

IVAM.
2022
Economic
Data Survey

- ▶ How sustainable are companies and research institutions in micro and nanotechnology in 2022? And what expectations do they have of the new German government?
- ▶ What economic, political, societal or organizational challenges are high-tech companies facing in early 2022?
- ▶ These are questions that currently concern IVAM Microtechnology Network, the leading European microtechnology industry association, and which we addressed in our 2022 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 February and March 2022 before the War in Ukraine started.

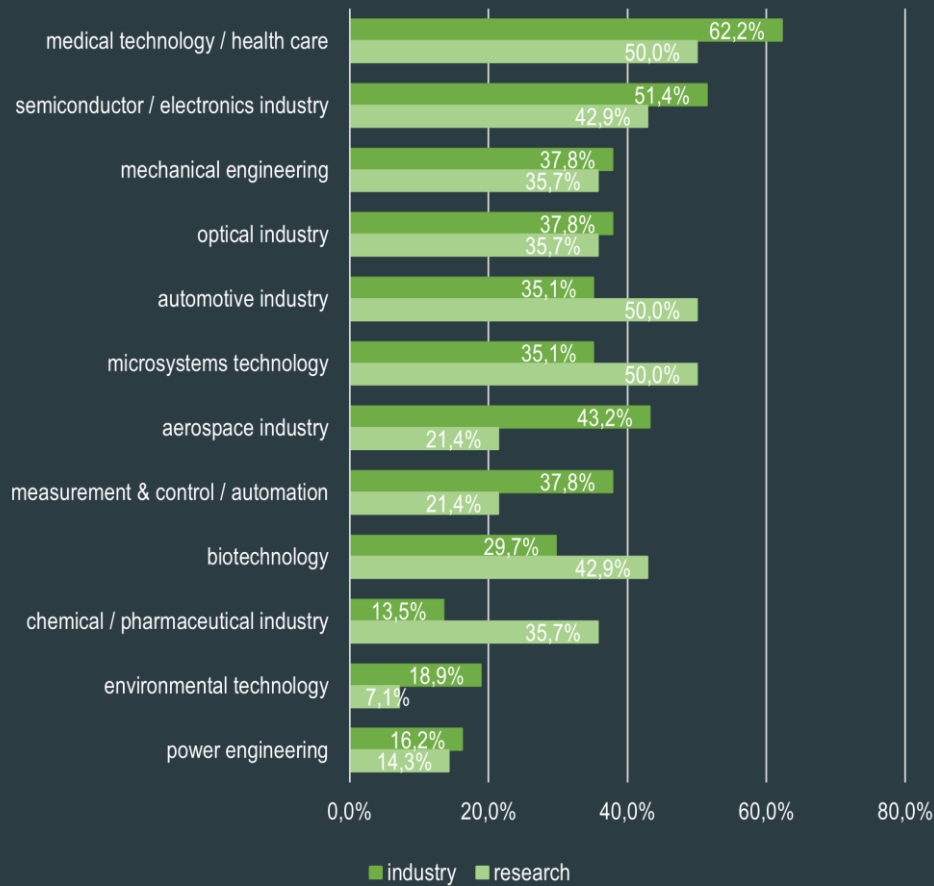


- ▶ Will medical technology continue to be the main market for products in micro- and nanotechnology in 2022 and in the next three years?
- ▶ How sustainable do companies and research institutions work in 2022? How big is their contribution to the topic in the form of products or technologies?
- ▶ What expectations do microtechnology organizations have of the new German government to strengthen Germany as a high-tech location?

Markets

The microtechnology sector is diverse in 2022

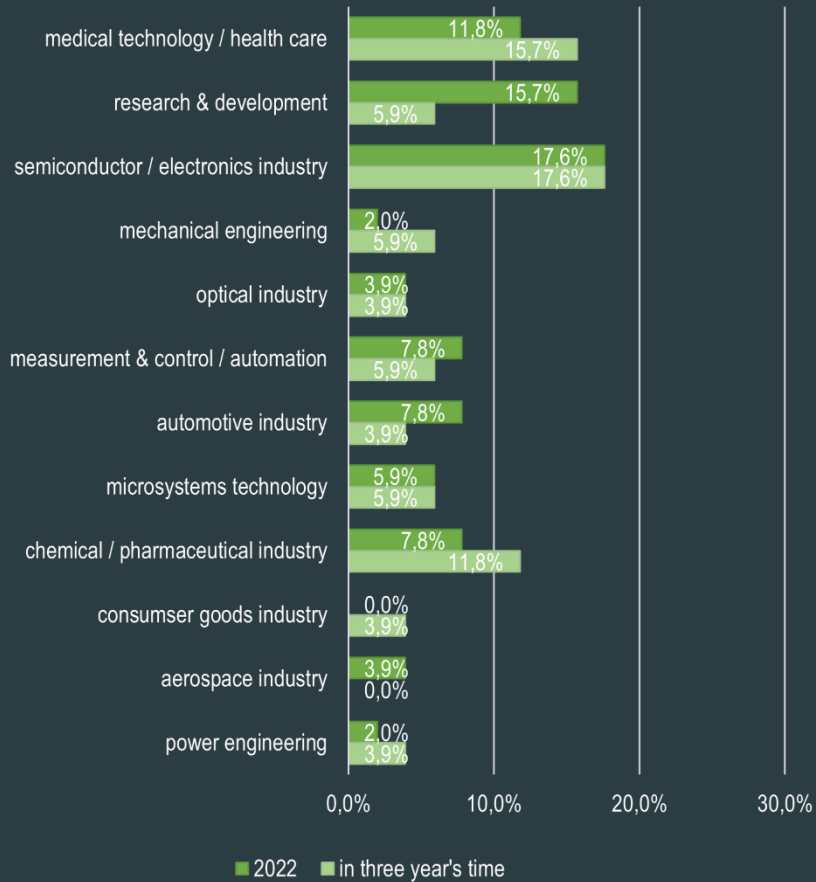
In which of the following industries are your products, technologies or services basically applied?



companies and research institutes, multiple answers included

- ▶ 62.2% of microtechnology companies and 50.0% of research institutes are active in medical technology – medical technology stays the biggest market in microtechnology sector
- ▶ 51.4% of companies and 42.9% of research institutes are providing semiconductor solutions
- ▶ Research institutes are represented in the areas of automotive (50.0%), microsystems technology (50.0%) and biotechnology (42.9%), which has grown significantly in importance
- ▶ a rather small share (7.1%) of research institutes is working on environmental technology, in industry, the proportion is higher at 18.9% - among the companies surveyed, there is little activity in the area of environmental technology.

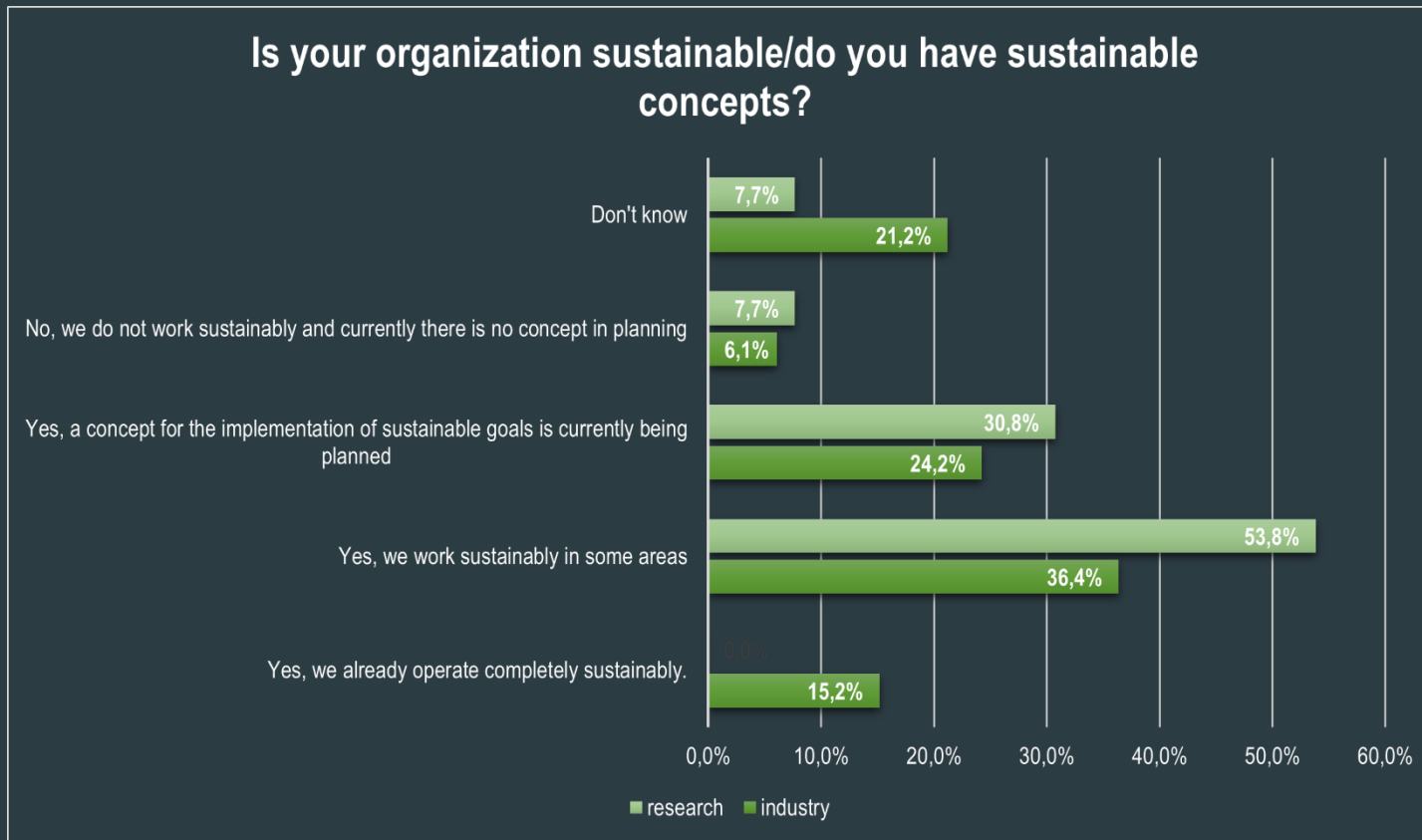
Which is / will be your most important target market?



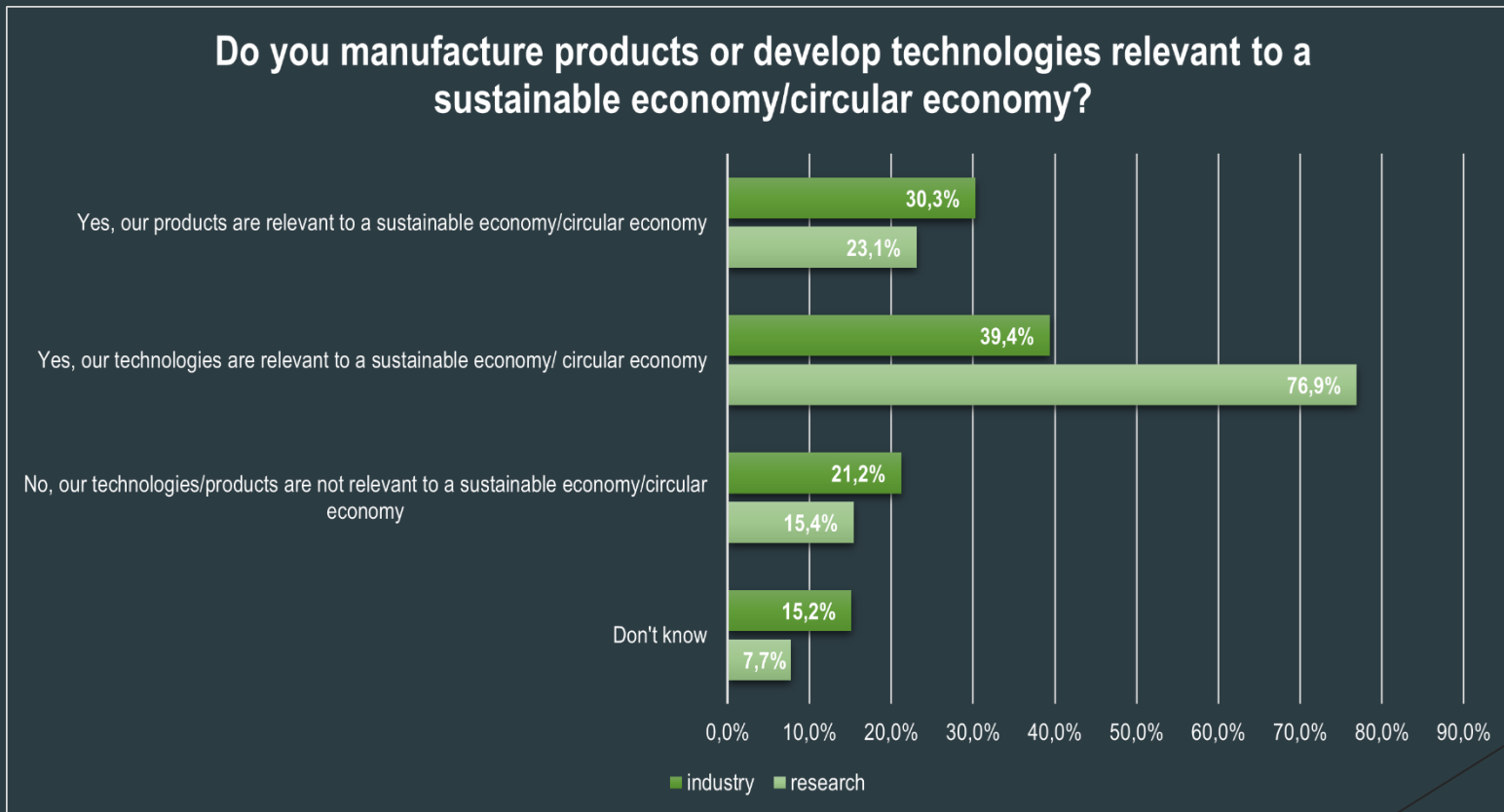
companies and research institutes

- ▶ In 2022, the most important target market of the organizations surveyed is the semiconductor/ electronics industry. 17.6% answered that they are active in this market. semiconductor / electronics industry is supposed to be the most important market in three years for also 17.6% of organizations
- ▶ still very important is the medical technology market - it is the most important market for 11.8% of all respondents
- ▶ the share of organizations that mainly do chemical and pharmaceutical technologies (7.8%, 11.8% in three year's time), power engineering (2.0%, 3.9% in three year's time) and consumer goods industry (0.0%, 3.9% in three year's time) will rise

- ▶ The topic of sustainability and the circular economy is already firmly anchored in the minds of the majority of respondents. 75,8% of the companies surveyed and 84,6% 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.



- ▶ A large part of the responding organizations stated, that their products or technologies are relevant to a sustainable economy/ circular economy. 76.9% of the research institutes respectively 39.4% 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 30.3% of the companies and 23.1% of the research institutes. An increase is also expected here.



companies and research institutes, multiple answers included



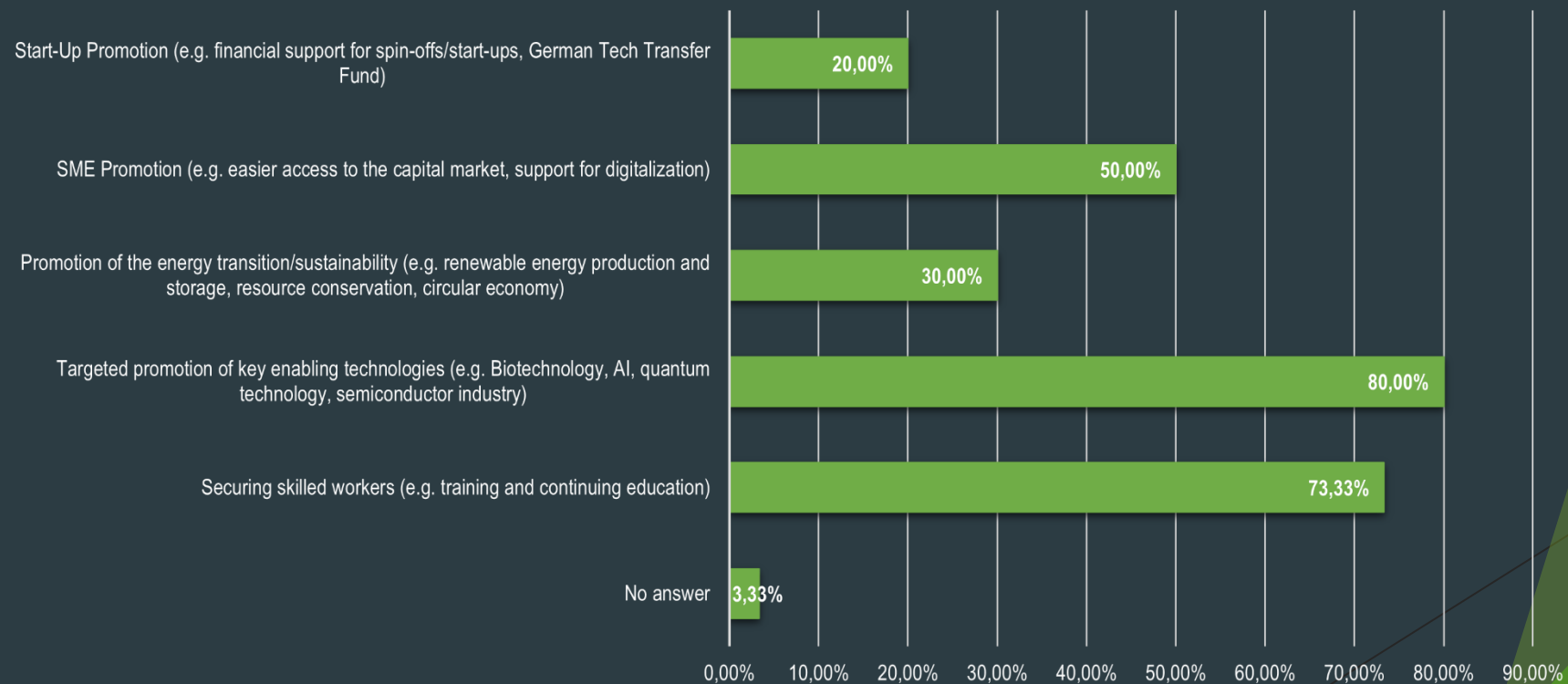
- ▶ Due to the change of government in Germany at the end of 2021, we asked the microtechnology industry what expectations they have of the new federal government to strengthen Germany as a high-tech location.
- ▶ On the one hand, the survey asked about measures that can be derived from the coalition agreement; on the other hand, it freely asked about the wishes of the organizations.

New German government



- ▶ Asked about measures resulting from the coalition agreement, the majority of those surveyed see the see the item “Targeted promotion of key enabling technologies” as the most important measure (80.0%).
- ▶ Then follow the points “Securing skilled workers” (73.33%) and “SME promotion” (50.0%).
- ▶ The two most frequently mentioned points are also found in the free responses. In particular, the area of promotion key enabling technologies was mentioned again and again (see next slide).

Particularly urgent measures to strengthen Germany as a technology location (German participants):



What further impetus do the participants expect from the new German government to strengthen Germany as a high-tech location?

There are numerous other expectations of the new federal government. Outstanding, however, is the desire for solutions to existing problems that have been exacerbated by the pandemic.

- ▶ The topics of necessary investments in education and research as well as an increase in funds for research funding were addressed.
- ▶ But the demands go even further: "Support in the area of scaling up new technologies beyond the R&D phase till sustainable level is achieved".
- ▶ Other mentions are aimed at securing Germany as a business location in the long term - even beyond the legislative period. The "expansion of the digital infrastructure" and "cybersecurity", the "promotion of sustainability and climate neutrality", the "presentation of long-term goals to strengthen the economy (due to the demise of the automotive industry) and the "securing of the future of energy supply" were mentioned here.
- ▶ Repeated at this point were the promotion or "insourcing of key technologies to secure an independent supply situation" and "combating the shortage of skilled workers," which once again underscores the urgency of this problem.

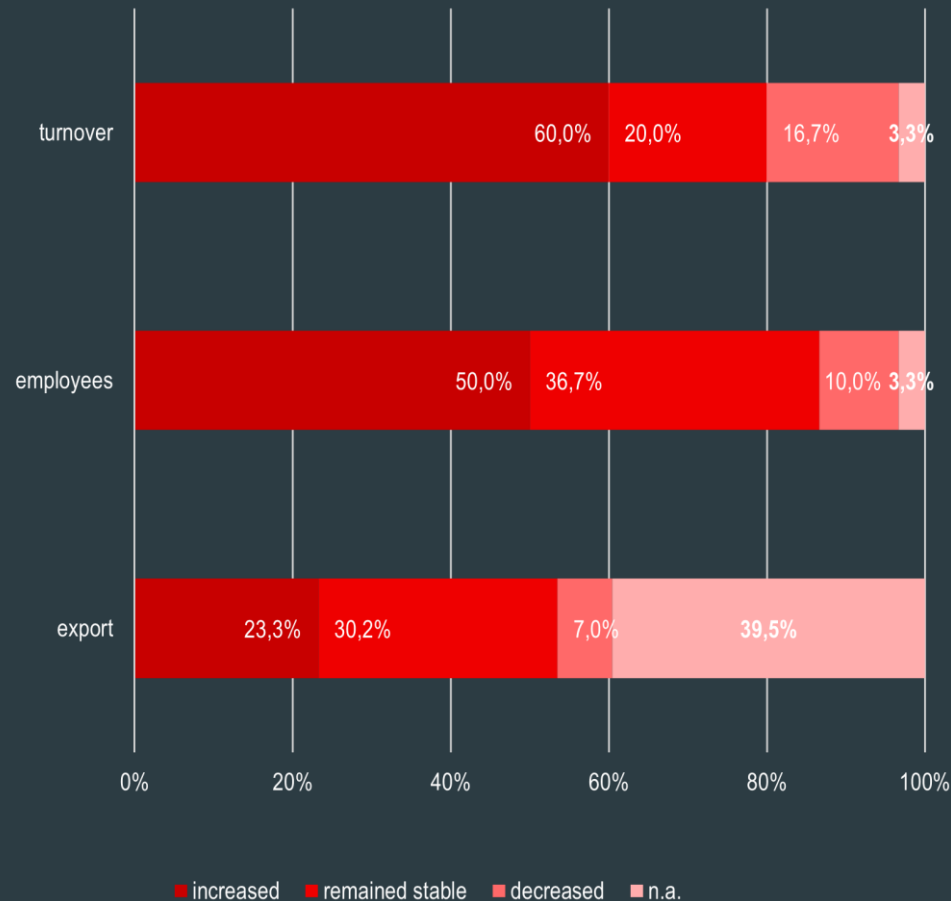
- ▶ Once a year, we ask the microtechnology industry in Europe about its economic situation.
- ▶ We ask the industry for the past and prospective development of turnover, employees, export and international markets.
- ▶ Prospective development of international markets are included but may, of course,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



Business development



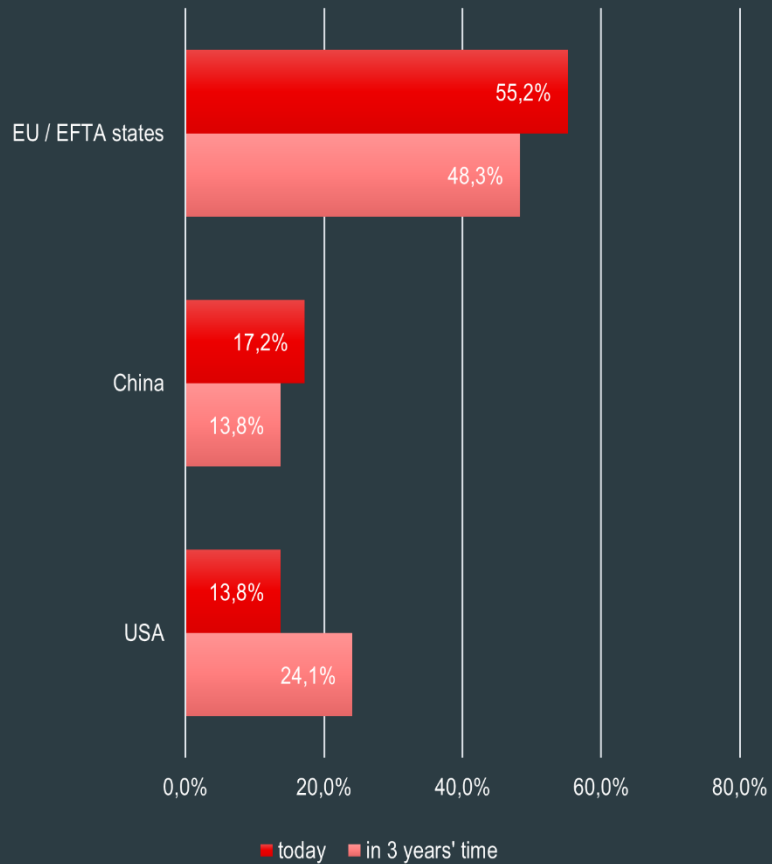
Business development in the European microtechnology industry 2021



companies only

- ▶ Companies have come through the Corona crisis well so far. 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
- ▶ 50,0% of companies have increased the number of employees in the past year – 36,7% 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.
- ▶ Only 23,3% of companies have increased export in the past year (2021) – export has remained stable for 30,2% of companies. This could indicate that more and more companies are relocating their production domestically.

Which is your most important export region? (companies only)



companies only

- ▶ for the European microtechnology industry foreign trade currently (early 2022), as in previous years, concentrates on the EU and EFTA states: for 55.2% of companies, this is the most important export region
- ▶ companies expect exports to the USA to increase – probably due to the change of government in the USA.
- ▶ at present, the USA is the most important market for 13.8% of companies; China is still ahead of the USA with 17.2%
- ▶ but in three years' time only 13.8% of companies see their primary export market in China, compared to 24.1% in the USA.
- ▶ two years ago (2020) the industry predicted that China would be more important as an export market than the USA

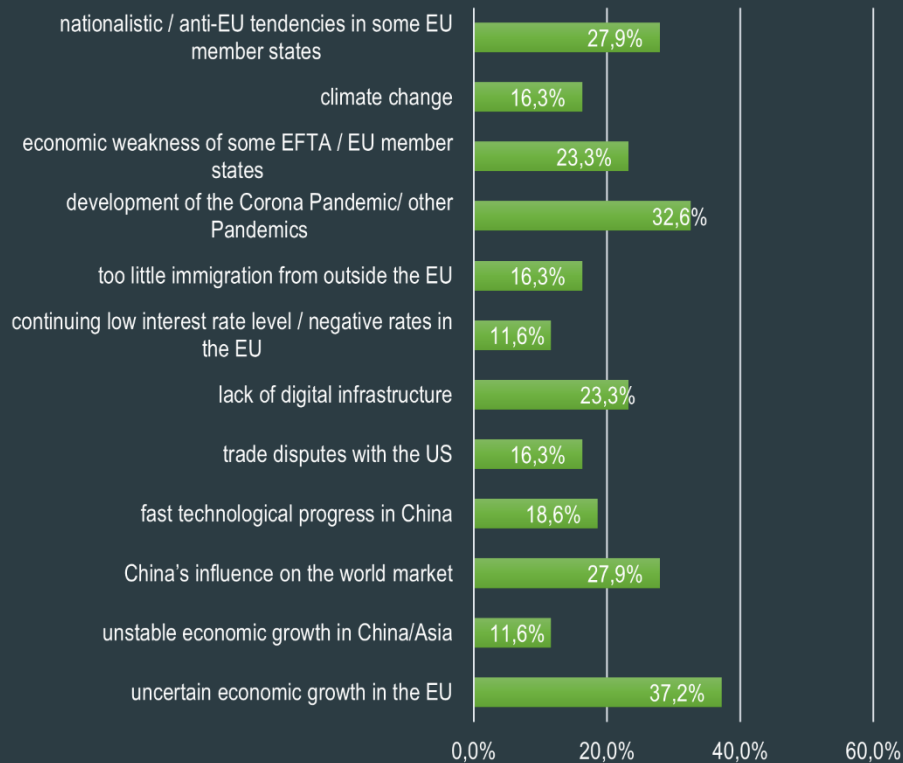
- ▶ What influence trade conflicts or legal regulations have on the microtechnology industry, and how the industry generally copes with necessary change processes?
- ▶ We have asked the following two questions in 2020 already, although with partly differing answer options, since some topics that were up-to-date back then have lost their relevance and some new ones have emerged since then. To read the results of the 2020 survey, visit https://www.ivam.de/research/economic_data/ivam_survey_2020_climate_change_discussion_spurs_innovation_in_microtechnology and download the summary
- ▶ The war in Ukraine had not yet started at the time of the survey and was not included in the questionnaire – this would certainly have been different a few weeks later.
- ▶ To examine the prospective impact of the war in Ukraine on the microtechnology industry, we have conducted a short survey among the IVAM member companies later in Beginning of March 2022; to see the results, visit https://www.ivam.de/research/executive_panel/war_in_ukraine_industry_experts_expect_significant_impact_on_high_tech_sector



Uncertainty factors



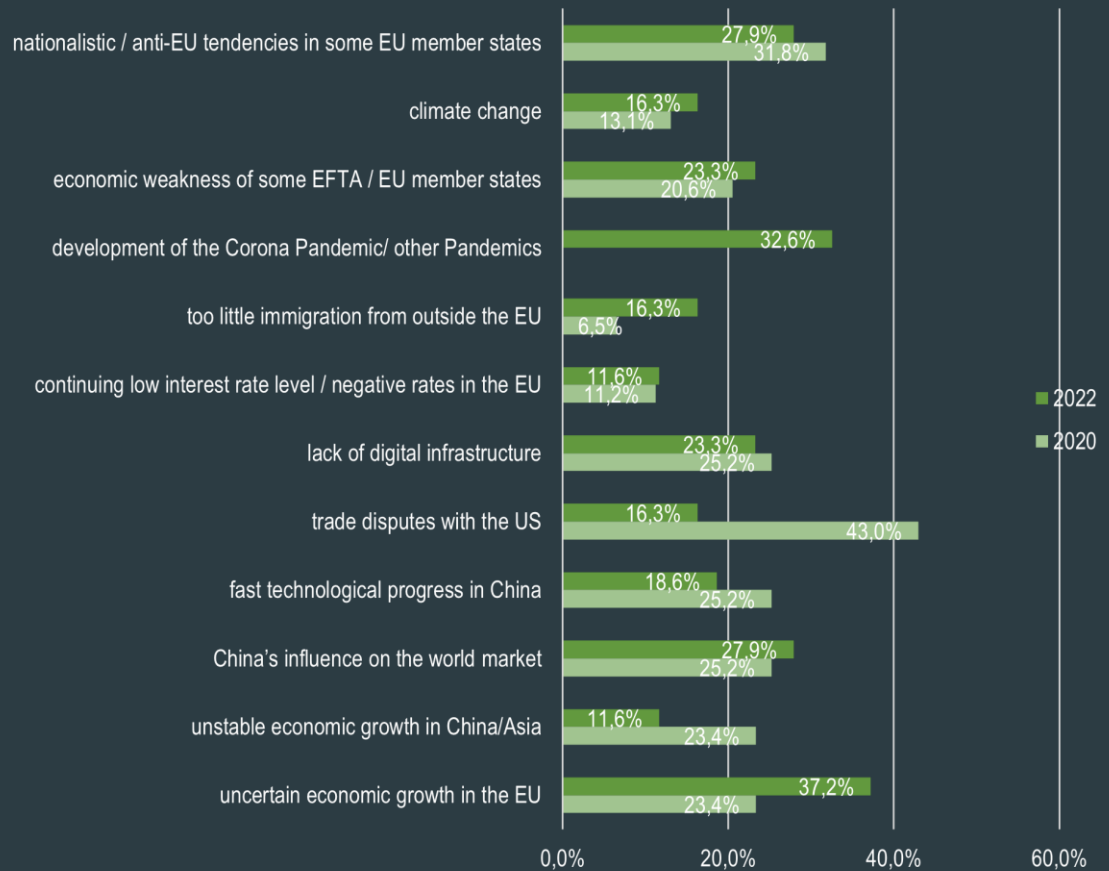
External uncertainty factors for the stability of microtechnology organizations



companies and research institutes, multiple answers included

- ▶ the uncertain development in the European Union is the biggest external uncertainty factor for the European microtechnology industry. This concerns on the one hand the economic development (37.2%) and on the other hand the nationalistic tendencies of some EU states (27.9%).
- ▶ the development of the Corona Pandemic or other Pandemics also cause concern in the microtechnology industry (32.6%).
- ▶ lack of digital infrastructure (23.3%) is a factor of uncertainty that affects both companies and research institutes.
- ▶ Climate change is seen by only a few organizations as an external uncertainty factor (16.3%).
- ▶ China's influence on the world market is an uncertainty factor for 27.9% of the organizations surveyed.

What do you perceive as a possible external uncertainty factor for the stability of your organisation?



companies and research institutes, multiple answers included

- ▶ After the change of government in the USA, trade conflicts with the USA become significantly less relevant (16.3%)
- ▶ the uncertain economic growth in the EU (37.2%) has gained significantly in importance as an uncertainty factor compared to 2020
- ▶ The factor the development of the Corona Pandemic or other Pandemics has not yet played a role at the beginning of 2020.
- ▶ The lack of digital infrastructure shows almost no changes (25.2%/ 23.3%).
- ▶ More organizations see climate change as a concern in 2022, though still at low levels (13.1%/16.3%)
- ▶ China's influence on the world market has slightly increased in importance as an uncertainty factor (25.2%/ 27.9%)
- ▶ to read the 2020 results go to https://www.ivam.de/research/economic_data/ivam_survey_2020_climate_change_discussion_spurs_innovation_in_microtechnology

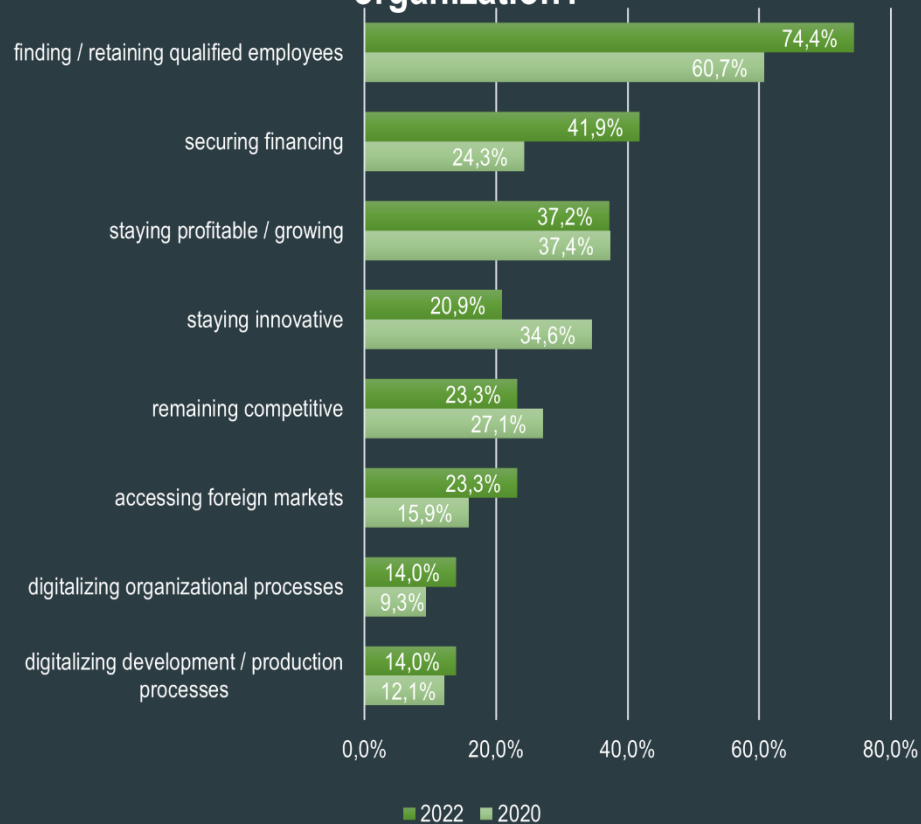
What do you perceive as a possible internal uncertainty factor for the stability of your organization?



companies and research institutes, multiple answers included

- ▶ competition for specialists is becoming apparent in the microtechnology industry: 74.4% of organizations see finding and retaining qualified employees as an uncertainty factor for the stability of their organization
- ▶ securing financing (41.9%) is an uncertainty factor to which research institutes are much more exposed.
- ▶ sustained profitability (37.2%) is a factor of uncertainty for more than a third of microtechnology organizations
- ▶ 23.3% of those surveyed are concerned about their competitiveness
- ▶ the proportion of companies and institutes for which legal requirements represent an uncertainty factor is rather low at 20.9%

What do you perceive as a possible internal uncertainty factor for the stability of your organization?



companies and research institutes, multiple answers included

- ▶ in 2020, the need to find qualified staff was the greatest internal challenge, just as it is today; however, the proportion of affected organizations has risen from 60.7% to 74.4%.
- ▶ the proportion of organizations that worry about staying profitable has remained approximately the same since 2020.
- ▶ There were significant changes in the "securing financing" and "staying innovative" items – since 2020, significantly more organizations are concerned about securing their financing (41.9% in 2022, 24.3% in 2020).
- ▶ Instead of that there has been a significant drop in the proportion of organizations that are concerned about their ability to innovate (20.9% in 2022, 34.6% in 2020)
- ▶ to read the 2020 results, go to https://www.ivam.de/research/economic_data/ivam_survey_2020_climate_change_discussion_spurs_innovation_in_microtechnology

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