



Aerospace supply chain: Resilience report 2024

Improving readiness, strengthening supply chains and
avoiding disruption

Management Summary

Together with the industry associations ADS (UK), BDLI (Germany) and GIFAS (France), Roland Berger surveyed key industry players to assess the current health and the future readiness of the aerospace supply chain in Germany, France and the UK. The study updates a similar 2023 report, with findings in three key areas:

Ramp-up readiness

At least one-third of participating companies are not ready for the ongoing planned rate ramp-up due to missing personnel resources, production capacities and/or capital constraints.

Supply chain resilience

The average level of supply chain disruption rose only slightly compared to 2023, but the level of very severe disruption increased markedly. Tier-1 suppliers were worst hit.

A key reason for disruption is unreliability of supply, caused by issues such as increased lead times and material availability.

Few companies achieved supply chain resilience in the past year, while the share of companies in firefighting mode increased.

Supply chain strategy

Many companies have recognized the problems: Nearly half of them have ambitions to change their supply chain set-up.

Regionalized/localized and parallel independent supply chains with a focus on availability as well as OTOQOC delivery are optimal in aerospace.

Key takeaways

- Bottlenecks are affecting the ramp-up, particularly around raw materials and resources.
- Companies have not yet sufficiently adapted their structures to ongoing supply chain disruptions.
- Companies need to build resilient structures to overcome future uncertainties. To achieve this, decisions made by task forces need to be better structured, stabilized, and sustainably implemented. It is not sufficient to only address problems ad hoc when they arise.
- The financial situation of the supply chain needs to be improved, with suppliers starting cost-competitive initiatives and customers (OEMs) re-evaluating pricing.
- Industry associations are supporting the move towards a resilient supply chain, for example, the "AeroExcellence" initiative.

Background and methodology

Our study assesses the health and future readiness of the aerospace supply chain in volatile times

The past few years have been enormously challenging for the aerospace industry, with a series of unprecedented crises severely shaking its supply chain. The effects of global events, such as the US/China trade war and the Russian invasion of Ukraine, were amplified by localized crises, including a rise in cyberattacks and US protectionist measures. This polycrisis led to material and workforce shortages, relocations from China and Russia, logistics and sourcing constraints, and increased lead times.

As a result of the volatility, aircraft and engine OEMs have made considerably fewer deliveries than were planned. While civil aircraft firms have recently begun ramping up production, many challenges remain.

Study objectives

In 2023, as ramp-up rates increased post-COVID, Roland Berger undertook a study to assess the health and future readiness of the aerospace supply chain in Germany. This year, Roland Berger and the industry associations of the three countries (ADS, BDLI and GIFAS) carried out a joint study to update the results, again using a survey of key industry players (see graphic).

The aim of the study is to analyze 1) the readiness of aerospace suppliers to deliver the planned rate ramp-up, 2) the resilience of the aerospace supply chain and improvement plans, 3) operational and strategic implications of new regulatory requirements, and 4) strategic considerations from the current geopolitical situation and next-generation aircraft.

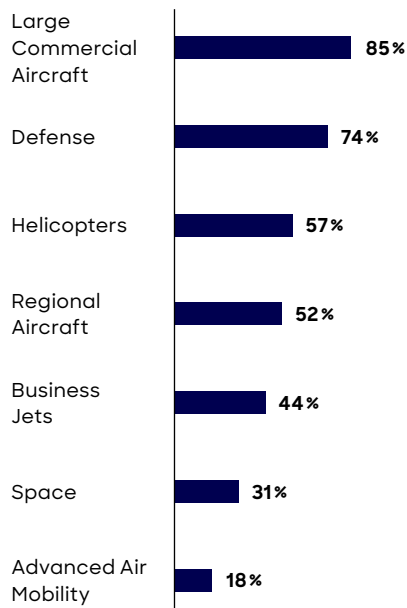
Below we present and analyze the study's results, concluding with some recommended actions.

Survey overview:

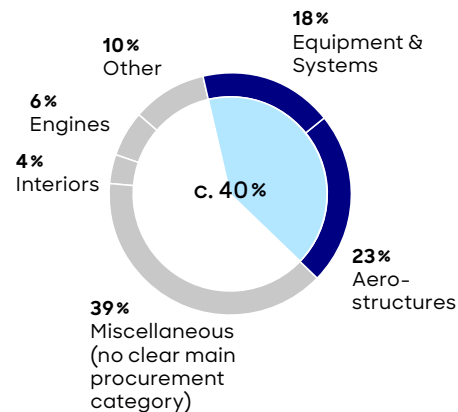
The surveyed group involved ~145 participants from OEMs and suppliers in diverse sectors, representing all procurement categories, company sizes and supplier tier levels

What are the main sectors your company is serving?

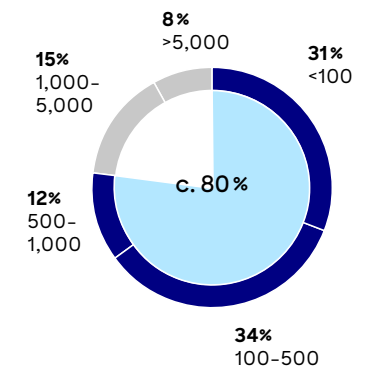
(Multiple answers possible)



What is the procurement category that is most relevant for your company?



How many people does your company employ?



What tier level is your company?*



Number of responses: Between 142 and 144 participants per question; main procurement category: >60% of procurement spend on one category of goods * May not add up to 100% due to rounding

Ramp-up readiness

OEMs and suppliers are currently suffering huge resource gaps, putting pressure on ramp-up targets

Internal ramp-up rates across the aerospace industry have increased considerably since the dark days of the pandemic, and production continues to pick up pace. However, our study shows that at least one in three companies are not ready for the planned rate increase because of a lack of resources.

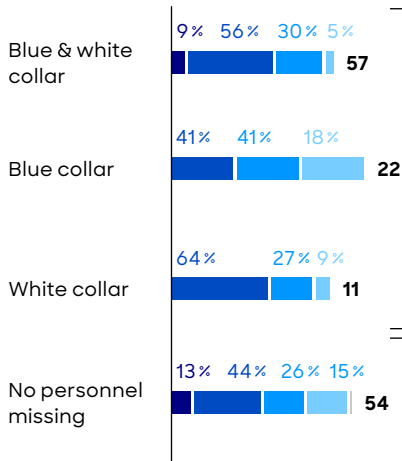
More than 60% of survey respondents, mainly Tier-1 and lower, are missing personnel resources, for example, while 40% are lacking financial resources. Production capacity is a smaller but still significant challenge, with 35% citing a lack of machines as a barrier to ramping up. These figures highlight a clear need for action to achieve ramp-up targets.

Several additional issues are also affecting ramp-up, particularly supply chain problems. These include material availability, unreliable supplier deliveries and the challenge of obtaining accurate customer demand forecasts. Supply chain disruption is covered in more detail in the next section.

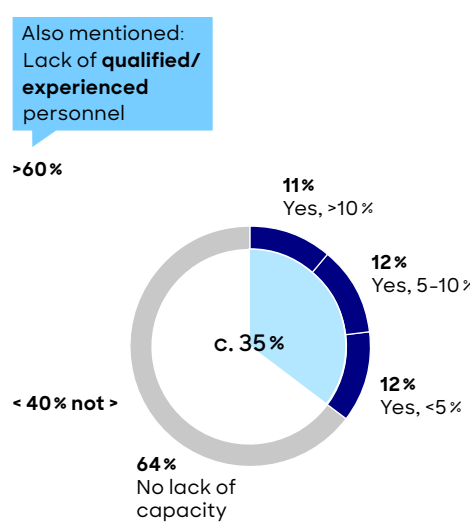
Ready or not:

Between 35% and 60% of OEMs and suppliers are lacking key resources to support the planned ramp-up.

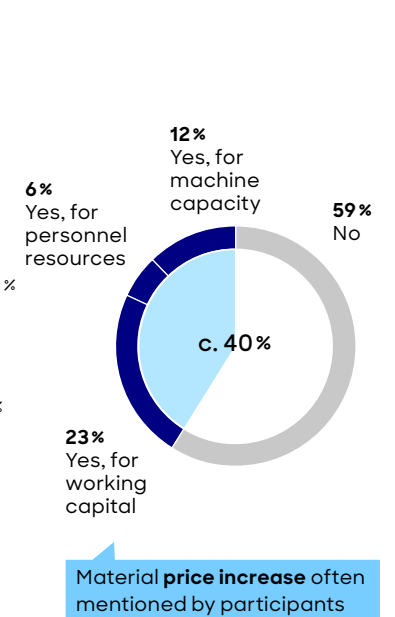
Lacking personnel resources for the ramp-up of production (e.g., blue & white collar)



Lacking production capacity (machines) for the ramp-up in production



Lacking financial resources for the ramp-up in production



- OEM
- Tier-1
- Tier-2
- >Tier-2
- No answer

Also mentioned: Lack of **qualified/experienced** personnel

Material **price increase** often mentioned by participants

Level of supply chain disruption

A big majority – two-thirds – of companies still perceive supply chain disruption as severe

Supply chain disruption is a key factor in the recovery of the aerospace industry and a useful indicator of its health, especially bearing in mind current volatility. In our survey, the vast majority of respondents – 66% – said that they are still experiencing some level of supply chain disruption. The main reasons given for this were supply issues, such as increased lead times and limited material availability (raw material and semi-finished goods), as well as quality issues around supplied products. Price increases and lack of personnel were also mentioned often.

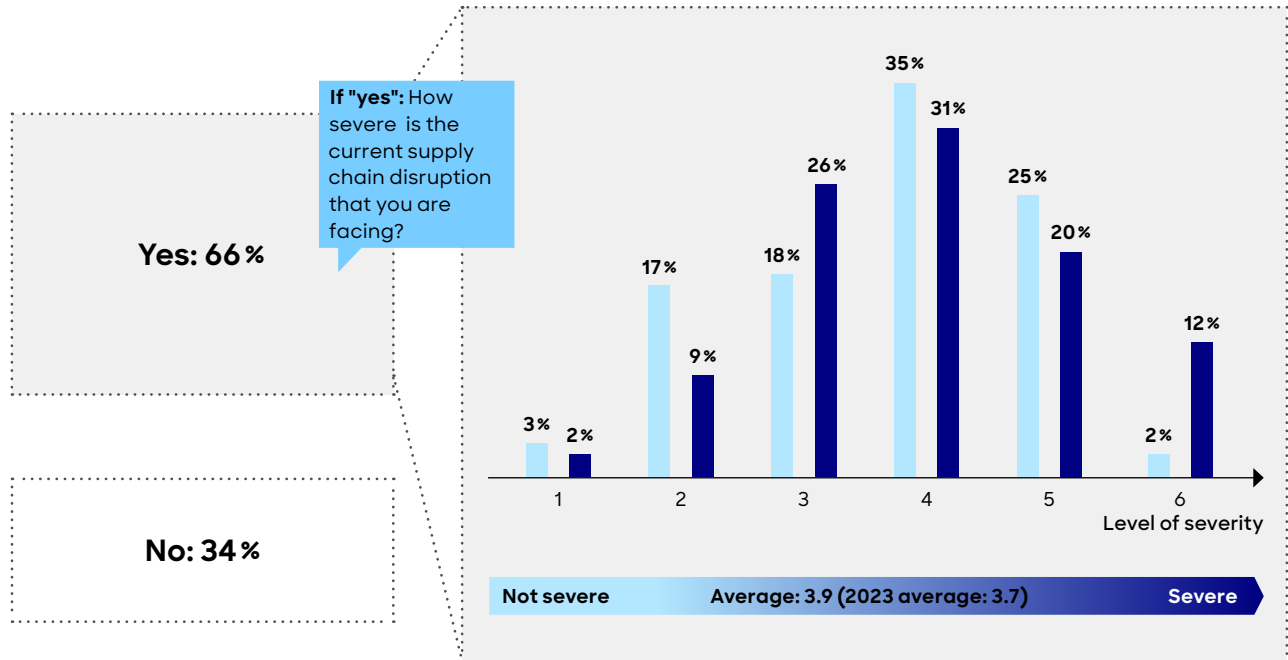
Compared to 2023, the average disruption level remained broadly flat, with only a slight increase. However, the share of companies facing very severe disruptions increased, due to unreliability of supplies. Tier-1s were most affected (see next two pages).

In contrast, 34% of respondents said they are not facing severe supply chain disruptions. Key factors cited for this included improved stock/inventory management, a geographically distributed supply chain with good supplier relationships and early/predictive sourcing, a strong organizational setup, and improved demand forecasts.

Degrees of severity:

The average level of disruption is similar to 2023, but the share of companies facing very severe disruption increased significantly

? Are you currently facing supply chain disruption?



■ 2023 survey ■ 2024 survey

Number of responses: 144 participants; qualitative answers derived from an open-ended question allowing for multiple responses

Source: Roland Berger

Severity of supply chain disruption: By company type

Tier-1 suppliers are worst affected by disruption because of their complex portfolio of procured products

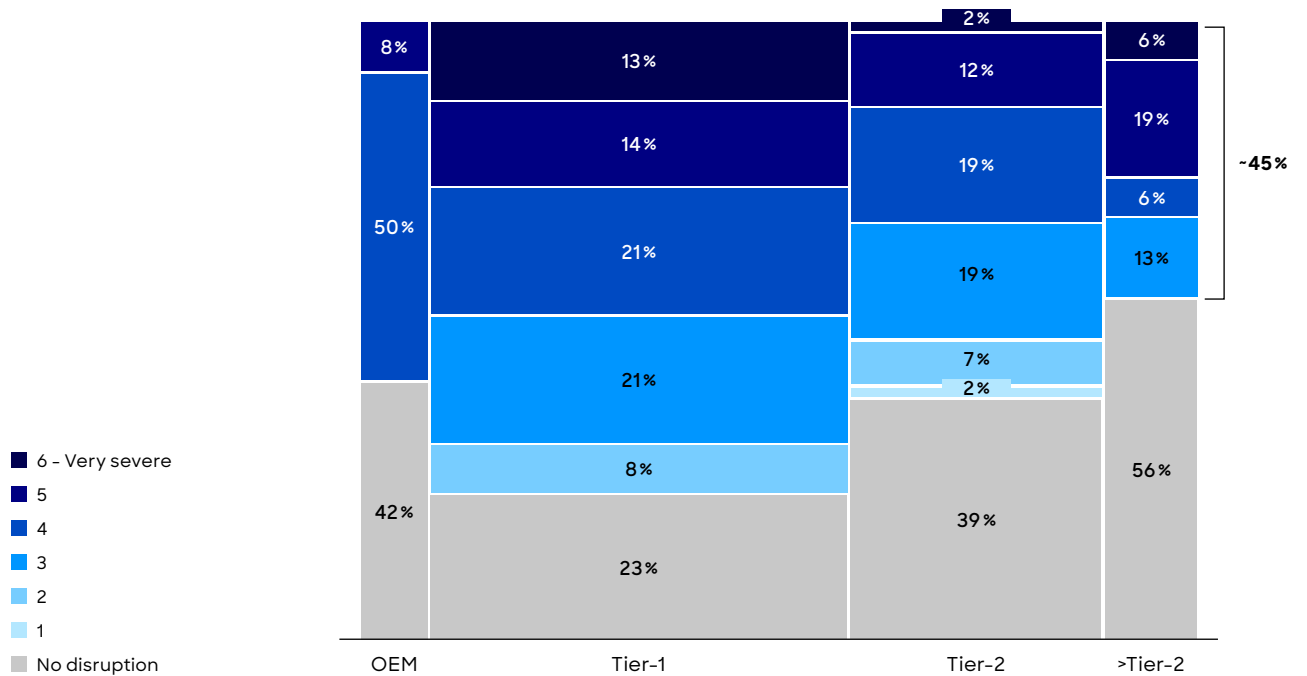
Tier-1 suppliers make up a disproportionately high share of the companies currently facing supply chain disruption, according to our survey. A total of 76% say they are facing some level of disruption, and, as mentioned previously, the number of companies facing very severe disruption is made up almost entirely of Tier-1s (9 out of 11).

However, only around 45% of Tier-2 suppliers are facing any level of supply chain disruption. There are distinct reasons for this. Lower tier suppliers (including > Tier-2) have a more focused supply base with a narrower range of products. Either these products (such as raw materials, semi-finished goods) are not affected at all by supply chain disruptions or the disruptions became evident in 2022/2023 and firms overcame the situation using task forces/firefighting or structural changes.

On the hook:

Only 24% of OEMs and lower Tiers are not affected by supply chain disruptions, while the figure for lower tier companies is much higher

? Are you currently facing a supply chain disruption, and if so, how severe is it?



Number of responses: 144 participants: column width and number above column represent number of answers per category

Severity of supply chain disruption: By procurement category

Companies that primarily procure aerostructure parts and materials are most exposed to severe supply chain disruption

Disruptions in the supply chain continue to affect all procurement categories, although some are significantly more affected than others. According to our survey, companies whose main procurement expenditure is on aerostructures are the worst affected. They recorded the highest shares of level 5 and 6 disruption, followed by companies focusing on engines and systems.

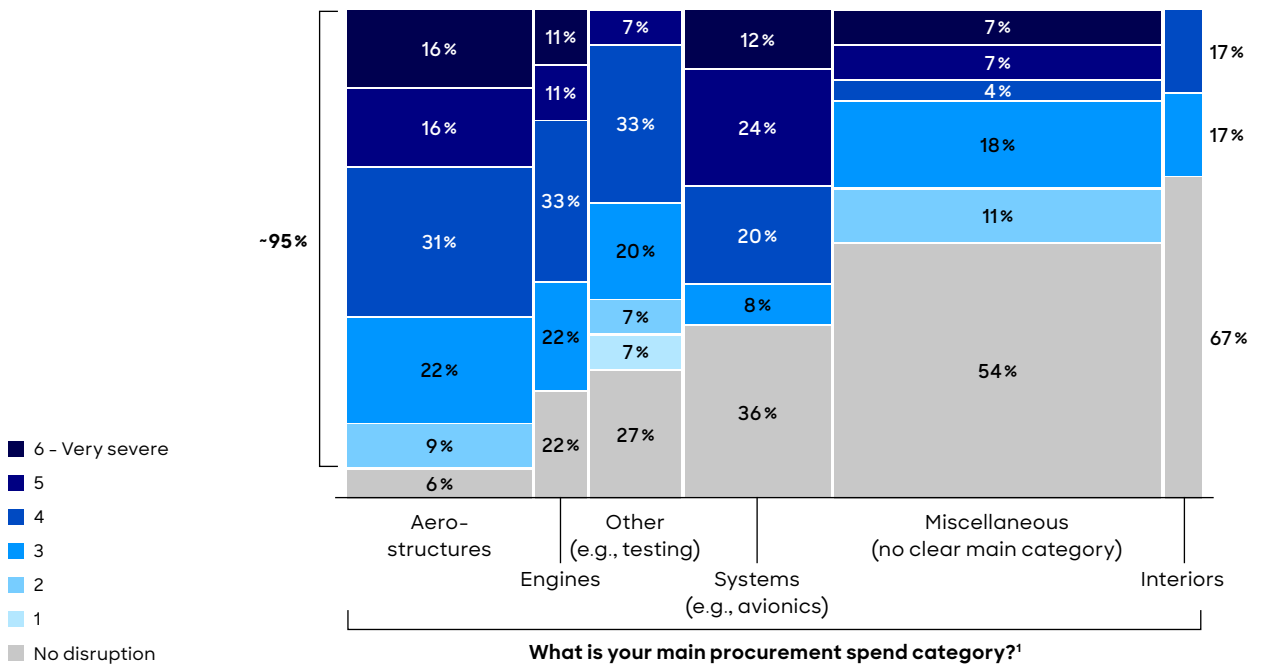
Around 95% of aerostructure-related companies are affected by disruption. Respondents cited the main challenges as material shortages (especially of steel and titanium) and quality issues. Materials typically have very long lead times (18-24 months from forging supplier to installation in the aircraft), meaning that disruptions take a long time to smooth out. In addition, it is more difficult to build up second sources of raw material supplies or for forging of these products. An issue affecting all suppliers along the supply chain is the unreliability of demand. However, the longer the lead time in the system (e.g., for aerostructures and engines) the higher the impact and the resulting disruptions.

Conversely, only around a third of companies whose main procurement expenditure is on interiors experience any supply chain disruption. Where it does occur, it is at a low level of severity.

Flying low:

Aerostructures is the most severely disrupted procurement category, with interiors escaping relatively unscathed

? Are you currently facing a supply chain disruption, and if so, how severe is it?



1 >60% of procurement expenditure spent on respective category; column width and number above column represents number of answers per category

Response to supply chain crisis

The majority of companies are still at the lowest, firefighting stage of tackling disruption

In our 2023 study, we outlined three stages of response to supply chain disruption – firefighting, stabilization and supply chain resilience – and asked survey participants to rate their company's level. We posed the question again in 2024. We found that 38% of companies are still in firefighting mode (8% more than in 2023), indicating continued challenges and instability.

More positively, almost a third of respondents considered their company to be at the resilient supply chain stage, 6% more than in 2023. However, with 38% of companies still being in a firefighting mode it will be very difficult for the overall aerospace supply chain, given that companies are dependent on each other, to achieve the current ramp-up targets.

Building resilient supply chains

Numerous companies have launched initiatives related to firefighting and stabilization (see graphic on next page). But only a small number of firms have taken actions in the last year to establish resilient supply chains, and these have been quite limited so far.

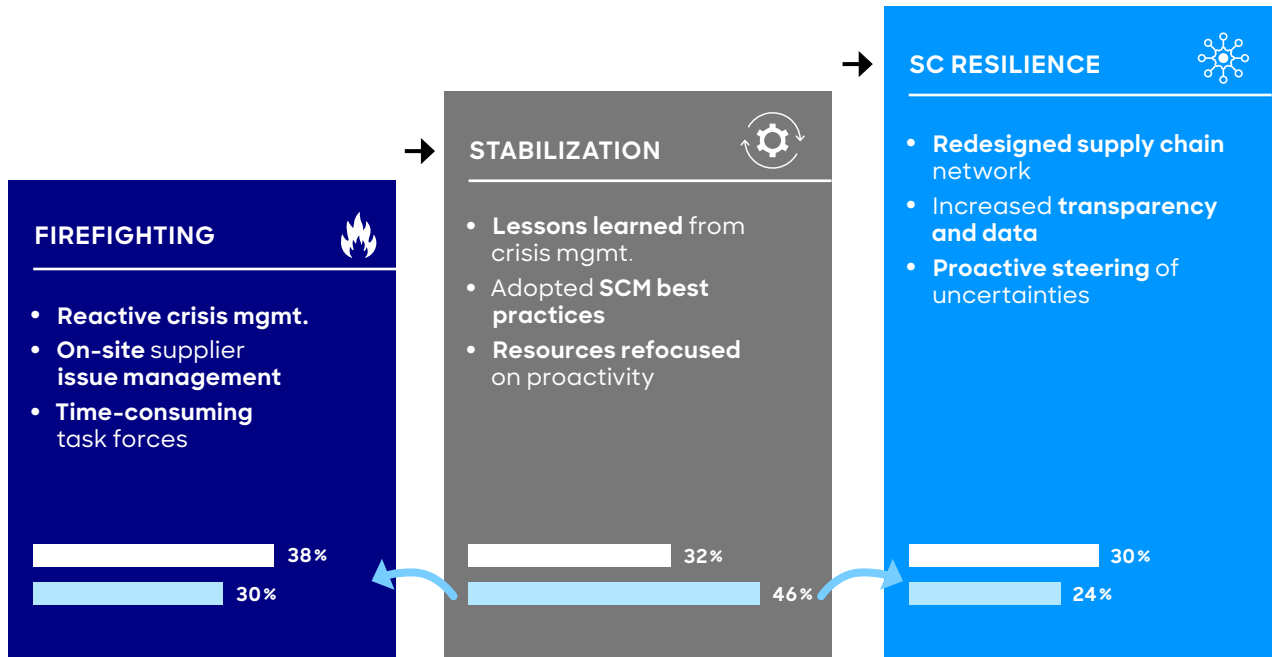
It is therefore imperative that companies focus more on stabilizing and building up a resilient supply chain to overcome the firefighting mode.

Success on the road to resilient supply chains depends on the right measures and their implementation. Those market participants who make informed decisions will be the ones to succeed amidst the challenging circumstances.

Limited impact:

Only a few more companies have achieved supply chain resilience since last year, while the share of companies in firefighting mode has increased

? What is your organization's perceived stage of maturity with respect to the supply chain crisis?



□ Current survey (2024) ■ Last year's survey (2023) ← Change from last year's survey

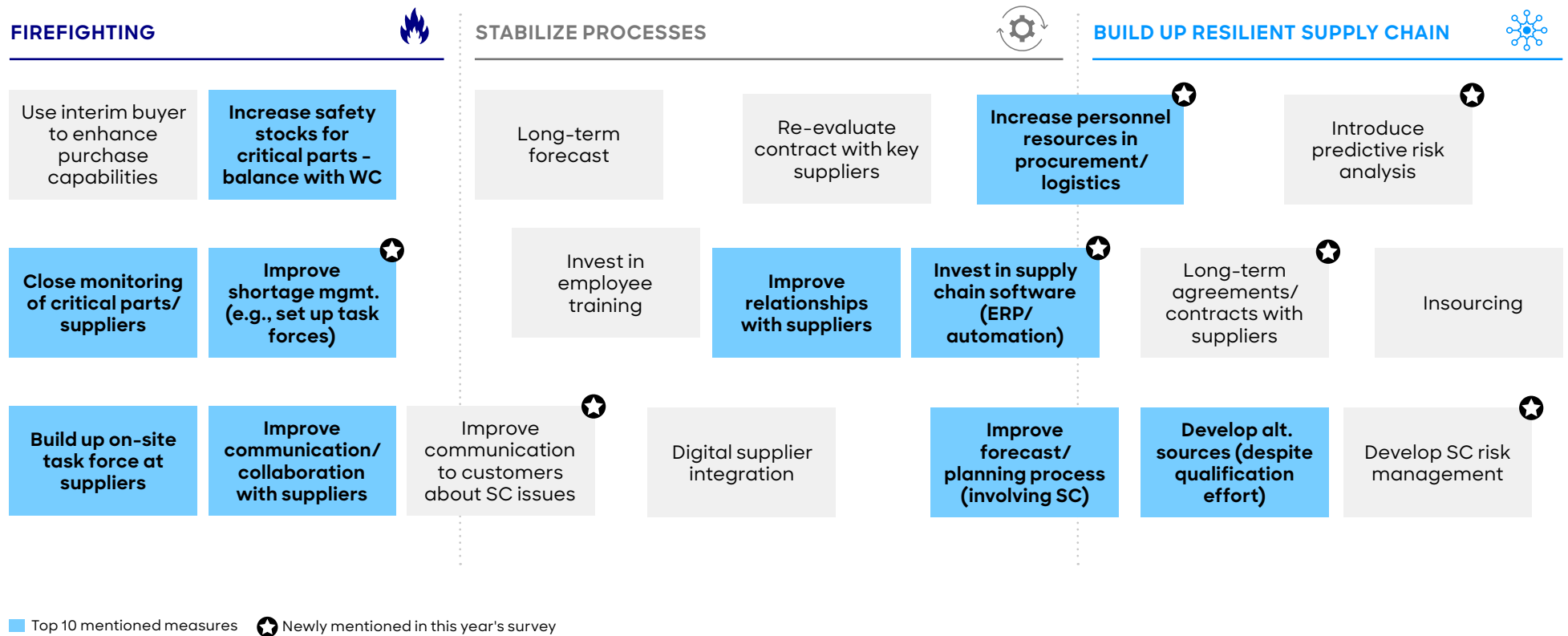
Number of responses: 137 participants

Source: Roland Berger

Measures to address supply chain disruption

Most measures launched to address supply chain disruption focus on firefighting and stabilization, not resilience

? What measures have been implemented in the last year to increase supply chain resilience in your organization?



Number of responses: 116 participants; most frequently mentioned answers shown; answers are grouped in categories

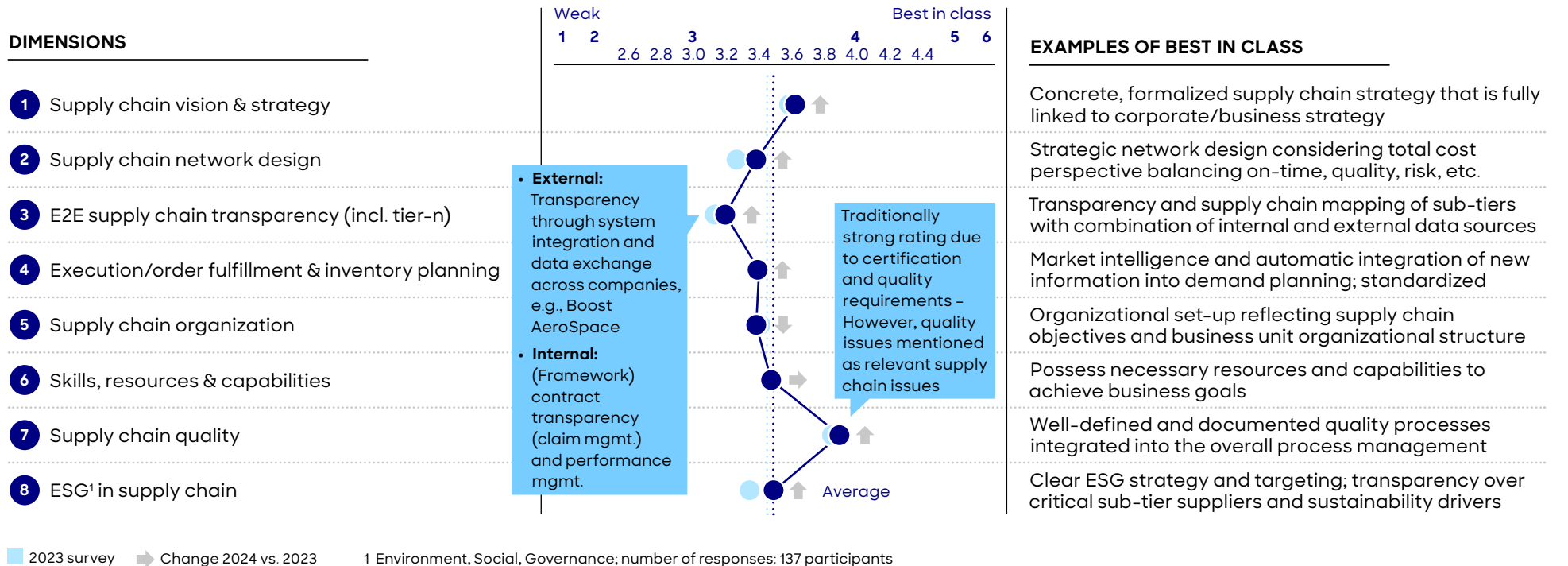
Supply chain maturity ratings

Ratings remain low and little improved, suggesting the aerospace supply chain is ill-equipped for another crisis

As in 2023, survey participants were asked to rate their supply chain maturity along eight main dimensions. The overall level of maturity remained low, with almost no improvement on 2023's results. Transparency was again a particular weak point. The assessment suggests that companies have not made any major changes to supply chain structures in the past year, helping to explain the severity of current supply chain disruptions.

Growing pains:

Transparency was the lowest scoring supply chain maturity rating, with only ESG and network design showing some improvements on 2023



Changes in supply chain set-up

Only around 50% of companies have changed or plan to change their supply chain set-up

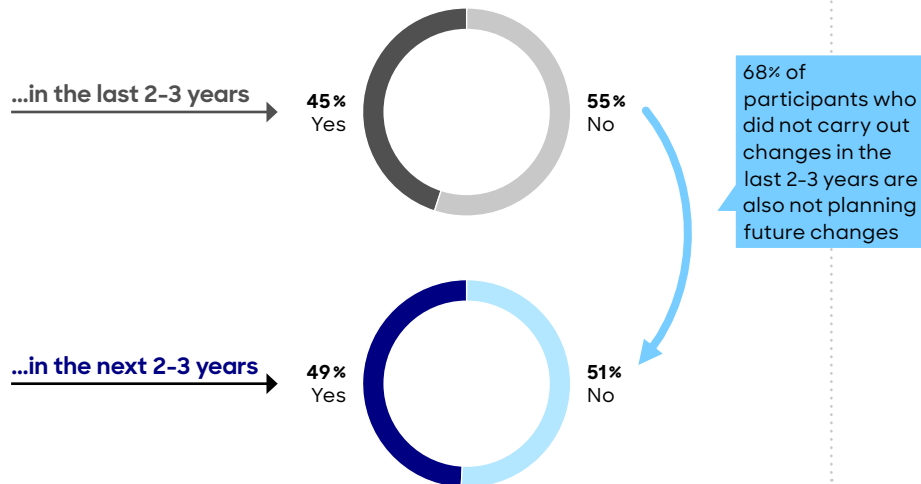
It's clear from the results so far that companies need to further develop their supply chain management. Yet when asked if they had changed their set-up in the past 2-3 years or intend to do so in the next 2-3 years, less than half of the companies involved in our survey said yes. Of those that said yes, roughly 70% said the consequences of supply chain disruptions were the most important reasons to modify the set-up of their supply chain management. Increasing resilience, for example, through more local sourcing or dual sourcing, was the most cited factor. Cost optimization in the supply chain also continues to be an important motive for change.

No change:

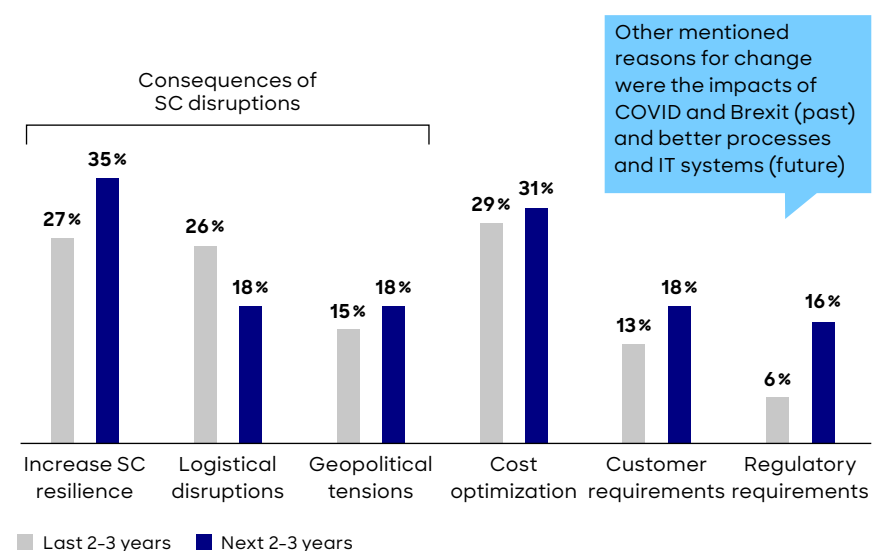
A small majority of companies are still not considering any alterations to their supply chain set-up

? Have you changed or do you plan to change your supply chain set-up?

Yes...



If you answered "Yes", what was the reason for change? (Multiple answers possible)



Number of responses: Between 141 and 143 participants per question

Global vs. local supply chains

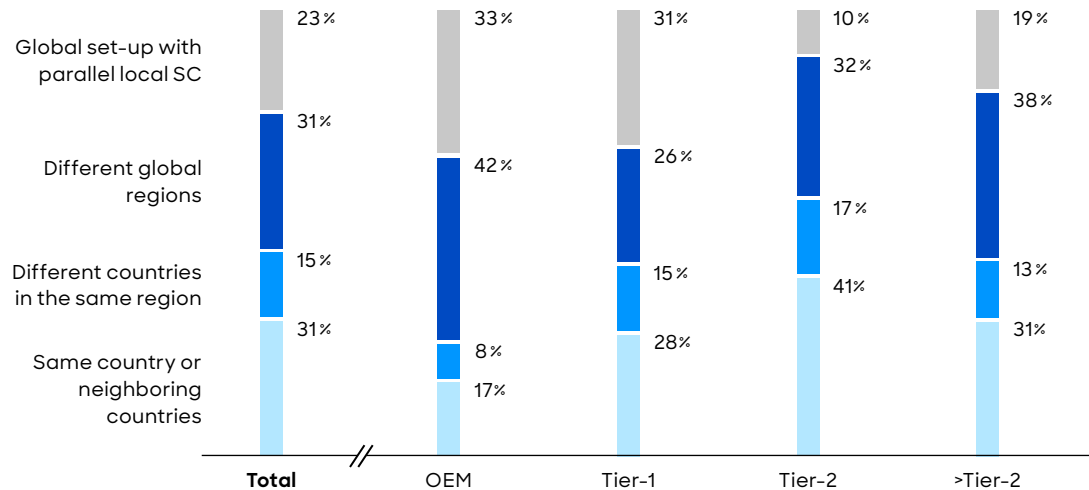
Almost half of companies now favor local suppliers, which results suggest reduces the impact of supply chain disruption

A consequence of the recent polycrisis is that companies have begun to localize their supply chains to limit future disruption. Aerospace is no exception - almost half of survey respondents (46%) indicate that their supply chain expenditures are now concentrated in their own region (meaning different countries in the same region, the same country or neighboring countries).

Going local-for-local:

Almost 25% have already a global set-up with parallel local SC. We expect to see a higher share of companies implementing this setup in the next years

? How global vs. local is your supply chain (considering the majority of your procurement spend)?



Number of responses: 141 participants; may not add up to 100% due to rounding

Source: Roland Berger

Regulatory challenges

Sustainability rules are squeezing suppliers and increasing costs

In addition to the current focus on ramp-up rates and the management of supply chain disruptions, companies must also deal with new regulatory requirements. Most of these are related to sustainability, for example, the EU's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and critical raw materials acts.

The biggest regulatory challenge is the increase of procurement costs (mentioned by 61% of respondents), followed by a lack of alternative suppliers (51%) and increasing lead times (45%).

A total of 37% of companies say that the EU's critical raw materials act leaves them with no alternative suppliers, while one-third say it is not currently relevant. Companies also perceive the REACH legislation as a major challenge, due mainly to a lack of internal resources for the high administrative burden.

Overall, around 30% of respondents identified a cost impact of 1% to >5% due to sustainability-related supply chain regulations.

Conclusions and recommended actions

To limit the impact of severe disruptions, the aerospace supply chain must adopt best-practice solutions

After thorough analysis of the study results from 2024 and 2023, we formulated three main conclusions:

Companies that changed their supply chain set-up in recent years can expect to be less impacted by very severe supply chain disruptions

- While the overall share of very severe impacts has increased, companies that recently changed their set-up have been less severely affected.

The severity of supply chain disruptions and share of companies in firefighting mode has increased

- The average impact of the ongoing supply chain disruptions increased slightly, while the share of very severe disruptions increased strongly, affecting mainly Tier-1s.
- The majority of companies are yet to sufficiently adapt their structures to ongoing disruptions. Firefighting and task forces dominate, while the planned rate ramp-up and future uncertainties call for resilient supply chain setups.

An increased share of companies perceive themselves as having a resilient supply chain set-up, the starting point for best-practice examples

- The performance of the whole supply chain depends on its weakest link. To overcome severe disruptions, all companies should orientate towards best practices, as outlined in our maturity ratings.

In addition to our conclusions, we also developed a set of recommended actions for companies to make the leap from firefighting and stabilization to supply chain resilience. These are outlined in the graphic.

Time to act: Achieving supply chain resilience requires the industry-wide adoption of best-practices



Increase downstream commitment

Earlier order commitment (i.e., contractually binding fixed orders) as well as more forward looking visibility to ease upstream financing and allow needed inventory build-up



Foster transparency

External: System integration/ interfaces across the supply chain (e.g. AeroExcellence, Boost Aerospace, Boost Aerospace, Aerospace-X)
Internal: Customer/ supplier contracts (claim management) and according performance management



Embed firefighting learnings

Build on achievements of already implemented measures, and transition to stabilized setup/ processes and resources



Use emerging technologies

Explore (smaller) AI solutions to improve supply chain risk management and management of critical supply chain elements, e.g. demand sensing or planning



Supply chain localization

Companies with predominantly local-for-local production footprints and supply chains seem less affected by current global disruptions

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We welcome your questions, comments and suggestions

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