



IVAM.

2023

Economic Data Survey

- ▶ How badly are companies affected by supply chain problems? What solutions do they have for these problems?
- ▶ How sustainable are companies and research institutions in micro and nanotechnology in 2023?
- ▶ What economic, political, societal or organizational challenges are high-tech companies facing in 2023?
- ▶ These are questions that currently concern IVAM Microtechnology Network, the leading European microtechnology industry association, and which we addressed in our 2023 economic data survey.
- ▶ This survey was conducted among European companies and research institutes engaged in key enabling technologies like microtechnology, MEMS and semiconductors, nanotechnology and advanced materials, optical and photonic technologies, sensor and measurement technology.
- ▶ The survey was conducted in August and September 2023.

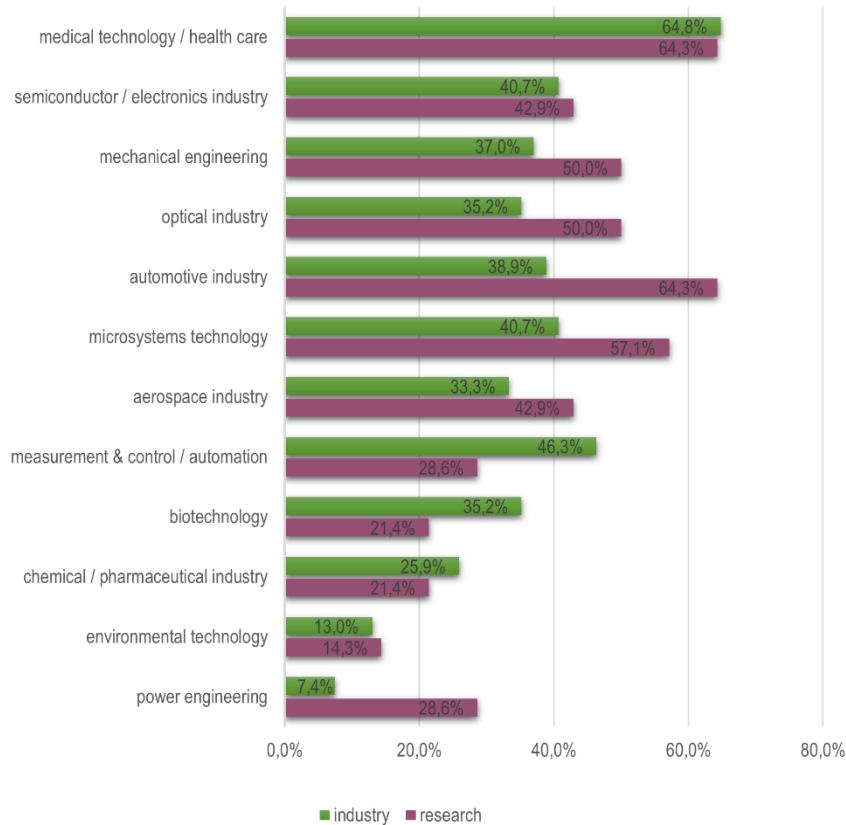


- ▶ Will medical technology continue to be the main market for products in micro- and nanotechnology in 2023 and in the next three years?
- ▶ How badly are companies affected by supply chain problems? What solutions do they have for these problems?
- ▶ How sustainable do companies and research institutions work in 2023? How big is their contribution to the topic in the form of products or technologies?

Markets

The microtechnology sector is diverse in 2023

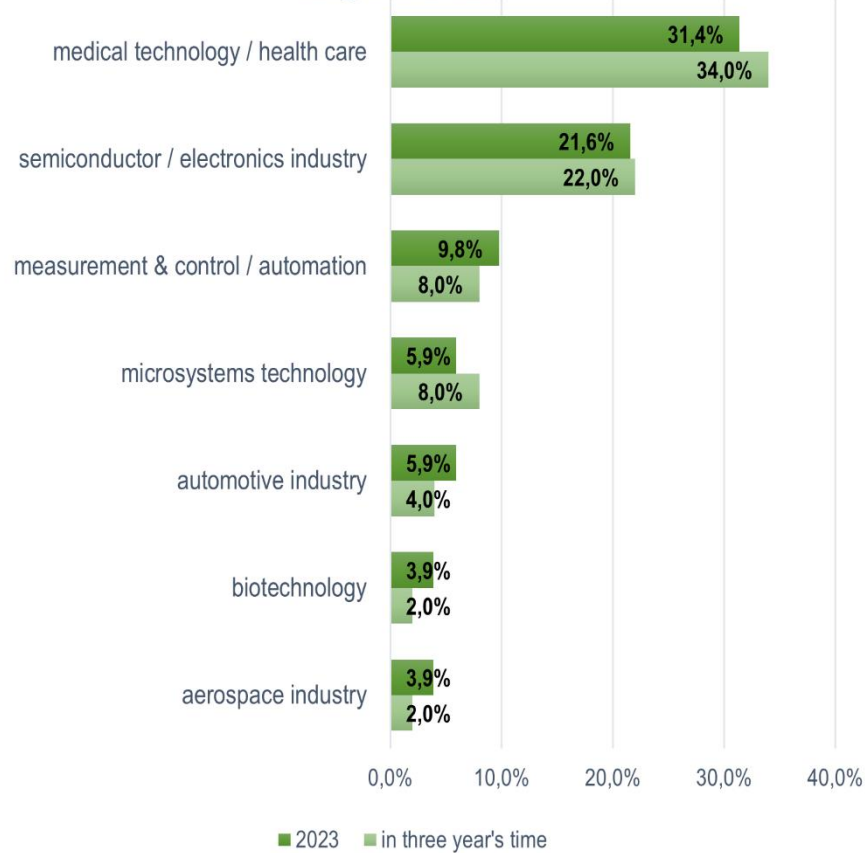
In which of the following industries are your products, technologies or services basically applied?



multiple answers included

- ▶ 64,8% of microtechnology companies and 64,3% of research institutes are active in medical technology – medical technology stays the biggest market in microtechnology sector
- ▶ 40,7% of companies and 42,9% of research institutes are providing semiconductor solutions
- ▶ Research institutes are represented in the areas of automotive (64,3%), microsystems technology (57,1%), mechanical engineering and optical industry (each 50,0 %)
- ▶ Companies are strongly represented in the field of measurement & control (46,3%)
- ▶ a rather small share (14,3%) of research institutes and companies (13,0%) is working on environmental technology.

Which is / will be your most important target market?



companies and research institutes

- ▶ In 2023, the most important target market of the organizations surveyed is the medical technology / healthcare industry. 31.4% answered that they are active in this market. medical technology / healthcare industry is supposed to be the most important market in three years for also 34.0% of organizations
- ▶ also very important is the semiconductor / electronics industry market - it is the most important market for 21.6% of all respondents
- ▶ the share of organizations that mainly do microsystems technology will rise (5.9% in 2023, 8.0% in three years)
- ▶ All other markets mentioned here are going to shrink

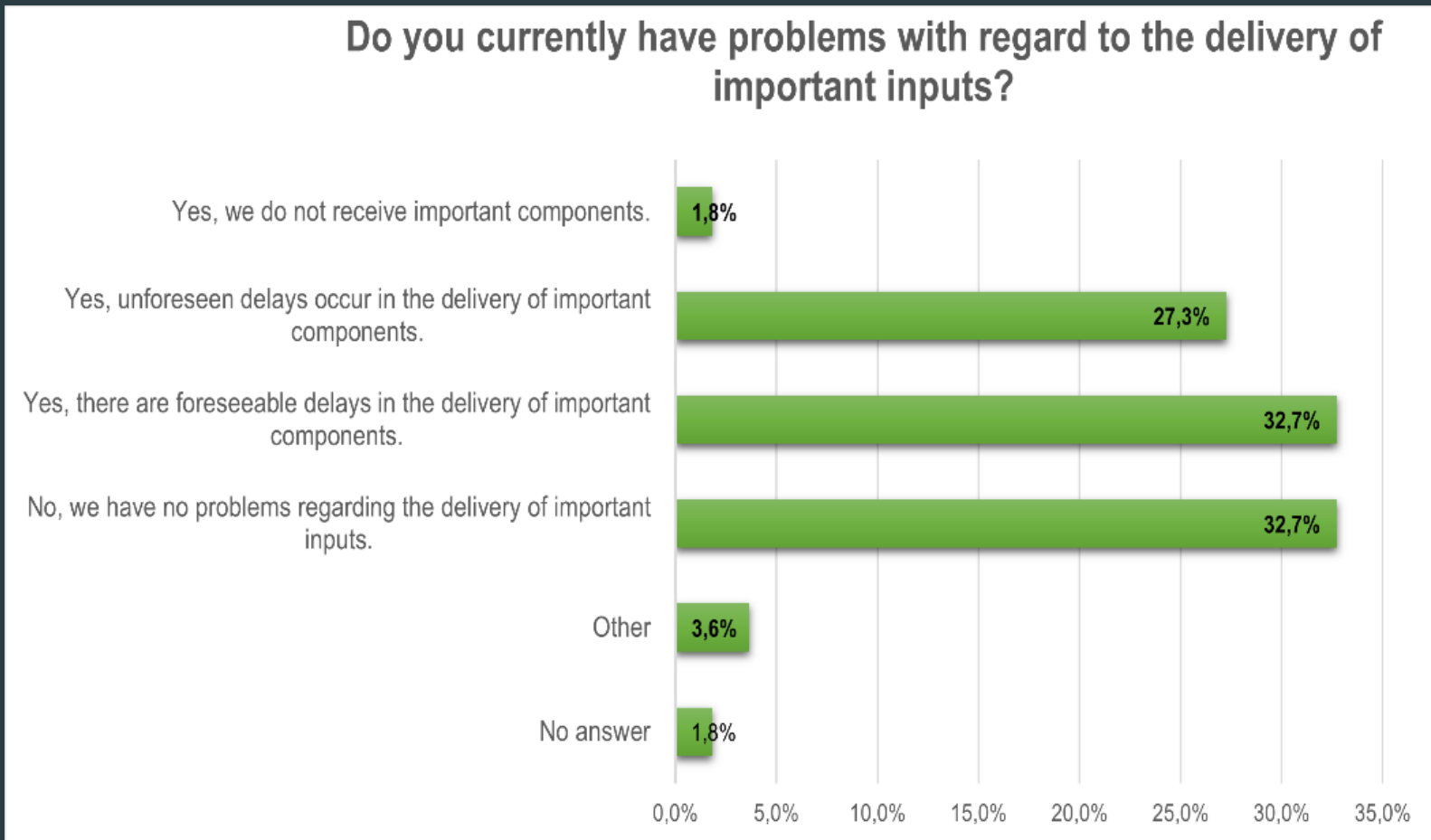


- ▶ Organizations in the high-tech sector are currently often particularly affected by supply chain problems. We asked companies and institutes to what extent they are affected and how they react to these restrictions.

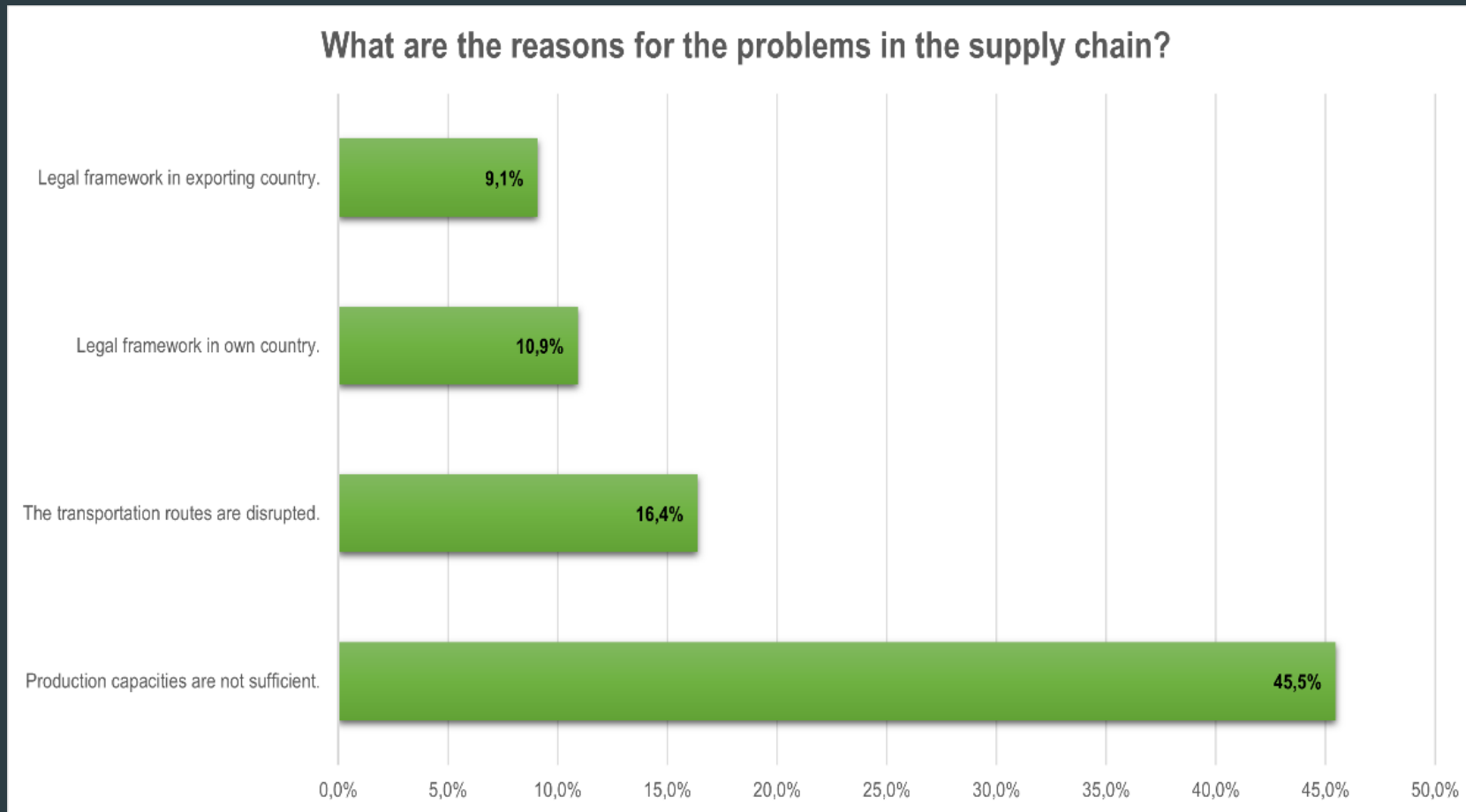
Supply Chain Problems



- ▶ Most of the organizations surveyed have issues related to their supply chains. 85.7% of the research institutes and 58.4% are affected.



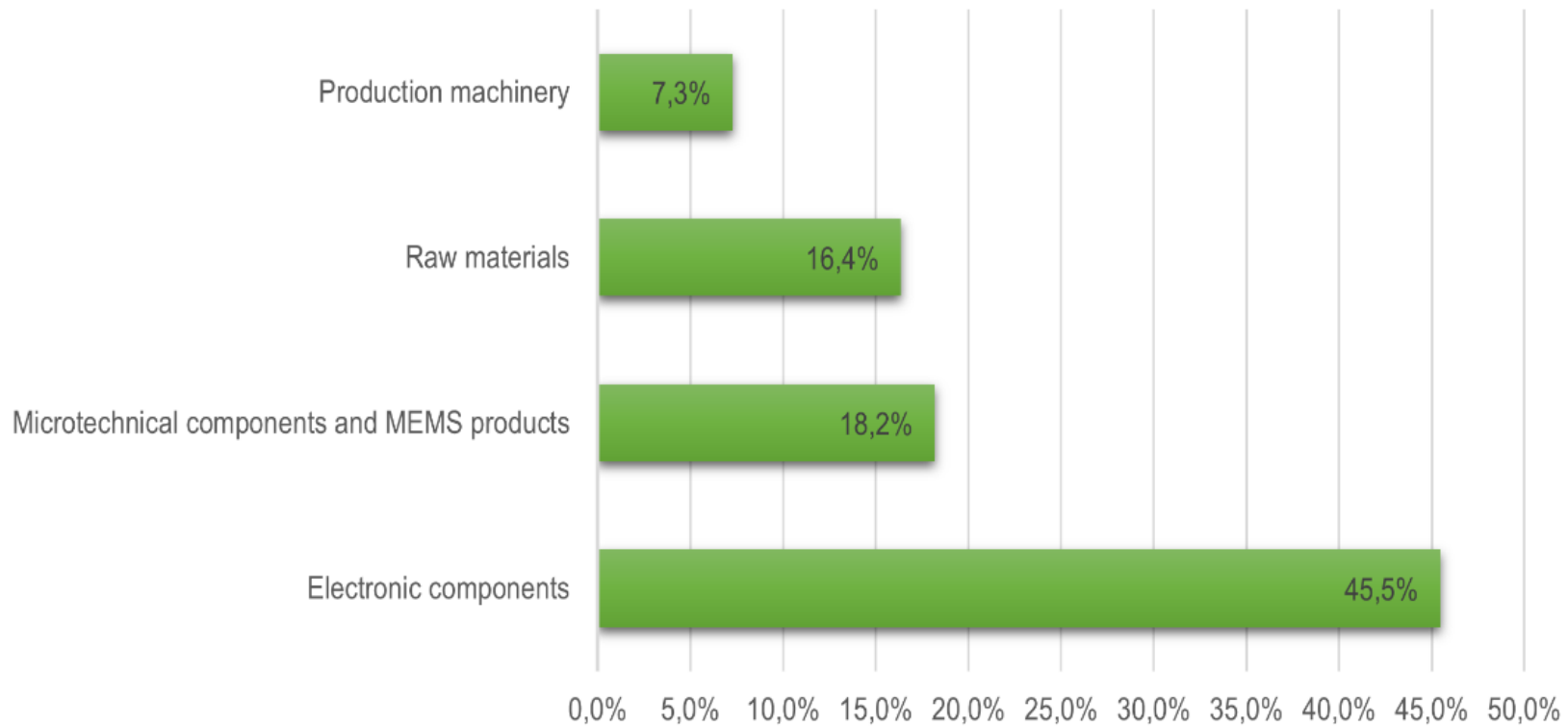
- ▶ The majority of respondents see the reason for the supply chain problems in insufficient production capacities at suppliers (71.4% institutes, 41.7% companies). Other reasons include disrupted transportation routes (28.6% / 14.6%) and regulatory frameworks in the home country (14.3% / 10.4%) that disrupt supply chains. Legal frameworks in exporting countries are only for the companies a problem (10.4%).



multiple answers included 7

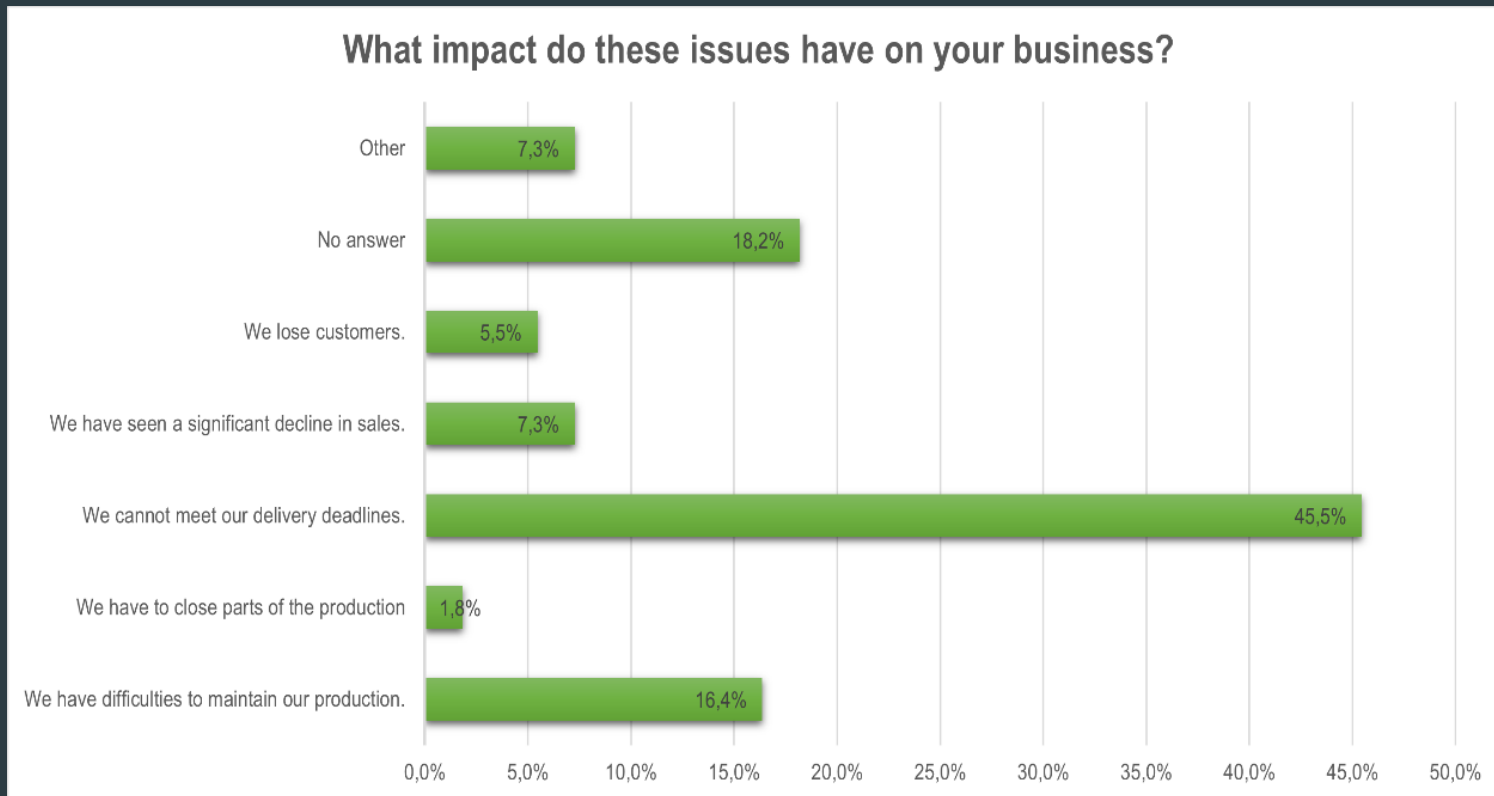
- ▶ Electronic components in particular are affected (71.4% / 41.7%). There are fewer problems with microtechnical components/MEMS products, raw materials and production machinery.

Which supplier products are particularly affected by these problems?



multiple answers included

- ▶ The most noticeable impact of supply chain issues is that a large percentage of the organizations surveyed are unable to meet their delivery deadlines (71.4% / 41.7%). Impacts such as a decline in sales or difficulties in maintaining production, on the other hand, are experienced by rather few institutes and companies.

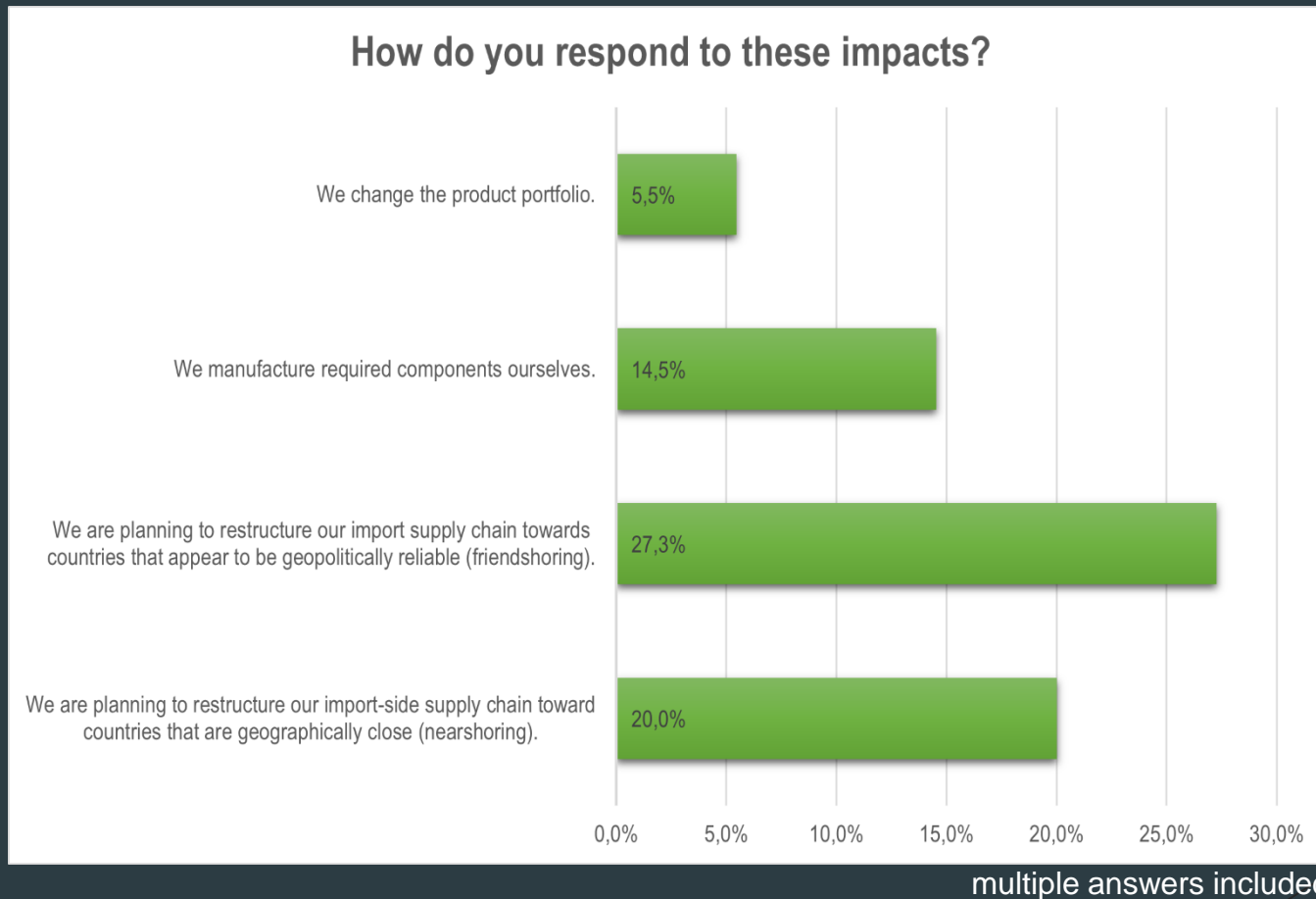


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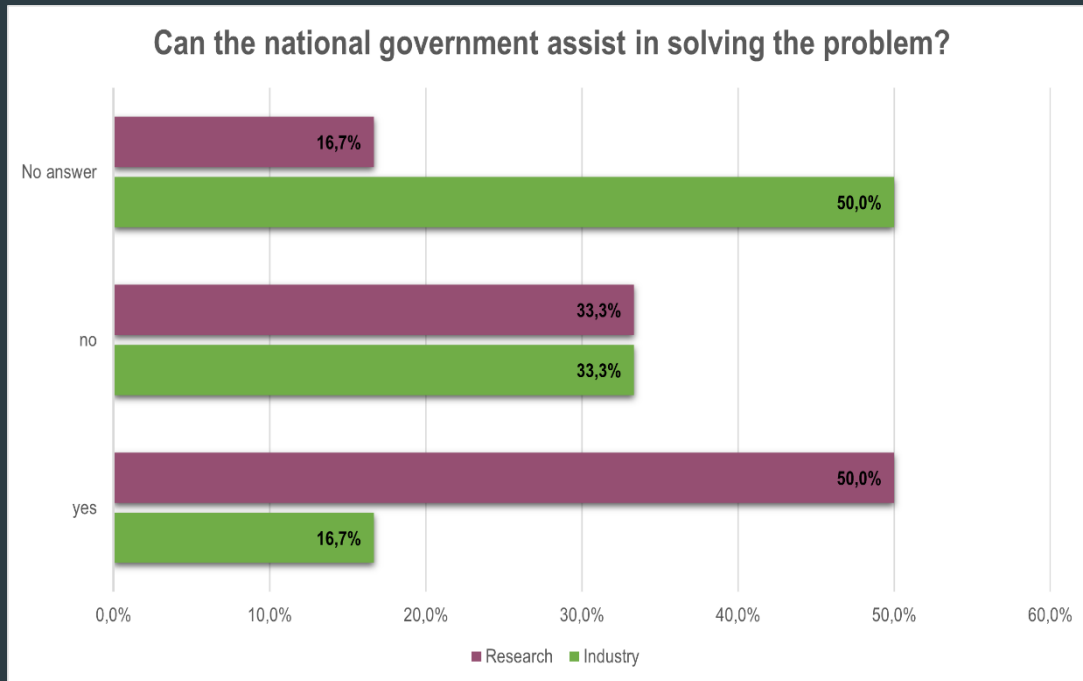
Other impacts mentioned under "Other" are:

- *longer leadtime for delivery*
- *We need to find replacement and adapt our systems*
- *Replenish stocks*
- *Not affected*

- ▶ In response to these problems, both companies and institutions are planning to change their supplier strategy. In the future, preference will be given to suppliers based in countries that are either geographically close (nearshoring) or geopolitically reliable (friendshoring).
- ▶ To change the product portfolio or to manufacture products themselves is only attractive for few organizations.



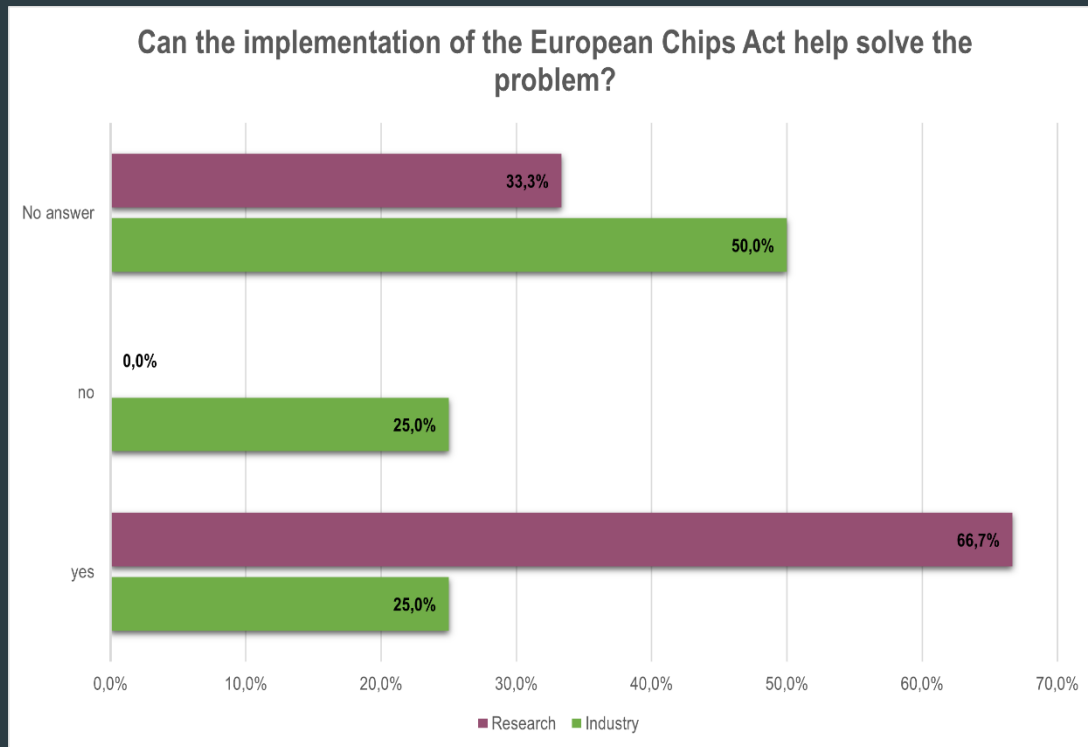
- ▶ With regard to possible support from the national government, most companies are skeptical. However, at least half of the institutes surveyed see possibilities for assistance from their own government.



When asked how specifically the national government can assist, the following responses were given:

- *Actually, she can't. It lacks any competence to do so. So de facto it has to resign. Become competent yourself. Less ideology, more pragmatism. Put an end to encroachment. Finally tackle digitization in a credible and focused way. Finally, reduce bureaucracy in a credible and focused way. Relieve the burden on those who generate resources.*
- *Make it attractive for suppliers to locate here. Diplomatically strengthen existing cooperations*
- *Reduce administrative burdens u e restrictions*

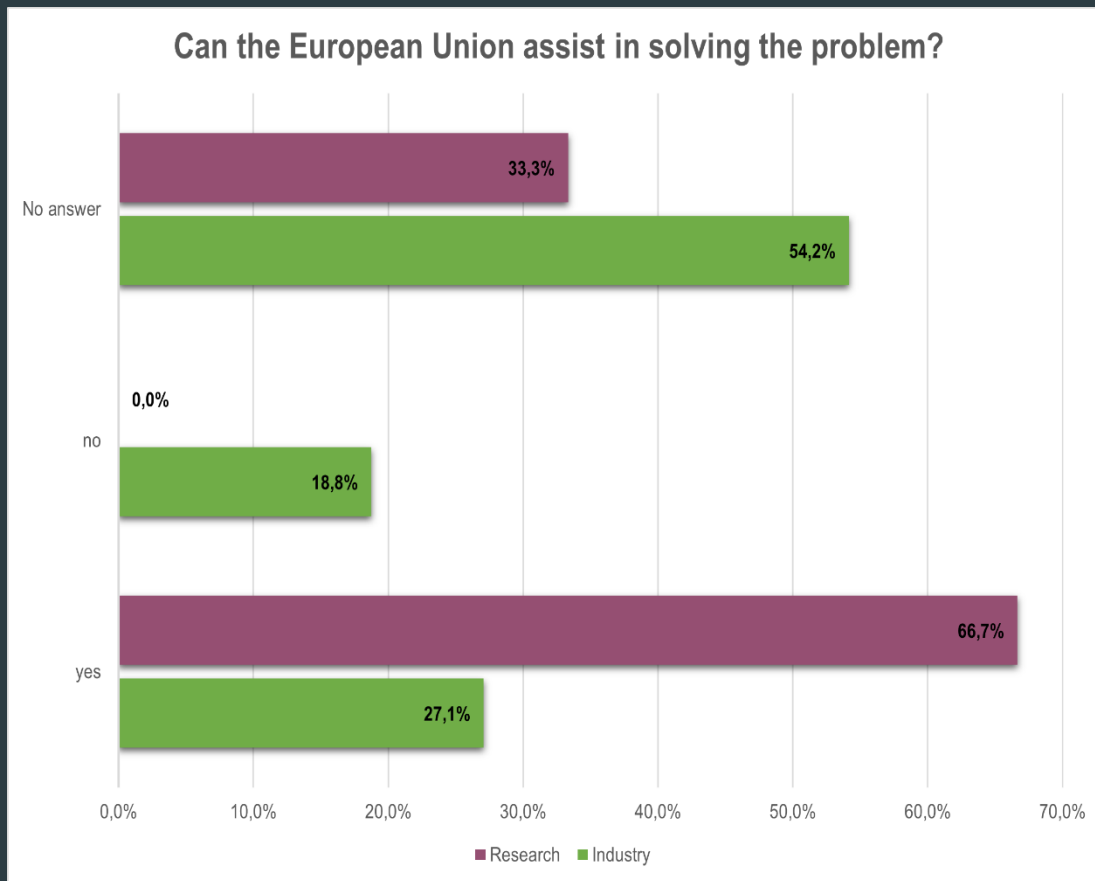
- ▶ The research institutes in particular see the implementation of the European Chips Act as helpful (66.7%). The companies are skeptical here as well.



When asked why the implementation is not helpful, the respondents answered:

- *The new semiconductor fabs will focus on high volume production, which will not relieve the ASIC and low volume market.*
- *A lot of hot air. Helps at best the big ones, which could also act on their own.*
- *Because governments have far too little detailed knowledge and are rushing into individual large lighthouse projects. What good is a chip factory if the packages to be produced afterwards are not manufactured in Europe, at least for volume products.*
- *Does not directly affect our suppliers.*
- *This is essentially a temporary resource bottleneck that will be solved until the European Chips Act takes effect.*
- *Because only the pure chip production is supported, but not all other backend services.*
- *A drop in the ocean*
- *Because photonic semiconductors have not been in the focus so far or other critical components are not addressed with it.*
- *Other structure sizes are needed*

► The companies also do not see much support from the EU - in contrast to the research institutes.



When asked how the EU can assist in solving the supply chain problems, the organizations answered:

- *Promoting SMEs and foundries.*
- *The EU should bring back the entire supply chains and Innovation finally take place in the EU again.*
- *As the national government: Make it attractive for suppliers to locate here, strengthen existing diplomatic cooperations, standardize legal situation, develop supply routes in Europe in a favorable way (rail).*
- *in a globalized world, the European government is more likely to be noticed than a single country. It strengthens Europe as much as any single country. (if the obstructionists do not break too much).*
- *Make necessary agreements.*
- *Micro technology development and manufacturing must be encouraged by EU.*
- *Less administrative burden and restrictions.*



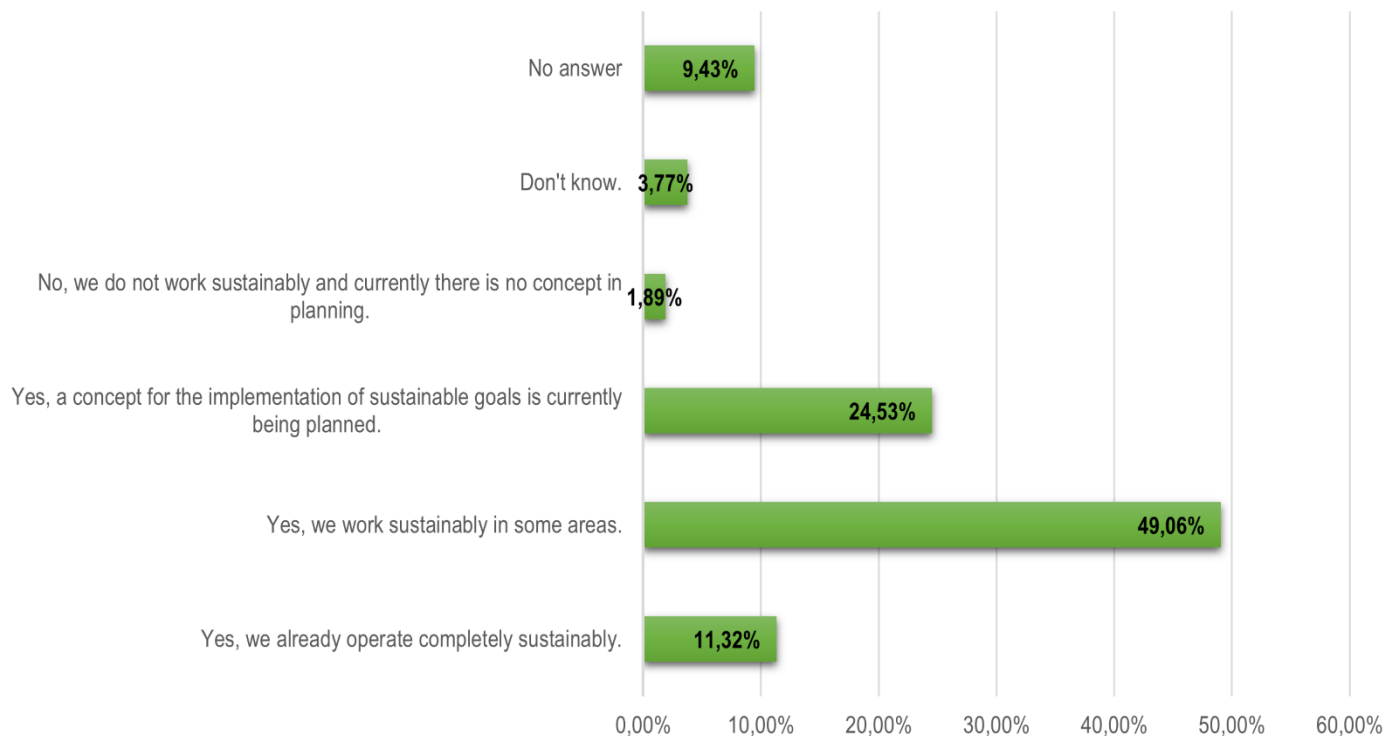
- ▶ To what extent are organizations from the high-tech sector sustainable or contribute to sustainable products?

Sustainability

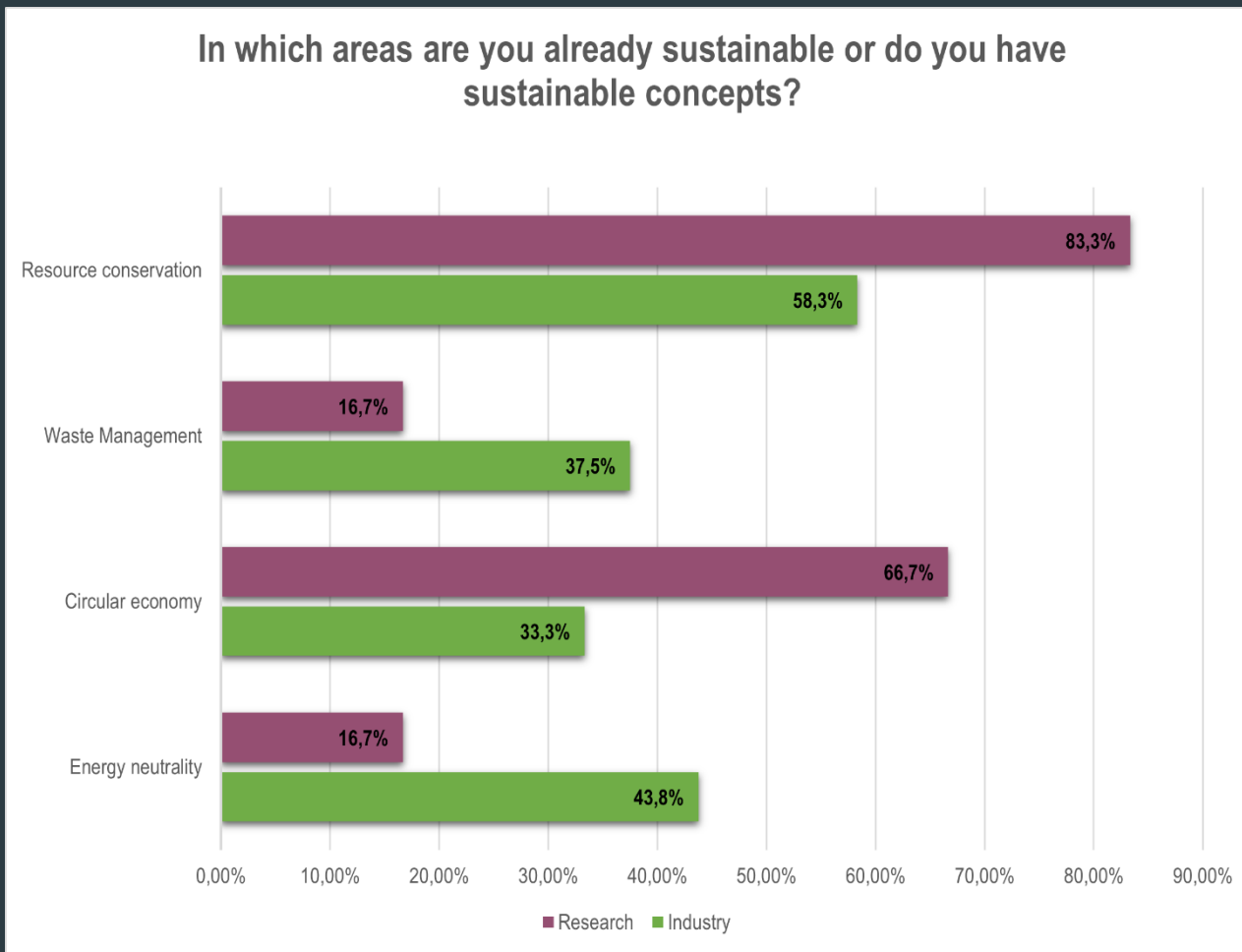


- ▶ The topic of sustainability and the circular economy is already firmly anchored in the minds of the majority of respondents. 83.0% of the companies surveyed and 100.0% of the research institutes stated that they were currently planning at least one sustainability concept or working sustainably in some areas, if not already working completely sustainably.

Is your organization sustainable/do you have sustainable concepts?

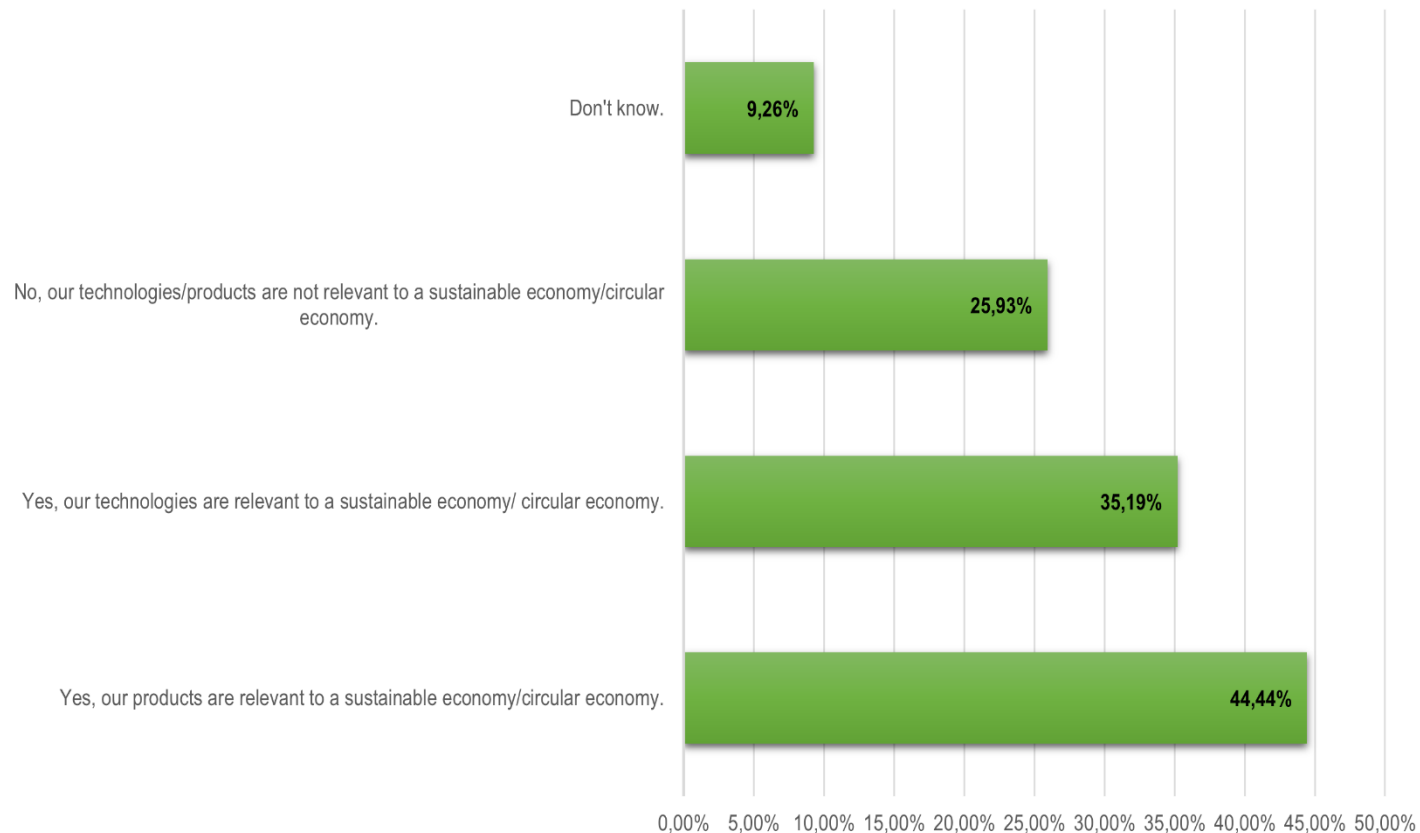


- ▶ Most of the research institutes are already sustainable or have sustainable concepts in the fields of “Resource conservation” (83.3%) and “Circular Economy” (66.7%). Companies are also active in the field of “Resource Conservation” (58.3%) but are more likely concentrated on the topic of “Waste Management” than research institutes.



- ▶ A large part of the responding organizations stated, that their products or technologies are relevant to a sustainable economy/ circular economy. 83.3% of the research institutes respectively 29.2% of the companies develop technologies that are related to the topic of sustainability. This suggests that the topic of sustainability plays an important role in the field of research and will certainly continue to gain in relevance.
- ▶ Products that are relevant to a sustainable economy/circular economy are produced by 47.9% of the companies and 16.7% of the research institutes.

Do you manufacture products or develop technologies relevant to a sustainable economy?



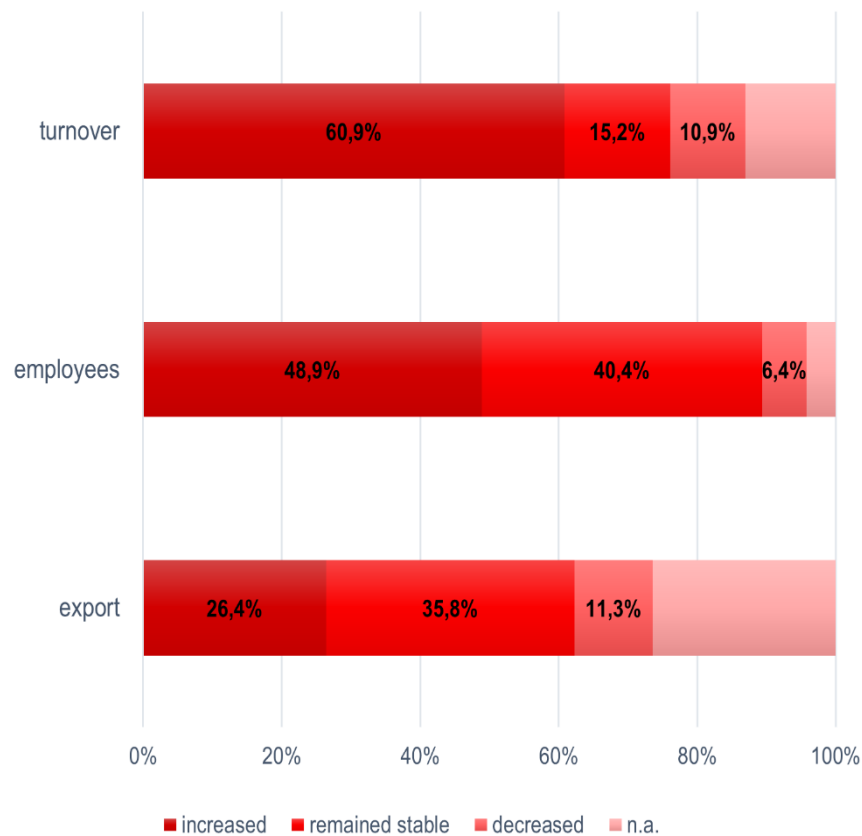
- ▶ Once a year, we ask the microtechnology industry in Europe about its economic situation.
- ▶ We ask the industry for the past and prospective development of turnover, employees, export and international markets.
- ▶ Prospective development of international markets are included but may, of course, change in the medium term due to current economic uncertainties caused by the war in Ukraine.



Business development



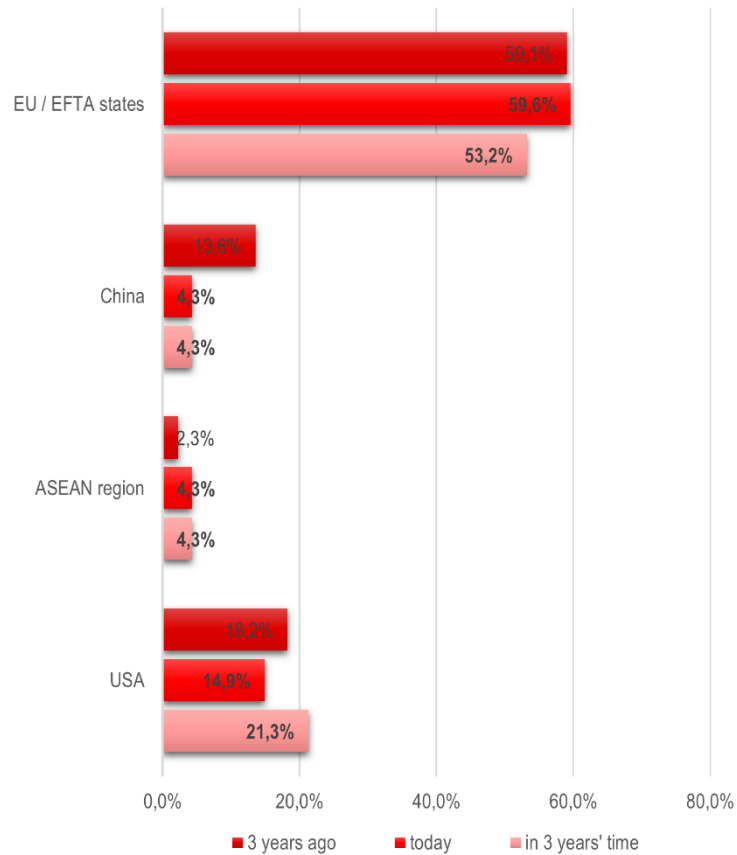
Business development in the European microtechnology industry 2022



companies only

- ▶ Business development has been rather positive for the European microtechnology industry in the past year:
- ▶ 60,0% of companies have been able to increase turnover – instead of uncertainty in corona crisis
- ▶ Nearly 50,0% of companies have increased the number of employees in the past year – 40.4% were able to retain their employees and did not have to reduce their workforce.
- ▶ A large part of microtechnology organizations assess finding and retaining qualified employees as difficult.
- ▶ 26.4% of companies have increased export in the past year (2022) – export has remained stable for 35.8% of companies.
- ▶ The majority of turnover is therefore generated domestically.

Which is / will be your most important export region?



companies only

- ▶ for the European microtechnology industry foreign trade currently (2023), as in previous years, concentrates on the EU and EFTA states: for 59.6% of companies, this is the most important export region
- ▶ at present, the USA is the most important market for 14.9% of companies. In perspective, the USA as an export region is increasing even further (21.3%), while China and the ASEAN region are the most important export region for only a few companies (each 4.3%)
- ▶ In 2020 the industry predicted that China would be more important as an export market than the USA

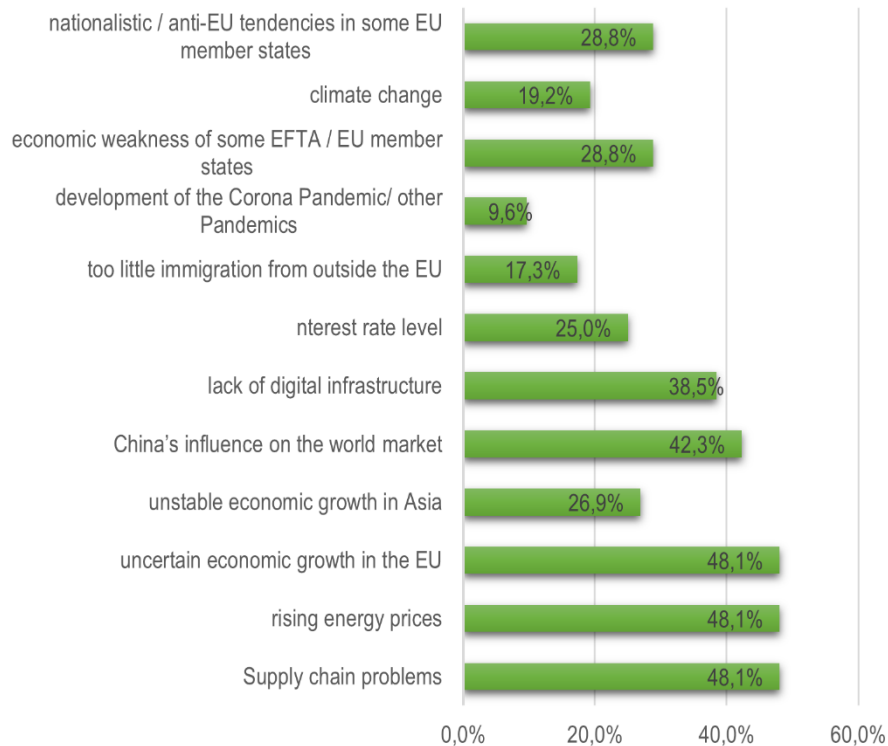
- ▶ What influence trade conflicts or legal regulations have on the microtechnology industry, and how the industry generally copes with necessary change processes?
- ▶ We have asked the following two questions in 2022 already, although with partly differing answer options, since some topics that were up-to-date back then have lost their relevance and some new ones have emerged since then. To read the results of the 2022 survey, visit https://www.ivam.de/research/economic_data/ivam_survey_2022_corona_crisis_climate_change_developments_in_the_eu and download the summary



Uncertainty factors



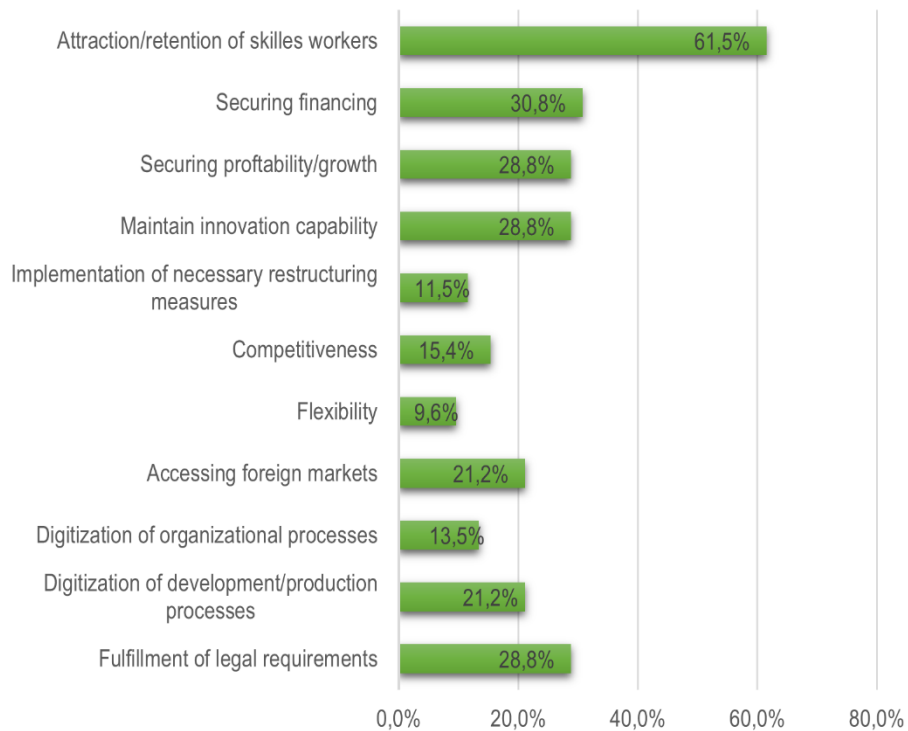
External uncertainty factors for the stability of microtechnology organizations



companies and research institutes, multiple answers included

- ▶ In the survey, the current economic and political developments become clear. The biggest uncertainty factors are “uncertain economic growth in the EU” (66.7% / 45.7%), “rising energy prices” (66.7% / 45.7%) and “supply chain problems” (33.3%/ 50.0%).
- ▶ China’s influence on the world market is an uncertainty factor for 45.7% of the companies and 16.7% of the research institutes surveyed.
- ▶ nationalistic tendencies of some EU member states and an economic weakness of the EU are for more companies than research institutes a factor of uncertainty
- ▶ the development of the Corona Pandemic or other Pandemics is no longer relevant (8.7% / 16.7%).
- ▶ lack of digital infrastructure is a factor of uncertainty especially for the institutes (50.0%), but also for companies (37.0%).
- ▶ Climate change is seen as an external uncertainty factor by 33.3% of the institutes and 17.4% of the companies.

Internal uncertainty factors for the stability of microtechnology organizations



companies and research institutes, multiple answers included

- ▶ competition for specialists is becoming apparent in the microtechnology industry: 100.0% of research institutes and 56.5% of the companies see attraction and retention of qualified employees as an uncertainty factor for the stability of their organization
- ▶ securing financing (30.4% / 33.3%) is an uncertainty factor to which research institutes are more exposed.
- ▶ Securing profitability (28.3% / 33.3%) is a factor of uncertainty for approx. a third of microtechnology organizations
- ▶ Digitization of development/production processes is for 33.3% of the institutes and 19.6% of the companies an internal uncertainty factor.
- ▶ the proportion of companies and institutes for which the fulfillment of legal requirements represent an uncertainty factor is relatively big – 28.3% of the companies and 33.3% of the institutes see this as a problem.

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