

## Mood of the German Micro- and Nanotechnology Industry Significantly Brightens

*In early 2013, the disposition of the micro- and nanotechnology companies in Germany had reached a low point. Although not much has happened to improve their economic situation during 2013, the mood has now significantly brightened.*

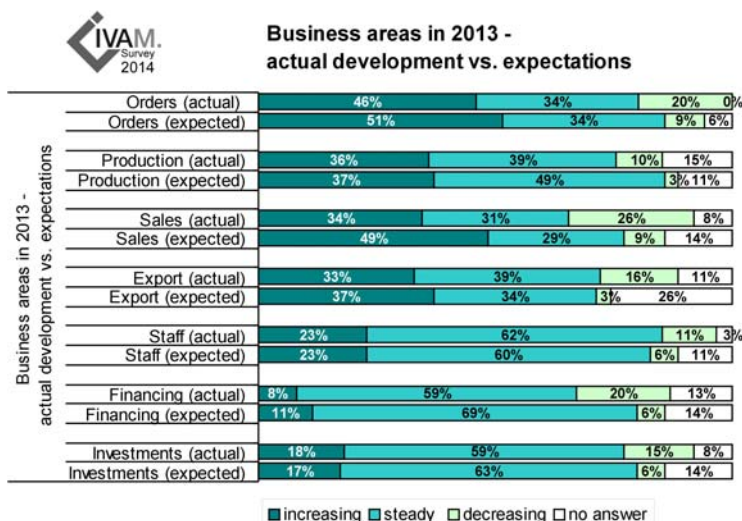
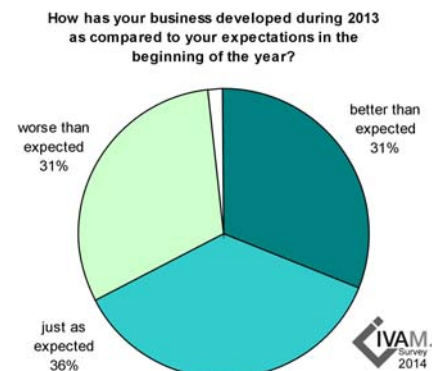
For the German companies dealing with microtechnology, nanotechnology, advanced materials and optical technologies, business in 2013 has developed just as the industry had predicted earlier that year: at a constant level. But things are supposed to get better in 2014. The companies do not expect an enormous growth, but they are more positive than they have been ever since the outbreak of the financial and economic crisis. Orders, production and sales figures are expected to rise noticeably in 2014. Areas excluded from an optimistic outlook are staff and financing: the numbers of employees is likely to remain static in 2014 while the funding situation might even reach a new low.

The situation and mood of the micro- and nanotechnology industry, which the IVAM Microtechnology Network queried in a recent economic data survey, coincides with the overall economic development in Germany and general forecasts for 2014. According to publications of the German Federal Statistical Office, the gross domestic product in Germany has grown by only 0.4 percent in 2013 – the lowest growth since the crisis year 2009. For 2014, the Ifo Institute predicts a strong growth for the German economy. Especially exports are expected to increase.

There is still a risk that recent global economic developments and political conflicts might put a damper on the forecast upswing. For instance, the instability of currency rates in some major emerging markets and the unstable economic situation in the USA are uncertainty factors. In case the Crimean crisis tightens and Western States impose sanctions on Russia – one of the EU's major suppliers of natural gas and oil – a resulting shortage of gas supplies and higher energy prices might slow down the economic development. But at the moment, economists do not actually expect this to put a noticeable strain on the European or world economy.

### 2013 as unexciting as expected

Business development in the year 2013 was rather unexciting for the German micro- and nanotechnology industry – just as the companies had expected at the beginning of that year. About one third of companies each have performed better than expected, just as expected, and worse than expected. On average, the estimations the companies made at the beginning of the year have been quite realistic.



Regarding individual business areas, predictions for 2013 have largely been to the point, too. Orders, and export, and especially sales have not completely fulfilled the expectations placed on them in the beginning of 2013. But in previous years the discrepancy between expectation and reality had been much larger.

In 2013, the companies have been reluctant to raise staff numbers, which was also in accordance with the expectations they had at the beginning of the year. Less than a quarter of companies (23 percent) have hired additional employees – a quite small proportion that is even lower than in previous years. This development is probably not only due to the much discussed shortage of skilled workers but also to the slow economy.

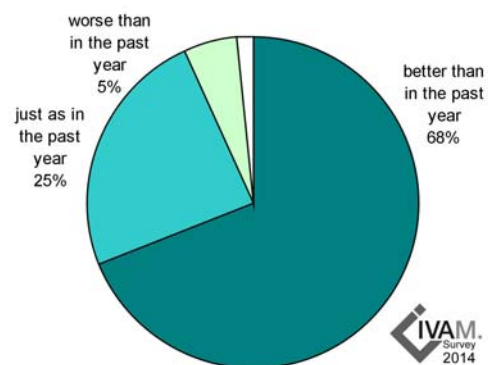
Corporate financing was an extremely difficult business in 2013 again. For highly innovative high-tech companies with their high investment and financing needs it is still not easy to get funding for technology or business development. Only 8 percent of companies have been able to acquire more financial means than in the previous year. There are signs indicating towards an improvement of this situation in the course of the predicted economic revival. According to economic and financial experts, trends in the financial markets, such as low interest rates and the willingness of investors from all over the world to invest money in Germany, might encourage corporate financing. Whether this will actually happen and reach the micro- and nanotechnology industry, remains to be seen.

Another way out of the tight financing situation may be the new European Framework Programme Horizon 2020, which is supposed to make access to EU funds easier for small and medium-sized enterprises through accelerated procedures and a new SME instrument (read more in section Horizon 2020).

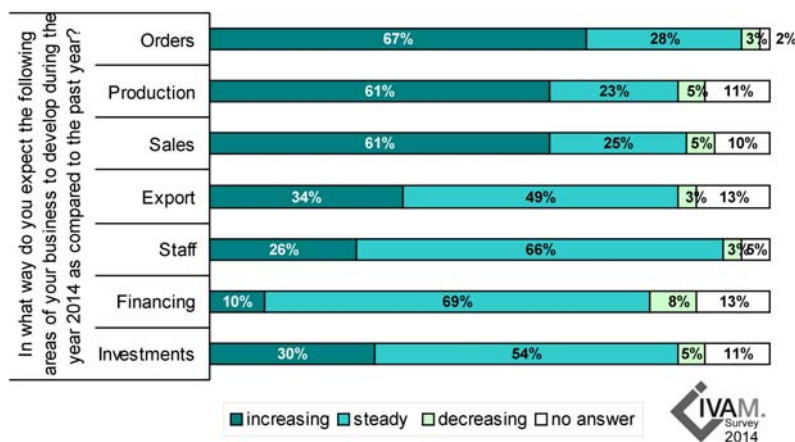
### 2014 promises an economic upswing

Looking out on 2014, the micro- and nanotechnology companies are more optimistic than they have been for a long time. More than two thirds of companies expect their economic situation to improve during 2014; only 5 percent think they will do worse than in the past year. The mood has not been that positive since the financial and economic crisis in 2009, which has slowed down the growth of the micro- and nanotechnology industry, like that of most other industry branches, too.

How do you expect your business to develop during 2014 as compared to the past year?

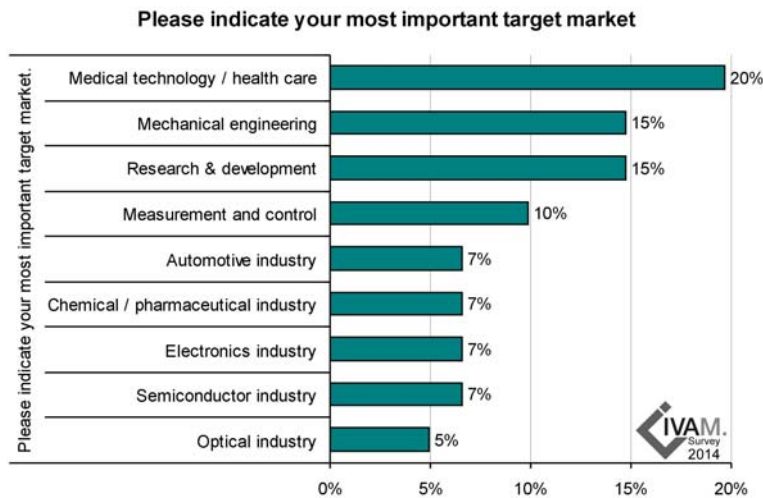


In what way do you expect the following areas of your business to develop during 2014 as compared to the past year?



More than 60 percent of companies expect orders, production and sales to increase during 2014. But just a quarter of companies intend to hire more staff. Only one tenth of companies expect increases in the field of financing. Nevertheless, 30 percent of companies are planning to make investments, which is a higher proportion than in previous years.

## Medical technology is major target market – second health market gains in importance



Another aspect that has been consistent in 2013 is the market orientation of German micro- and nanotechnology companies: the medical technology and health industry remains the major target market for the highest proportion (20 percent) of companies. Mechanical engineering and R&D are following as second most important markets.

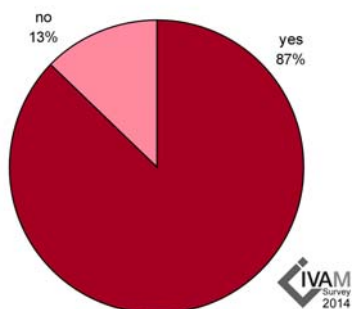
Technology trends in medical technology and health care include mobile systems for diagnosis, monitoring and therapy that enable quick and accurate test results and a targeted, personalized treatment. Point-of-care systems with micro sensors or microfluidic components are taking hold in the second healthcare market, too, where they are used, for instance, for monitoring vital parameters during physical exercise and fitness training. Another recent development in medicine and healthcare is the application of 3D printing processes for manufacturing custom-fit prostheses and implants, but also more and more often bone and tissue substitutes including skin and organs made of biomaterials.

For suppliers of advanced and high-tech materials, who are forming one part of the surveyed group, the automotive industry is an equally important target market as the medical and health industry. The advanced materials industry provides, among other things, technical textiles and light but extremely stable materials such as carbon fibers that help reduce the weight of the cars and, consequently, fuel consumption.

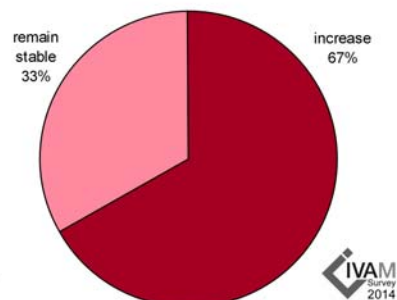
## Europe's markets are becoming too small for IVAM member companies

It follows from previous surveys of the IVAM Microtechnology Network among the European micro- and nanotechnology industry and member companies that the international business has a strong focus on countries in Western Europe and the European Union. As the current survey shows the European market is becoming too small for IVAM member companies (this part of the survey only addressed IVAM members). Almost 90 percent of companies have already accessed markets outside Europe or are planning to do. Two thirds of the participating IVAM member companies are resolved to increase their activities outside Europe in 2014. An even higher proportion (70 percent) estimate that the market potential of their products in non-European countries will rise in 2014.

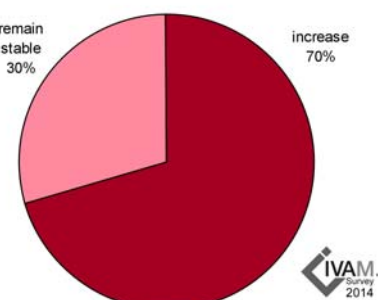
Does your company (plan to) do business in non-European countries?



How will your foreign business in non-European countries develop during 2014 as compared to the past year?



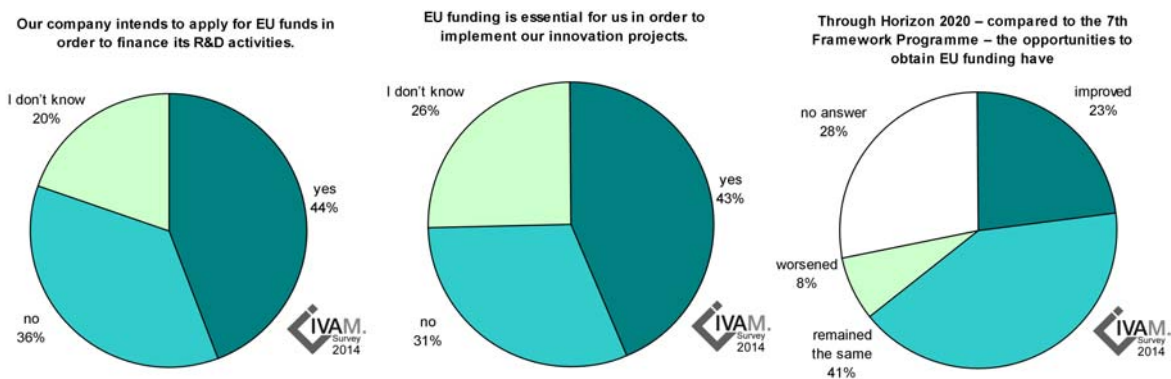
How would you rate the market potential of your products in non-European countries in 2014 as compared to the past year? It will ...



## Horizon 2020: a way out of the financial shortage?

The new research funding program of the European Union, Horizon 2020, has aroused certain hopes for a way out of the financial shortage. Compared to the 7<sup>th</sup> Framework Program, Horizon 2020 is designed in a way that means to facilitate access to EU funding for small and medium-sized enterprises. The new dedicated SME instrument provides funding for feasibility studies, supports demonstration projects with 70 percent, and provides appropriate financing instruments for commercialization. From 2014 to 2020, the EU will provide a total of 77 billion Euros for funded innovation projects. Will Horizon 2020 give a boost to innovation in the German micro- and nanotechnology industry? Especially small companies are still a little sceptical in this regard.

In the IVAM survey, 43 percent of micro- and nanotechnology companies say that EU funding is essential for them in order to implement their planned innovation projects. 44 percent of companies are planning to apply for funds from the new program.



In the past, especially small companies have often refrained from applying for EU funding due to the complex application procedure and extensive administration. Or they have simply given up their efforts after one unsuccessful attempt. According to estimations of the surveyed companies, the new framework programme will not make a big difference. Only 23 percent of companies think that their opportunities to obtain EU funding have improved with Horizon 2020. Many small high-tech enterprises presume that the application still takes too much time and effort while the chances to be successful are still too low. Even companies that have experience with EU projects say that they will not get along without support concerning the search for partners, application, and administration.

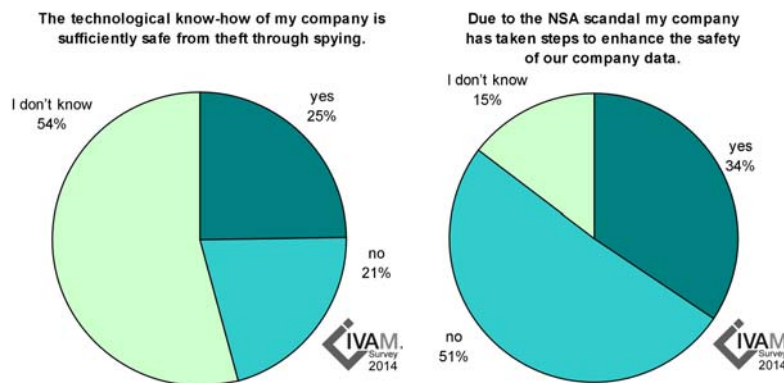
Since the program has just started, there are no experiences that might confirm or refute these first impressions. Also, at the time of survey little was known about funding themes and individual calls that may be relevant to the micro- and nanotechnology industry. An objective assessment of the possibilities that 2020 Horizon has to offer for innovative SMEs will be possible only after the first projects have started.



### Safety of data and knowledge: NSA scandal causes insecurity

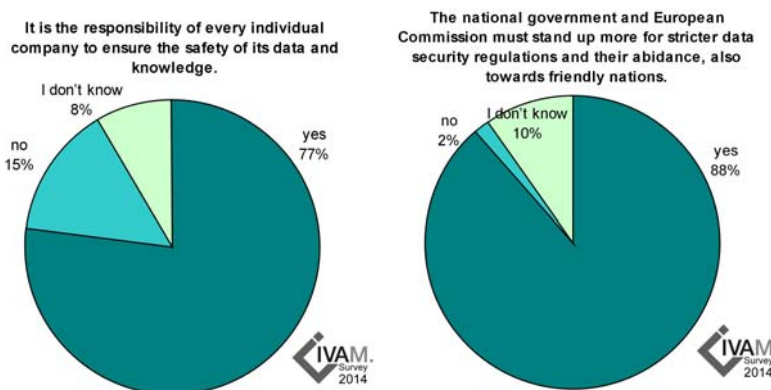
The NSA surveillance scandal has raised concerns that security agencies in the USA and Great Britain may not only monitor mobile phone calls and e-mail traffic but conduct industrial espionage on a large scale. For this reason IVAM has asked the micro- and nanotechnology companies how they assess the safety of the technological know-how and data of their company.

As it turned out, the prevailing disposition is insecurity. The majority of respondents (54 percent) would not even make a guess at whether their company's know-how is safe from spying. A quarter of companies believe that they are sufficiently safe from spying. Only 21 percent are convinced that they do not have adequate protection.



A little more than a third of companies have drawn consequences from the NSA scandal and taken steps to enhance the safety of their data. This is a higher proportion than the share of companies that believe their knowledge to be sufficiently protected. That means that even those who have taken steps are not certain whether these are sufficient.

Measures the companies mentioned include encrypting the electronic data traffic, sending confidential documents by conventional mail, or even holding meetings in rooms without windows. In at least one case, business transactions with U.S. companies have been strictly limited. Regarding encryption technologies, it was assumed that security agencies will probably always find a technical way to get around them.



Most companies agree that they bear at least a partial responsibility for protecting their data. Only 15 percent of respondents do not agree to the statement that each individual company has to ensure the safety of its data and knowledge.

But still, almost 90 percent demand that authorities like national governments and the European Commission should intervene and impose stricter regulations. They feel that although each company bears a partial responsibility, the state must also fulfil its responsibilities, establish a clear legal framework for data security, make sure that regulations are complied with, and impose sanctions when they are not.

*IVAM Research, the economic research division of the IVAM Microtechnology Network, collects economic data in the fields of microtechnology, nanotechnology, advanced materials, and optical technologies once a year. The survey in January and February 2014 has been addressed to 1485 companies in Germany. 5.12 % of addressees took part in the survey.*

Information: [www.ivam.de/research](http://www.ivam.de/research)