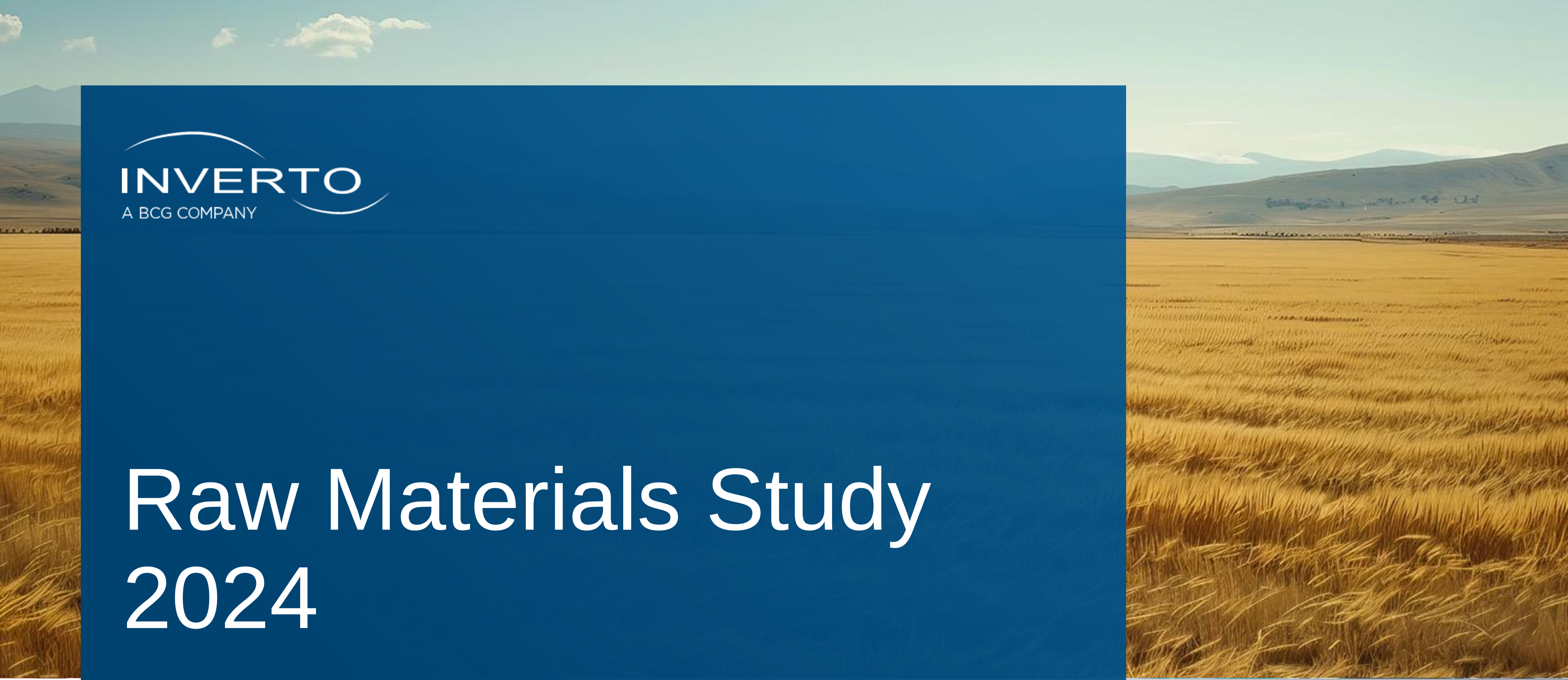

Raw Materials Study 2024

Survey by INVERTO in cooperation with Handelsblatt

Cologne, August 2024

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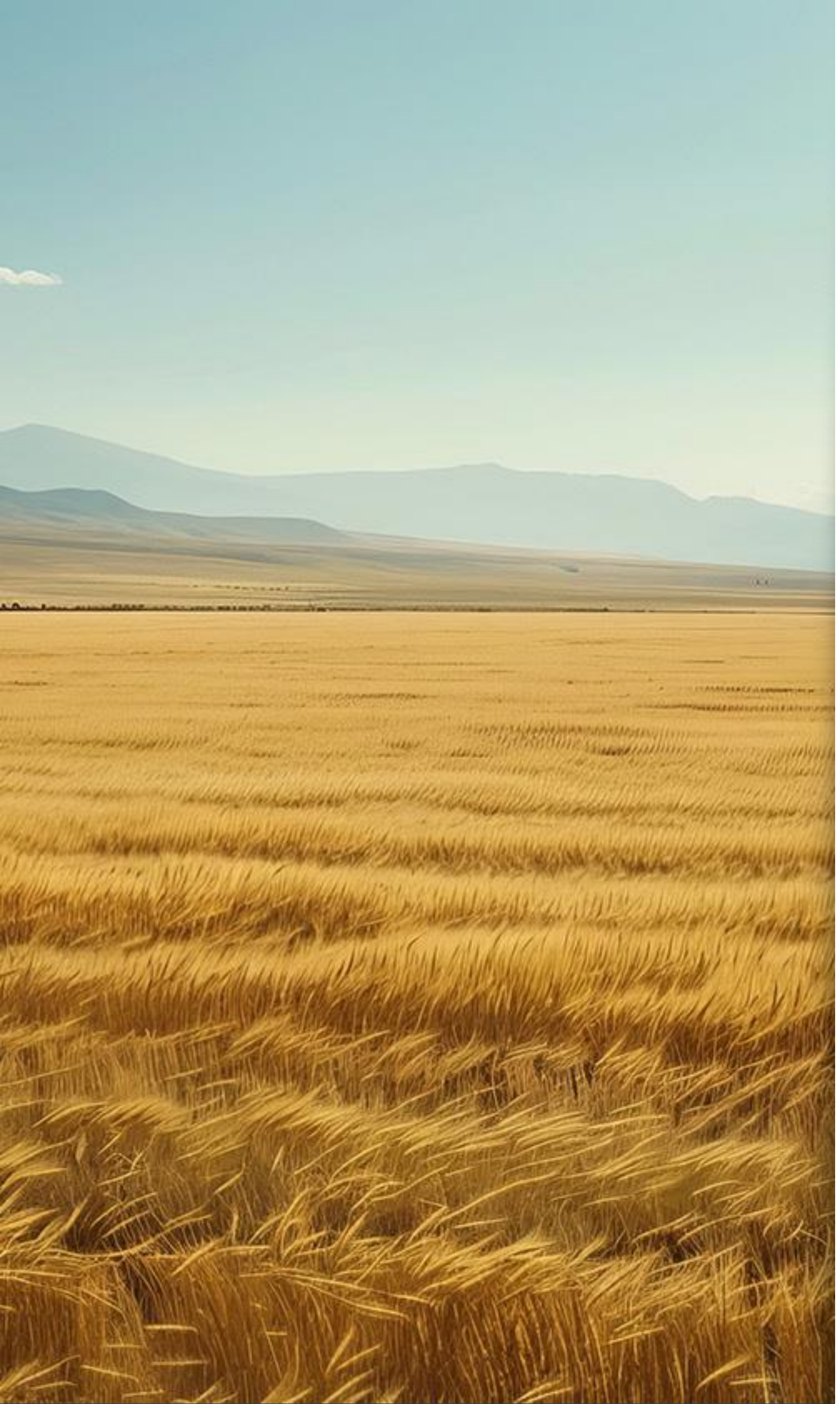

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1 **Key findings of the raw materials study 2024**
2 Study design and participants
3 Results in detail
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Key survey findings at a glance

Following a period of stabilization in raw material and energy prices last year, future expectations lean towards increased price rises – Declining sales volumes and high raw material costs continue to impact the financial performance of companies.

Regional perceptions of price hikes and raw material shortages vary significantly – Companies face diverse challenges in raw material management across different countries.

Geopolitical risks lead to ongoing uncertainties in raw material procurement – The majority of companies are responding by adapting their sourcing strategy

Companies are increasingly relying on digital tools for managing raw materials – Data quality and availability pose the biggest challenges in their application

Study participants expect increased price hikes – declining sales volumes and high raw material costs will continue to impact companies in 2024

Study participants perceive an imminent risk of further price increases following a decline in 2023

- The impact of declining sales volumes (39%) and raw material prices (38%) will remain at a high level in 2024. These factors continue to significantly affect business results, though their relative importance has decreased compared to the previous year (-4% and -41%, respectively).
- Compared to 2021 and 2022, most companies now consider raw material availability as less critical to pricing trends and overall business performance. 75% of respondents expect sufficient supply, 17% foresee only temporary restrictions, and only 9% expect high volatility and are proactively preparing.
- 16% of respondents anticipate sharp price increases again in the future – a significant increase from 7% in 2023. While 49% expect moderate price rises, 23% predict that prices will stabilize, and 13% foresee a decrease in raw material prices over the next 12 months (compared to 41% in 2023).

The surveyed companies have implemented a variety of strategies to manage price volatility

- **Index-based pricing agreements:** While 70% of companies use index-based pricing with suppliers as their primary strategy, only 46% of respondents find it effective.
- **Supplier base and inventory optimization:** Optimization of the raw material supplier base (63%) and supply chain and inventory analysis (58%) have decreased in priority since last year. However, they still represent the most favoured strategies, with each being implemented by 65% of the companies surveyed.
- **Material reduction projects:** Efforts to reduce material usage saw the most significant growth in approval, increasing by 5% to 52%, ranking fourth overall. Material substitution projects are also notable, with 46% of companies pursuing them.

Companies adopt varied strategies to manage price increases and supply challenges based on regional differences

Price increase risks and supply challenges are perceived differently across various countries

- **DACH region & the UK:** Paper and wood are the primary concerns regarding price increases with 31%, followed by plastics and aluminum at 29% each. Cocoa (19%) and electricity, aluminium, and oil & gas (16% each) are also emerging as key areas of supply uncertainty.
- **France:** Cotton (23%) and cocoa (19%) are viewed as the primary concerns regarding price instability, closely followed by plastics at 18%. Participants also note heightened supply risks particularly for cotton (23%), cocoa (19%), and aluminium (18%).
- **Spain:** Copper (20%), sugar (19%) and wheat (17%) are considered to be particularly vulnerable to price increases. Additionally, copper (20%), cotton (15%) and oil & gas (15%) are identified as facing significant supply vulnerabilities.

Companies across different regions have adopted various strategies to mitigate the effects of price increases

- **DACH region & the UK:** 60% of companies predominantly use price escalation clauses for raw material costs. This is followed by long-term fixed-price agreements (19%) and predefined material inflation surcharges (9%).
- **France:** Long-term fixed-price agreements including raw material costs are preferred by 24% of companies. Price escalation clauses are used by 20%, while predefined material inflation surcharges (15%), tranche agreements (13%) and offset transactions (11%) are less common.
- **Spain:** 28% of companies prefer price escalation clauses, followed by long-term fixed-price agreements and material inflation surcharges each being used by 17%. Tranche agreements and offsetting transactions are used by 11% and 9% of companies, respectively, for managing price increases.
- **Across all regions mentioned above:** Approximately 19% of respondents indicate that they do not have fixed price agreements with their suppliers.

Most companies have revised their sourcing strategies, with geopolitical risks playing a crucial role

Companies are diversifying their sourcing strategy to address evolving market conditions

- 57% of companies have revised their procurement strategies over the past 12 months, and an additional 29% are in the process of making changes. Only 14% have no plans to alter their strategies in the foreseeable future.
- **Country-specific trends:** In France, 64% of companies have adjusted their sourcing strategies over the last year, and a further 31% are planning to adjust in the medium term.
- The DACH region and the UK show a lower rate of change, with only 48% having adjusted their strategies and 30% not planning any changes.
- Spain shows a moderate level of adjustment, aligning closely with the overall trend.
- **Sourcing methods:** 51% of companies with an adapted sourcing strategy are increasingly relying on dual or multiple sourcing methods to mitigate risks and enhance security of supply. 39% are focusing on nearshoring strategies to shorten their supply chains. Procurement cooperation and friendshoring, are prioritized by only 31% and 26% of respondents, respectively.

Geopolitical factors and price risks are key drivers for adjustments in sourcing strategies

- The primary motivators for changes in sourcing strategies are geopolitical risks (40%) and price risks (39%), with these factors significantly more emphasized by participants from the DACH region and the UK (69% and 71%, respectively).
- 37% of respondents see raw material scarcity as a major driver of strategic change, followed by logistics costs and risks (35%) and the adaptation to ESG legislation and the implementation of sustainability goals, each cited by 34% of respondents.

Key findings of the raw materials study 2024 (4/4)

Digital tools are now standard in raw material management, offering cost efficiency, transparency, resilience, and ESG compliance

Digital tools are revolutionizing raw material management for enhanced effectiveness and competitiveness

- 97% of companies utilize digital solutions like ERP systems (57%), SCM software (39% for supply chain optimization), and BI tools (38% for data-driven decision-making).
- 30% of companies use generative AI and specialized software for raw material management, boosting efficiency and responsiveness through advanced analytics and automation.
- Digital tools significantly improve raw material procurement and management: Study participants see clear improvements in the areas of transparency (91%), resilience (88%), ESG compliance (80%) and improved cost structures (77%).

Companies across various industries and of different sizes prioritize differently. The main challenges associated with digital solutions involve data management, cost, and integration

- **Large companies (revenue >€1 billion)[1)]:** Core focuses include real-time data analysis (46%), sustainability and environmental management (46%), and trend analysis (44%).
- **Smaller enterprises (revenue ≤€500 million):** Focus is on automation (53%), risk management (51%), and trend analysis (49%).

Sector-specific differences are also notable:

- Retail sector: Priority is given to sustainability and environmental management (67%) and trend analysis (67%).
- Automotive sector: Focuses on automation (50%) and analytics 83%.
- Over half the respondents identify challenges with data quality (63%) and availability (51%), software implementation and maintenance costs (47%), and integration into existing system landscape (34%). Security concerns are viewed as less critical and were noted by only 13% of those surveyed.

1) Annual revenue

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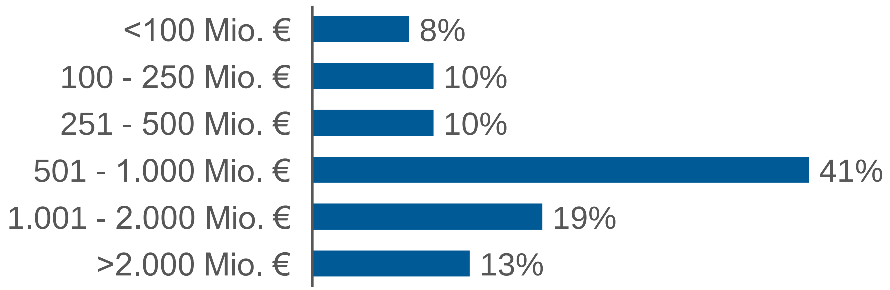
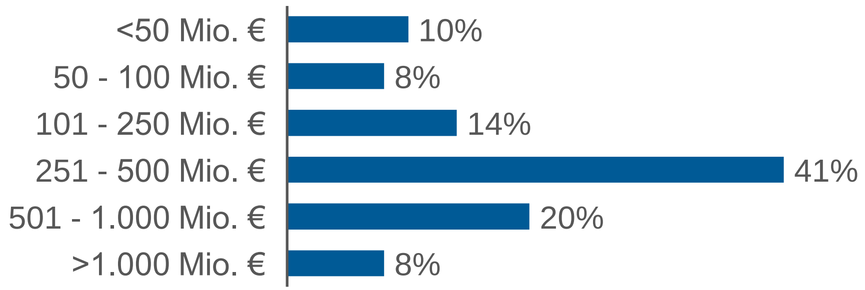
82% of the participants report a procurement volume exceeding €100 million, representing companies from all key industries

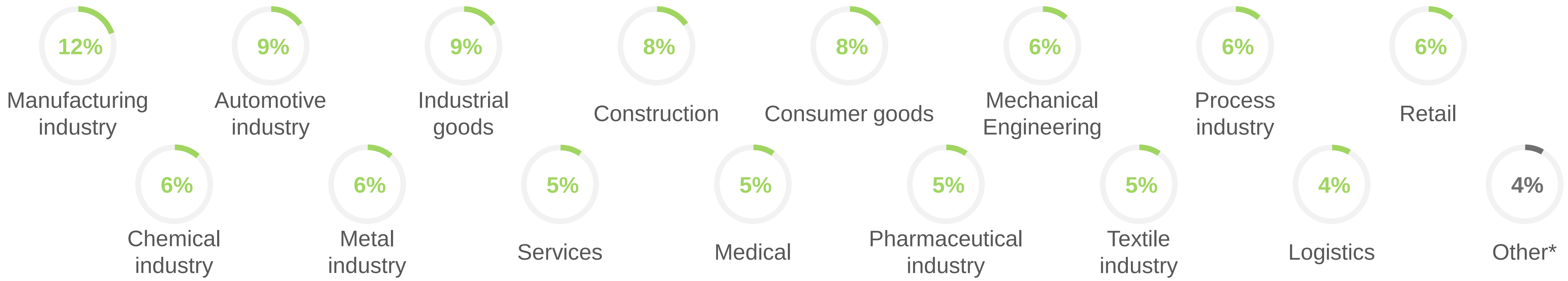
What revenue did your company generate in 2023?



What was the procurement volume of your company in 2023?



Which industry does your company operate in?

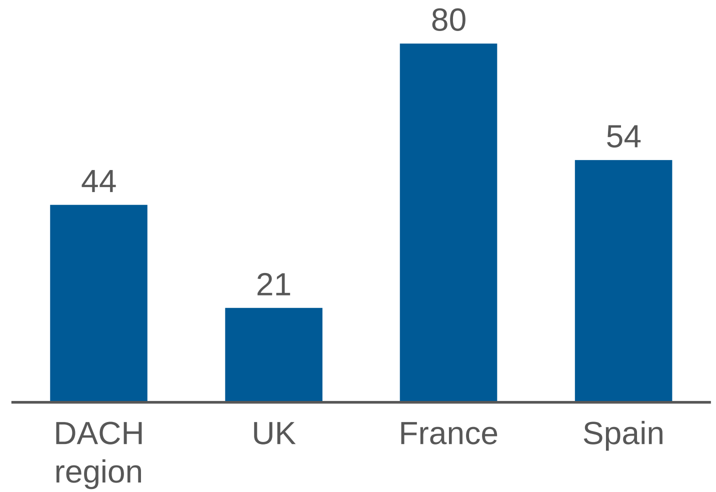


*Other includes government, aerospace and other

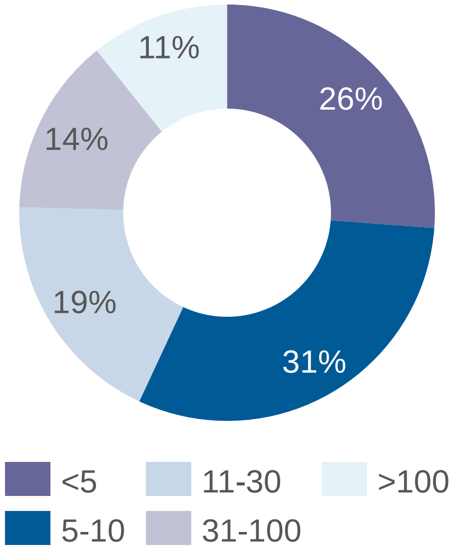
Note: Deviations of 100% in totals are due to rounding discrepancies

Approximately 200 managing directors, board members, and procurement decision-makers from the DACH region, the UK, France, and Spain were surveyed

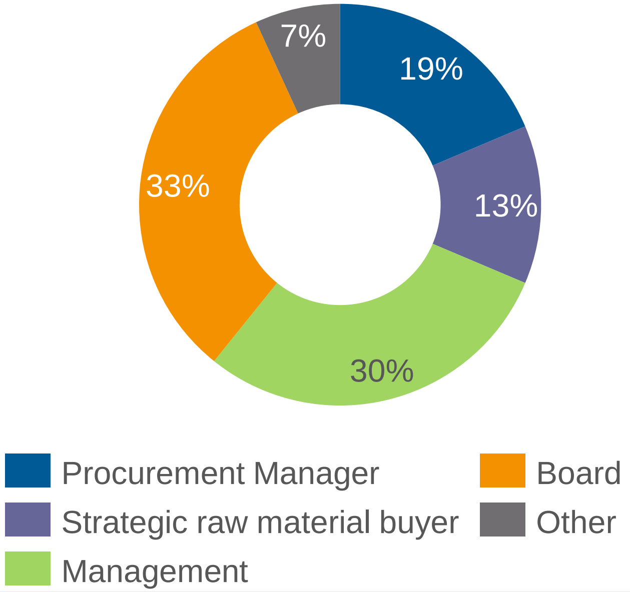
Regional distribution of survey participants



How many employees work in strategic procurement?



What is your position within your company?



Method: Online survey of companies in the DACH region, the UK, France and Spain
Author: INVERTO GmbH in cooperation with Handelsblatt and Censuswide
Data: Anonymized collection and evaluation
Participants: 199 Managing Directors, Board members and decision-makers
Period: March – June 2024

Note: Deviations of 100% in totals are due to rounding discrepancies

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Energy and raw material prices have less impact on business results than in 2023 – bureaucratic hurdles are increasing sharply

Which external factors have a significant influence on your business performance at present? (Multiple answers possible)

	2024	Change to 2023	Change to 2022	Change to 2021
Declining sales volumes	39%	-4%p	+23%p	+23%p
Raw material prices	38%	-41%p	-56%p	-54%p
Uncertainty of economic and geopolitical development	37%	-30%p	-43%p	-5%p
Political regulations (e.g. legislation)	35%	+-0%p	+1%p	+14%p
Energy prices	34%	-37%p	-59%p	+4%p
Increased competition	30%	+12%p	+26%p	+19%p
Bureaucratic obstacles to import and export	28%	+20%p	+14%p	+14%p
Staff shortages	26%	-11%p	-21%p	+-0%p
Exchange rate fluctuations	24%	+9%p	+8%p	+17%p
Reduced availability of raw materials	23%	-5%p	-58%p	-53%p

Increase ≥ +25%p   Increase < +25%p und ≥ +5%p   Change < ±5%p   Decrease ≥ -5%p

- **Declining sales volumes** are expected to have the most significant impact on business results in 2024, affecting **39%** of businesses despite a slight decrease. In the **DACH** region and the **UK**, the impact of this factor is felt more acutely, with **63%** of businesses perceiving it strongly.
- Despite a significant decline, the impact of **raw material prices (38%)** and **geopolitical developments (37%)** will remain among the top 3 influences in 2024.
- Contrary to the overall results, in France, **exchange rate fluctuations (34%)** and bureaucratic obstacles (33%) are the primary factors.

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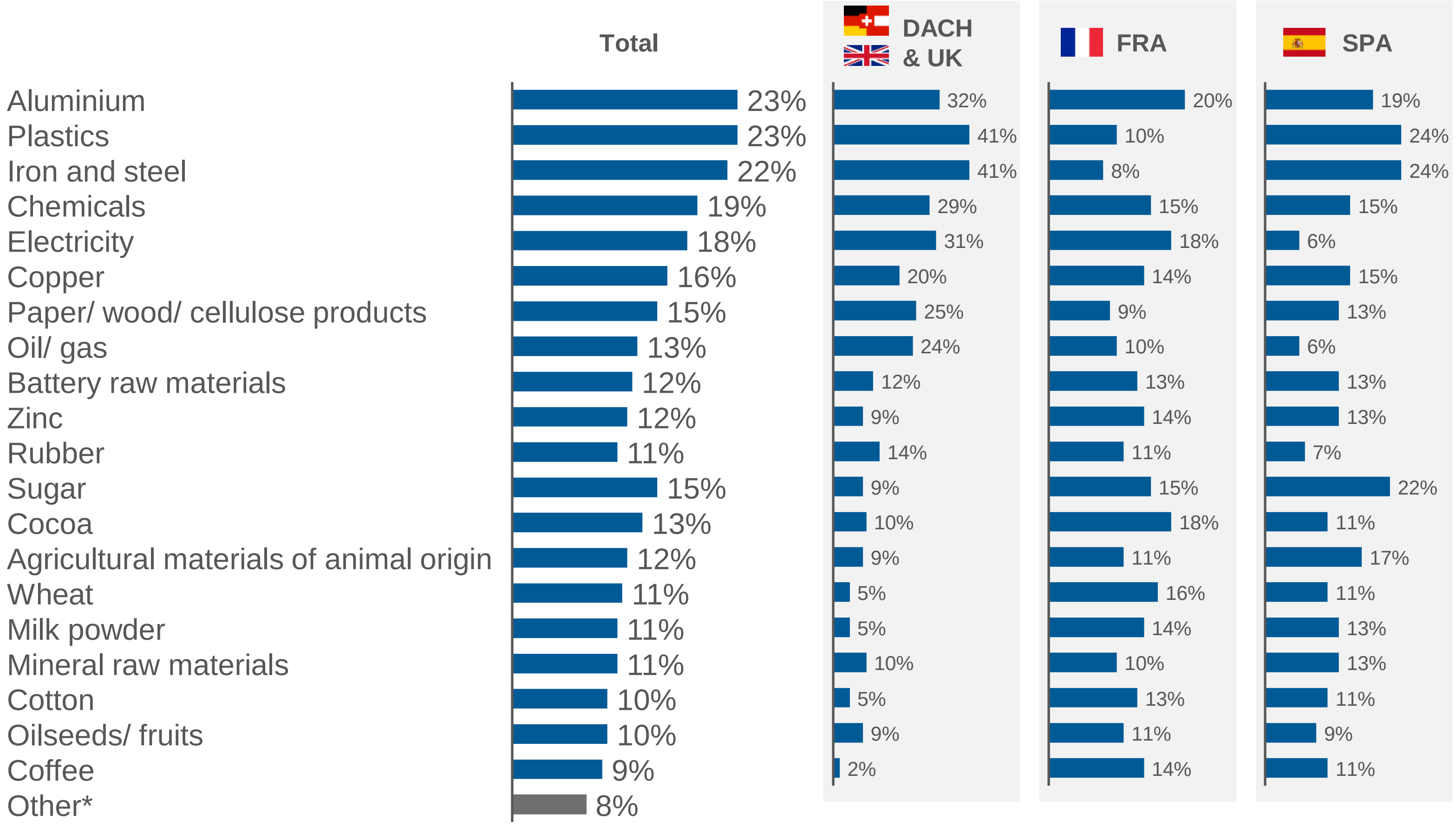
Aluminium, plastics, ferrous metals and steel are the most relevant raw material groups for the participants

Which raw material groups are especially relevant for your company? (Multiple answers possible)

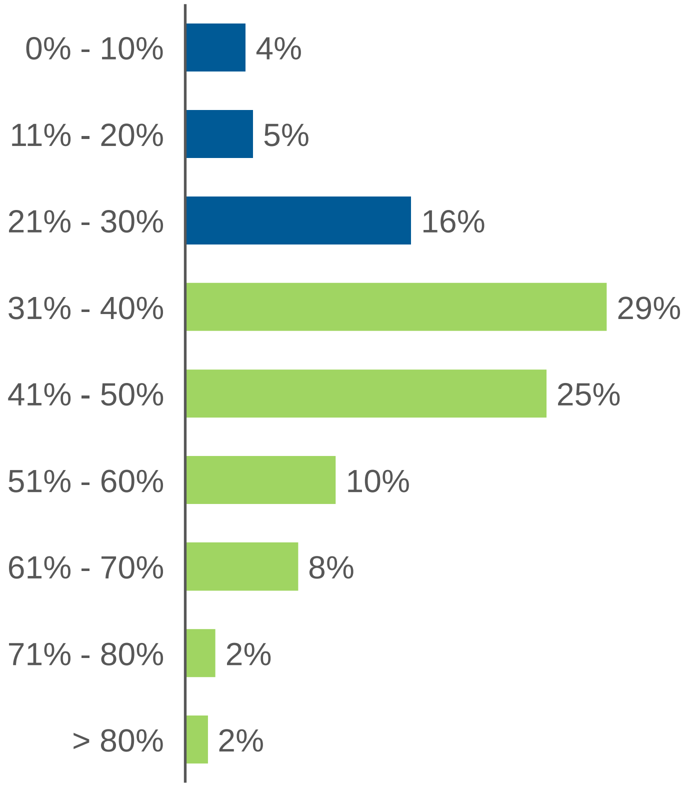


- **Aluminium, plastics and ferrous metals/steel** are identified as the most relevant raw material groups by 23% of all participants.
- In the **DACH region & the UK, plastics and ferrous metals/steel** each accounting **for 41%** are particularly significant, highlighting their essential role in production-intensive processes.
- In **France**, cocoa (18%) and wheat (16%) and in **Spain**, sugar (22%) along with agricultural raw materials of animal origin rank among the top five **agricultural raw materials**.

*Other includes: rare-earth elements (9%), coal (9%), other non-ferrous metals (9%), precious metals (8%), corn (8%), other agricultural commodities (8%), other grains (6%) and others (3%), Question 8 – Raw materials

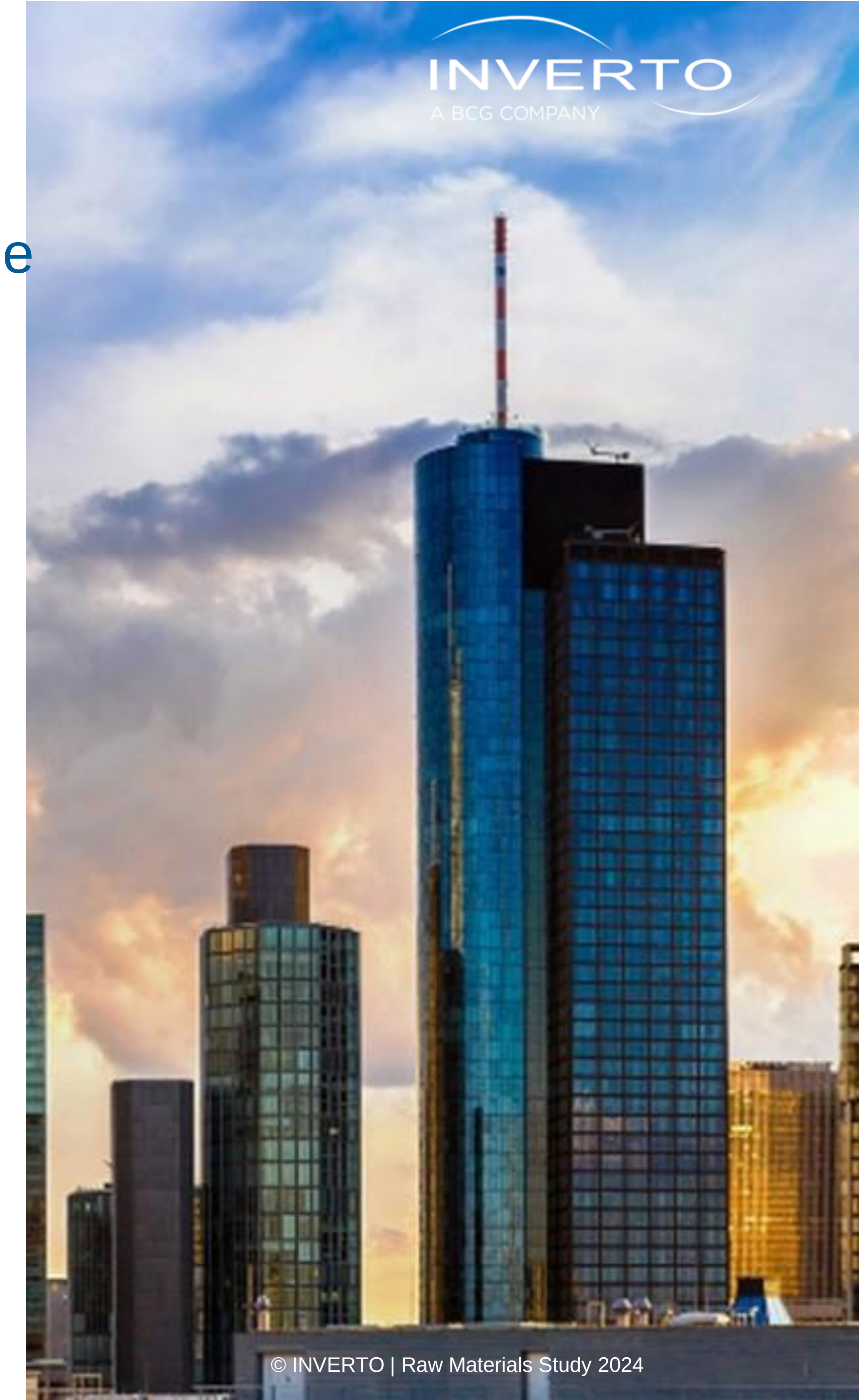
75% of the study participants report that raw materials account for more than 30% of their total procurement volume

What share of your company's procurement volume consists of raw material procurement?



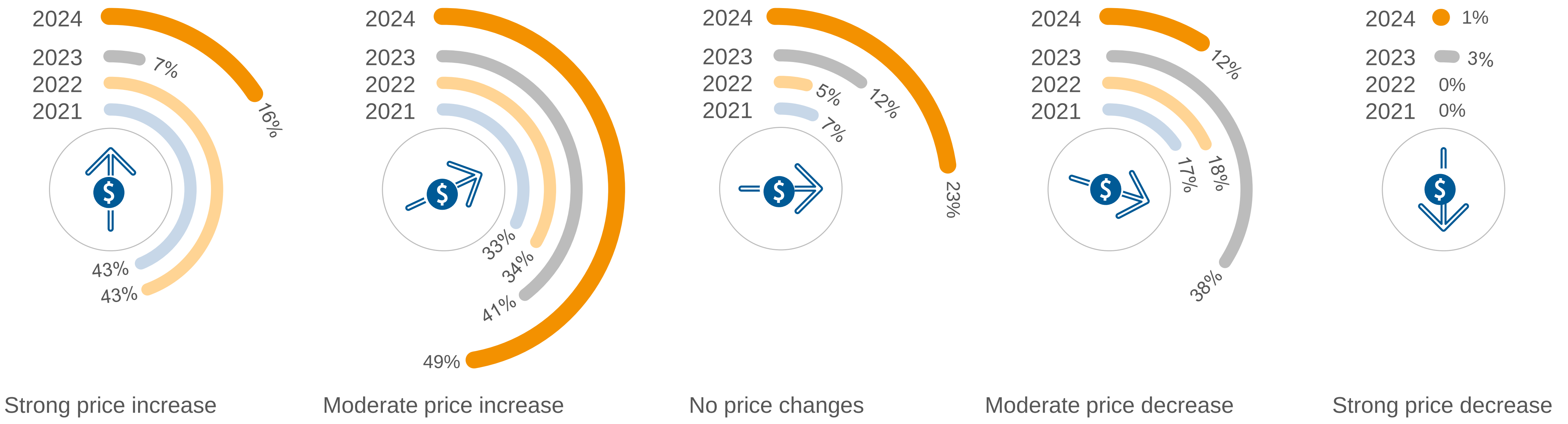
- The majority of the companies with the highest share of raw materials in the procurement volumes are from the **manufacturing, mechanical engineering and metal industries.**
- 75% of all participants report that raw materials constitute over 30% of their total procurement volume.

Note: Deviations of 100% in totals are due to rounding discrepancies



Expectations for rising raw material prices have increased by 18% compared to the previous year

What type of price trends are you anticipating for raw materials (which are relevant to you) over the next 12 months?



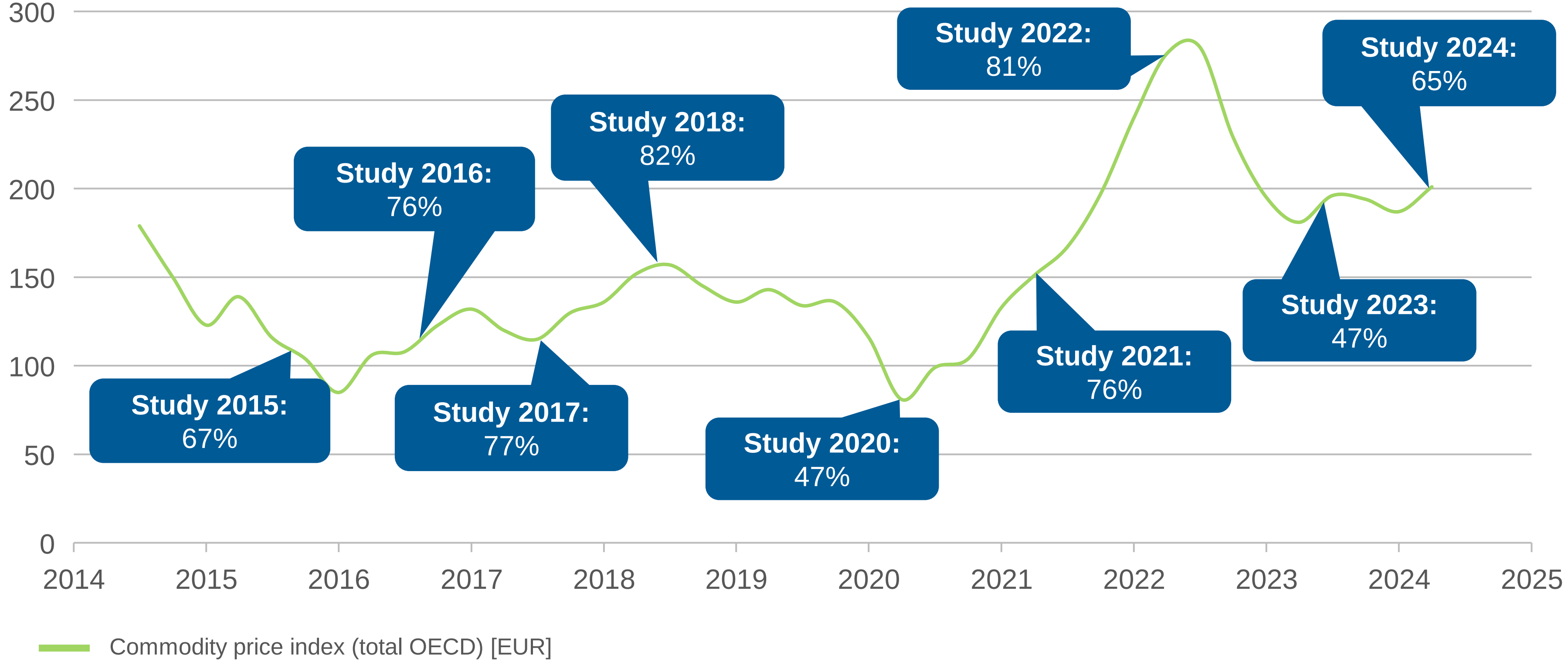
- **16%** of all respondents expect a **strong increase in prices.** This marks an increase from the low 7% level observed in 2023.
- **49%** of participants anticipate a **moderate price increase** – surpassing the already high level of 2023 (41%).
- **23%** of the surveyed companies expect raw material prices to **remain unchanged** – a significant increase compared to 2023 (12%)
- **12%** expect **moderate price reductions** - significantly less than in 2023 (38%).

Note: Deviations of 100% in totals are due to rounding discrepancies

65% of the study participants anticipate cost increases over the next 12 months – marking a significant rise from the previous year's figures

Comparison of study participants' general expectation for raw material price trends from 2014 to 2024

Percentage of participants expecting an increase in raw material prices:

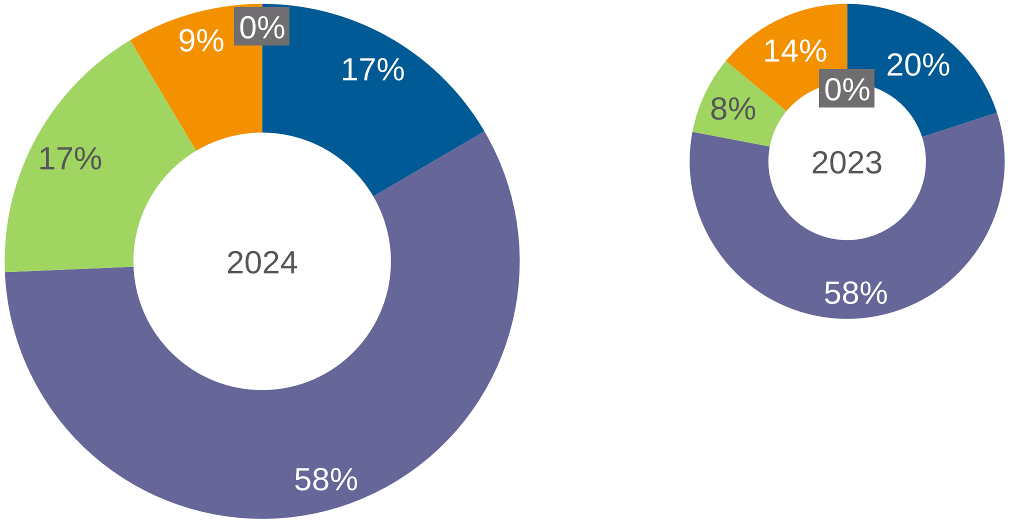


- A total of **65%** of this year's participants **expect raw material prices to rise** – a significant increase from 47% in 2023.
- This represents an **18% increase** compared to the previous year

Source: HWWI – rohindex.de

Most survey participants anticipate no issues with raw material availability over the next 12 months

What is your expectation for the availability of raw materials in the next 12 months?



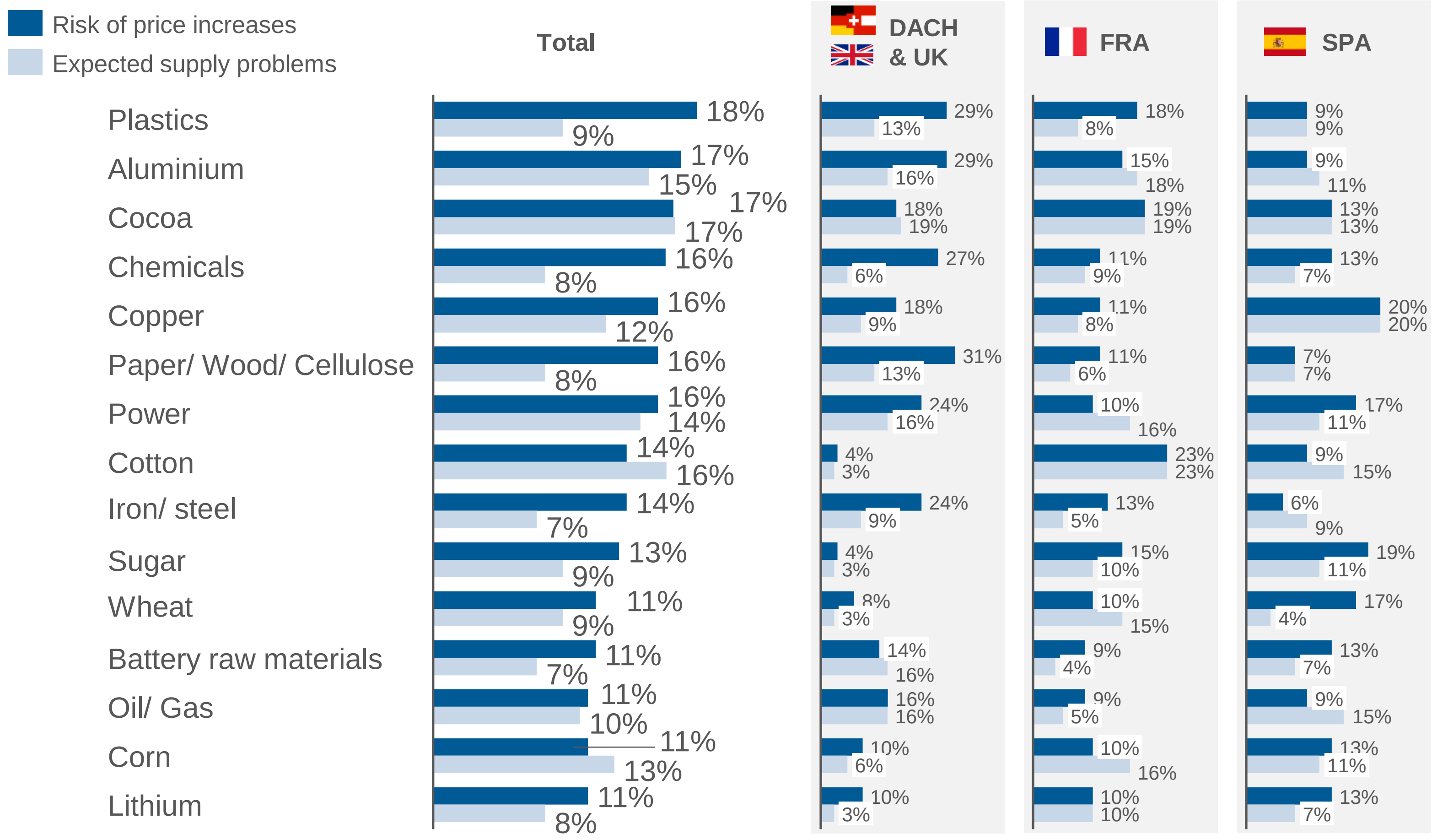
- We are convinced that we can obtain the raw materials we need at any time to meet our requirements.
- We expect raw material availability to cover our needs for most of our raw materials.
- We anticipate minor and temporary restrictions in the supply of raw materials, which will only have a minor impact on operations.
- We anticipate a high level of uncertainty in the supply of raw materials and are taking proactive measures.
- We anticipate severe restrictions and shortages in the supply of raw materials and are taking proactive measures.

- **75%** of the participants anticipate that **raw material availability will meet demand** for all or most raw materials over the next 12 months.
- **17%** foresee **minor and temporary raw material restrictions**, which will have a minor impact on operations.
- 9% are concerned about significant volatility in the supply of raw materials and are proactively implementing measures to address this.

Question 11 – Raw materials

The risk of price increases and supply issues is classified differently in the countries surveyed

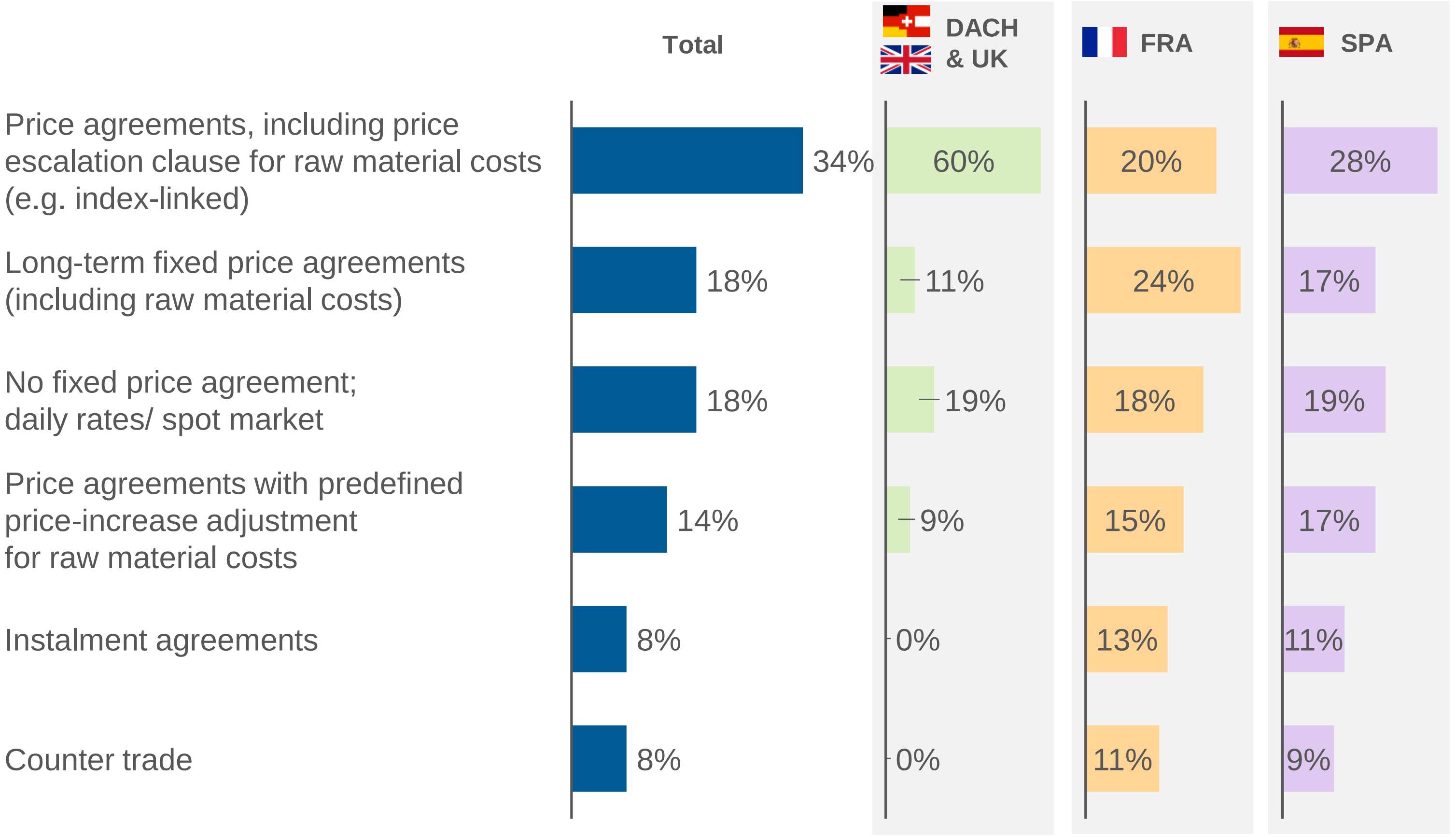
In your opinion, which raw materials are at greatest risk of price increase in the next 12 months? For which raw materials do you anticipate supply problems in the future? (Multiple answers possible)



- Participants perceive a higher risk of **price increases than supply issues** for most raw materials.
- Surveyed companies view **plastics (18%) and aluminium (17%)** as the materials most susceptible to **price increases** over the next 12 months.
- In the **DACH region & the UK, paper and wood (31%)** and plastics and aluminium (29%) are particularly at risk for price increases.
- In **France, cotton (23%)** and cocoa (19%) are major concerns, while in **Spain, copper (20%)** and sugar (19%) are particularly vulnerable to price fluctuations.

Price agreements with price escalation clauses are the most commonly implemented model – pricing strategies vary across international markets

What pricing model has your company predominantly been able to implement in agreements with your suppliers over the last 12 months?



- **Price agreements with a price escalation clause** are among the most widely implemented pricing models, especially in the **DACH region** where **60%** of companies use them.
- **Long-term fixed-price agreements** while less common overall, are most prevalent in **France**, where **24%** of companies use them.
- Almost **20%** of the participating companies report that they have not entered into **any fixed price agreements** in the last 12 months.

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Optimization of the raw material supplier base and analysis of the supply chain remain the most suitable measures - index-based prices are used most frequently

What measures do you consider appropriate for developing the management of raw materials? And what measures do you use? (Multiple answers possible)

Measure	Appropriate measure	Applied measure	Change to 2023*	Change to 2022*	Change to 2021*
Optimizing the supplier base for raw materials	63%	65%	-7%p	+9%p	+4%p
Supply chain analysis/ inventory optimization	58%	65%	-11%p	-1%p	-11%p
Passing on higher raw material costs to customers	54%	46%	-5%p	-8%p	-21%p
Projects to reduce material usage	52%	46%	+5%p	+2%p	+12%p
Index-based pricing with suppliers	46%	70%	-13%p	-10%p	N/A
Development projects to substitute materials	46%	33%	-10%p	-4%p	+6%p
Development of business intelligence tools	44%	17%	-4%p	+7%p	+8%p
Recycling/ reusing raw materials	42%	39%	-2%p	-5%p	+9%p
Long-term price fixing with suppliers	33%	39%	-24%p	+1%p	-20%p
Nearshoring or friendshoring	29%	26%	N/A	N/A	N/A
Develpoing financial hedging	27%	20%	+3%p	+1%p	+1%p
Implementing standardized reporting	27%	17%	-12%p	+1%p	+1%p
Pooling raw materials requirements	27%	7%	-12%p	-2%p	-4%p
Vertical integration (e.g. shares in producers)	25%	17%	+1%p	-7%p	-1%p

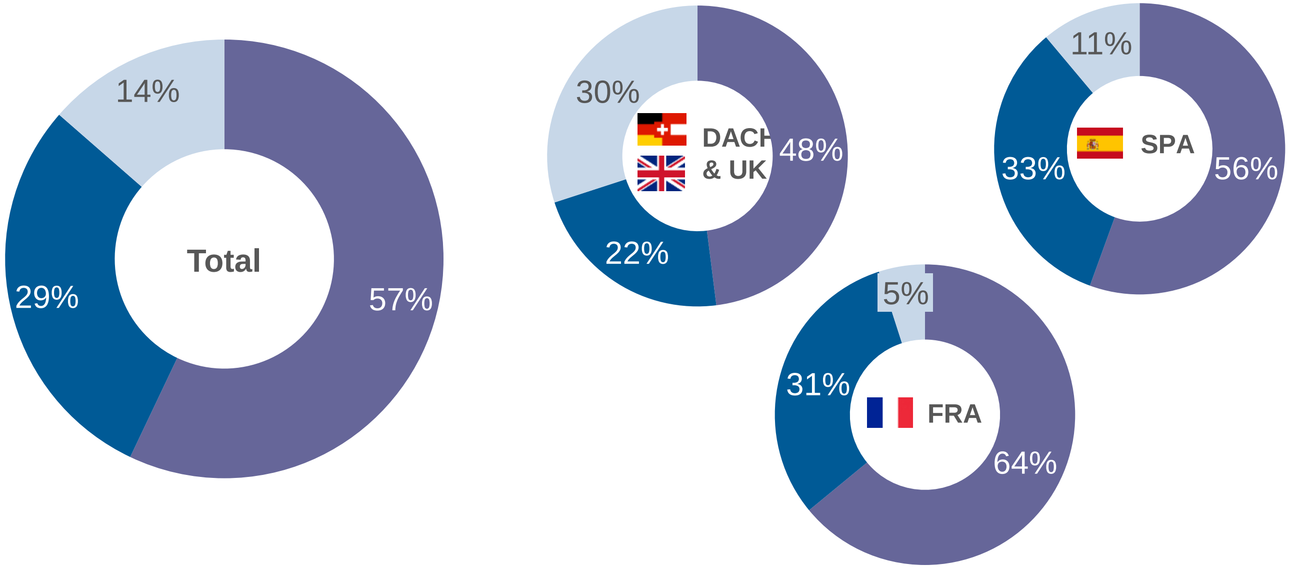
- For the participants, **optimizing the raw material supplier base (63%)** and **analyzing and improving supply chain inventory processes (58%)** are considered the most effective measures.
- **Projects aimed at reducing material usage (+5%)** have grown in importance for the third consecutive year.
- Fewer participants consider **long-term price fixes (-24%)** suitable.
- Although **index-based** pricing is the most commonly used method at **70%**, only 46% of participants find it suitable.

Increase ≥ +25%p   Increase < +25%p and ≥ +5%p   Change < ±5%p   Decrease ≥ -5%p   *Appropriate measure

Question 14 - Sourcing strategy

Most companies are responding to changing market conditions by adapting their sourcing strategies

Have your procurement strategies or your sourcing markets changed in the last 12 months?

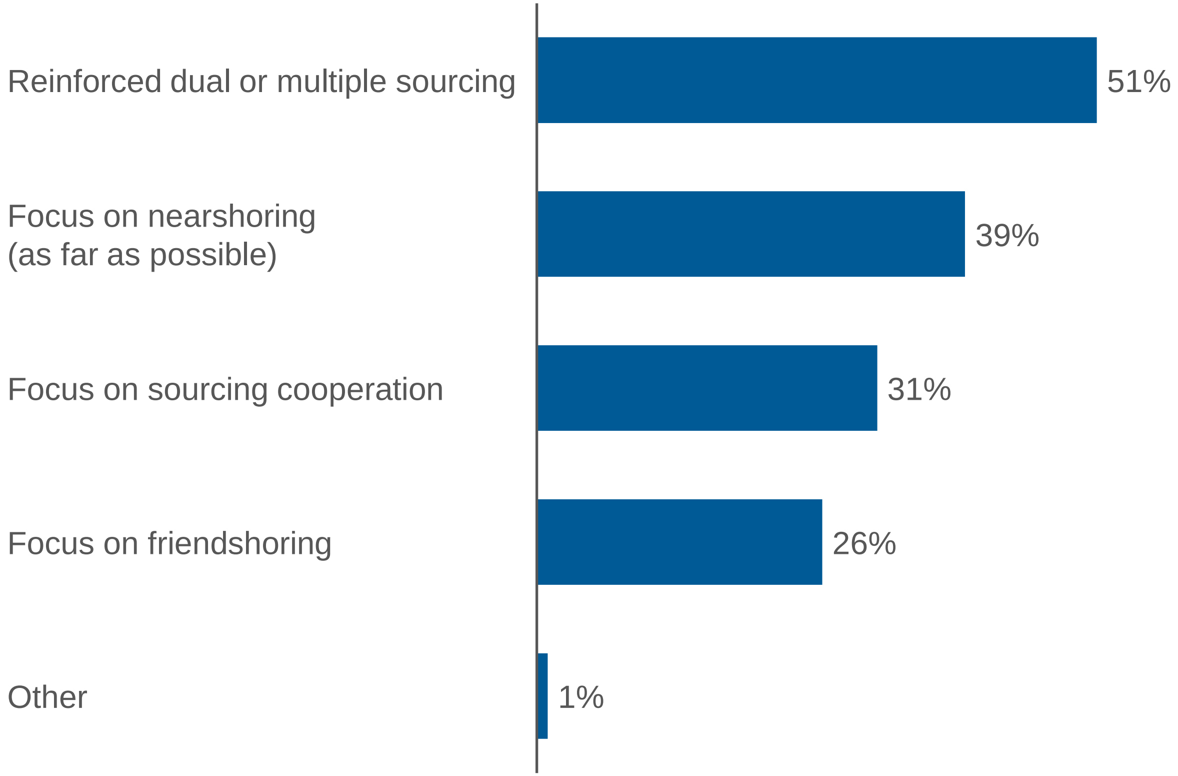


Yes, our sourcing strategy has changed
No, but a change is being planned or implemented
No, a change is not planned in the medium term

- **57%** of the surveyed companies have revised **their procurement strategy** in the **past 12 months.**
- A further **29% are in the process of planning or implementing** new sourcing strategies.
- In the DACH & the UK regions, **30%** of participants **have not changed their strategy** in the last year and see no need to do so in the medium term.
- Survey results from **Spain & France show a clear trend** towards adjusting or the need to change current sourcing strategies, with **89%** and **95%** respectively.

Diversification and nearshoring are key drivers of changes in sourcing strategies

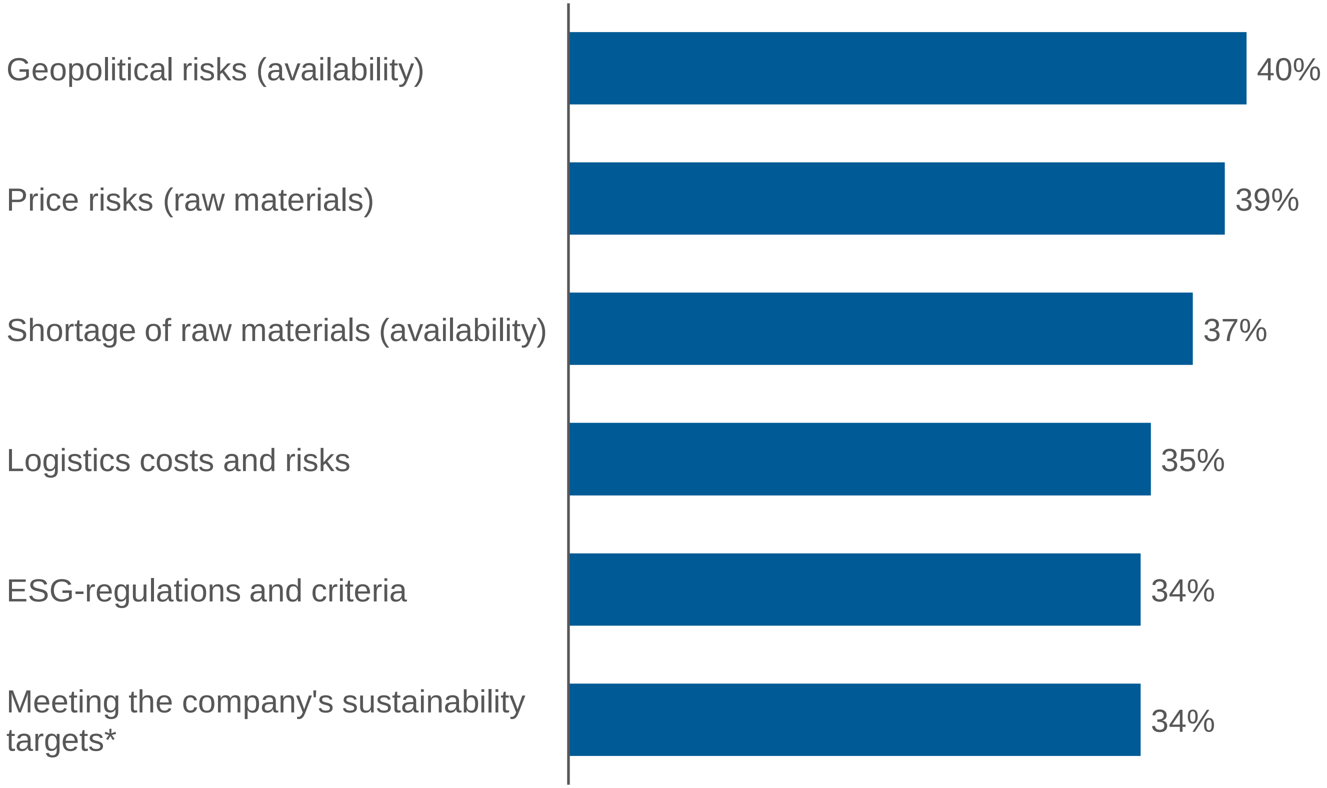
To what extent has your sourcing strategy changed? (Multiple answers possible)



- **51%** of companies with revised sourcing strategies are increasingly utilizing **dual or multiple sourcing methods** to mitigate risks and increase security of supply.
- **39%** of companies are prioritizing **nearshoring strategies** to reduce supply chains length and improve responsiveness.
- Topics such as **procurement cooperation (31%)** and **friendshoring (26%)** are considered **less relevant**.

Geopolitical challenges and price risks drive changes in supply sources

What are the main reasons for a change in your supply markets? (Multiple answers possible)

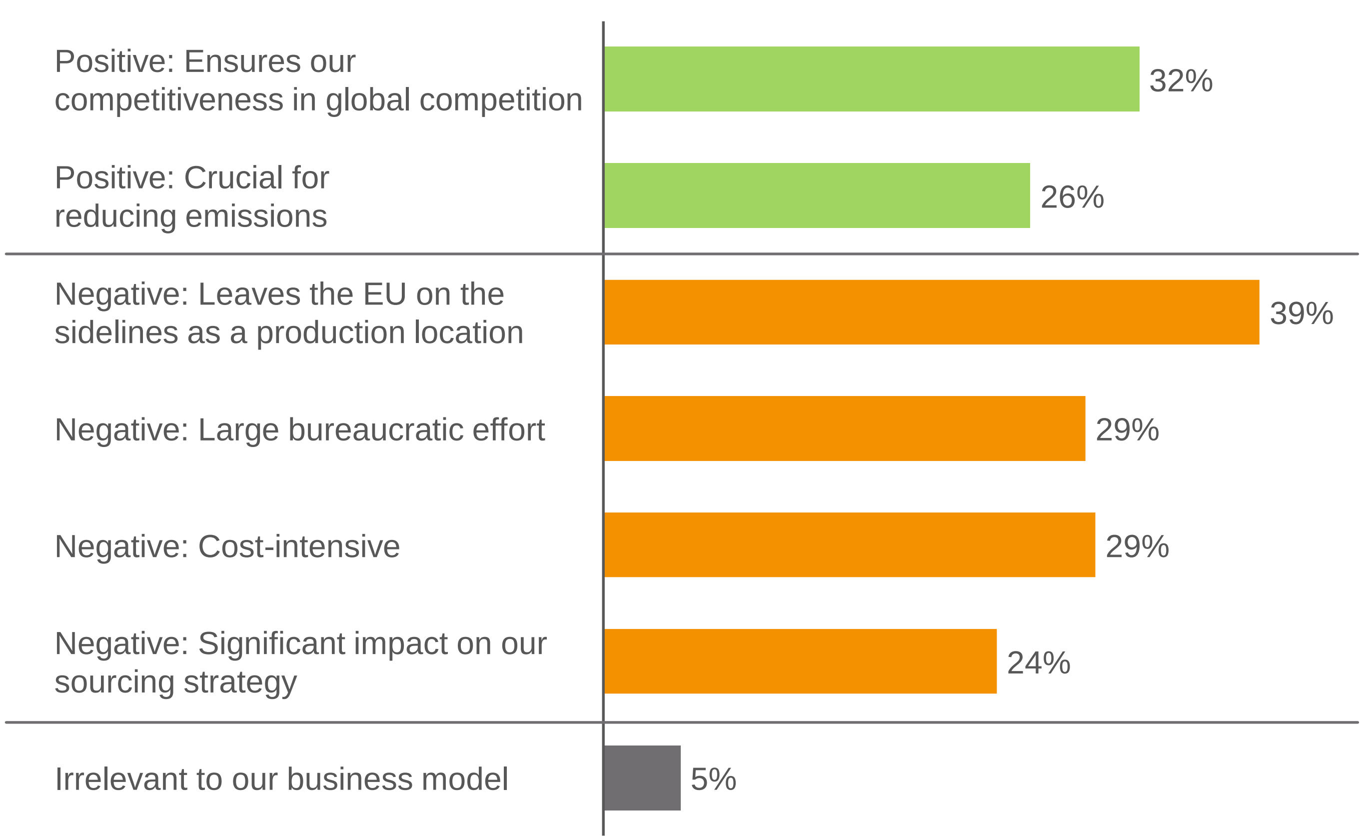


- **Geopolitical risks (40%) and price risks (39%)** are highlighted overall, especially among participants from the DACH region, where the scores are significantly higher (69% and 71%, respectively).
- **37%** of respondents identify **raw material shortages** as a key driver for change, highlighting the challenge of ensuring material availability.

*Answer option only applies to French and Spanish participants in the survey

Despite its intention to increase competitiveness and environmental protection, CBAM is predominantly met with reservations by the companies surveyed

How do you assess the potential impact of CBAM* on your industry and your sourcing strategy? (Tick all answers that apply)

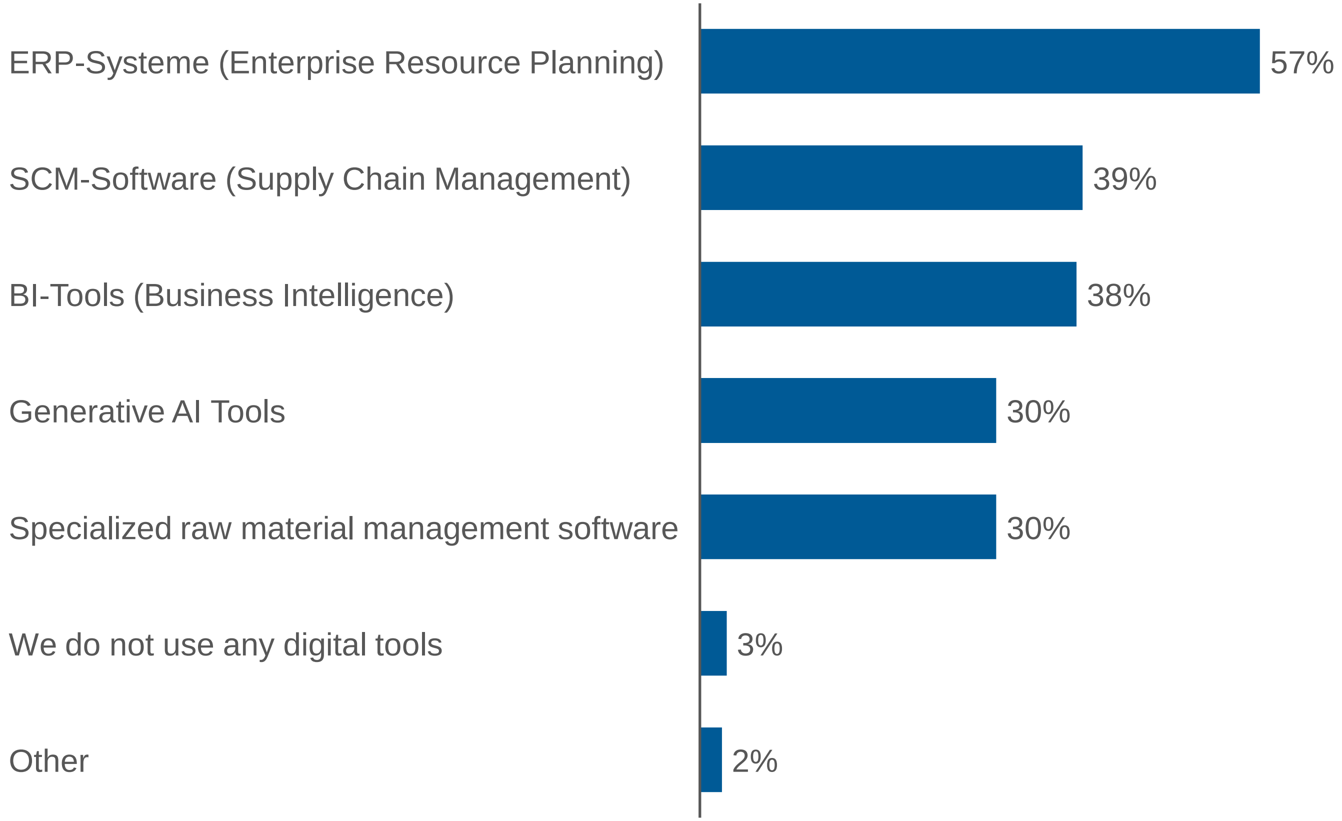


- **One-third** of respondents view CBAM as a **promoter of global competitiveness**, while approximately **one-quarter** consider it essential **for reducing emissions**.
- The **majority (39%)** express concerns that **CBAM places the EU at a disadvantage as a production location**, supplemented by significant concerns about **bureaucratic (29%)** and **cost-intensive processes (29%).**

*CBAM = Carbon Border Adjustment Mechanism

Companies use digital tools for raw material management to a limited extent

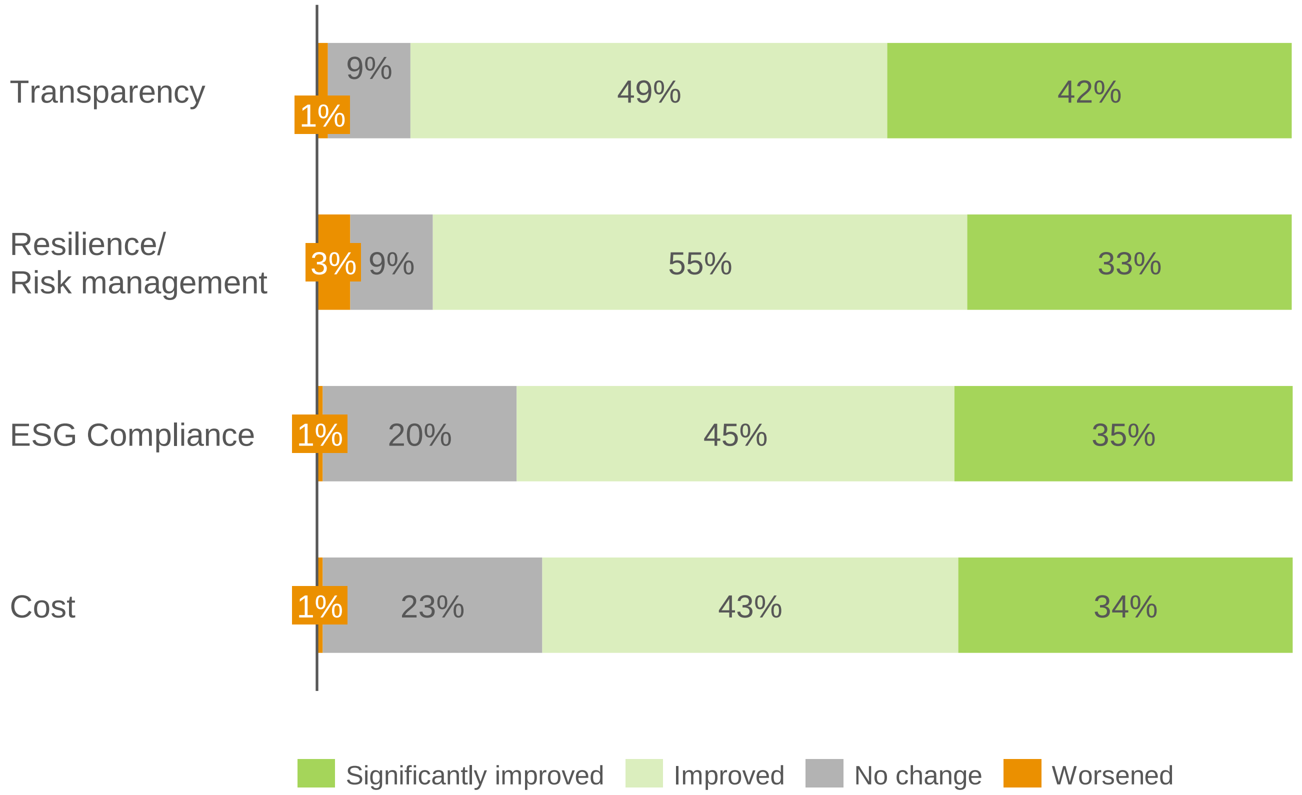
Which digital tools do you currently use in your raw materials management? (Multiple answers possible)



- **Over half** of the survey participants (57%) use **ERP systems** to optimize their raw material management.
- **39%** depend on **SCM software** and **38%** use **BI tools,** underlining the importance of data-driven decision-making.
- **30%** of companies have adopted **GenAI tools** and **specialized raw material management software** to increase their efficiency and responsiveness.
- Only 3% of participants do not use any digital solutions.

Digital tools significantly enhance transparency, resilience, and ESG compliance in raw materials management

In what way have digital tools improved the efficiency of your raw material procurement and management?

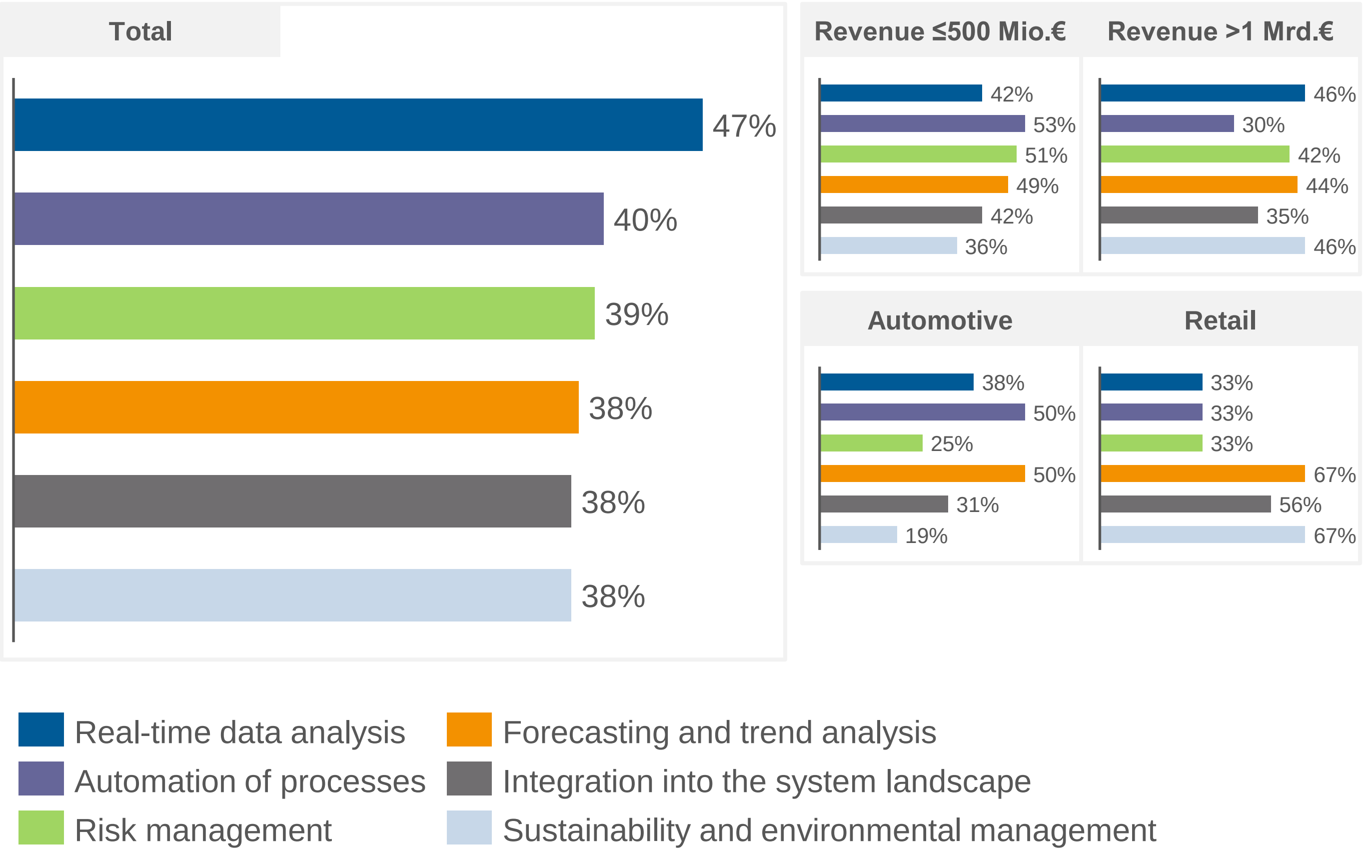


- About **9 out of 10** companies report **improved transparency** using digital tools in raw materials management.
- **80%** of respondents are experiencing improvements in **ESG compliance**, while **90%** are seeing increased **resilience** through digital technologies; one third report significant progress in both areas.
- A large proportion **(77%)** report improved **cost structures** using digital tools, with 34% of respondents even reporting a significant improvement.

Question 20 – Digital tools

Industry and company size significantly impact the importance of various digital functions in raw material procurement

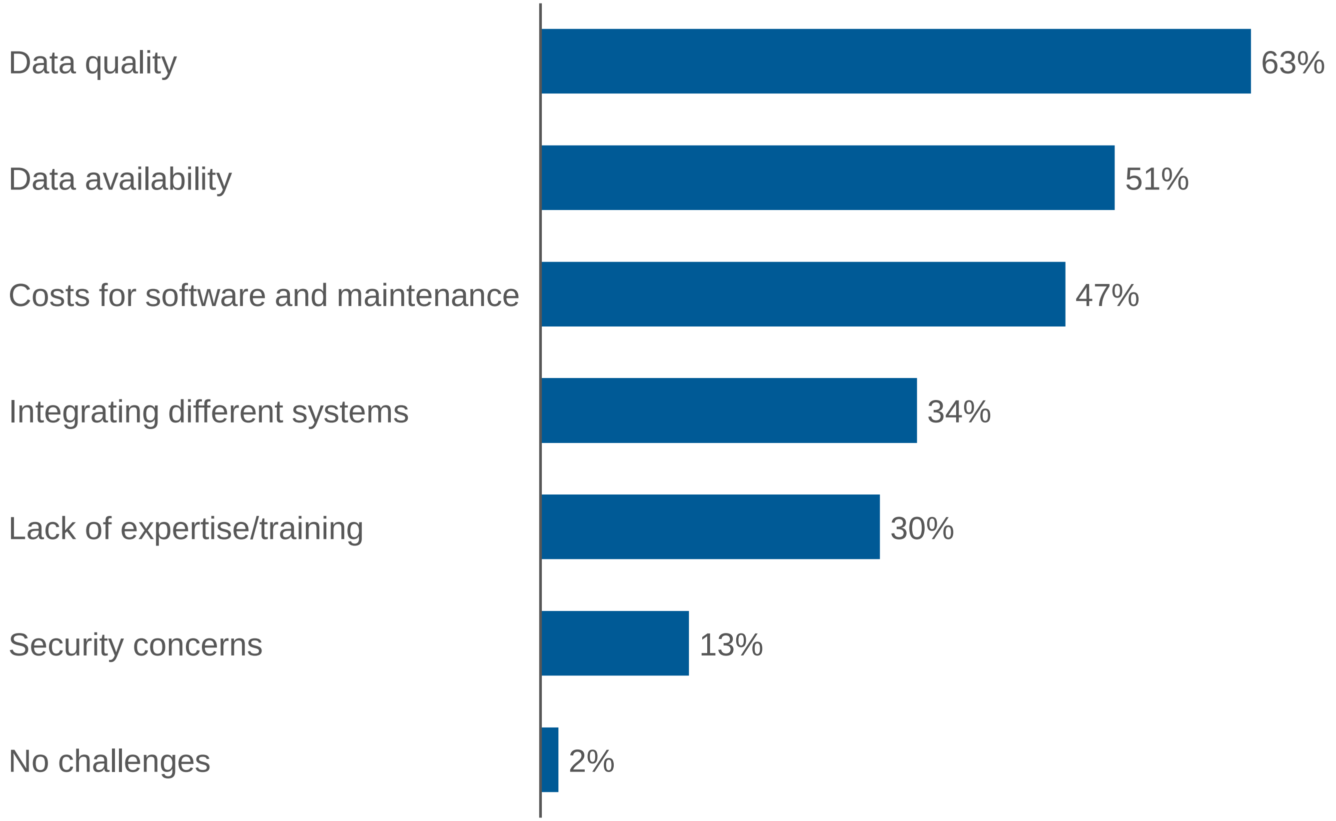
Which functions of digital tools are particularly important to you for raw materials management? (Multiple answers possible)



- **Digital solutions provide extensive support** across all aspects of raw material procurement
- Overall, **47%** of respondents value **real-time data analysis** for its critical role in quickly adapting to market changes.
- **Process automation (40%),** risk management (39%), forecasting and trend analysis, systemic integration, and sustainability management (38% each) are also highly valued to improve efficiency, safety, and sustainability in raw material management.

Data quality and availability present the biggest challenges in the use of digital tools in raw material management

What challenges do you see in the use of digital tools in raw materials management? (Multiple answers possible)



- **63%** of respondents identify **data quality** as a challenge, highlighting the importance of reliable and accurate data in digital systems.
- About half of the participants see data **availability (51%) and costs for software and maintenance (47%)** as challenging.
- One-third of respondents perceive the **integration of different systems (34%) and the lack of expertise (30%)** as significant barriers that impact the effectiveness of digital tools.

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2 Study design and participants

3 Results in detail

4 Recommendations for action

Enhanced transparency and digital innovation drive effective cost management and strategic flexibility in the raw materials market

Maximize cost savings by leveraging supply chain information

Gain a **competitive edge** by thoroughly understanding the supply chain, including strategies such as hedging raw material prices on the supplier side, **supplier pricing** (cost breakdowns), and **comparing** alternative suppliers. **Evaluate** both potential benefits and drawbacks of the Carbon Border Adjustment Mechanism **(CBAM)**. Implement a structured **foundational toolset to realize cost savings** and use digital solutions and GenAI to enhance data and market transparency for your procurement processes.

Systematically monitor markets using business intelligence tools

Use advanced **digital** and **GenAI solutions** for ongoing, structured and automated **analysis of the raw material markets**. Leverage the resulting transparency to establish robust **risk management practices,** preparing for potential price volatility and crises.

Maximizing the impact of digital solutions by addressing key challenges

Invest in data quality, systems integration, and training to fully optimize the efficiency and effectiveness of your digital solutions. **Digital solutions** are **essential** for long-term success and **allow procurement to focus on strategic initiatives.**

Boost resilience, responsiveness, and cost efficiency by exploring alternative procurement options and integrating cross-functional strategies

Dual and multi-sourcing strategies increase flexibility

Facilitate the integration of diverse **local** and **international suppliers** to boost **sourcing flexibility**. **Dual and multi-sourcing** strategies not only enhance your agility and responsiveness to **potential price fluctuations** and supply disruptions but also broaden your negotiation tactics, including options like auctions and **Process Driven Negotiations** (PDN).

Leverage cross-functional expertise to reduce raw material consumption

Form **cross-functional project teams,** including **purchasing, R&D** and **existing suppliers** for a holistic analysis and to develop strategies to **reduce raw material consumption**. These efforts can lead to cost savings through initiatives such as re-specification, use of recycled materials, and optimization of the production processes.

Your INVERTO Team

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