wal-Mart have broken new ground in logistics: by independently establishing a cold chain, they have laid the foundation for modern food retailing. The Chinese government's new five-year plan, with its goal of modernising agriculture, will bolster the development of logistics processes in the food industry. Although the survey results on the quality of logistics service providers show that less than half of German retailers and consumer goods manufacturers currently use specialised logistics services like refrigerated transport and storage, the new regulatory environment makes the Chinese market more attractive for the German food industry. This indirectly stimulating the demand for specialised warehousing services and raising hygiene requirements. As shown in Figure 28, the survey results show that among logistics service providers, there is significant room for improvement in these two areas in particular. This is all the more remarkable given that the retailers and consumer goods manufacturers generally contract non-Chinese logistics service providers, who are thought to adhere to international quality standards.

Fig. 28 Level of development of logistics service providers in China from the perspective of German retailers and consumer goods manufacturers



Costs will rise

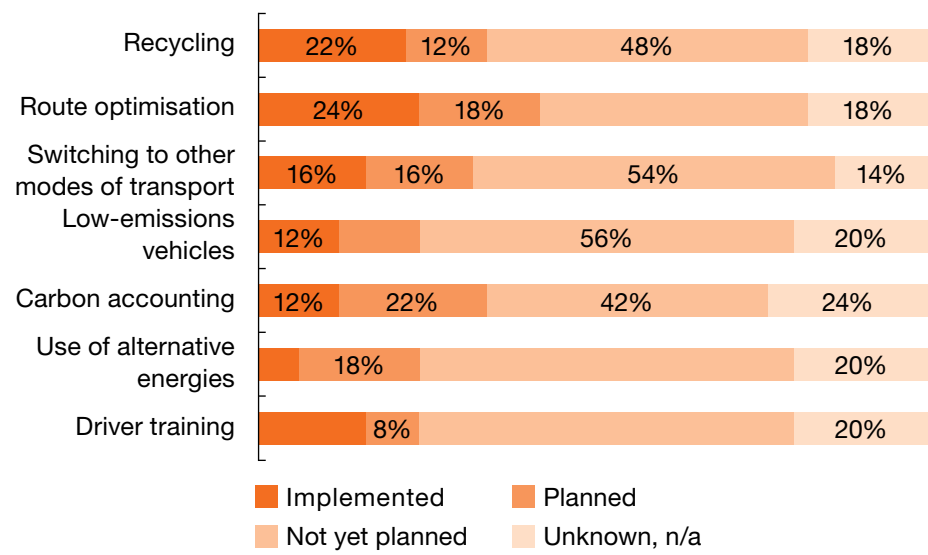
The new five-year plan also poses new challenges to retailers and consumer goods manufacturers. Wage increases of up to 40%, more stringent compliance requirements (particularly in the areas of food security and sustainable development), and higher taxes will lead to significantly higher costs in an already competitive market.

The intense competition for qualified staff has changed the way international retailers and consumer goods manufacturers think about employee recruitment and development. The trend is moving away from foreign assignments and English-speaking graduates of the best Chinese universities to internal training and development programmes for Chinese employees. An example of the new approach to employee development in China is Metro Cash & Carry's intercultural "House of Training", which is located in Shanghai and serves the entire Asian region.

Environmental protection measures in need of improvement

The survey results show that German retailers and manufacturers need to improve significantly in the area of sustainability. To date, only about a third have considered sustainability aspects when selecting logistics service providers. In this aspect, the retail and consumer goods industry lags behind the four other industries surveyed. Retailers and manufacturers in China also have a long way to go in terms of implementing environmental protection measures in their own companies. Less than a third of the companies surveyed have taken standard environmental protection measures. Only in route optimisation do they fare better. These results are in substantial conflict with the sustainability goals and sustainability reporting of German retailers and manufacturers. It seems that the companies may apply different standards in different countries in order to keep their total costs manageable.

Fig. 29 Prevalence of environmental protection measures in the retail and consumer goods industry in China



Because German retailers and consumer goods manufacturers still consider China primarily a procurement and production market, there is still considerable room for growth. An efficient supply chain for retail and consumer goods companies is a key prerequisite for the (further) development of China as a market. Given that German retailers and manufacturers primarily contract non-Chinese logistics service providers, German suppliers with broad geographic coverage and high-quality service would make ideal partners for implementing expansion plans in the retail and consumer goods industry.

Retail & Consumer

Logistics service providers need to develop customised solutions for the unique needs of the retail and consumer goods industry.

**Gerd Bovensiepen, PwC,
Industry Leader Retail & Consumer**

5 China Business Group – Experts who know their stuff

The preferred locations for investment in China can be divided into three regions: the central region of Shanghai, with the neighbouring provinces of Jiangsu and Zhejiang (recipient of 36.7% of all foreign direct investment); to the south, the region of Canton, with the cities of Guangzhou and Shenzhen (15.8%); and to the north, the region of Beijing, with neighbouring Hebei province and the city of Tianjin (9.7%). The concentration of investment in the Shanghai region makes this region deserving of a closer look.

Taken together, the two ports in Shanghai and Ningbo already form the world's largest logistics hub for the import and export of goods to and from China; Shanghai's free-trade port Yangshan overtook Singapore at the end of 2010 as the world's busiest container port. The city of Shanghai is also hoping to become an international logistics centre by 2020, a goal reinforced by the 12th five-year plan. This includes, among other things, the further expansion of its various port areas. Last year also showed the completion of the new transport hub in Shanghai-Hongqiao, with the expansion of the airport and the construction of another railway hub. This development is supported through tax breaks, such as tax exemption for certain logistics companies that operate out of Yangshan. Further tax breaks for other logistics-related industries could follow. Shanghai is also becoming a popular home for holding companies; more and more international companies are setting up their Chinese or even Asian holding companies there. Although other popular locations such as Hong Kong or Singapore can boast lower tax rates, mainland China appears well on its way to becoming the most important growth market in Asia and globally. When selecting a location, companies seem to give more weight to "proximity to customers" than to the cost advantage of "low taxes", especially since there are other ways to get tax breaks.

New: China

Despite the current focus on Shanghai as a logistics hub, we should not forget to consider how trade flows will change in the future.

**Jens-Peter Otto, PwC,
China Business Group Leader**

China's affluent classes are currently concentrated on the east coast of the country, in the three previously mentioned regions of Shanghai, Guangzhou, and Beijing. But in recent years it has become clear that disposable income has also surged in other parts of the country, even in the traditionally underdeveloped west, and that car density, an indicator of purchasing power, has also increased there, albeit from a very low level. Western China is therefore becoming increasingly important as a market for high-quality products. Accordingly, transport routes within the country are getting longer, making the issue of environmental protection, so far not identified as a significant factor in this survey, more important. In fact, the present five-year has set the following goals: the reduction of emissions, the promotion of alternative propulsion technologies in the automotive industry, the efficient use of energy, and the environmental friendliness of the transport sector in general.

Punctuality is a topic that is worth mentioning again, as according to the present study, it is a salient factor in satisfaction with external logistics companies. In China, the time required for the transport of goods depends in part on whether the load can quickly and reliably pass through official control points. Local requirements may vary greatly, and so familiarity both in-house and on the part of external logistics service providers is crucial. It is therefore important that all necessary

documents, such as customs documents, be discussed sufficiently in advance with the relevant authorities. There is still room for improvement, also on the part of the Chinese authorities.

Workforce – a problem of the future

With regard to the availability of qualified logistics staff, the survey reveals a surprising result: 64% of companies report being able to find enough qualified staff in China. Staff turnover and qualifications do not seem to be problematic issues for the logistics segments of German companies in China.

Thus, the opinions expressed in the survey for the logistics sector deviate from those in other surveys. For example, according to the 2011 China Business Climate Survey conducted by the American Chamber of Commerce in China, 52% of companies struggle to find and retain technical staff; 56% see the same problem with management; and 64% with skilled workers or specialists.⁹

German companies collaborating with Chinese universities

In their search for employees, German companies have for years struggled to find enough Chinese university graduates that have the same level of education as their German counterparts. To raise education standards among Chinese university graduates, some German companies have built up strong ties to Chinese universities, for instance, by establishing endowed chairs. German companies will need to increasingly leverage these opportunities in order to successfully recruit new managers, since top salaries alone are no longer incentive enough to work for a multinational company. Chinese (state-owned) companies have caught up in monetary

compensation and often provide attractive benefits, including affordable housing. In addition, they offer a better work-life balance than foreign companies do. Young Chinese companies, on the other hand, offer other incentives, such as stock options and rapid advancement opportunities.

These non-monetary forms of compensation resonate with Generation Y'ers, for whom professional development opportunities and work-life balance are, along with salary, key factors when considering a job offer. However, salary level is still very important, especially to avoid losing face when friends and acquaintances compete for the highest incomes. As a result, some industries have seen salary increases of 8% to 10% in recent years.¹⁰

Salary increases are the factor with the greatest impact on human resources for 64% of all the companies.¹⁰

In the future, it will be even more difficult for German companies to compete with Chinese companies for university graduates with the required skills.

And there is no question that these employees must be sought in the local Chinese labour market, since companies will not be able to establish a long-term presence in China with only non-Chinese employees.

This is especially true in view of the fact that it is becoming increasingly expensive to employ foreign workers in China. This for example is due to the introduction of social insurance contributions for foreign staff from July 1st 2011, and income tax on employee and employer contributions to foreign social security systems as of January 2011.¹¹

⁹ Source: The American Chamber of Commerce in the People's Republic of China (ed.): 2011 China Business Climate Survey, III. Business Challenges, Human Resources, page 19, chart 22. 2011.

¹⁰ Source: The American Chamber of Commerce in the People's Republic of China (ed.): 2011 China Business Climate Survey, III. Business Challenges, Human Resources, page 19, chart 22. 2011.

¹¹ Cf. PwC (ed.): China Compass, Summer 2011, page 28 f.

Cost of living is rising in China

In addition, the cost of living, and especially rent, in major urban centres like Beijing and Shanghai is steadily rising. These factors make long-term assignments to China unattractive for employers. That said, few companies can afford to ignore the booming market in China and the associated development opportunities. When sending employees to China, German companies face a difficult balancing act between need and cost, which makes the employment of qualified local workers even more attractive.

But what about companies who do not need highly qualified employees, but rather a wide range of cheap labour?

Cheap labour is still sufficiently available in China, thanks to the size of the population. In the past, these workers mainly came from the predominantly agricultural inland provinces, such as Sichuan, Anhui, and Jiangsu, or streamed into the coastal industrial centres as migrant workers. But long-term infrastructure and investment programmes for the central and western regions are showing results. Tax incentives and the expansion of the transport system have ensured that new companies set up shop there.

It is thus expected that, over time, more companies will move to the inland and western regions.¹²

According to the results of the study, just 8% of the 250 German companies surveyed plan to relocate their operations within China in the near future.

In addition, German companies will have to deal with rising salaries for migrant workers. That is because today's migrant workers are better educated than those of previous generations. Also, the increased cost of living must be taken into account. As a result, the minimum wage is raised continuously in many cities, sometimes by 10%.¹³

¹² Source: The American Chamber of Commerce in the People's Republic of China (ed.): 2011 China Business Climate Survey, III. Business Challenges, Human Resources, page 19, chart 22. 2011.

¹³ Cf: Zeit Online (ed.): Kristin Kupfer: In China fehlen Arbeitskräfte [China lacks manpower]. 04/03/2010.

Strengthening the inland regions will also deplete the pool of available workers in the coastal regions. Workers who previously had to move to the coast to earn a living and support their families will no longer need to do so if companies in their home provinces offer wages up to 20% higher than before, and extensive social benefits, such as free training and birthday bonuses.¹⁴

A far-reaching problem of the future is demographic change. The one-child policy means that the number of available workers will shrink in the medium term.¹⁵

German companies will therefore face several challenges in the Chinese labour market in the future. They will have to contend with rising labour costs, the shrinking availability of cheap labour, and increasing difficulties in recruiting graduates. In addition, companies that rely primarily on cheap labour will need to consider whether they should establish inland sites.

China

It remains to be seen whether the survey respondents will remain so optimistic about the availability of qualified logistics staff in the Chinese labour market. The answer is probably no.

Dirk Bongers, PwC

¹⁴ Weijun Yin, China: Labour shortage spreading to less developed central areas, Allianz Global Investors China Focus, 03/2011; Kristin Kupfer, In China fehlen Arbeitskräfte (China lacks manpower), Zeit Online, 04/03/2010

¹⁵ Cf: Sebastian Dullien, Wie China sein Superwachstum selbst ausbremst (How China will choke its super growth), Spiegel Online, 22/06/2011; Till Fähnders, Weg von der Ein-Kind-Politik (Abandon the one-child policy), faz.net, 18/05/2011

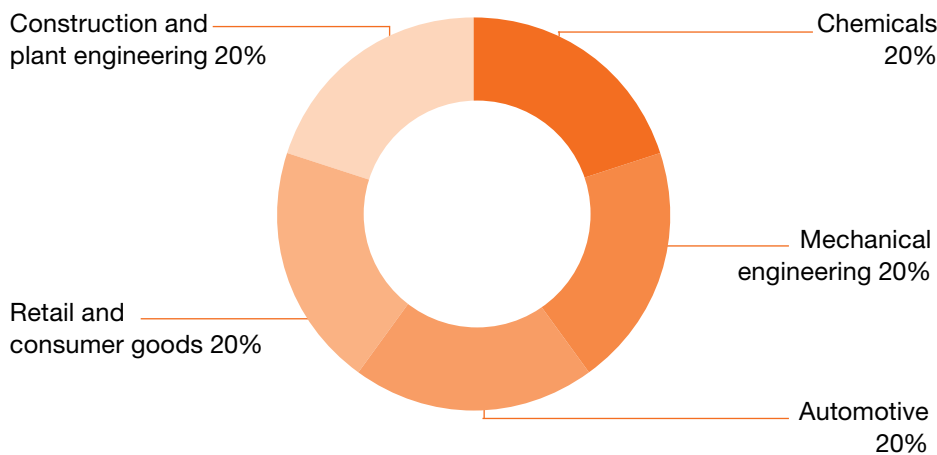
E Methodology

1 Approach

The study “Logistics in China: An all-inclusive Market?” looks at the logistics activities of German companies in five different industries: retail and consumer goods, automotive, mechanical engineering, construction and plant

engineering, and chemicals. Booster samples were taken in each area. A total of 50 interviews were conducted for each industry.

Fig. 30 Industries surveyed



All of the survey participants were companies operating in China that conduct business, logistics activities, or both in China. During the pre-selection phase, all companies were sent a letter with a preliminary question to ensure that the companies surveyed were indeed active in China. The sample comprises top German companies in the five aforementioned industries.

The addresses of the companies were provided by Hoppenstedt. The target contacts in the companies were mainly procurement/purchasing or logistics

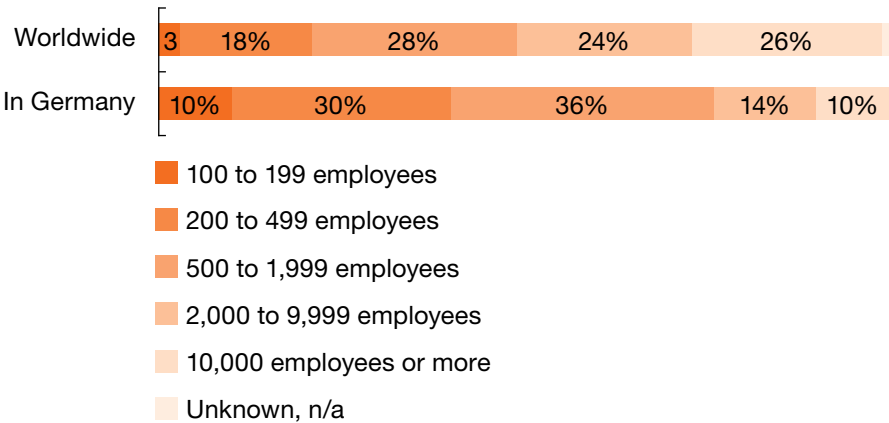
managers; however, the responses to the questions could be delegated to other relevant decision-makers.

The 250 CATI interviews were conducted from May 26th–June 27th 2011 by an independent market research firm (TNS Emnid), which guarantees the protection of data and ensures the anonymity of the respondents. The conversations lasted an average of 20 minutes.

2 Sample of companies

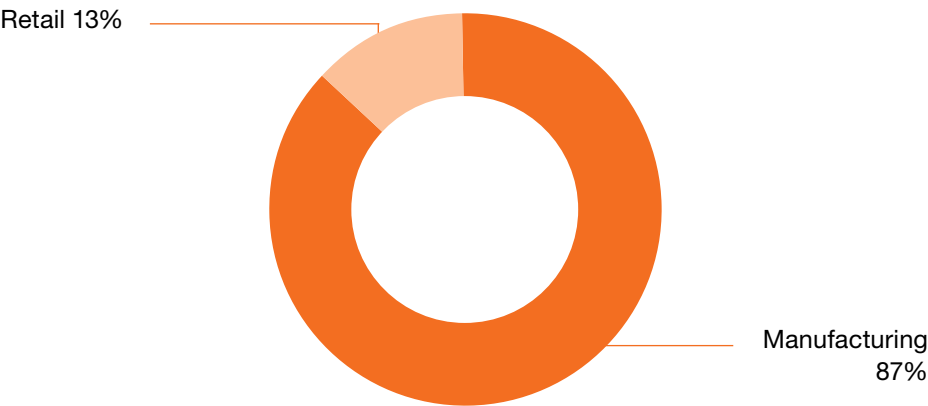
Half of the companies surveyed in the five industries employed at least 2,000 people. A quarter of the companies in the sample have at least 2,000 employees in Germany alone. Companies with fewer than 100 employees were not included in the survey sample.

Fig. 31 Number of employees

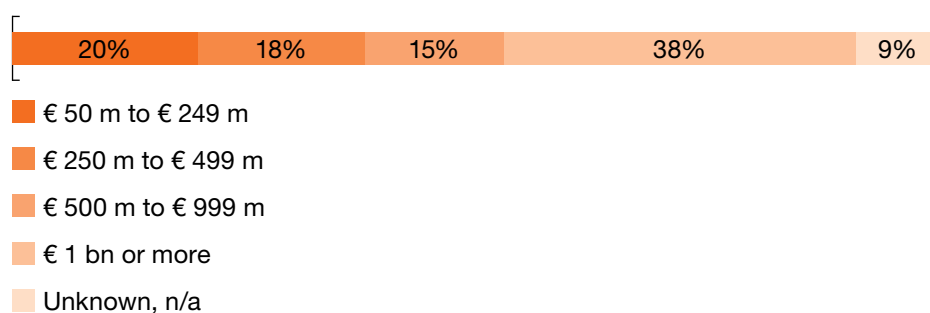
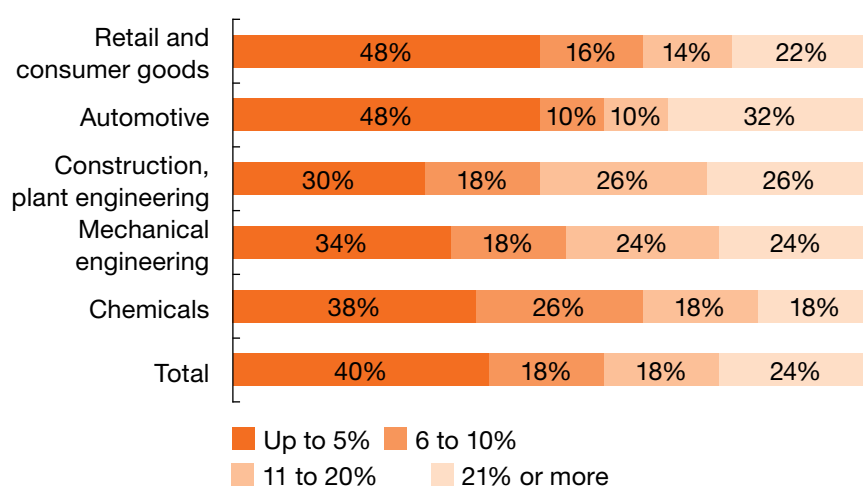


The vast majority of the companies surveyed were in manufacturing (217 of the 250 companies). Just 33 of the 250 were in retail.

Fig. 32 Company's line of business



Almost half of the companies reported at least €500 million in turnover in the previous year. Four out of ten companies generated even more, reporting a turnover of at least €1 billion.

Fig. 33 Previous year's turnover**Fig. 34 Percentage of total business represented by Chinese operations**

Just about half of the companies in construction (mechanical engineering, construction and plant engineering) stated that their activities in China make up more than 10% of their total business. In the chemicals and the retail and consumer goods industries, just one out of three companies reported the same.

Furthermore, almost half of the decision-makers in smaller companies (46%) estimate that their activities in China make up more than 10% of their total business. In the larger companies, just one out of three shared this view (33%).

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