Technological needs and challenges in Denmark's life science industry

What has happened in digitalisation and the green transformation from 2020 through to today?

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Lægemiddelindustriforeningen

MEDICO INDUSTRIEN
MEDTECH DENMARK

DI Life Science

Knowledge Hub Zealand
vidensmiljø i verdensklasse

LIFE SCIENCE Fyn

Medicon Valley Alliance

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Has the life science industry become greener and more digital?

The life science industry is one of Denmark's greatest strengths in the commercial sphere, with nearly 50,000 employees and one of the country's highest export volumes, comprising about 20% of all exported products.[1]

In spring 2023, the Danish government began developing a new government strategy for life science. Due to be launched in 2024, the new strategy seeks to ensure that Denmark remains a leading nation in the life science industry. The strategy is expected to include initiatives in areas like innovation, research and development, scaling of new technologies, health data and export promotion.

As an impartial Research and Technology Organisation (RTO) and an active member of the Danish Life Science Cluster, we at FORCE Technology are interested in understanding this industry and helping to ensure that Danish life science companies remain competitive through technological innovation and solutions.

To that end, in 2020, we decided to uncover the greatest technological challenges and needs among Danish life science companies. We repeated the study in summer 2023 to better understand what has changed in the industry, which challenges remain unchanged, and more generally how the industry is doing three years after our first study in terms of digitalisation and green transformation.

Takeaways from the study are presented in this report. We hope that it will inspire the industry, its partners and its players – on top of contributing new knowledge founded in data to the Life Science Council and the Danish government regarding the technological challenges and needs of life science companies.

Our sincere thanks go to our partners in the study for all of their assistance and contributions: the Danish Life Science Cluster, LIF (the Danish Association of the Pharmaceutical Industry), Medicoindustrien, DI Life Science, Knowledge Hub Zealand, Life Science Funen and the Medicon Valley Alliance.

Happy reading!

Hanne Christensen, CEO
FORCE Technology

Executive summary

The purpose of this report is to uncover technological challenges and needs, and to survey developments in digitalisation and green transformation within the life science industry from 2020 to 2023 in three domains: manufacturing processes and facilities, product development and quality management.

The most significant conclusion from this report is that life science companies have made progress in digitalisation, and that green transformation is now playing a bigger role than in 2020, when the study was first conducted.

However, companies are also struggling with a shortage of workers, reflected in the fact that recruitment was named as their single greatest challenge – both generally and in terms of successfully handling larger volumes of new projects in digitalisation and green transformation.

Within digitalisation, the report paints a picture of an industry that is well under way digitalising manufacturing processes and facilities, product development and quality management. Companies are now more digitally mature, completing more digitalisation projects, and shifting their focus from implementing hardware to collecting data and translating it into value in the form of analysis, optimisation and improvement.

Green transformation has become more important at these companies, and is also playing a greater role in activity levels. Almost half of the companies surveyed have got started or made progress with green transformation in manufacturing, and more than one-third of respondents have also begun green product development. Additionally, the report identified a shift from many companies planning activities in 2020 to actually starting them in 2023. One of the major areas of focus is initiatives with documentation applications, whether in terms of reducing emissions, preparing climate reports or establishing the environmental impact of individual products.

The report also paints a picture of an industry that seems in many respects to be in agreement on what its greatest challenges are– although beneath the surface, it remains heterogeneous in terms of technological challenges and needs depending on segment and company size. Here, we can see clearly that progress, technology, solutions and untapped potential are still closely linked to companies' own maturity in digitalisation and green transformation.

About the report

This report is based on a survey in which 153 respondents from Danish life science companies completed a questionnaire. The responses were collected in May and June of 2023 repeating the same survey conducted in December 2020. Consequently, we will compare the 2020 results with the 2023 results in this report and analyse the developments over those three years. Respondent counts vary throughout the report due to variation in the number of responses to items that were not required.

About the respondents

The distribution of respondents by segment, activity and size is presented in the graphs on the next page. Throughout the report, our respondent grouping combines the pharmaceutical and biotech companies into a single group. Medico companies, including health tech and wellness technology, are also pooled. The remaining respondents defined themselves as service providers and “other” life science segments, while 18% indicated that they do not work in the life science industry. These respondents were excluded based on their responses to the introductory items, so they have no impact on the conclusions of this study.

Product development, manufacturing and sales were the primary activities for 64% of the respondents, followed by 12% in engineering, 9% in service provision and 5% in distribution/retail. An additional 4% worked in research and development, and 7% had another primary activity.

Large and medium-sized companies constituted a majority in the study, while 32% were micro-companies and small companies.

As before, one of the study's greatest strengths is the high proportion of respondents in management roles. This distribution helps to legitimise the report, since those in management positions often have in-depth knowledge regarding the needs and challenges present on strategic and operational levels at a company.

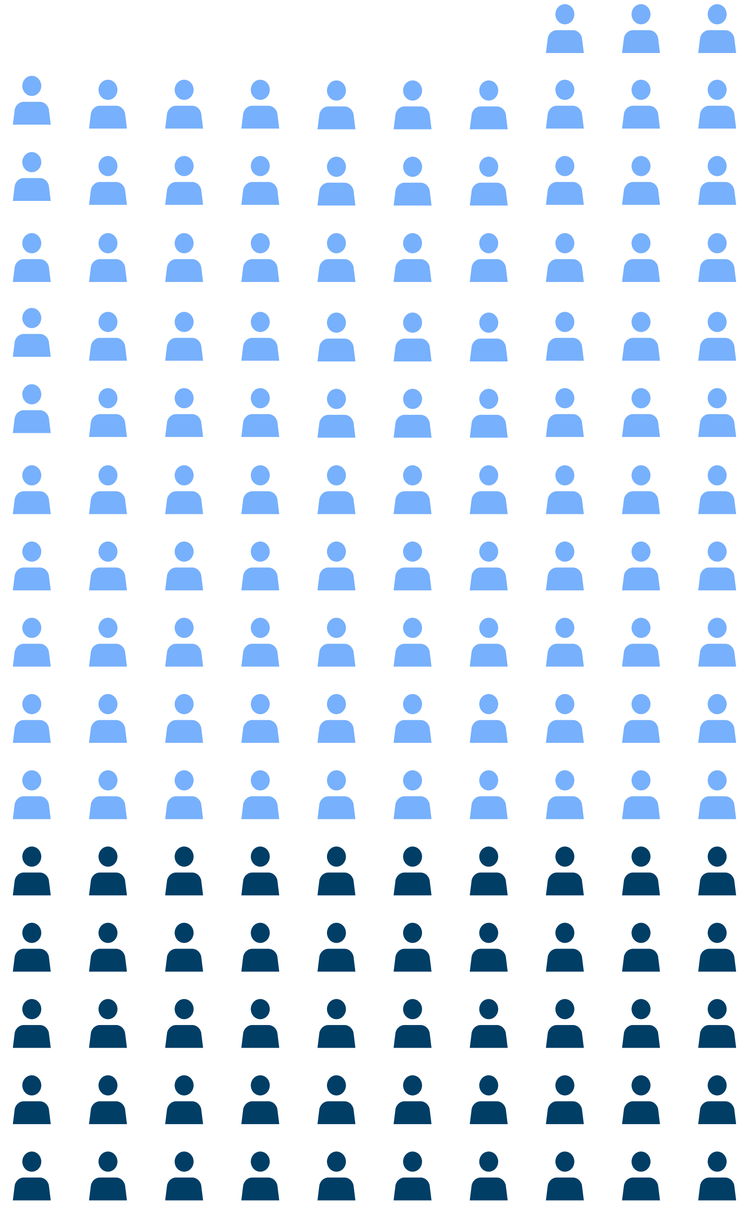
About FORCE Technology

FORCE Technology is a technological consulting and service business that strives to create positive technological change while making the world safer and more sustainable. As an RTO, we are dedicated to developing and applying technologies and new knowledge for the benefit of the business world and society as a whole.

With our technological capabilities and state-of-the-art facilities, we solve specific problems for businesses. This creates innovation, growth and jobs.

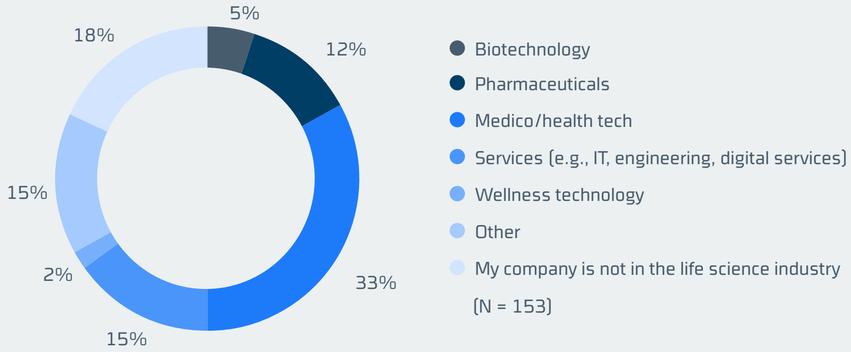
153
respondents

67%
managers

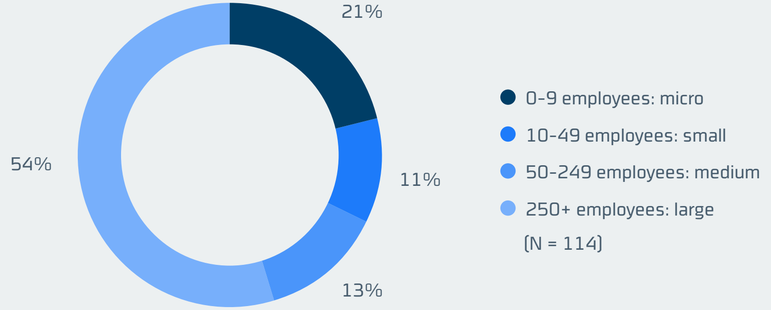


Distribution of respondents

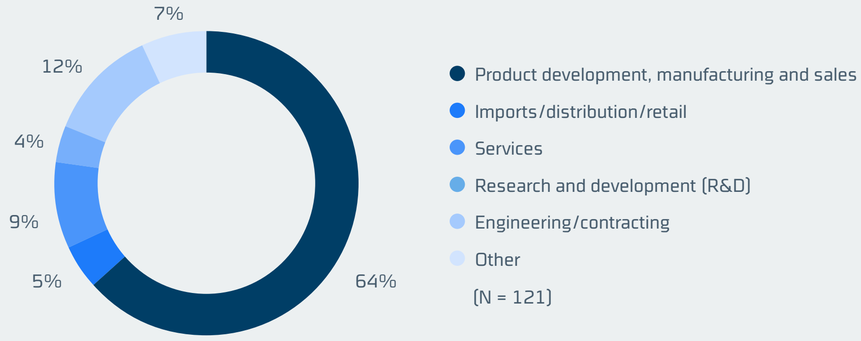
What part of the life science industry does your company fall under?



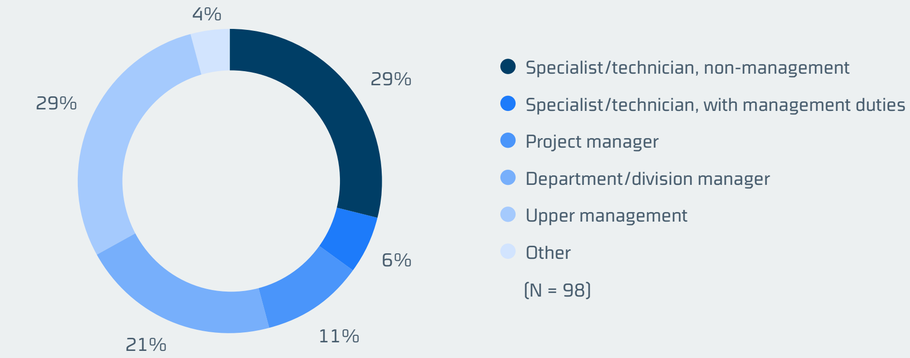
How large is your company?



What is your company's primary activity?



What type of position do you hold?



The industry's greatest challenges

The most significant conclusions:

Recruitment is the single greatest challenge
The responding companies broadly agreed that recruitment is not only the industry's greatest challenge in 2023, but also that this challenge has the greatest impact on individual businesses. This was true across industries, with recruitment ranked highest among both pharmaceutical/biotech and medico companies, even when accounting for company size.

There was also broader agreement among respondents regarding what challenges they considered the industry to be facing compared to 2020. At that time, there was greater variance in what challenges respondents considered the industry to be facing and what challenges they themselves faced.

Differences in challenges between large and small businesses
Putting recruitment aside, there were differences in the challenges that micro-, small, medium-sized and large companies faced. Micro-companies found collaboration with public hospitals challenging, while small, medium-sized and large companies struggled to create consistency in their digital systems. This could be associated with the increase in digitalisation in recent years, which imposes greater requirements on companies' existing digital infrastructure.

Engagement with SDGs and ESG is also most significant among micro-companies and large companies.

Regulatory requirement compliance continues to be a headache
In 2020, the respondents considered compliance with regulatory requirements, rules and standards to be the industry's greatest challenge. While recruitment is now a more prominent issue in 2023, regulatory compliance remains a major challenge for many, and it continues to be a top-five challenge across companies of different sizes and in different industries.

Digitalisation still important, but green transformation more prominent
Digitalisation and green transformation were both considered important in 2023. Digitalisation continues to be important, with 85% of respondents considering it important or very important compared to 78% for green transformation.

Conversely, only 5% considered digitalisation to be of either low or no importance versus 9% for green transformation. The results indicate a shift in attitudes towards green transformation, now a much more prominent topic than in 2020.

On the following pages, we present conclusions from questions about the largest challenges facing the life science industry in 2023. Respondents were asked to identify what they considered to be the industry's greatest challenges in 2023 and what they considered to be their own companies' greatest challenges.

We also present information on how respondents rated the importance of digitalisation and green transformation.

This section addresses challenges for the industry as a whole, as well as for pharmaceutical/biotech and medico companies and broken down by company size.

Greater overlap between challenges for the industry and individual companies

In 2020, there was a greater contrast between what respondents considered to be the industry's greatest challenges and what they considered to be their own greatest challenges. In 2023, companies were more broadly in agreement.

Recruitment at the top of the agenda

Recruiting employees with the right qualifications eclipsed other challenges for individual businesses and the industry as a whole. Recruitment was the greatest challenge for 51% of the respondents. This is likely due to a combination of demographic developments in Denmark, where labour shortages are a problem in general, and the nature of the life science industry as one of Denmark's strengths, experiencing growth and continuously expanding its workforce.

Sustainability was more prominent

Engagement with SDGs (the UN's Sustainable Development Goals) and ESG (environment/social/governance) was considered the third greatest challenge for the industry and individual companies, whereas this challenge was ranked 12th in 2020. This could indicate that companies are experiencing greater challenges in implementing and stepping up efforts to bolster their "triple bottom lines", in addition to the increased focus from society, the government and customers.

Some challenges were greater for individual companies than the industry as a whole

It is also worth noting that some challenges were found to be greater for individual companies compared to the industry as a whole, including cost-cutting, new or changing customer needs and demands and continued education for employees. This could indicate that individual companies are still focusing on increasing their own competitiveness without considering these to be industry-wide challenges compared to regulatory compliance and rising costs for energy and materials, which are expected to impact the entire industry.

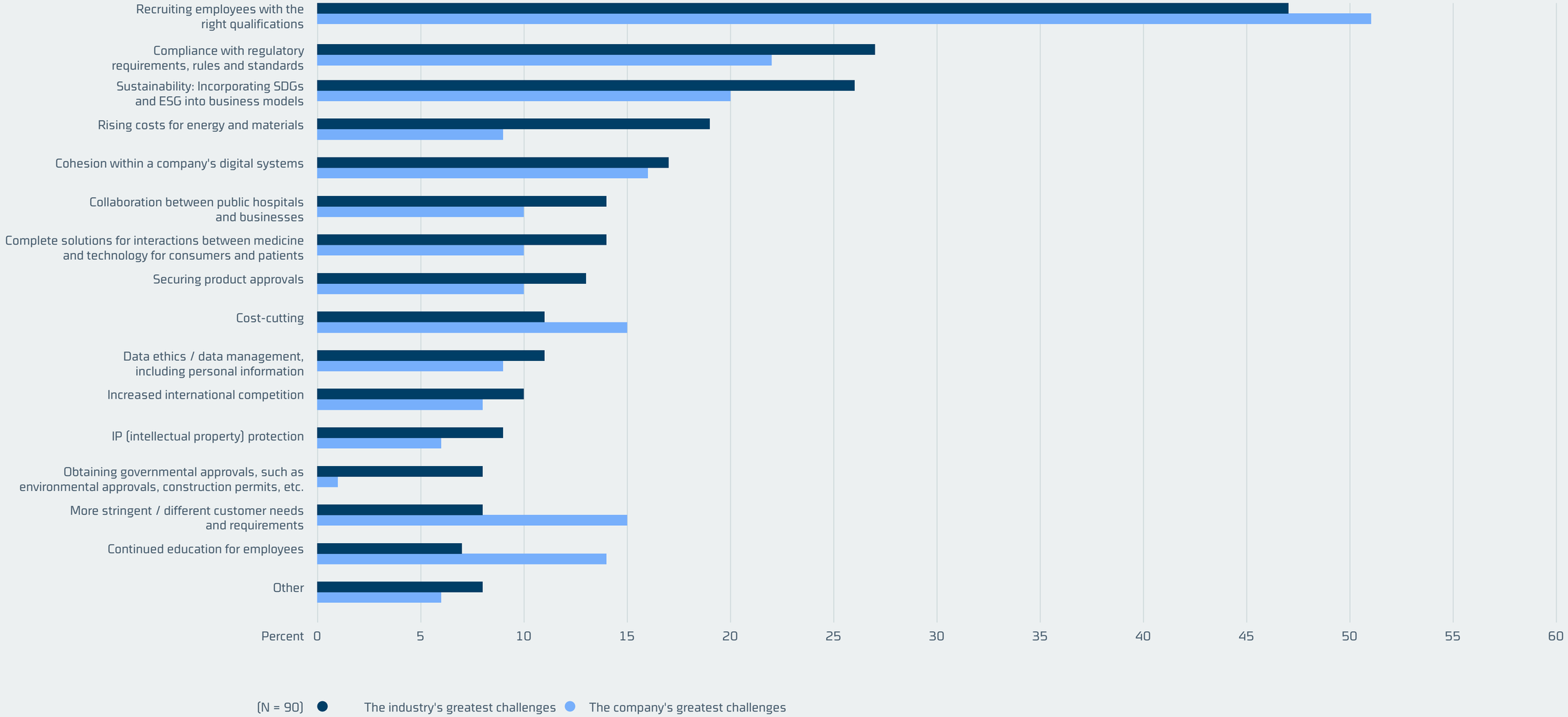
51%
see recruitment as their company's greatest challenge

27%
named SDGs and ESG as corporate challenges, compared to 10% in 2020

"The lack of qualified labour is an immense challenge facing the Danish life science industry, given that the industry is growing and expected to continue to grow well into the future."

Peter Huntley, director, Medicoindustrien

The greatest challenges for the industry and individual responding companies



Minimal differences in challenges facing medico and pharma/biotech

Looking closer at the responses from businesses in the pharma/biotech and medico groups, we find that they largely face the same challenges, the greatest among them being recruitment.

The only differences are in rankings. While companies in the pharma/biotech group were equally focused on consistency in digital systems; compliance with regulatory requirements, rules and standards; and sustainability (24% each), more respondents in the medico group (29%) considered sustainability to be a challenge than consistency in digital systems (26%).

Compliance with regulatory requirements, rules and standards remains one of the greatest challenges for the medico industry (19%).

The 2020 report showed a much larger difference between these two industries. At that time, cost-cutting and the development of complete solutions for interactions between medicine and technology were the main challenges for pharma and biotech. In medico, more than 45% reported difficulties in compliance with regulatory requirements and rules, followed by financial challenges.

”Recruitment is the biggest headache for many companies in the life science industry. We need a lot of new, talented colleagues, and recruiting them is a prerequisite for this industry to realise the potential of its companies and solve the other challenges it faces.”

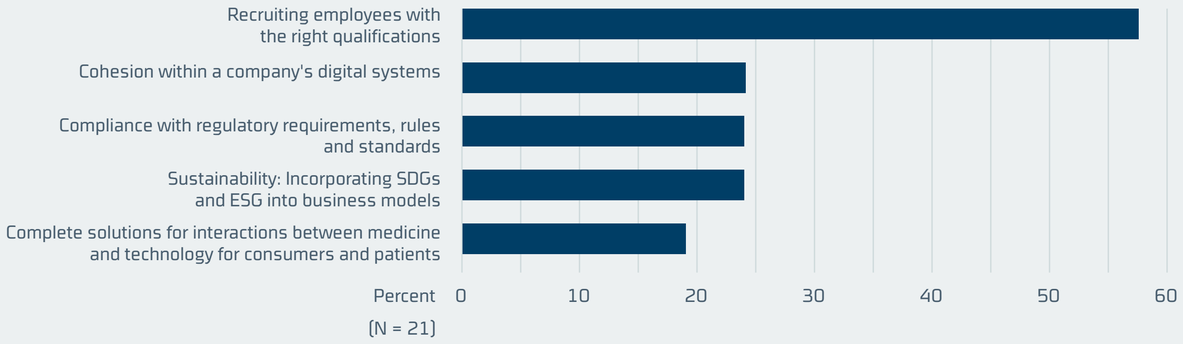
Anders Hoff, head of research policy, Lif

”Looking back on recent years, there's no doubt that the Danish medico sector has been hit hard by rising costs associated with producing and distributing medical devices, brought about by COVID-19 and the Russian invasion of Ukraine. That puts pressure on our sector.”

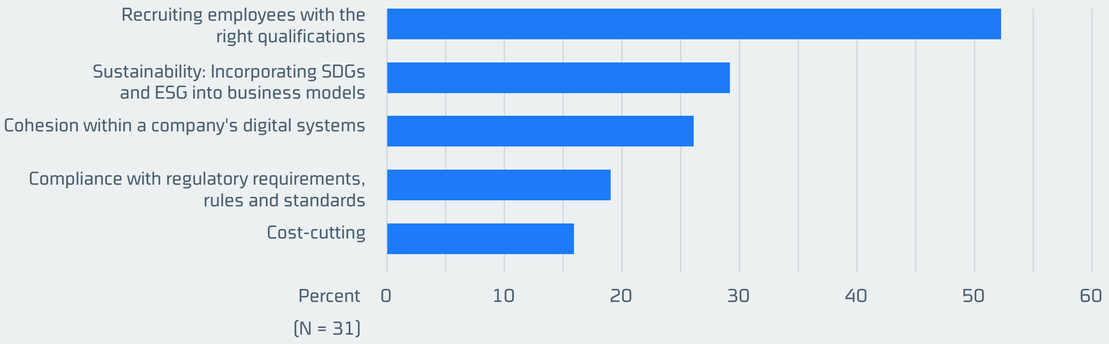
Peter Huntley, director, Medicoindustrien

What do you find to be the greatest general challenges that your company is facing right now?

Pharma/biotech



Medico



The industry's challenges in 2023 versus 2020

It is also interesting to compare what the respondents considered to be the industry's greatest challenges in 2023 compared to 2020.

Here, we can once again see that the largest jumps occurred in recruitment, from 29% in 2020 up to 47% today; and in incorporating SDGs and ESG, which only 10% considered the industry's greatest challenge in 2020 compared to 26% today.

On the other hand, complete solutions for interactions between medicine and technology, data ethics and processing and obtaining government approvals have all fallen by half since 2020.

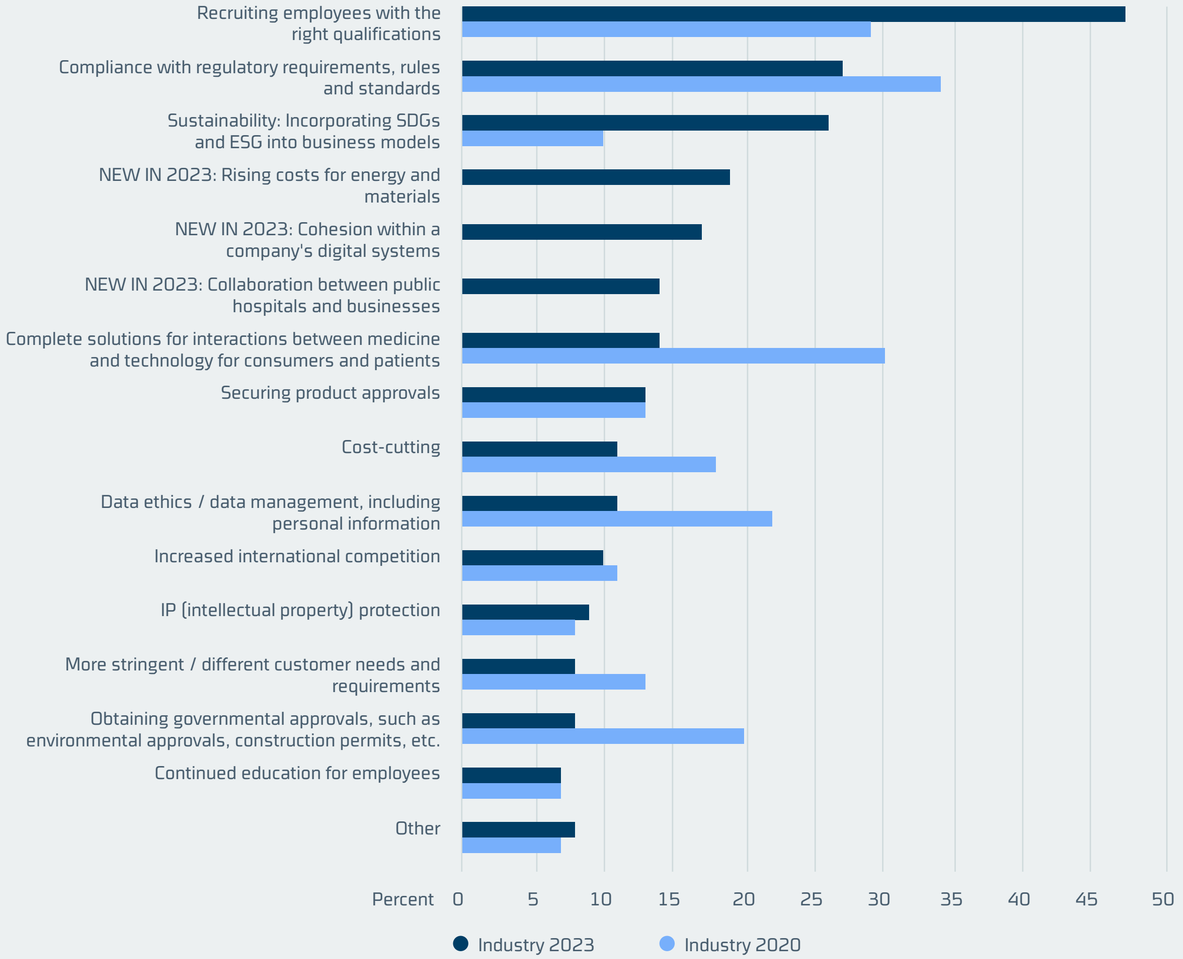
This may be due to the introduction of three new response categories, all of which proved relevant to the industry: rising costs for energy and materials, cohesion within a company's digital systems and collaboration between public hospitals and companies.

Rising costs for energy and materials ranked above the other new response options. This could be explained by the fact that in recent years, companies have faced historically high energy prices and shortages of materials and components as a result of changes to the geopolitical situation in Europe.

”In light of this new, more unstable global situation, we can clearly see a need for new, robust solutions and for companies to rethink their supply chains. At the same time, the challenge of recruiting the right employees has become more pronounced.”

Jakob Bjerg Larsen, head of policy for clinical trials and pharmaceutical manufacturing, Lif

Comparison of the industry's greatest challenges in 2020 and 2023



Small and large companies face different challenges

Recruiting employees with the right qualifications takes first place for micro-companies, medium-sized companies and large companies. Medium-sized and large companies struggle the most with the labour shortage, at 73% and 67%, respectively.

The uniform distribution of secondary challenges at micro-companies and small companies may also indicate that there are greater differences in the challenges facing these companies individually–and that they may be facing multiple challenges simultaneously, as in the case of a smaller company with limited access to funds, capabilities and resources that must nonetheless meet the same demands as the rest of the industry.

Notably, recruitment took third place for small companies. This likely does not mean that small companies find recruitment easier, but instead that other challenges are more significant to them, such as cutting costs and increasing synergy in digital systems.

Additionally, it is interesting to note that sustainability ranked high among micro-companies and large companies, while small and medium-sized companies did not find it to be a significant challenge.

"Access to qualified labour in STEM fields is critical to supporting the incredible potential there is within the life science industry. That is especially true in terms of the green transformation, which is becoming increasingly important in realising Denmark's ambitious climate goals."

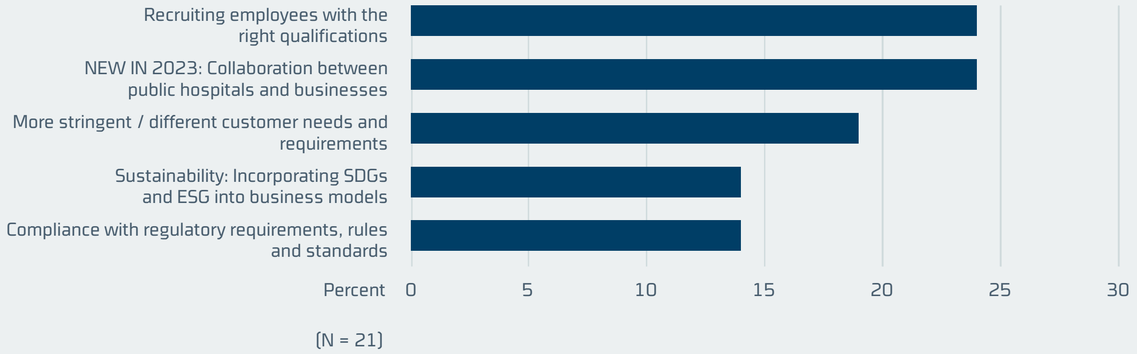
Christian Beenfeldt, project director,
Knowledge Hub Zealand

73%
of medium-sized companies, and 67% of large companies, consider recruiting employees with the right qualifications their greatest challenge

33%
of small companies named rising costs and cohesion in digital systems as challenges

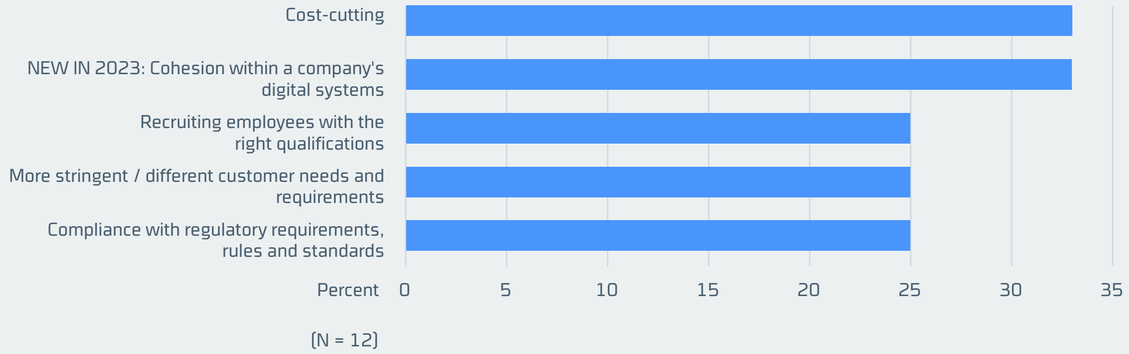
What do you find to be the greatest general challenges that your company is facing right now?

Micro: 0-9 employees



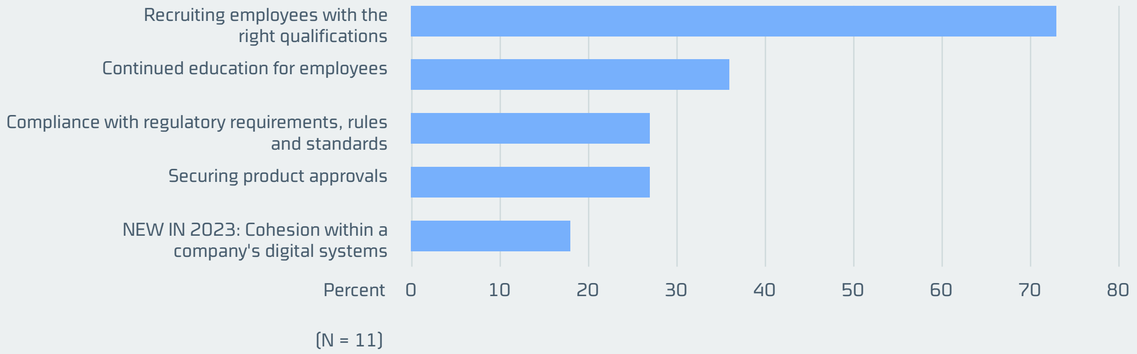
(N = 21)

Small: 10-49 employees



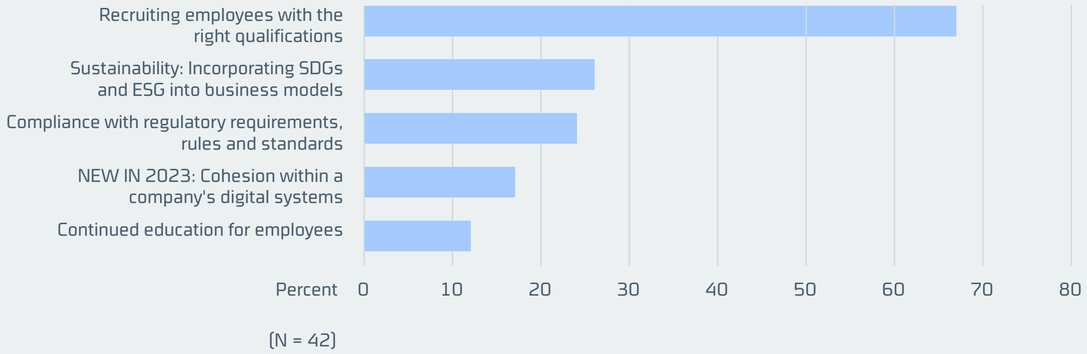
(N = 12)

Medium: 50-249 employees



(N = 11)

Large: 250+ employees



(N = 42)

Digitalisation is still important, and green transformation is much more prominent

One of the most surprising takeaways from the 2020 survey was that 25% of the respondents at that time considered green transformation to be of little importance or no importance at all, while 87% considered digitalisation to be important or very important.

This baffled the industry, given that life science is generally considered to be a leader in the green transformation in terms of many parameters.

78%

believe that green transformation is important or very important

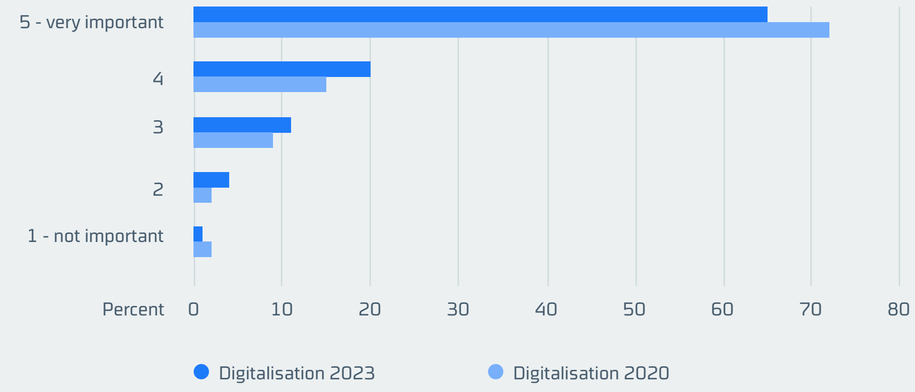
Today, 85% reported that digitalisation is important or very important, while 78% also consider green transformation to be important or very important. Similarly, only 5% reported that digitalisation is of only little or no importance compared to 4% in 2020, whereas only 9% reported that green transformation is unimportant, compared to 25% in 2020.

"The green transition is a focus area for the Danish medico industry, which is experiencing an increasing interest in green and sustainable solutions from health services both in Denmark and globally. At the same time, many medico players see a possible competitive advantage in being at the forefront of the green transition."

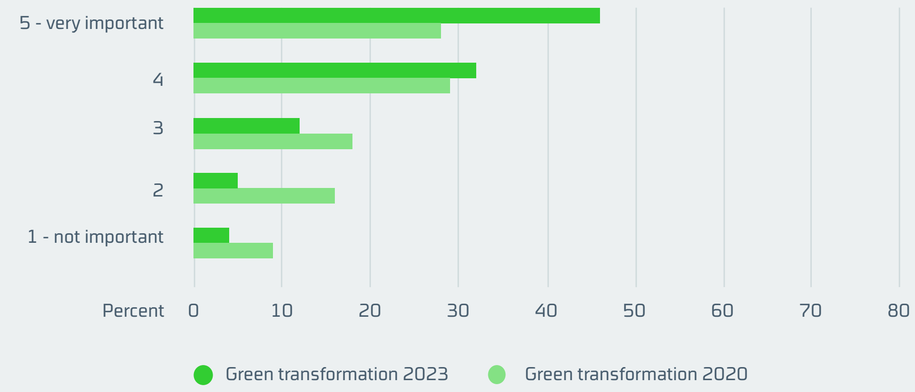
Peter Huntley, Director, Medicoindustrien

On a scale from 1 to 5, how important do people at your company consider digitalisation and green transformation work?

Digitalisation in 2020 vs. 2023



Green transformation in 2020 vs. 2023



Green transformation and digitalisation by industry and company size

Digging deeper into the responses, we can see that digitalisation is important to very important. There is more variation in how important respondents consider green transformation.

Importance by industry

For both pharma/biotech and medico, digitalisation is important or very important. Only 4% of the pharma/biotech segment indicated that green transformation is of little or no importance. In the medico segment, only 16% indicated that green transformation is of little or no importance.

Importance by size

Medium-sized and large companies broadly agreed that green transformation is important or very important, at 82% and 88%, respectively.

Additionally, only 8% of respondents at small companies indicated that green transformation is not important.

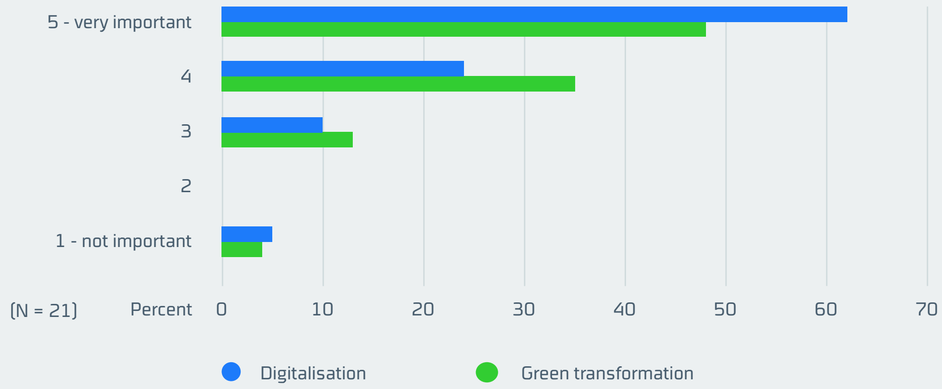
For micro-companies, that figure was 10%, and none of the respondents from medium-sized companies indicated that green transformation is not important.

”Digitalisation and green transformation work are becoming more and more important for these companies. They matter to individual employees, and are increasingly critical for the way companies do business.”

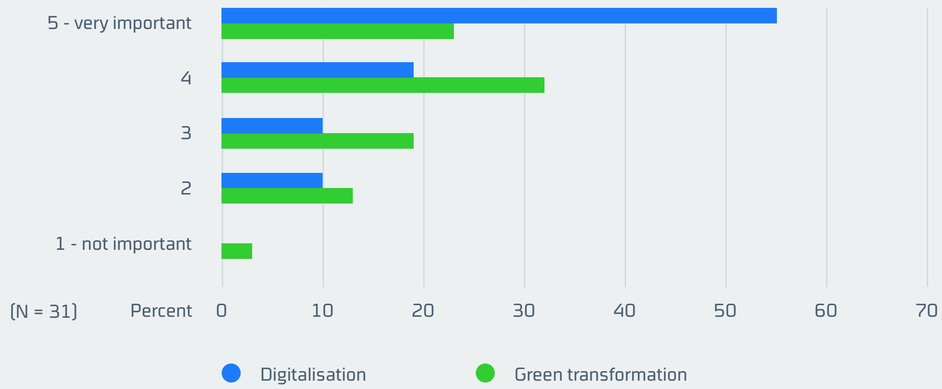
Jakob Bjerg Larsen, head of policy for clinical trials and pharmaceutical manufacturing, Lif

On a scale from 1 to 5, how important do people at your company consider digitalisation and green transformation work?

Pharma/biotech

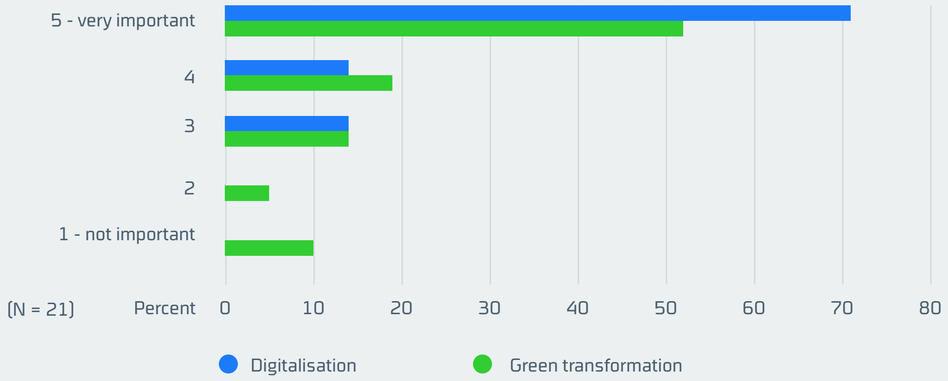


Medico

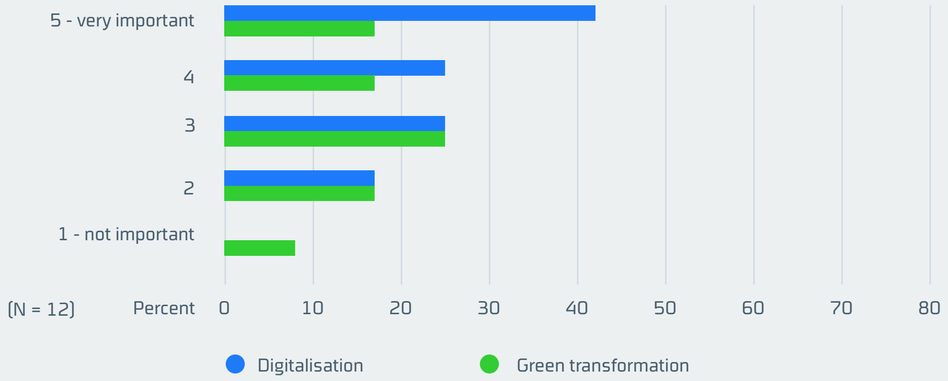


On a scale from 1 to 5, how important do people at your company consider digitalisation and green transformation work?

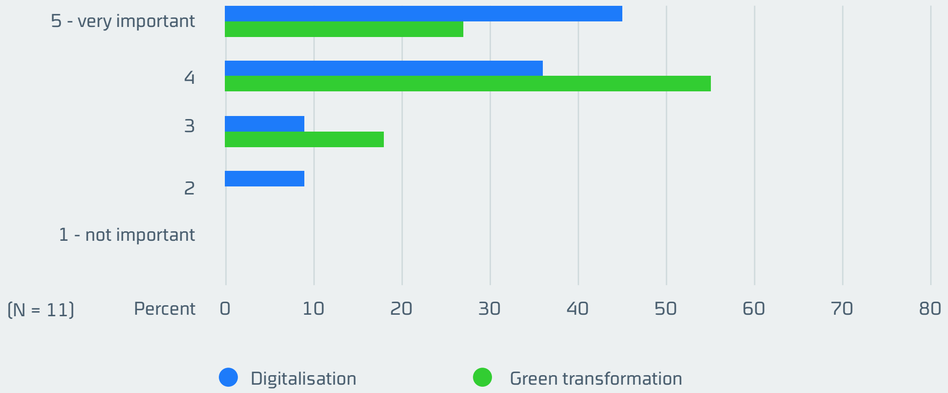
Micro: 0-9 employees



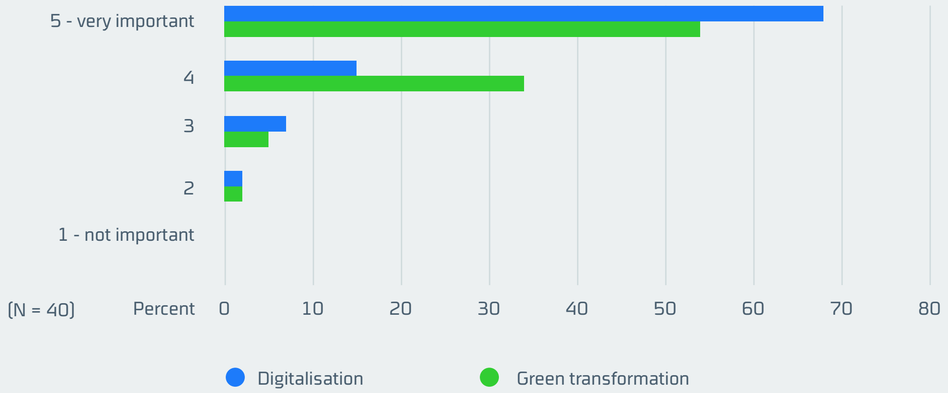
Small: 10-49 employees



Medium: 50-249 employees



Large: 250+ employees



Digitalisation status and challenges

The most significant conclusions:

Even more companies have launched digital projects and activities

A majority of the companies surveyed are engaged in digitalisation. Broadly, more companies have gotten started and made more progress than in 2020. The greatest focus is on digitalising manufacturing processes and facilities, and on data-driven initiatives for improvement, optimisation and prevention.

Data, data, data…

In the life science industry, data is the new black. Particularly in the areas of manufacturing processes and facilities, and in product development, companies were much more focused on turning data into value in 2023 compared to 2020. We see this in how these activities are driven by a desire to optimise processes using collected data, how a greater proportion of companies are now launching data-driven activities, and how many of them see major potential in becoming better at analysing and understanding data. The shift from 2020 is clear: whereas the focus in 2020 was on acquiring data, the focus today is on using data.

This is also true in terms of the technologies companies are adopting. Simulation, robotics technology, artificial intelligence and machine learning are receiving more attention in 2023 – and implementing all of these technologies requires large volumes of data.

Lacking capabilities and resources may slow down digitalisation

Recruitment is also a major factor in digitalisation. Several respondents indicated that they either fear or are currently experiencing obstacles and delays in digitalisation projects resulting from a lack of capabilities, high resource turnover and ongoing training for new employees.

The following pages present an overview of the state of digitalisation in the Danish life science industry in terms of manufacturing processes and facilities, product development and quality management.

Respondent counts for some items are below 153. This is because respondents who chose “Do not know” for the main items in this category were not shown follow-up items. Consequently, we do not present breakdowns by company size or segment at this level.

Digitalisation is under way at more companies than in 2020

The responses we received suggest that many life science companies are well under way in digitalising their businesses. More companies have gotten started and made more progress than in 2020.

Digitalisation is most advanced in manufacturing processes and facilities

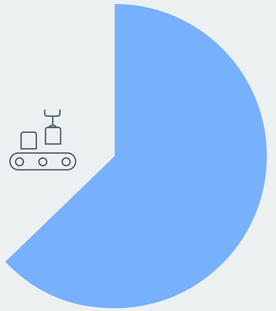
63% of respondents indicated that digitalisation of manufacturing processes and facilities is under way or far along at their companies, compared to 49% in 2020. Manufacturing processes and facilities are thus the area which respondents reported as being most digitalised. 19% have only just begun, and 6% have yet to launch any activities.

A slight drop in product development

47% of companies indicated that they are under way or far along in digitalising product development. This figure has fallen slightly from 2020. However, 18% have now progressed in digitalisation compared to 13% previously, indicating a shift towards greater digital maturity at these companies.

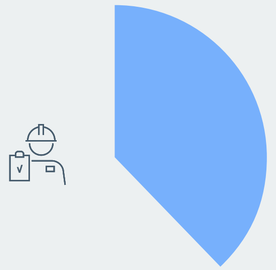
Quality management remains the least digitalised

38% of respondents reported that digitalisation of their quality systems was under way or far along. This is a small increase from 2020. There were also more respondents that were just beginning, at 33% compared to 24% in 2020. 11% still have yet to start, in line with the previous figure.



63%
are under way or far along in digitalising manufacturing processes and facilities

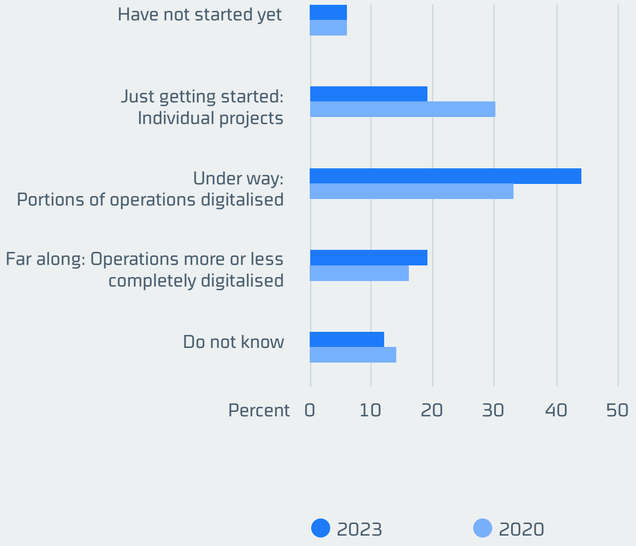
47%
are under way or far along in digitalising product development



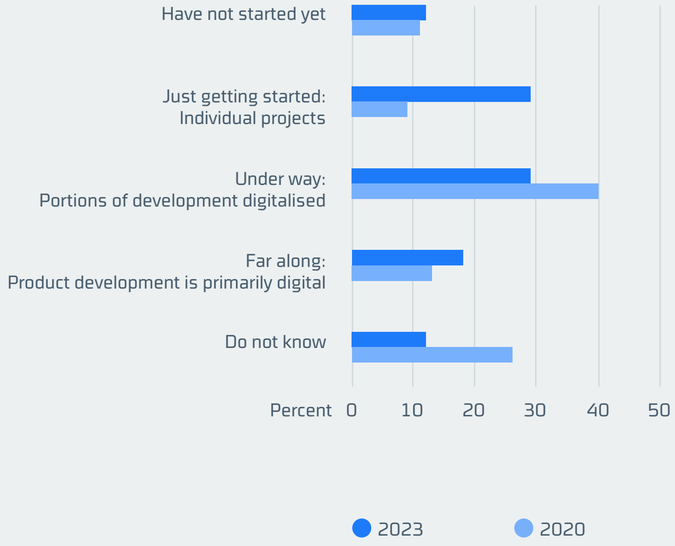
38%
are under way or far along in digitalising QA/QM

How far along is your company in digitalisation? 2020 to 2023 comparison

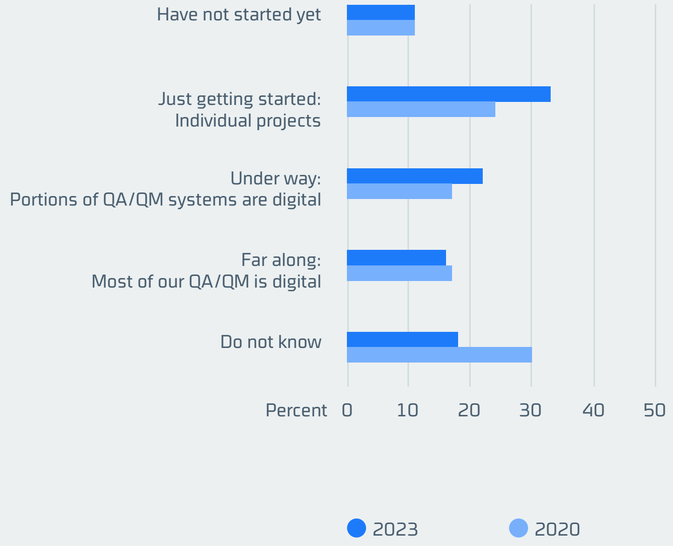
Manufacturing processes and facilities

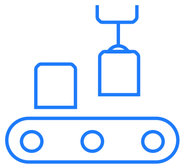


Product development



Quality assurance (QA) and quality management (QM)





How companies are digitalising manufacturing processes and facilities

Digitalisation is still driven by both internal ambitions and external demands

Digitalisation continues to be driven largely by companies' own desires to optimise manufacturing processes and reduce costs, as in 2020. However, while we found in 2020 that the most advanced companies were those in which digitalisation was driven by management's strategic priorities, there were fewer respondents in 2023 that considered digitalisation a strategic priority. This could suggest that digitalisation has made its way down from the C-suite into the manufacturing facilities themselves, where the greatest effects can be seen.

Furthermore, respondents reported that external demands for traceability (36%) and demands from customers and the market (29%) were bigger drivers for transforming manufacturing to be more digital.

It is also worth noting that 34% considered new or changing documentation requirements to be a major driver in 2020, compared to just 14% today.

Data-driven manufacturing, optimisation and maintenance

Overall, most companies have begun collecting data and using it for optimisation and maintenance activities. We also see increases in almost all activities associated with increased digitalisation, except for component and unit tracking, which has fallen by 10 percentage points. This could indicate that companies have increased digitalisation activities, a conclusion which FORCE Technology's digital experts support:

“In recent years, we've seen a clear shift from ideas and ambitions to real activity. A majority of companies have begun to engage practically in digital innovation projects”, explains Michele Colli, head of digital production.

Data holds the greatest untapped potential

Given that nearly half of the respondents are already collecting data from process equipment, it is fairly logical for the greatest untapped potential to lie in analysing and using collected data. This can be seen as a natural next step in many companies' digitalisation journeys, closely followed by the need to optimise and maintain manufacturing equipment using data.

It is also interesting to note the many large jumps from 2020's figures in terms of untapped potential: preventive maintenance, data collection, data-driven maintenance and manufacturing process intelligence (MPI).

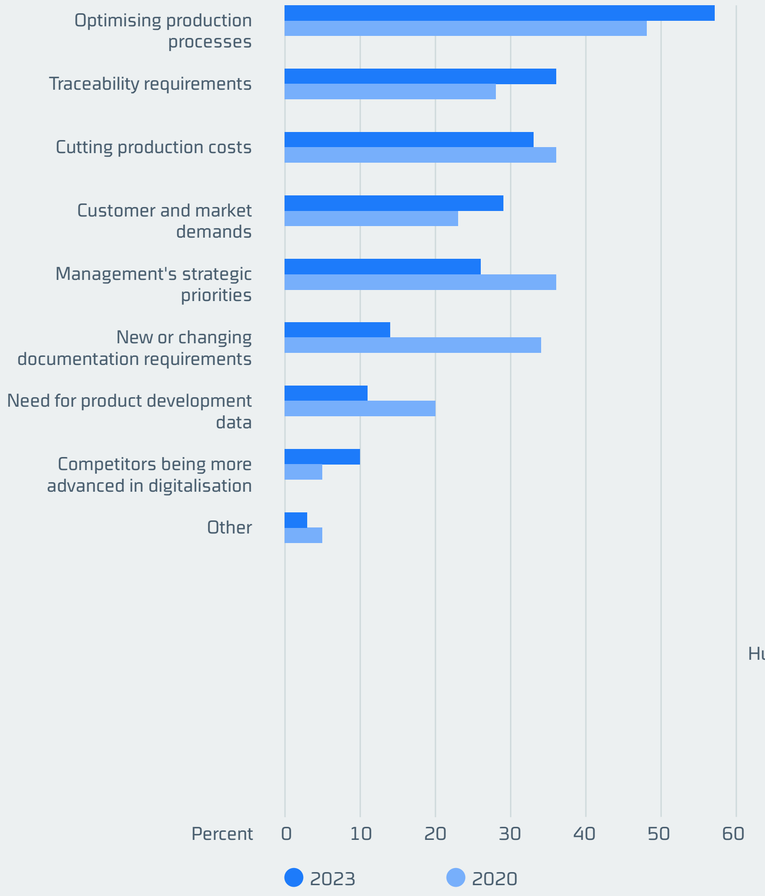
“The drop in interest in all hardware development-related activities is noteworthy, from the introduction of sensor technology and IoT and lights-out manufacturing automation to flexible and modular processes. On the other hand, this explains the increase in activities related to using data. This indicates growth in digital maturity. Companies that have invested in hardware for collecting data and connecting their equipment are now shifting their focus to how data can be used to create value for their operations”, Colli says.

”Companies that have invested in hardware for collecting data and connecting their equipment are now shifting their focus to how data can be used to create value for their operations.”

Michele Colli, head of digital production, FORCE Technology

Digitalisation of manufacturing processes and facilities

Drivers



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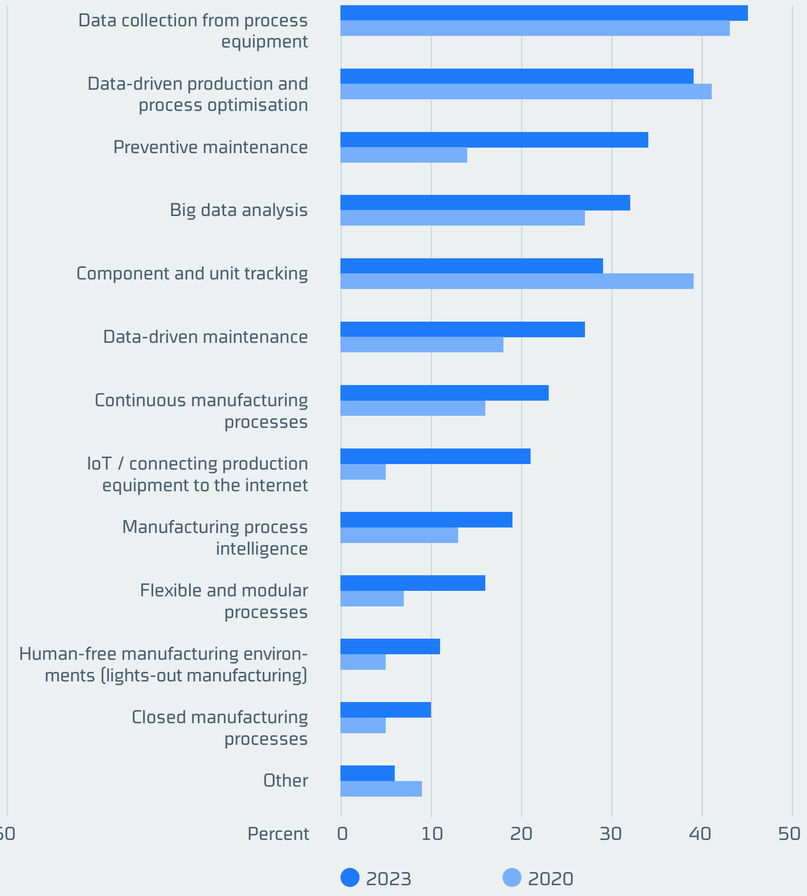
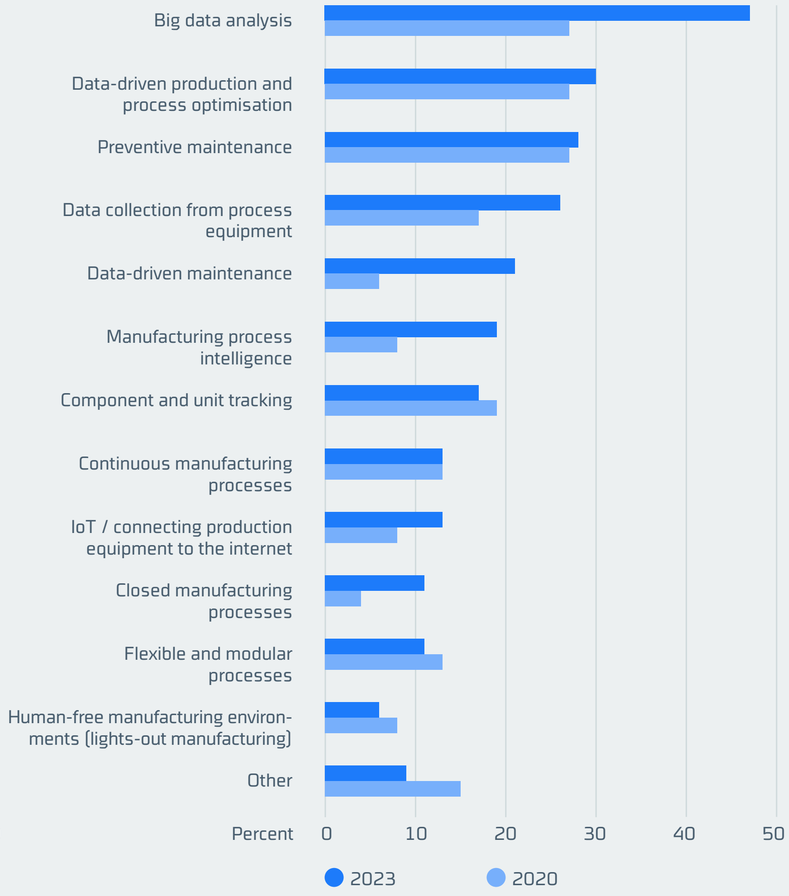


Untapped potential



New technologies making their way into the digitalisation of manufacturing processes and facilities

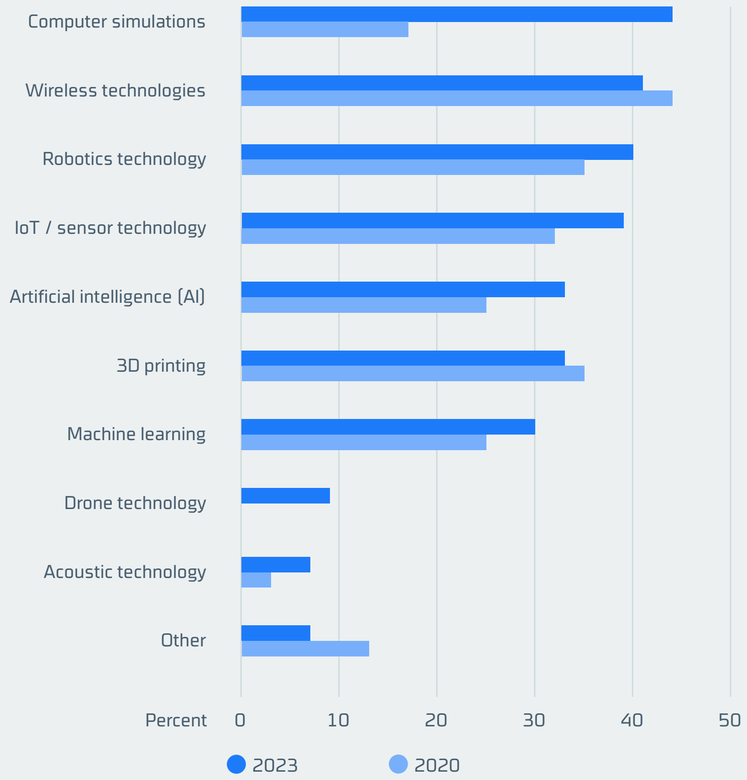
Looking at the technologies used to digitalise manufacturing, computer simulation has made the largest jump, to 44% from just 17% in 2020. This is closely followed by wireless technologies, at 41%, although it has fallen slightly from 44% in 2020.

Robotics technology, IoT and sensor technology, artificial intelligence and machine learning are also gaining ground as technologies used in manufacturing by life science companies.

"The increased interest in big data analysis can be linked to the popularity that AI has achieved in recent years. ChatGPT is a good example of this. The many surprising ways to transform data into value with the right tools have become very tangible to these companies."

Michele Colli, head of digital production, FORCE Technology

Which of the following technologies do you use in your production processes and facilities?



How companies are digitalising product development

Optimising the product development process is the greatest driver for digitalising product development

Respondents overwhelmingly agreed that optimising the product development process is the most important driver for digitalising product development, at 48%. In 2020, only 26% considered it an important driver. Digitalisation of product development has also become more of a strategic priority for management, at 32% today compared to 27% in 2020.

Interestingly, reducing time-to-market (35%) and the digital transformation of the healthcare sector (38%), which were considered the two biggest drivers for digitalising product development in 2020, have now fallen to 27% and 17%, respectively. Furthermore, new or changing documentation requirements has fallen from 19% in 2020 to just 7% today.

Sensor technology, computer simulations and machine learning gain ground

Looking at the activities companies are using to digitalise product development, sensor technology, computer simulations and digital twins and machine learning have made the biggest moves compared to 2020. Meanwhile, artificial intelligence, virtual prototypes and acoustic technology have all become less significant in 2023.

While there are still many companies engaging with these technologies, there are also many that see significant untapped potential in artificial intelligence (34%), followed closely by data usage (32%), machine learning (29%) and digital twins (29%). A smaller proportion of respondents saw untapped potential in IoT, 3D printing and wireless technologies.

Several respondents commented that "new" technologies often must first be accepted by executives and have solid business cases before companies will implement them and realise their full potential.

"The association between data and sensors is logical. But there's so much more potential there–it's not about just having the sensors and having IoT, but about the value we can get from the data produced by those sensors."

Michele Colli, head of digital production, FORCE Technology

44%

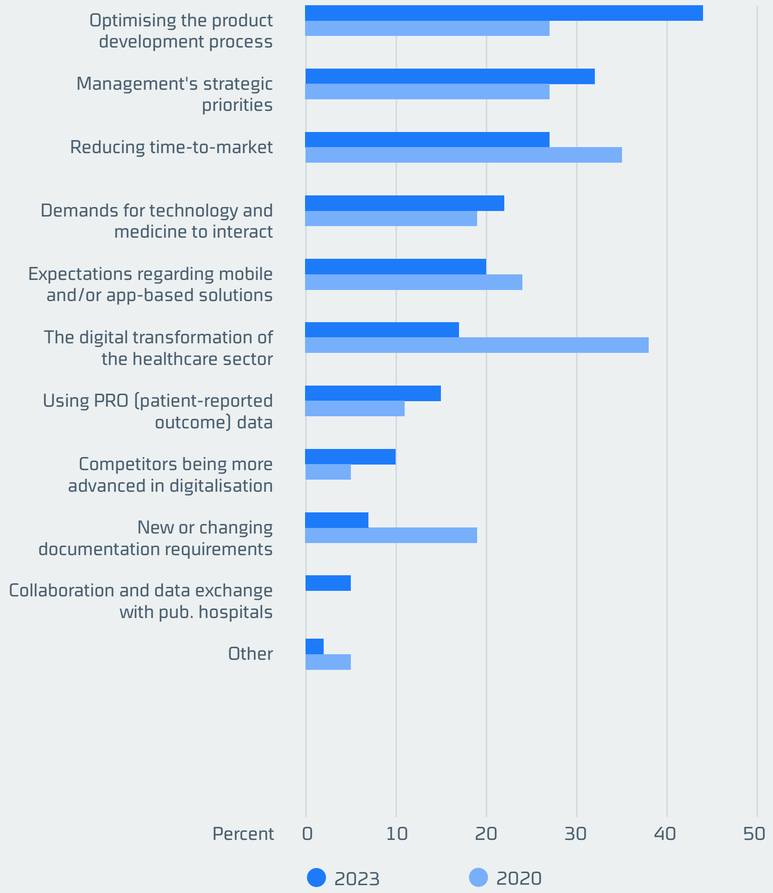
of businesses indicated that digitalisation is driven by a desire to optimise the product development process

49%

of respondents have begun digitalisation activities involving sensor technology

Digitalisation of product development

Drivers



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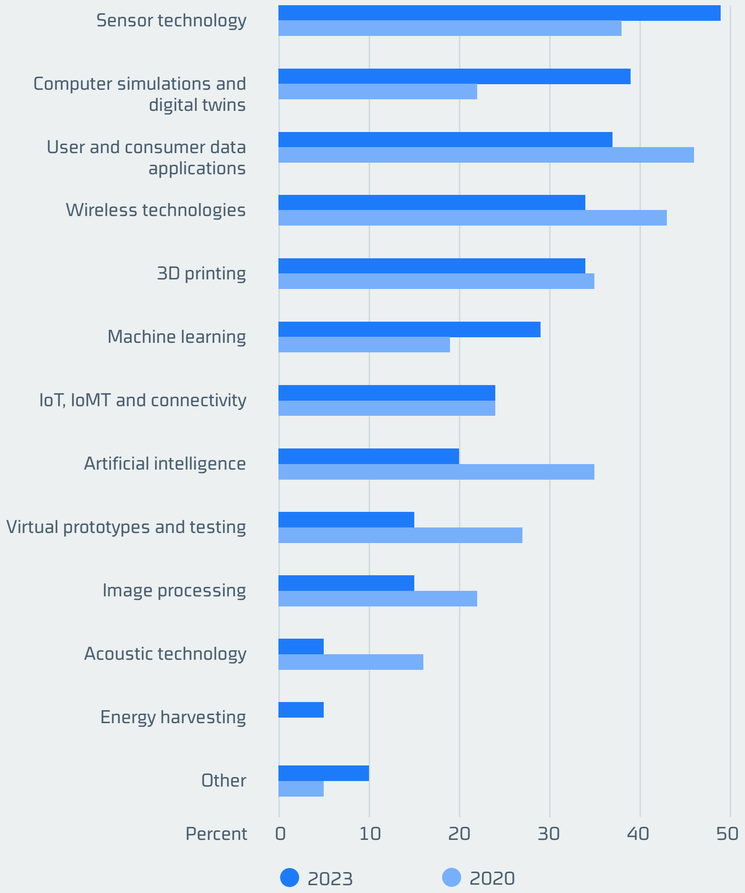
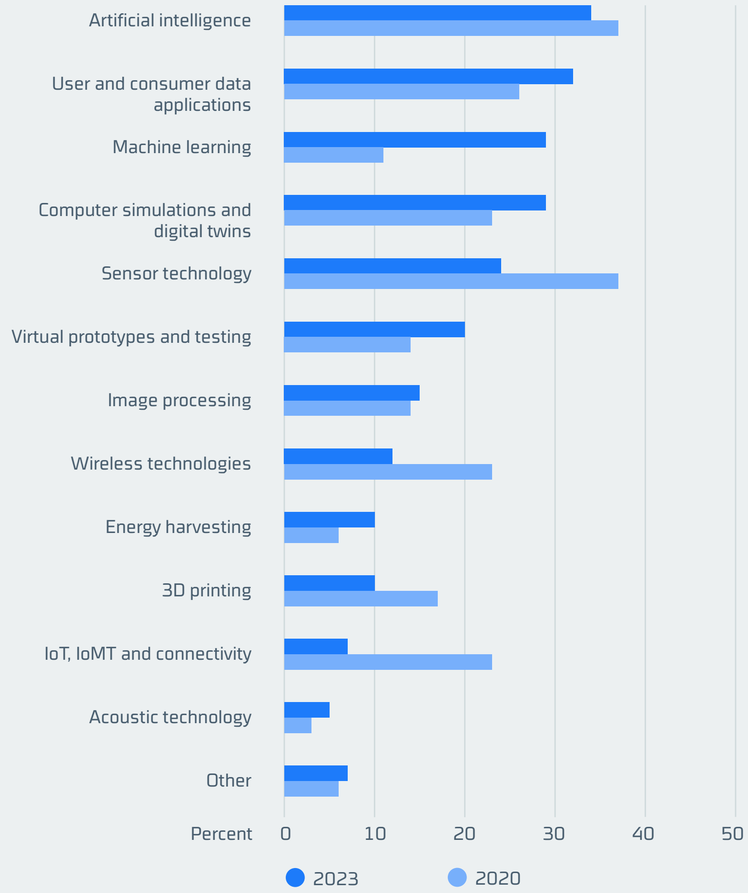


Untapped potential



How companies are digitalising QA/QM

Digitalisation is now driven by external circumstances

In 2023, the digitalisation of QA and QM is most commonly driven by a desire to optimise internal development processes (49%), whereas in 2020, it was most commonly driven by management's strategic priorities (39%). Additionally, more so than before, external requirements, such as those imposed by law or by authorities, and customers' expectations and demands are driving digitalisation.

Interestingly, the digital transformation of the healthcare sector was one of the biggest drivers in 2020, at 32%. In 2023, only 9% of respondents named it as a driver.

Electronic documentation and signatures remain the greatest asset and a major source of untapped potential

More than half of the respondents reported working with electronic documentation and electronic signatures as part of their quality management digitalisation (54%), down from 74% in 2020. They also indicated that they still see untapped potential in this technology, although this figure has fallen from 42% in 2020 to 35% today.

The focus on digitalisation activities is fairly stable, with increased activity in the area of cybersecurity – perhaps a logical consequence of the cyberattacks that impacted Danish public- and private-sector businesses in 2022–and reduced focus on both change requests for validated processes and data processing and analysis.

Notably, a greater proportion saw untapped potential in data processing and analysis and in cybersecurity, the latter of which rose from 6% in 2020 to 18% today.

Several respondents commented that they faced challenges in recruiting and training employees to be specialists in these new technologies, enabling them to realise their vast potential.

”Cyber security has a higher priority in companies’ digitalisation activities. This is due, among other things, to the current global threat landscape and the cyber attacks Danish companies and authorities have been exposed to in recent years.”

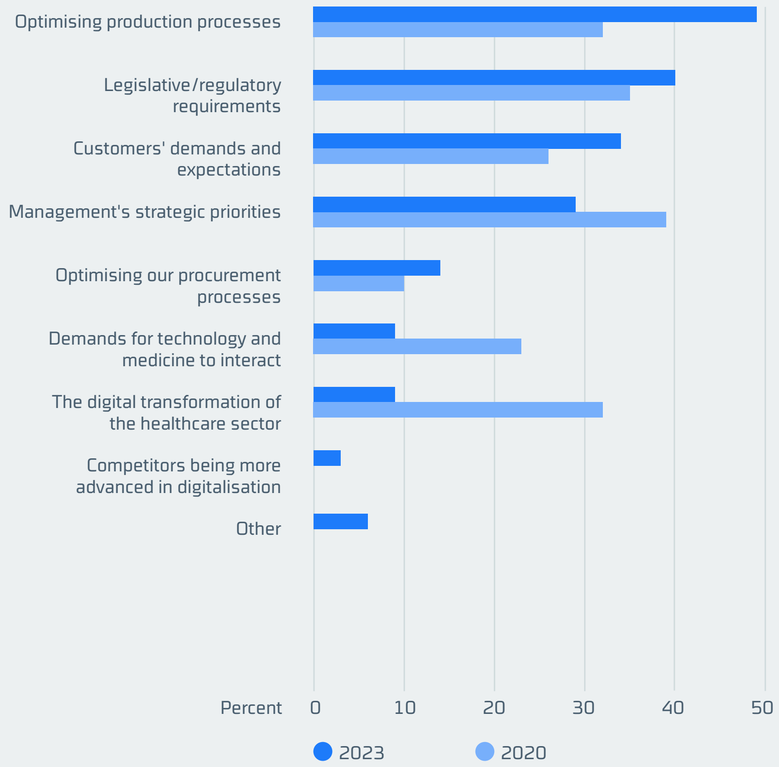
Peder Søgaard-Pedersen, deputy director, DI Life Science

At 49%

of businesses, digitalisation is driven by a desire to optimise internal development processes, compared to 32% in 2020

Digitalisation of quality assurance (QA) and quality management (QM)

Drivers



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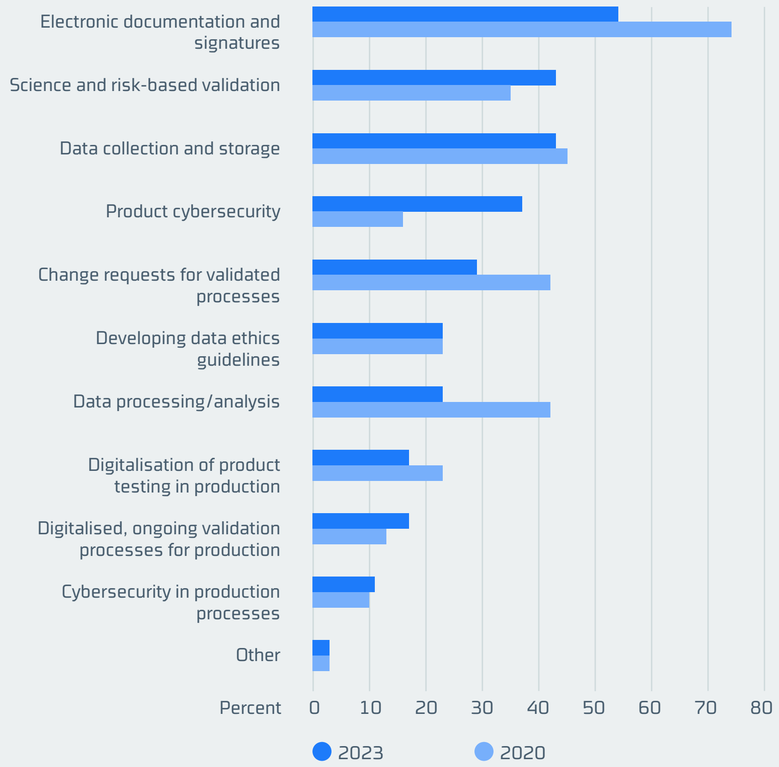
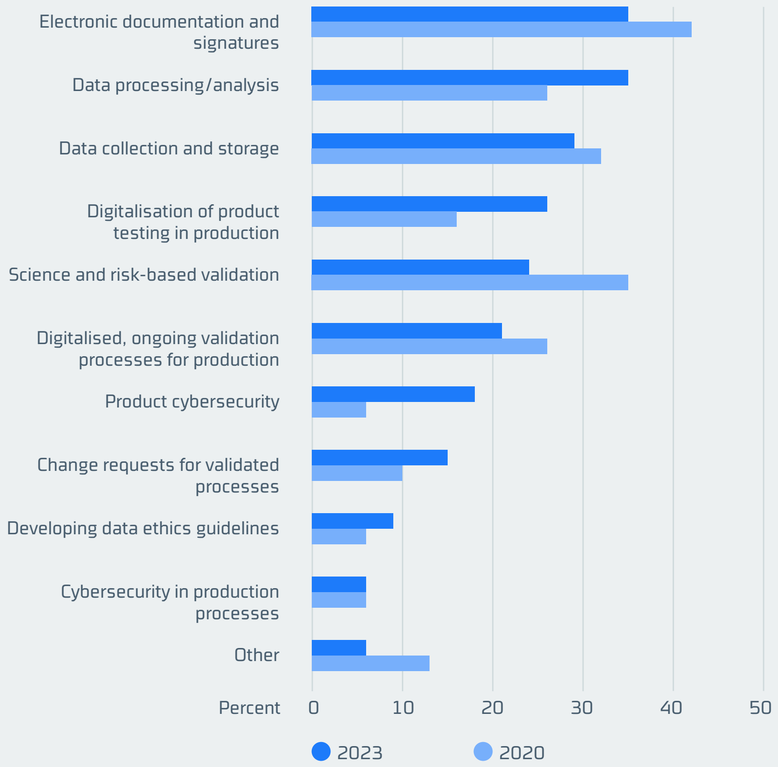


Untapped potential



Green transformation status and challenges

The most significant conclusions:

Green transformation has become more important
It is clear that green transformation plays a greater role in the life science industry now compared to 2020, in terms of both importance and activity levels. A significantly larger proportion of the respondents have started or made progress on green initiatives, and a correspondingly smaller proportion has yet to get started at all.

Primary focus on documentation
As in 2020, the greatest focus is on transforming manufacturing processes and facilities to be greener. Respondents reported that the green transformation of manufacturing facilities is driven by customer and government expectations and requirements. That fact, and the fact that manufacturing and distribution are often responsible for a majority of a company's CO_2 emissions, may be the reason for this focus. Consequently, there is also a focus on areas where companies need documentation for their climatic and environmental reporting, such as energy consumption, CO_2 emissions, chemical usage and waste.

More attention given to individual products' environmental footprint
There are major differences in product development activities between 2020 and 2023. This could indicate that companies are focusing more on individual products' footprint in 2023, such as by calculating carbon footprint, conducting life cycle analyses, choosing alternative materials, reducing packaging and retrieving used products through take-back systems to reduce the prevalence of single-use products.

This is also true in QA/QM, where we see companies focusing on sustainable products and circular economics through documentation and compliance, as well as setting goals to provide a framework for increasing their green transformation work.

The following pages present an overview of the state of the green transformation in the Danish life science industry in terms of manufacturing processes and facilities, product development and quality management.

Some items have low respondent totals. This is because respondents who chose “Do not know” for the main items in this category were not shown follow-up items. Consequently, we do not present breakdowns by company size or segment at this level.

A greater proportion of companies are working actively to become greener

The life science industry seems to have progressed in its green transformation of all three domains compared to its state during the 2020 survey. Fewer respondents indicated that they had not yet started this work.

The most green transformation progress has been in manufacturing processes and facilities

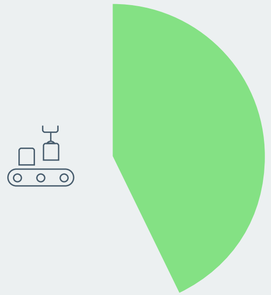
43% of the respondents indicated that work towards greener manufacturing processes is either under way or far along, compared to 30% in 2020. Additionally, 35% have just got started, and 11% indicated that they have yet to begin these activities.

Product development is also becoming greener

As for the transformation of product development, 4% of the respondents indicated that they have progressed to the point of having an overwhelmingly green product development process. The greatest change occurred among those that had launched several initiatives (33% versus 19% previously) and had just got started (30% versus 21% previously). 15% have yet to begin at all, compared to 23% in 2020.

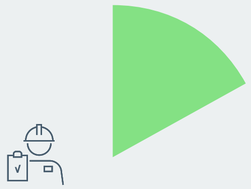
The green transformation of QA/QM

As in 2020, none of the companies in the survey are far along in transforming quality management to be greener. 17% are now well under way versus 11% previously, while 29% have just started with individual projects versus 21% in 2020. 24% have yet to begin these activities. That aside, it is interesting to note that 31% of the respondents did not know how far along their companies are in the green transformation of QA/QM.



43%
are under way or far along in transforming manufacturing processes and facilities to be greener

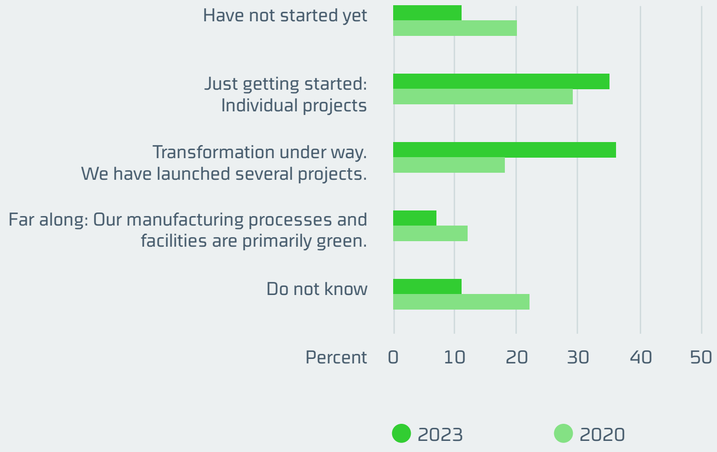
37%
are under way or far along in transforming product development to be greener



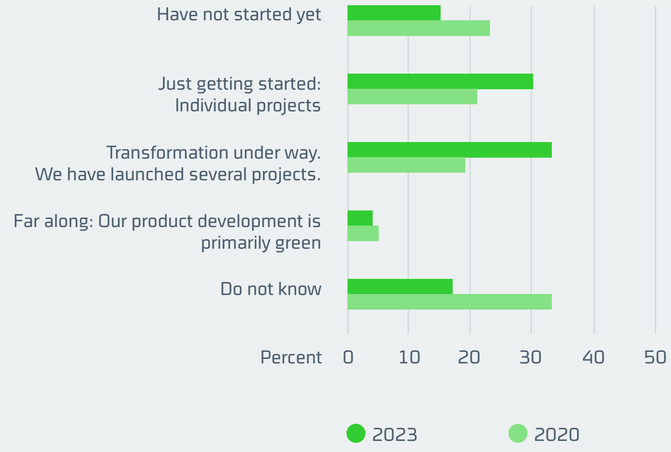
17%
have launched activities to transform QA/QM to be greener

How far along is your company in the green transformation? 2020 to 2023 comparison

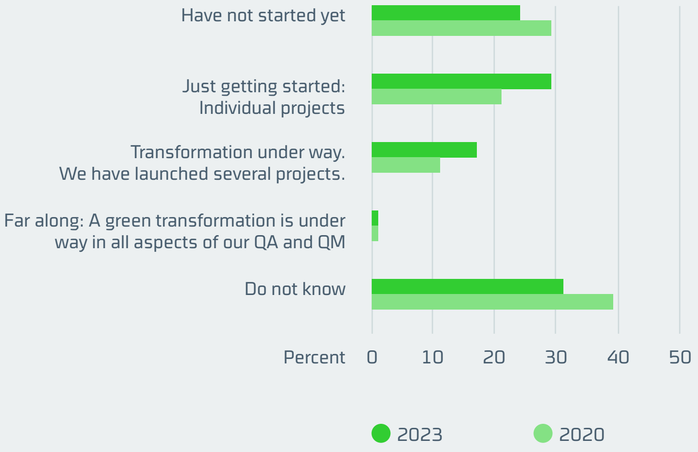
Manufacturing processes and facilities

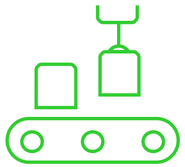


Product development



Quality assurance (QA) and quality management (QM)





Focusing on energy consumption and other forms of energy in manufacturing

Strategic requirements and customers' expectations and requirements drive the green transformation

Particularly in the case of transforming manufacturing processes and facilities to be greener, management's strategic priorities and the desire to meet customers' expectations and demands are the biggest drivers. It is interesting to see that the desire to reduce costs as a driver has risen from 16% in 2020 to 25% today. It is also worth noting that a company's image, which was the biggest driver in 2020, was considered a driver by 33% of companies in 2023.

This could indicate that the point is no longer to make companies merely appear green from the outside, but to actually operate sustainably, meet requirements and avoid “greenwashing”.

Minimising consumption, waste and environmental impacts remain the most common activities

The results of the survey showed that companies are generally implementing several activities to promote their green transformation. 61% of the companies are actively working to minimise their consumption of various resources, including water, heat and electricity. Furthermore, 54% are working to reduce manufacturing waste by making better use of resources, while 41% wish to reduce emissions of $CO_2$and other substances from their manufacturing operations. More companies also reported a desire to use renewable energy (39% versus 22% in 2020).

Energy activities hold the greatest untapped potential

The companies indicated that minimising energy consumption was both their largest activity and the place where they saw the greatest untapped potential, ranked first by 35% of respondents. There were also three jumps from the previous survey's figures, with 28% working on using renewable energy and 23% working on reusing excess heat from production operations and minimising waste. Many also saw potential in cleaning and reusing water, as well as in environmentally conscious procurement of manufacturing equipment.

”Despite the uncertainty about where to start as a manufacturing company, the findings in the report underline the change we see in the industry today, namely that many companies are now implementing concrete initiatives to create resource-saving production methods and processes.”

Christine Bang Kragelund, business development manager resources & circular economy, FORCE Technology

48%

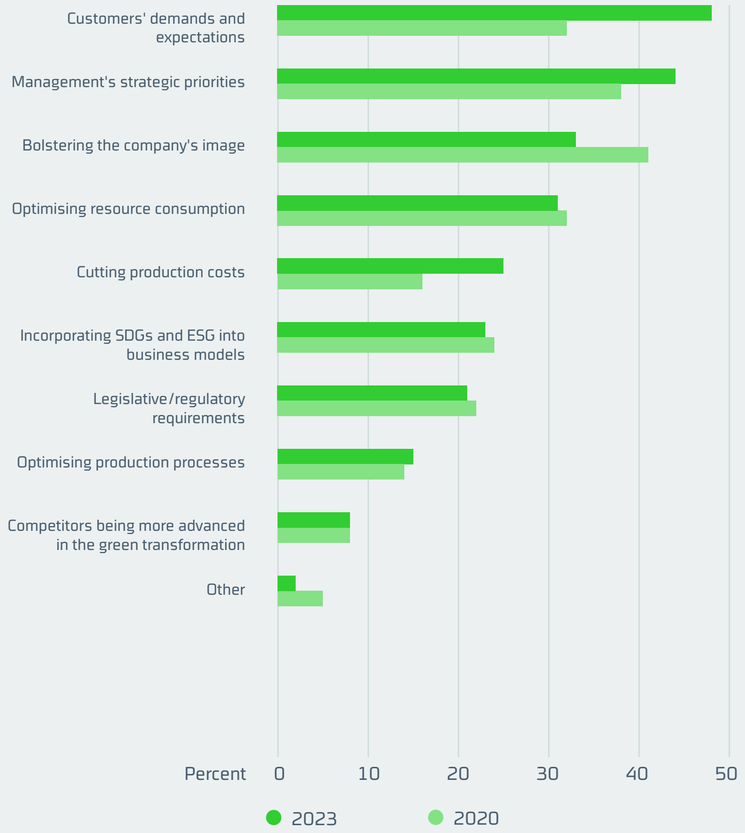
are transforming their manufacturing processes and facilities to meet customers' demands and expectations

24%

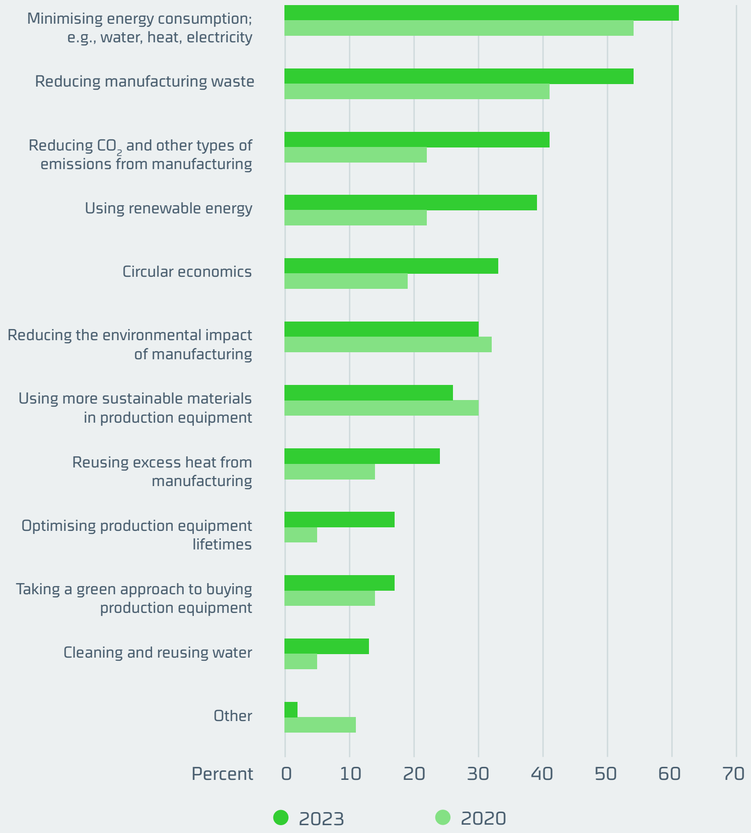
are working on reusing excess heat from manufacturing, but find that there is still untapped potential in this area

The green transformation of manufacturing processes and facilities

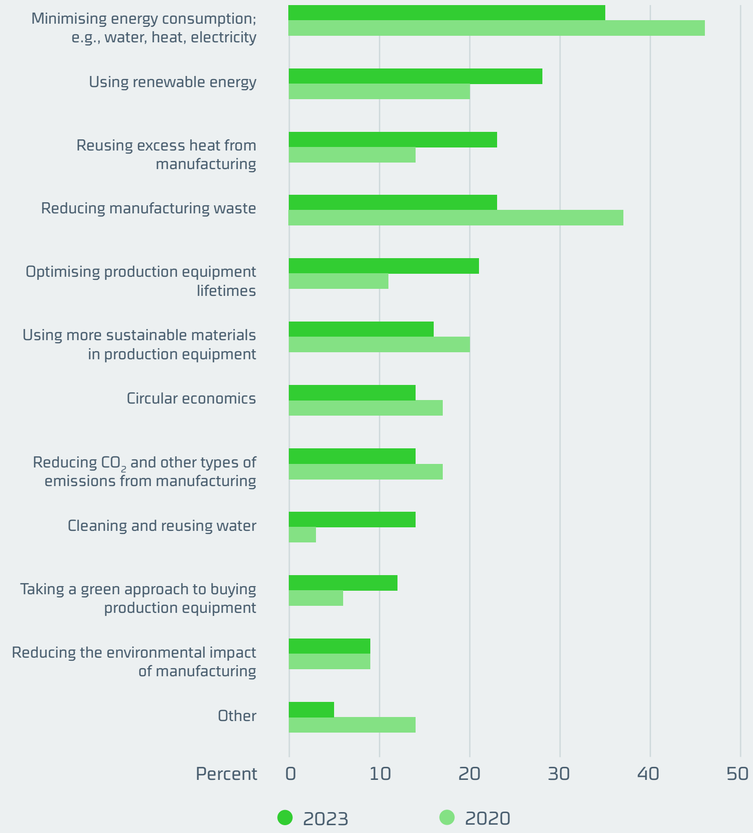
Drivers



Activities



Untapped potential



Much greater focus on product footprint

Strategic priorities continue to drive the green transformation of product development

55% of the respondents named the presence of green transformation among management's strategic priorities as the primary driver in product development. In 2020, this figure was 46%. Thus, we see that the desire for a green transformation continues to originate within these companies themselves.

Meanwhile, incorporating ESG and SDGs is now one of the biggest drivers, considered second most important at 39%. More stringent customer requirements and the need to optimise resource consumption remained important drivers.

Large contrasts in activities compared to 2020

There has been a major shift in companies' activities for transforming product development to be greener, with many jumps from 2020 and many activities no longer in focus. In 2023, 41% of respondents indicated that they focused on optimising their carbon footprint, compared to just 15% in 2020. That was followed by the use of more sustainable materials in products, with 38% of respondents indicating that they were engaged in this compared to 26% in 2020. Also, 35% of respondents indicated that reducing packaging was a priority for them compared to 30% in 2020. There was a similar trend in life cycle assessment (LCA), at 27% in 2023 versus just 7% in 2020. All of these activities have gained significant ground in 2023.

Digitalisation, lifetime optimisation and take-back systems, all new categories, have also taken on major roles.

On the other hand, respondents appeared to be significantly less engaged in other activities. Examples of these activities include choosing materials for single-use products, green packaging, using reusable materials and disposal, having fallen by more than half relative to 2020.

Untapped potential in sustainable materials and resource optimisation

The major focus on packaging, which many considered to have some of the greatest untapped potential in 2020, has now shifted to using more sustainable materials in products (38%). This is followed by optimising per-product resource consumption (27%), and tied for third place are digitalisation and reducing packaging (24%). The latter was named by 42% of respondents in 2020. It is thus fair to say that the focus within transforming product development to be greener has shifted significantly from 2020.

”Between 2020 and now, Danish life science companies have really increased their focus on SDGs and ESG goals. We in the Danish Life Science Cluster welcome this focus and see it as a signal that the life science industry as a whole is doing its part to find solutions to the challenges facing our society.”

Jane Nøhr, program manager, Danish Life Science Cluster

55%

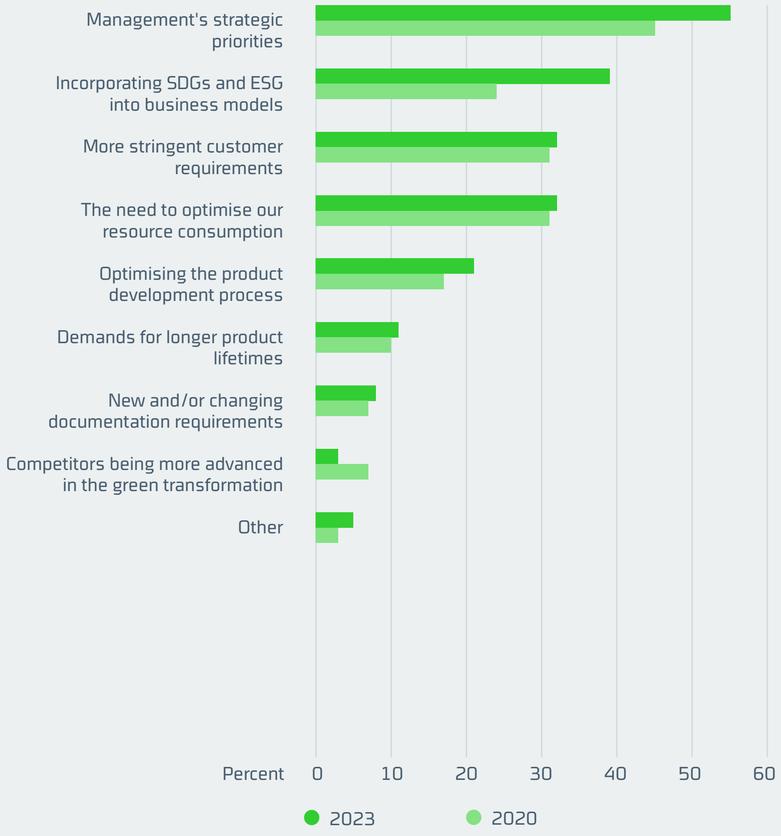
of companies' green transformation is driven by strategic priorities from management

38%

of respondents see the greatest unrealised potential in using more sustainable materials in their products

Green transformation in product development

Drivers



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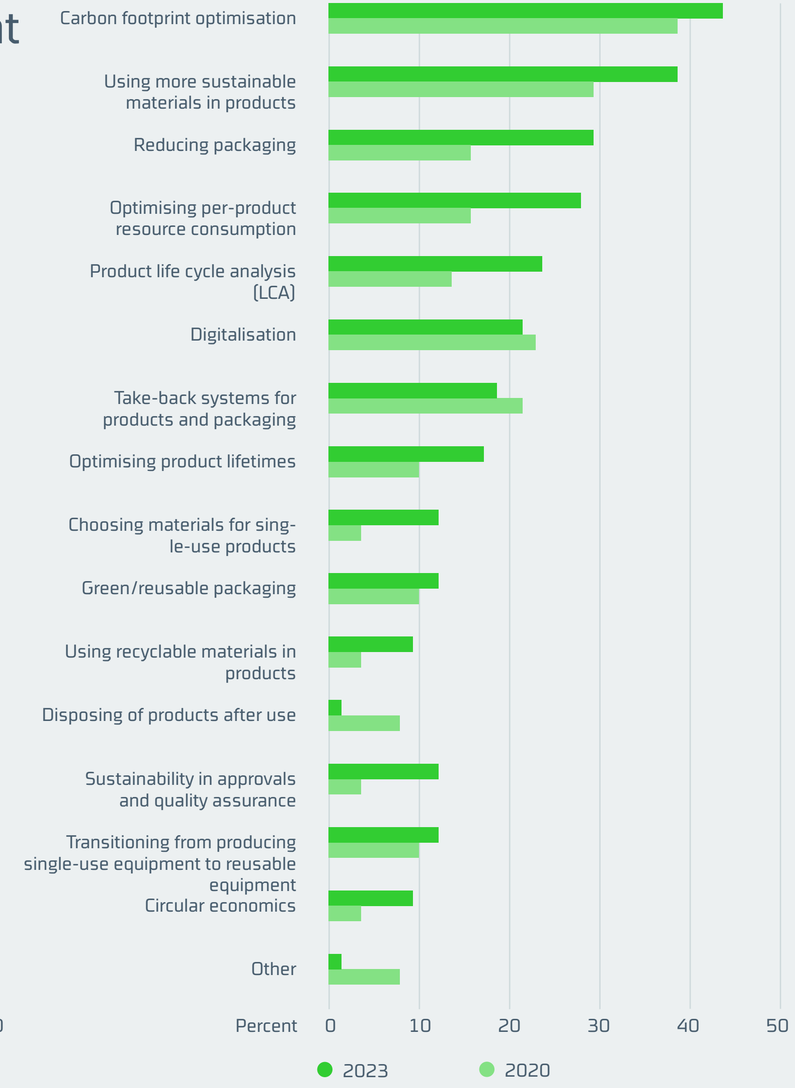
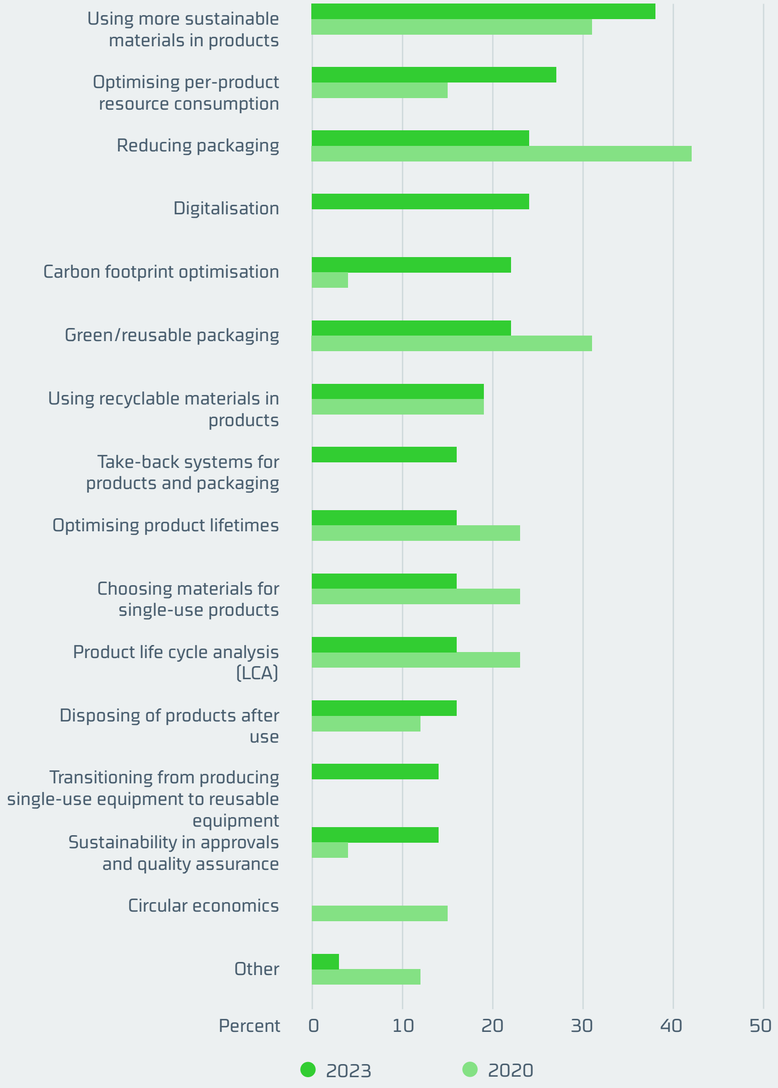


Untapped potential



Opportunities for optimisation and products' environmental footprint at the heart of the green transformation of QA/QM

Companies' efforts to transform QA/QM to be greener are driven more by internal desires and ambitions

In 2020, legislative requirements, government requirements and customers' demands and expectations were the primary drivers of the green transformation in QA/QM. In 2023, companies' own desires to optimise their resource usage have gained ground as a driver. This occurs due to either management's strategic priorities or attempts to bolster the company's image. Notably, legislative and government requirements have fallen as a driver. Whereas they topped the list in 2020 at 30%, they fell by nearly half to 17% in 2023.

Many activities and greater dispersion in the green transformation of QA/QM

Green transformation activities also differ compared to 2020. Whereas in 2020, the focus was on suppliers' documentation requirements, improving the environmental footprint of products and manufacturing, and "other activities" (reported by 23%), activities have become more varied in 2023. A general focus on sustainable products and circular economics is ranked first, and this activity made one of the larger jumps. However, LCA, carbon footprint documentation and setting goals for waste management in usage and disposal have also made major leaps.

Untapped potential in more focused work

A majority of respondents indicated that the path forwards for green transformation work lies in setting clear goals and making focused progress towards them. The five areas with the greatest untapped potential were deemed to be setting goals for improving the environmental impacts of manufacturing processes, individual products, and packaging materials and waste management and disposal. In 2020, respondents identified greater untapped potential in LCA and carbon footprint, both of which are now being implemented by greater proportions of companies in 2023.

Overall, this may indicate greater activity in the QA/QM sphere to promote the green transformation of these companies. That said, it is worth noting that the response rate for this item is the lowest of any item in the survey. Furthermore, 30% of respondents indicated that they do not know how far along their companies are in transforming QA to be greener. As a result, these conclusions should be taken with a grain of salt.

"Sustainable solutions and manufacturing chains are a prerequisite for remaining competitive in this industry. The green transformation is becoming more and more data-driven, and it now encompasses the entire manufacturing chain, from material selection to disposal."

Peter Huntley, director, Medicoindustrien

55%

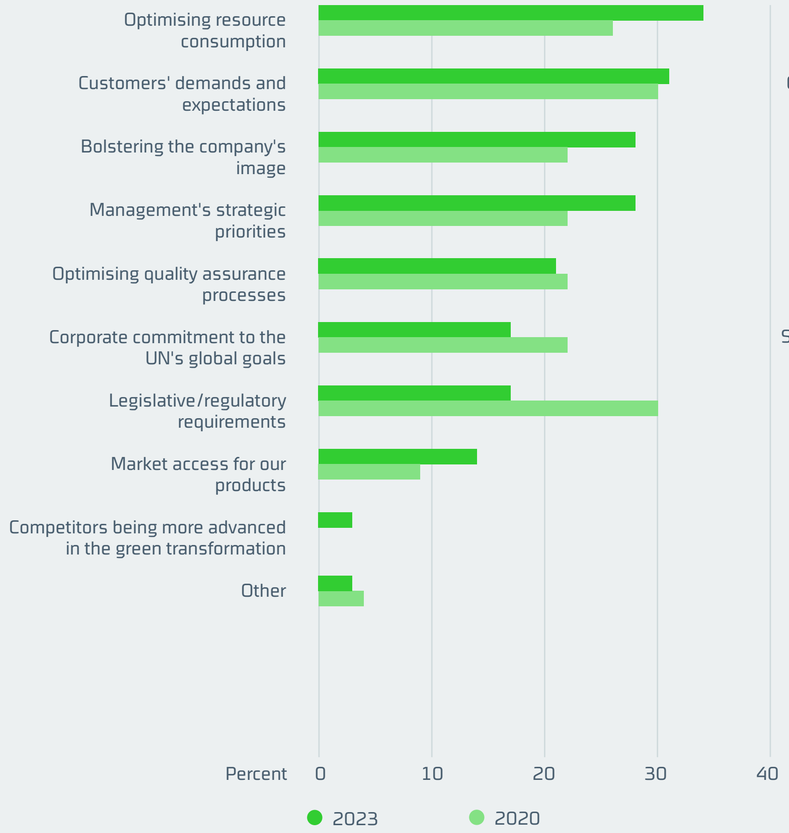
of companies' green transformation in QA/QM is driven by a desire to optimise their own resource usage

38%

of respondents have launched activities in sustainable products and circular economics

Green transformation in quality assurance (QA) and quality management (QM)

Drivers



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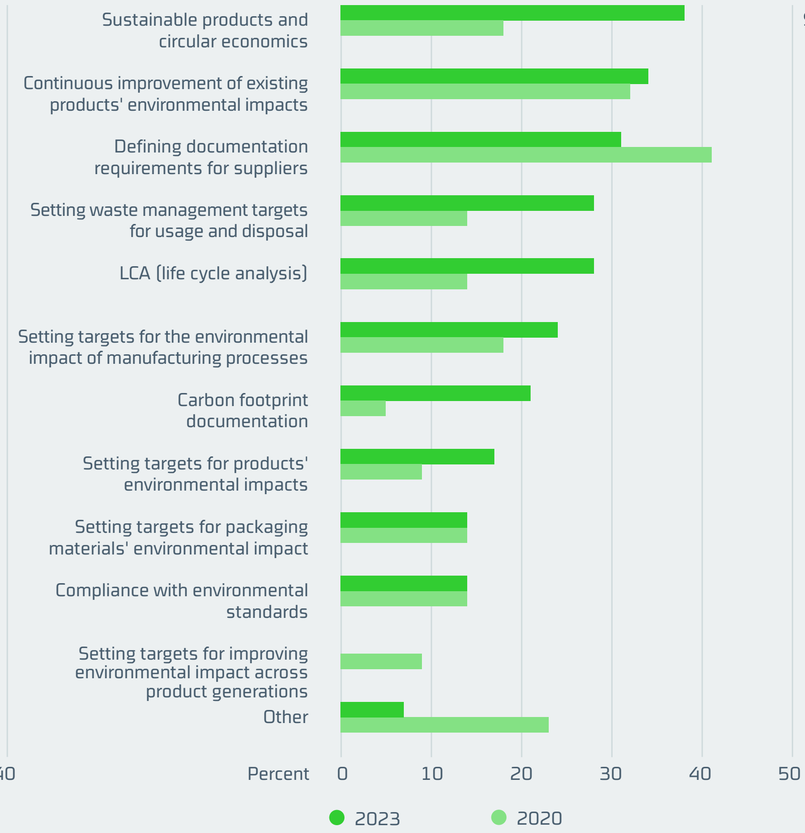
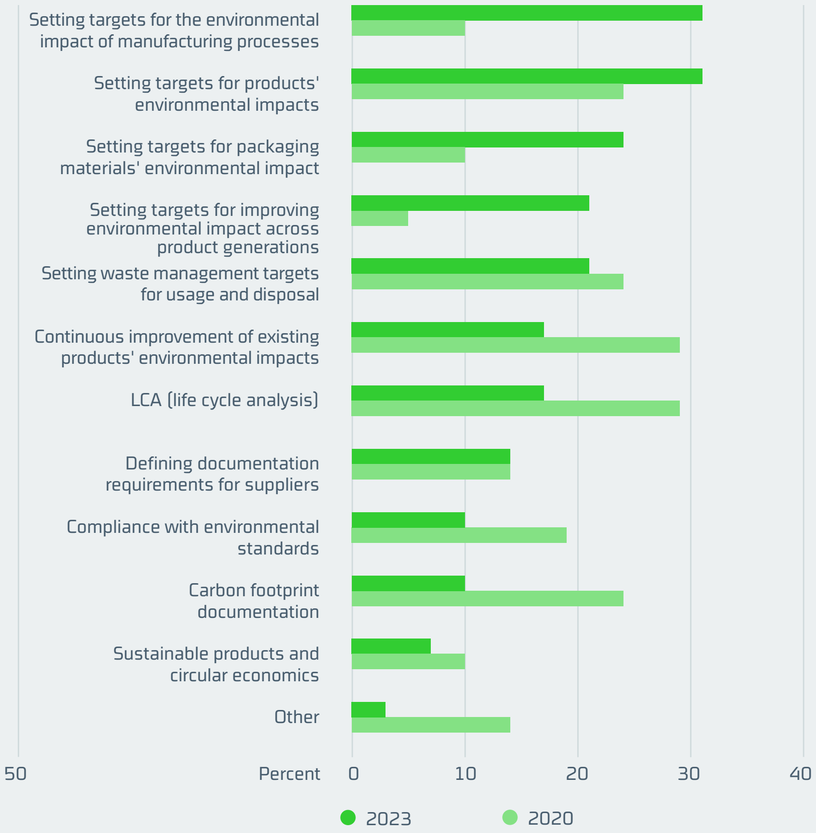


Untapped potential



Methods and limitations

About the validity of this report

This study does not aspire to present representative responses for all of the life science industry's needs and challenges. Rather, the partners sought to uncover trends and gather information that had not previously been investigated.

The report's figures for 2023 are based on 153 responses, compared to 131 responses in 2020. Consequently, there are somewhat more responses in all response categories throughout the 2023 report compared to the 2020 report.

Both surveys were conducted anonymously. As a result, we cannot know whether the respondents are the same as those from 2020. This could explain some of the differences between 2020 and 2023.

While these results should be taken to indicate some of the tendencies within the industry, they should not be taken as fully representative of the industry as a whole, which is naturally more complex.

Some response categories have response totals below 153. This is due partially to respondents not being shown follow-up items if they chose the “Do not know” response for an earlier item.
Additionally, respondent totals are not presented for comparisons between 2020 and 2023 because the respondent bases for individual item groups varied only minimally, with slightly more respondents in 2023.

For the sake of the reader, we have chosen to highlight the most important conclusions and lessons from the survey in this report, rather than presenting all the responses in their entirety.

Limitations

To restrict the number of items on the questionnaire, we chose to focus on three technology domains common to most life science companies:

Manufacturing and manufacturing facilities
– because most life science companies produce a medication, an ingredient or a product

Product development / R&D
– because continuous research and product development is at the core of most life science companies' technology

Quality assurance / QA and QM
– life science is one of the most thoroughly regulated industries, making QA/QM essential

Naturally, we could have chosen to study other domains, such as supply chain management, human resource management, and so on. However, we chose to restrict the survey in this regard to limit the time required of the respondents.

Anonymity

All respondents completed the survey anonymously. Respondents who wished to receive a copy of the report provided their contact information. The provided contact information is used solely to distribute the report and is known only to FORCE Technology.

Sources

1. DI Life science