Photonics Scotland

PHOTONICS IN SCOTLAND 2023 REPORT

A NETWORK OF technology SCOTLAND

CORPORATE SPONSOR SCINTILLA

Foreword

Photonics - the technical application of light - is the key enabling technology of the 21st century. Although largely an unseen technology, it has a wide presence in our everyday lives and is applied across a myriad of market sectors, from healthcare and communications to space and manufacturing.

Global markets for this critical technology are continuing to show strong growth, catalysed by an accelerated global demand for photonics enabled products and services, and Scotland remains perfectly positioned to exploit the opportunities that this will bring over the next decade.

Our world-renowned photonics cluster continues to grow, with revenues up by over 30% since 2019 and employee numbers rising by over 50% in the same period. With a current output of over £1.3bn, the sector remains on track to meet our 2019 ambitions to treble in size by 2030.

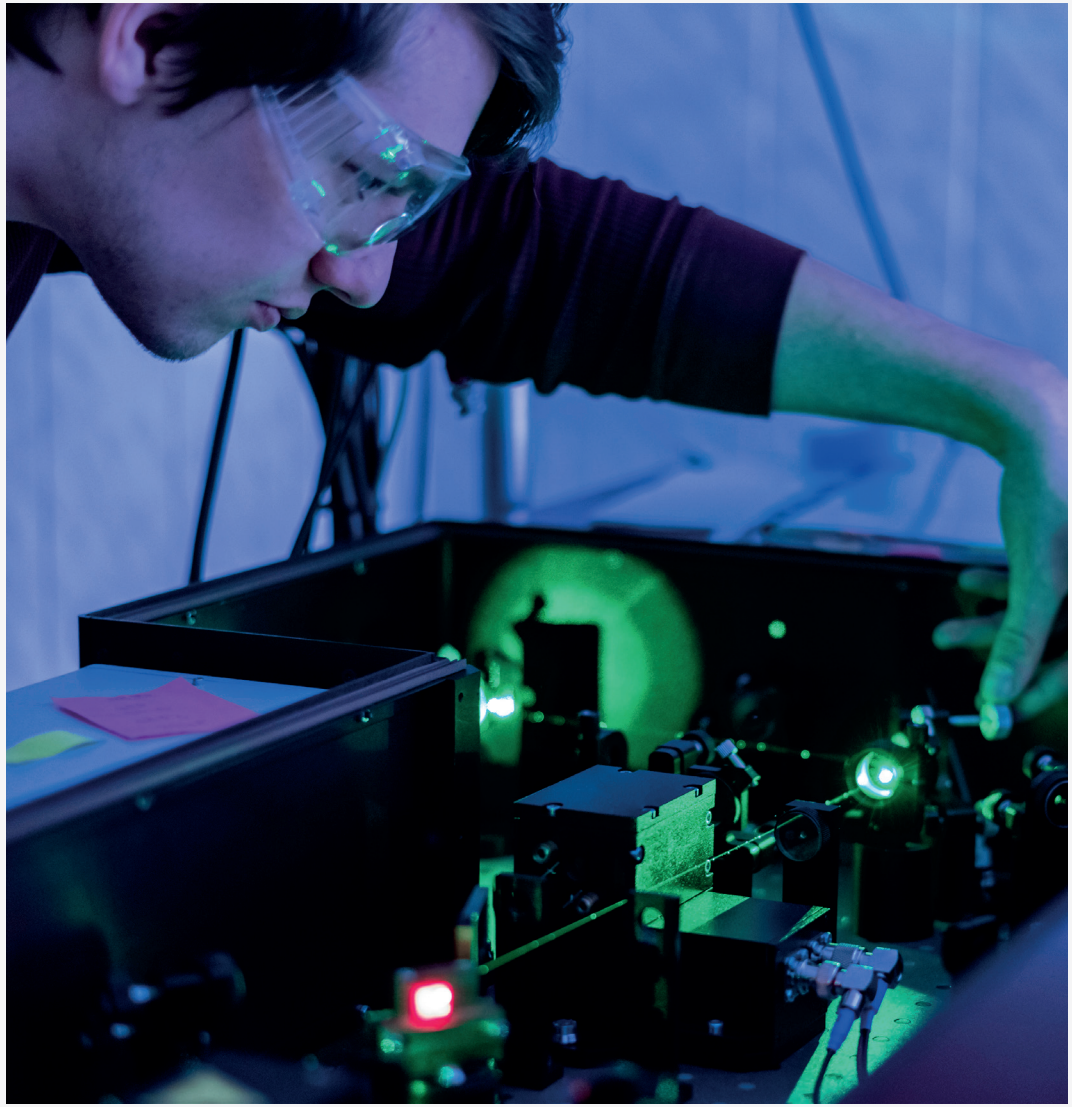
This position of strength has been recognised by the Scottish Government within the National Strategy for Economic Transformation (NSET) which states that, 'enabling and emerging technologies such as photonics and quantum technologies...can contribute to improved productivity of traditional industries and underpin industries of the future...' Recognition for the sector's potential was further emphasised within the recently published National Innovation Strategy in which the photonics/quantum sector is identified as one in which Scotland 'has clear potential to lead the world'.

Against the backdrop of this welcome focus on the sector, it remains important to track progress and our Annual Survey continues to provide an important health check for the sector.

This year's survey was conducted between June 2023 and September 2023, and includes data and sentiment gathered over the previous 12 months (2022-2023). As such, data presented here reflects the lasting impact of the global pandemic, the continued fall-out from the UK's departure from the European Union, rising energy costs and the ongoing effects of the war in Ukraine.

Despite the turbulence that these factors continue to bring, our survey once again highlights the resilience of Scotland's photonics sector. The sector continues to show positive signs of growth, with future sentiment also remaining optimistic.

This is hugely encouraging and provides timely evidence that the Scottish Government's recent recognition of the sector is justified and that the sector is set to play an important role in Scotland's economic future.



Sponsor statement

SCINTILLA

Peter McBride
Founder and Patent Attorney
Scintlla IP

It's been an exciting year in technology! We've seen artificial intelligence get mainstream attention with the explosion of interest in ChatGPT, global geopolitics has brought the strategic nature of semiconductor capabilities to the fore, and the once science-fiction topic of quantum computing has been edging closer to reality.

In a changing world, having a clear long term strategy to benefit from innovation and safeguard your intellectual property is essential. At Scintilla, we are proud to put our innovative clients in control of their destiny by organising, optimising and monetising their intellectual property.

This involves registering patents, trade marks and designs, and providing brand and IP monitoring, competitor analysis, advice on trade secrets and strategic IP management consultancy.

We are also proud to support Technology Scotland in representing and promoting the enabling technology sector in Scotland, through each of the Photonics Scotland, MaaS Scotland and Product Design Scotland networks. Let's keep up the good work and make sure these key sectors have a voice in Scotland, and that Scotland has a voice in the UK strategy and in the wider world!

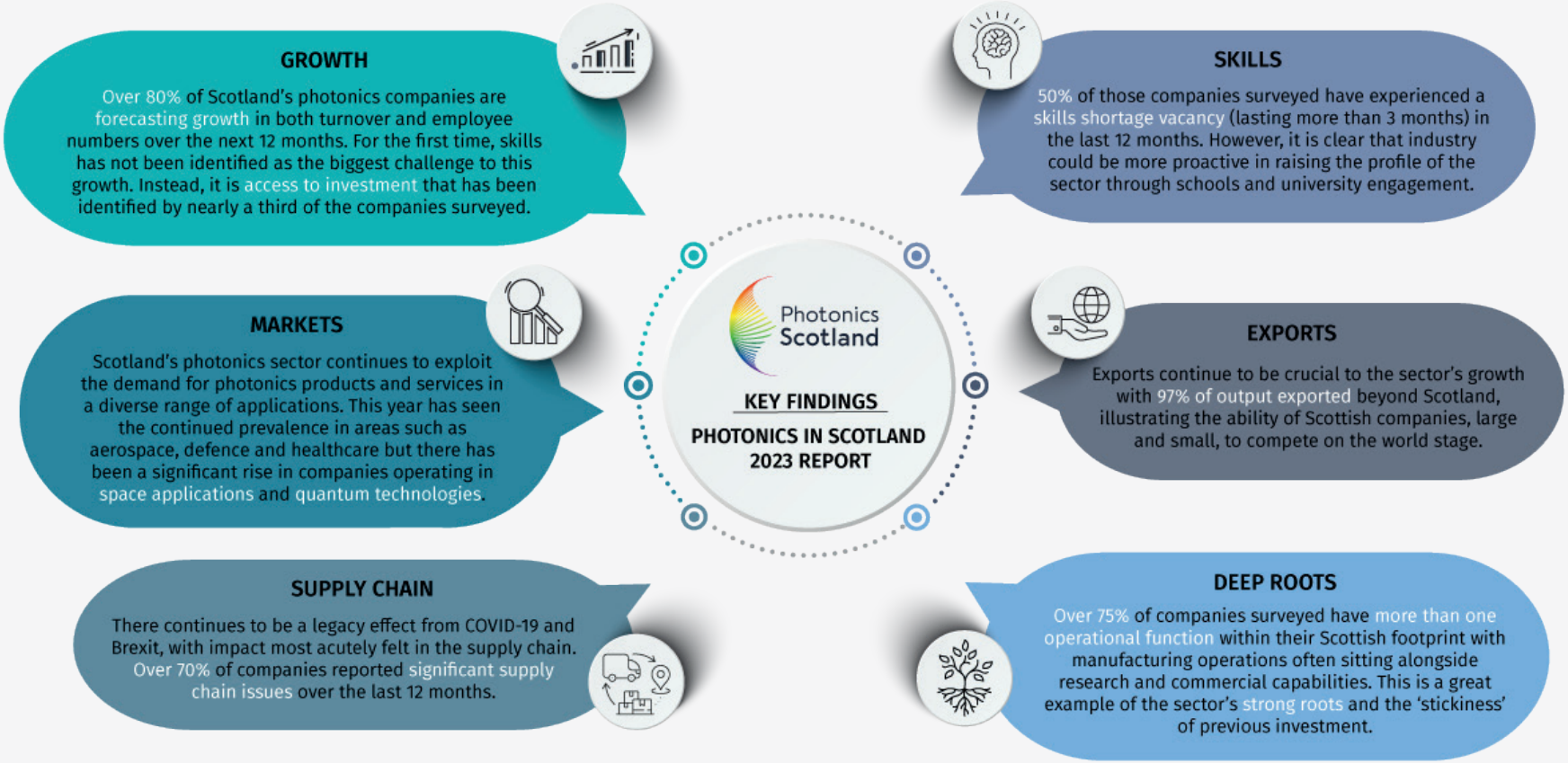
Executive summary

Our fourth Photonics Scotland Annual Survey highlights, once again, the resilience of our photonics sector. Despite the challenging global landscape, which continued throughout 2022-2023, results from this year's survey reflect a growing and vibrant sector and one in which future sentiment remains optimistic.

Over 60% of companies reported revenue growth over the last 12 months with a further 31% showing steady turnover. Perhaps even more encouragingly, over 80% of companies surveyed are forecasting increased revenues and head count over the next 12 months. Indeed, over 50% of companies are forecasting double digit revenue growth for this period.

Exports continue to be crucial to the sector's growth with 97% of output exported beyond Scotland's borders. This is consistent with previous year's results and illustrates the ability of Scottish companies, large and small, to compete on the world stage. The largest single export markets remain as the USA, Germany and China.

The diversity of Scotland's photonics sector continues to be its strength, with companies exploiting the demand for photonics products and services in a multitude of application areas. Once again, our survey highlights those traditional areas of strength, notably aerospace and defence and healthcare. However, this year saw a significant increase in activity in the emerging growth opportunity areas of space and quantum applications.



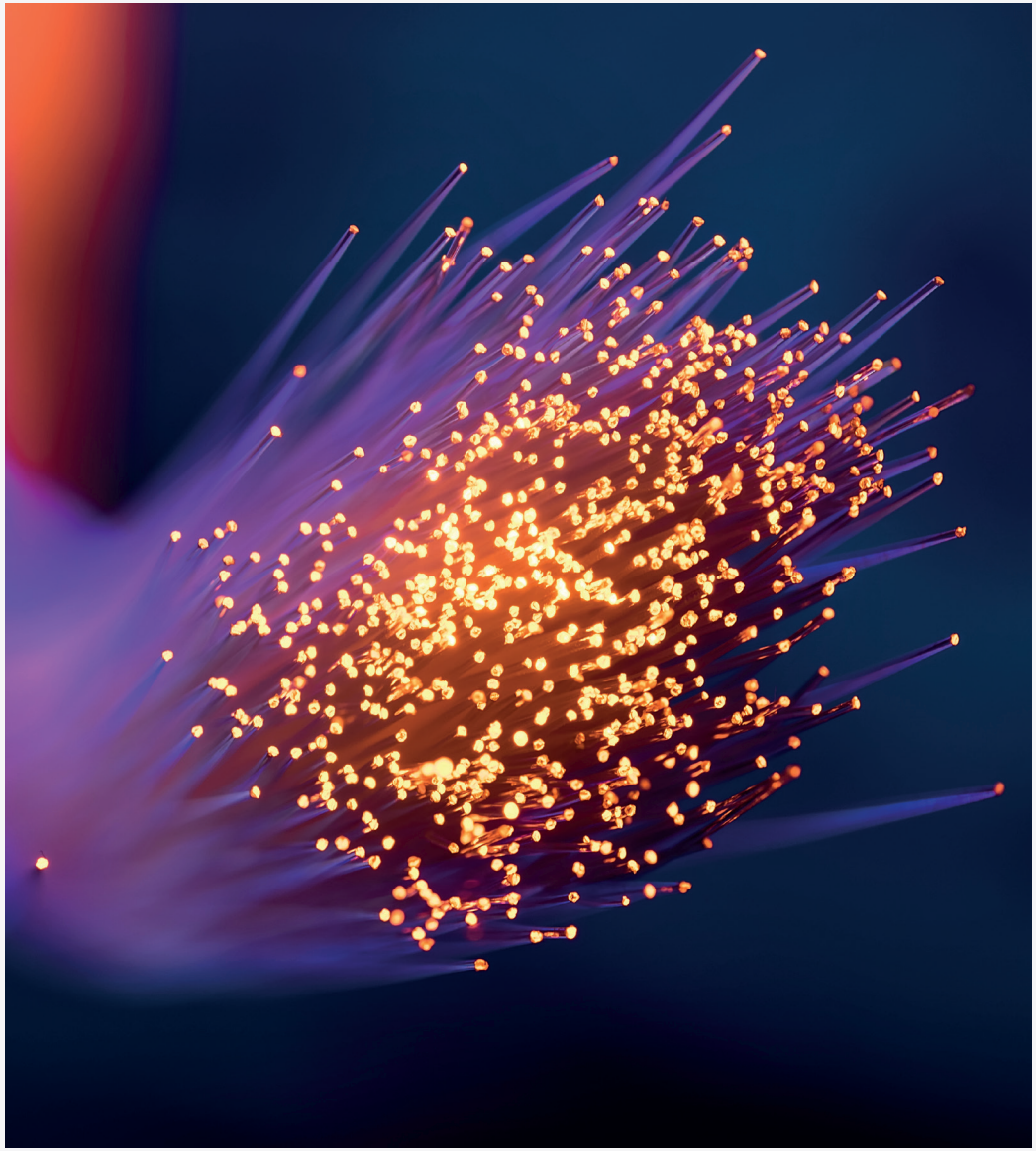
Executive summary

For the first time since the Photonics Scotland Annual survey started in 2020, access to skills has not been identified as the biggest barrier to the sectors growth ambitions. Indeed, it comes a lowly third (on 16%) behind access to investment (28%) and access to international markets (20%). However, while investment and internationalisation are rightly identified as key challenge areas, it is Technology Scotland's view that these results may indicate a sense of fatigue with the skills challenge. It is our interpretation that the skills challenge is now so ubiquitous that it is 'taken as a given' leading our members to highlight additional areas of challenge. This potential fatigue, while understandable, is somewhat concerning and we must continue, as a sector, to address this issue.

To emphasise the continuing skills challenge, results showed that 1 in 2 companies experienced a skills shortage vacancy lasting more than 3 months in the last year. However, the survey also highlighted that more can be done within the sector to raise its profile and engage with the future talent pool. With half of companies surveyed conducting no engagement with schools or universities, there is work to be done and Technology Scotland will play its role.

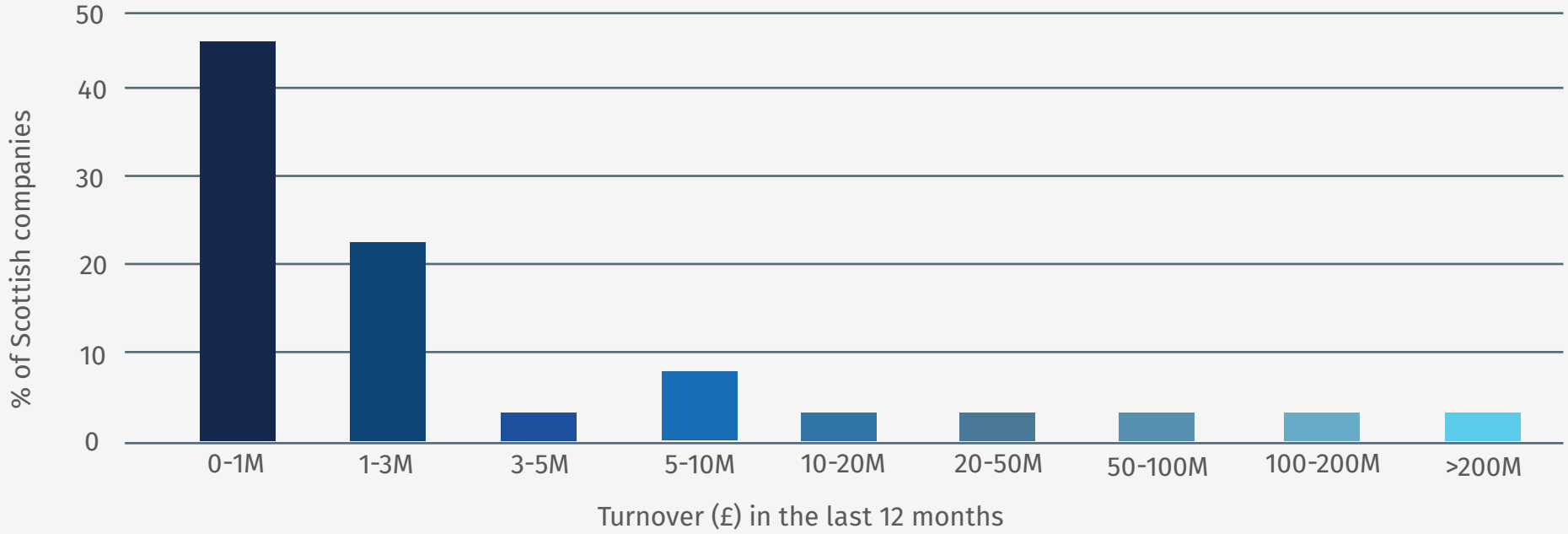
The survey provided important evidence of the deep roots of the sector in Scotland with over 75% of companies reporting more than one operational function within their Scottish footprint i.e., manufacturing, research, sales and marketing, consultancy. This parameter provides a measurement of the 'stickiness' of the sector, an important consideration in the context of domestic and foreign investment.

Finally, the survey once again highlighted the impact of COVID-19 and Brexit is not behind us. This is most acutely felt within the supply chain but also continues to have impact on talent attraction and retention.



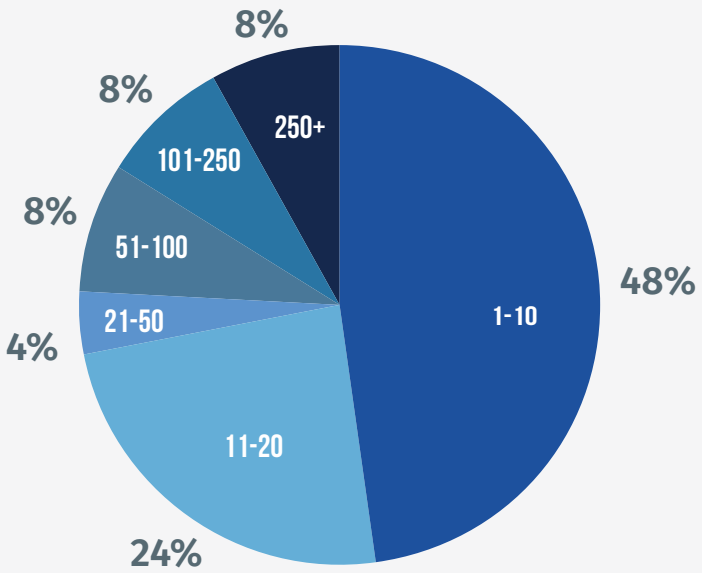
Company landscape

COMPANY SIZE - TURNOVER



COMPANY SIZE - NUMBER OF STAFF

92% OF COMPANIES ARE SMES

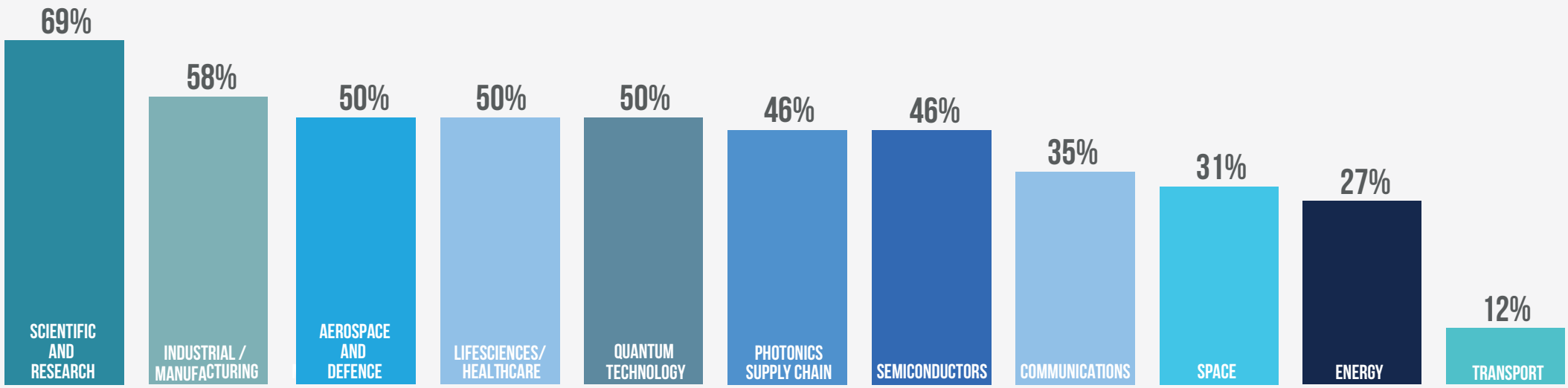


Scotland's photonics sector represents the blueprint for an active, vibrant cluster. The Scottish Government's focus on developing strategic clusters through the National Innovation Strategy must recognise this and provide a framework for future support.

OPPORTUNITY

Application focus

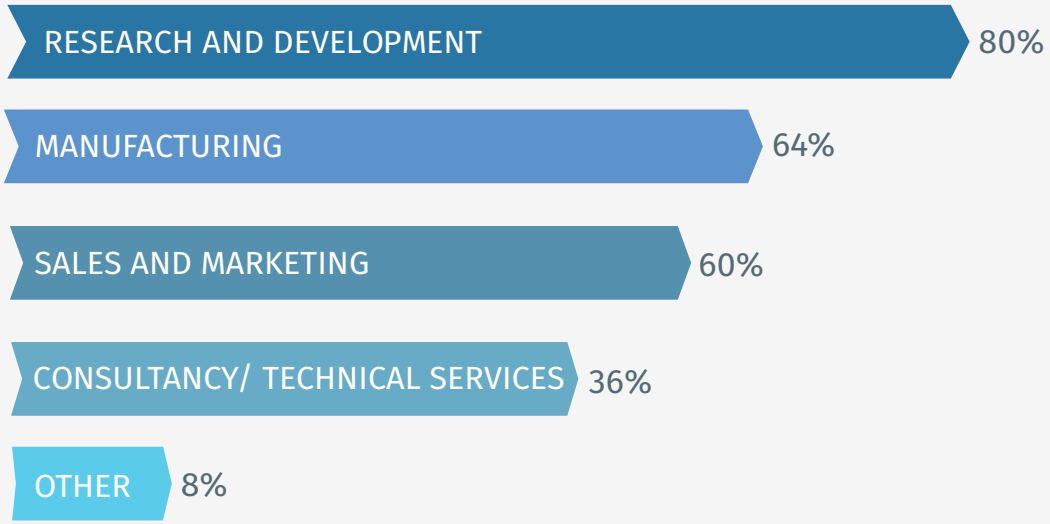
% OF SCOTTISH COMPANIES ACTIVE IN EACH APPLICATION AREA



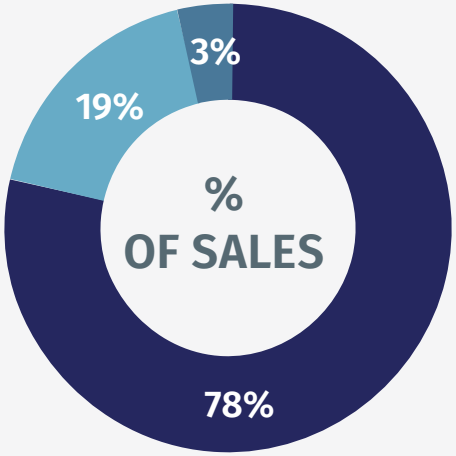
Over 75% of companies report more than one operational function within their Scottish footprint i.e., manufacturing, research, sales and marketing, consultancy. This parameter provides an important illustration of the 'deep roots' and 'stickiness' of the sector.

OPPORTUNITY

OPERATIONAL FUNCTIONS OF SCOTTISH COMPANIES



International markets



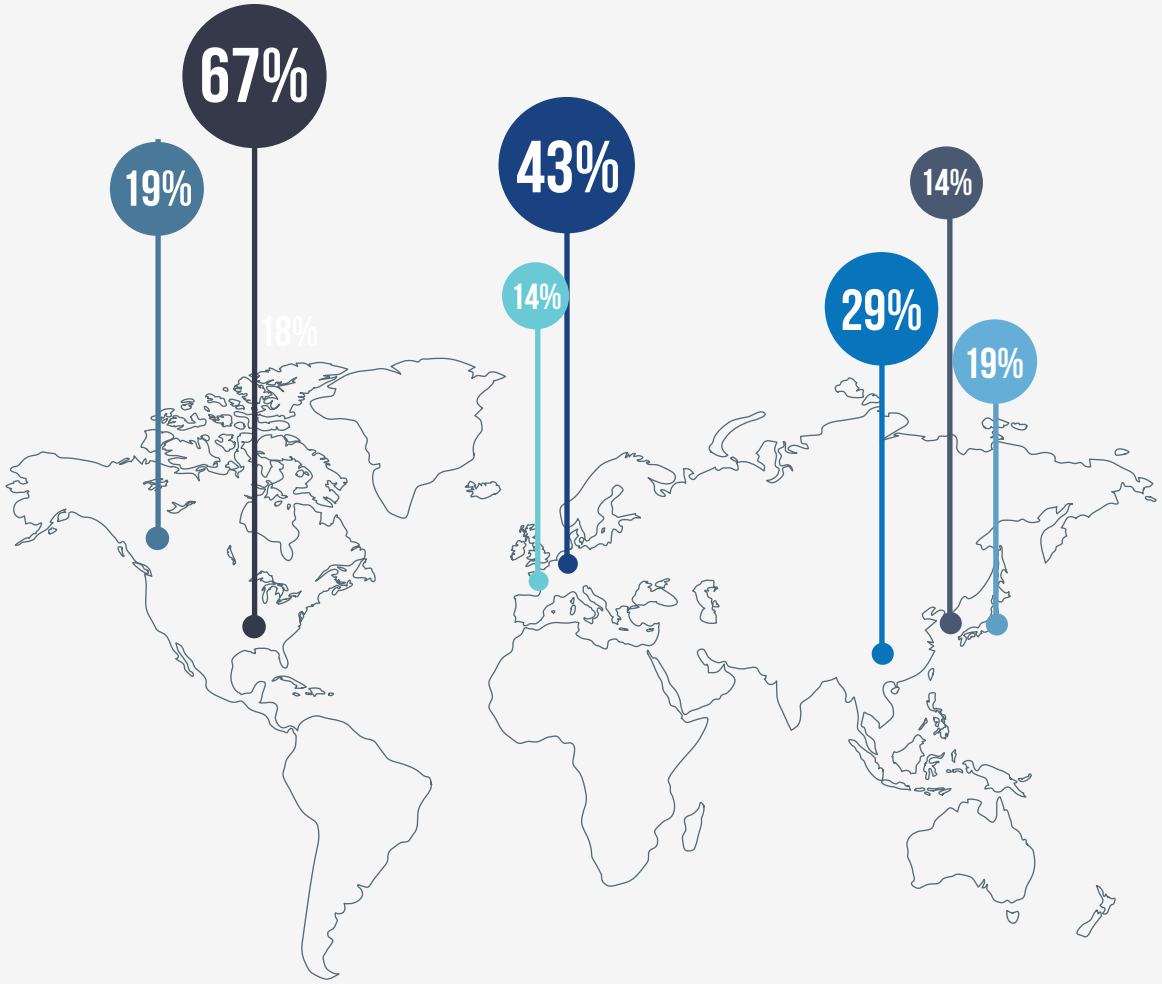
Scotland | Rest of UK | International

97% OF OUTPUT EXPORTED OUTSIDE OF SCOTLAND

Scotland's export strength illustrates the ability of Scottish companies, large and small, to compete on the world stage. However, further support will be required to improve market access for SMEs and maximise the opportunity this global market represents.

OPPORTUNITY

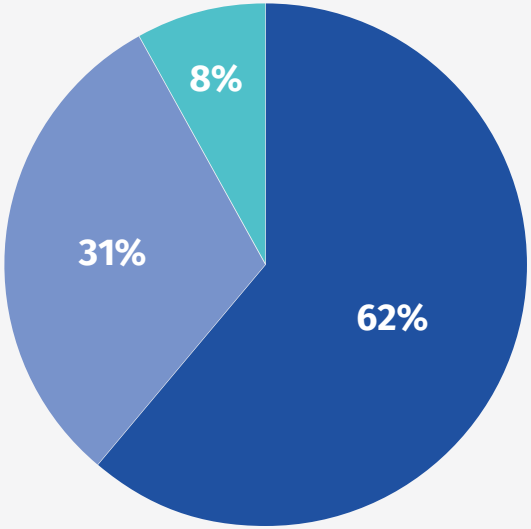
TOP EXPORT MARKETS



Canada | Germany | China | Japan
United States | France | South Korea

Growth

TURNOVER COMPARED TO PREVIOUS YEAR

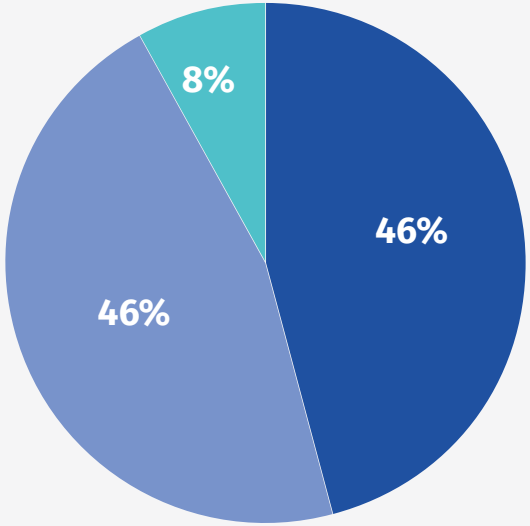


Greater The same Smaller

80%

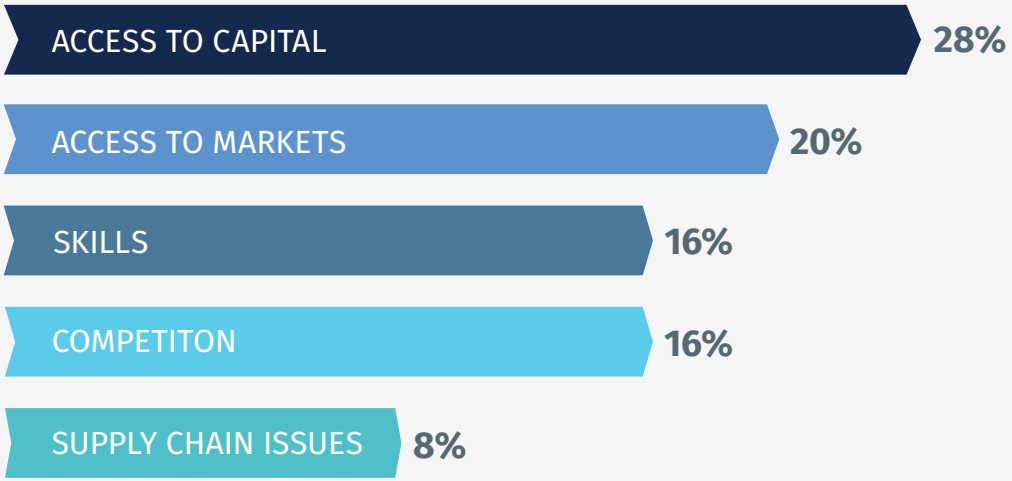
of companies project further growth in turnover and employee numbers over the next 12 months

STAFF NUMBERS COMPARED TO PREVIOUS YEAR

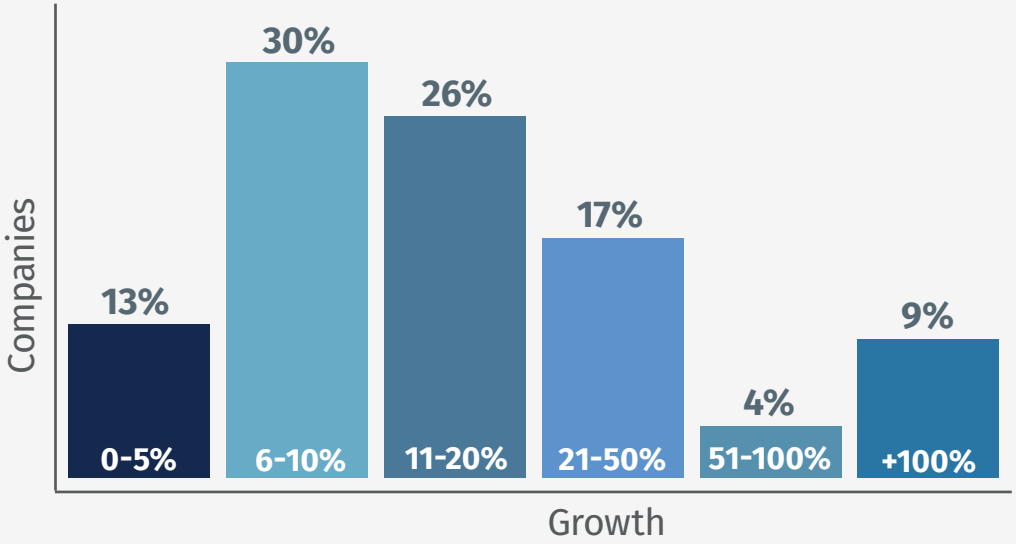


Greater The same Smaller

BIGGEST IMPEDIMENT TO GROWTH



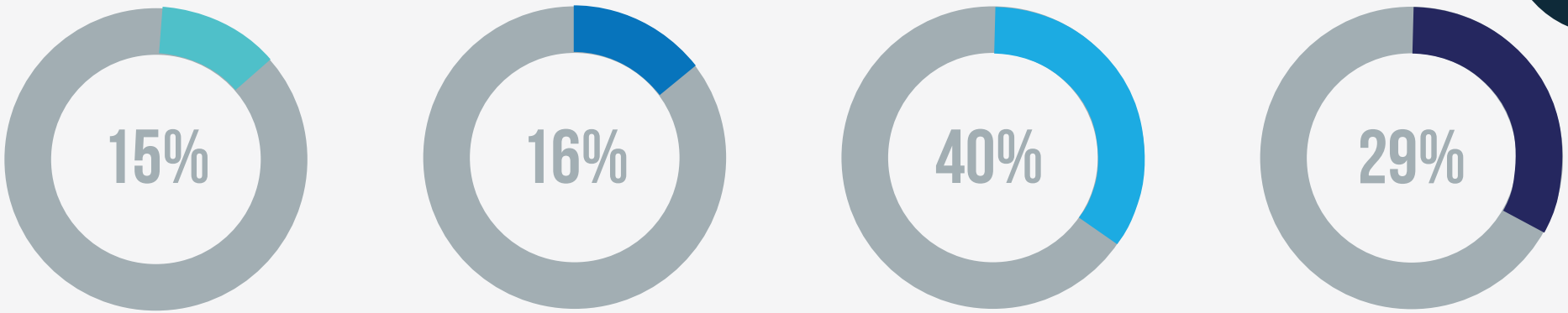
FORECASTED GROWTH IN NEXT 12 MONTHS



Workforce

20% of staff identify as female or non-binary

QUALIFICATION LEVEL OF SCOTLAND'S PHOTONICS EMPLOYEES



- No formal qualification
- Apprenticeship or college qualification
- University undergradute
- University postgraduate

54%

of organisations have experienced a long-term skills shortage in the last 12 months

55%

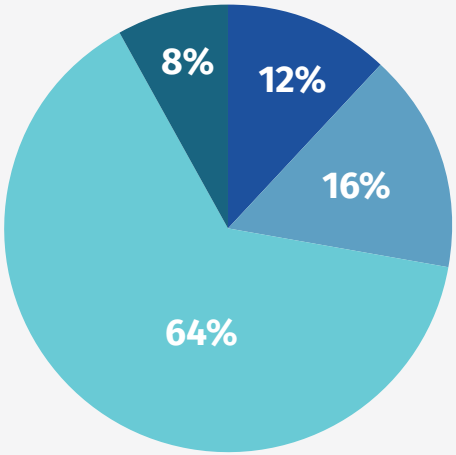
Of organisations currently engage with Scottish colleges and universities on skills and awareness

With only 50% of companies currently engaging with universities and local colleges, there is a clear opportunity to improve visibility of the sector through a coordinated approach to communications between industry and skills providers.

OPPORTUNITY

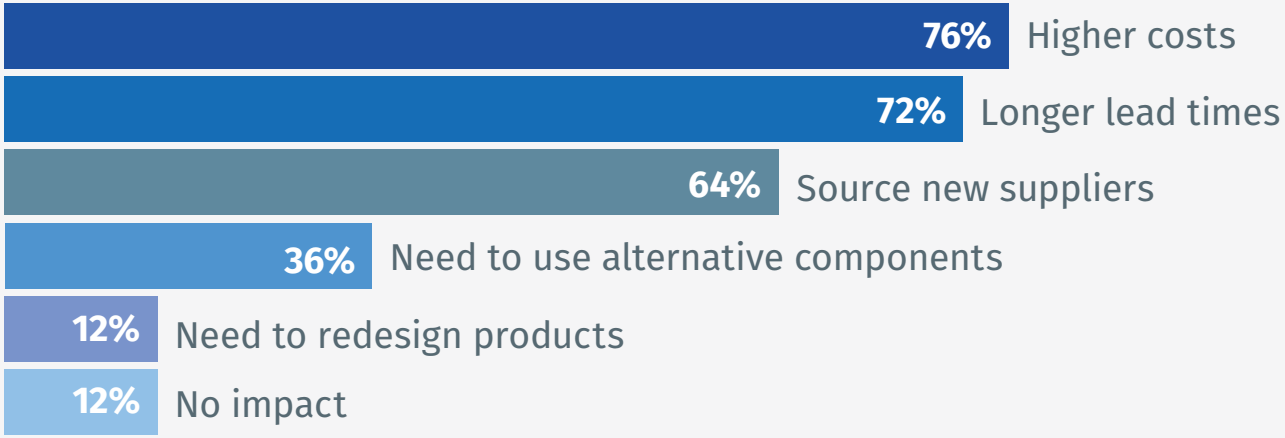
Supply Chain

Supply chain disruption

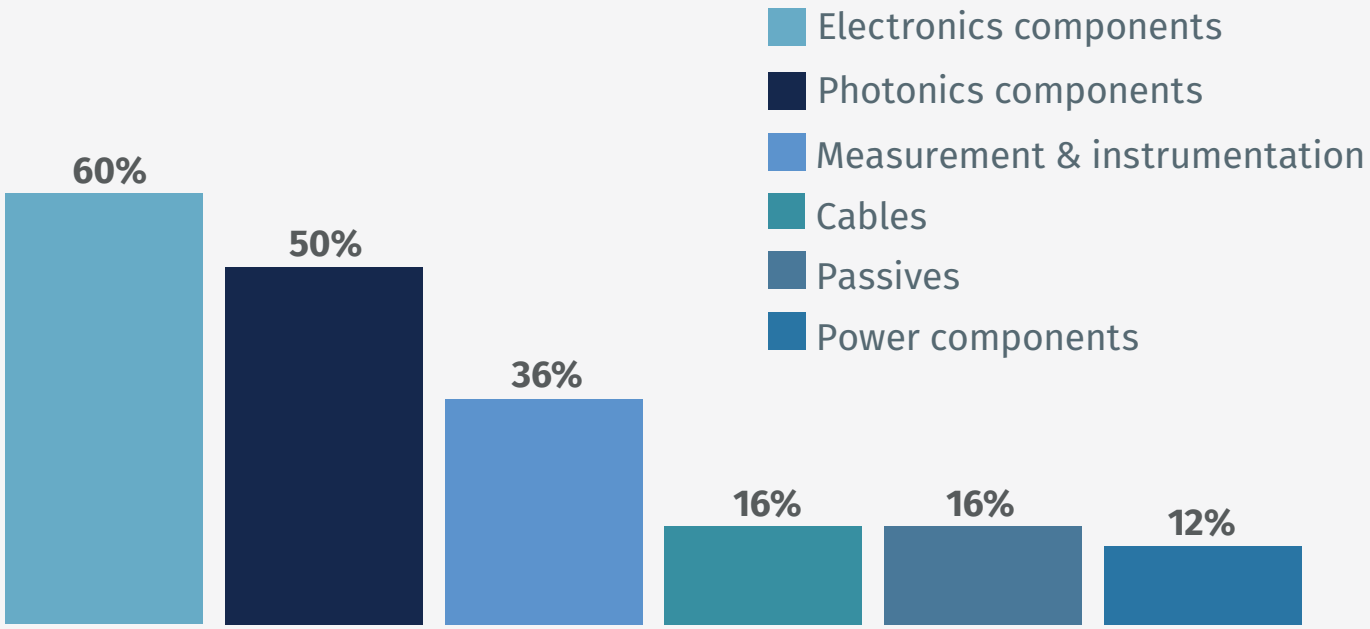


Significant | Moderate | Slight | None

Impacts of supply chain disruption



Component sourcing issues

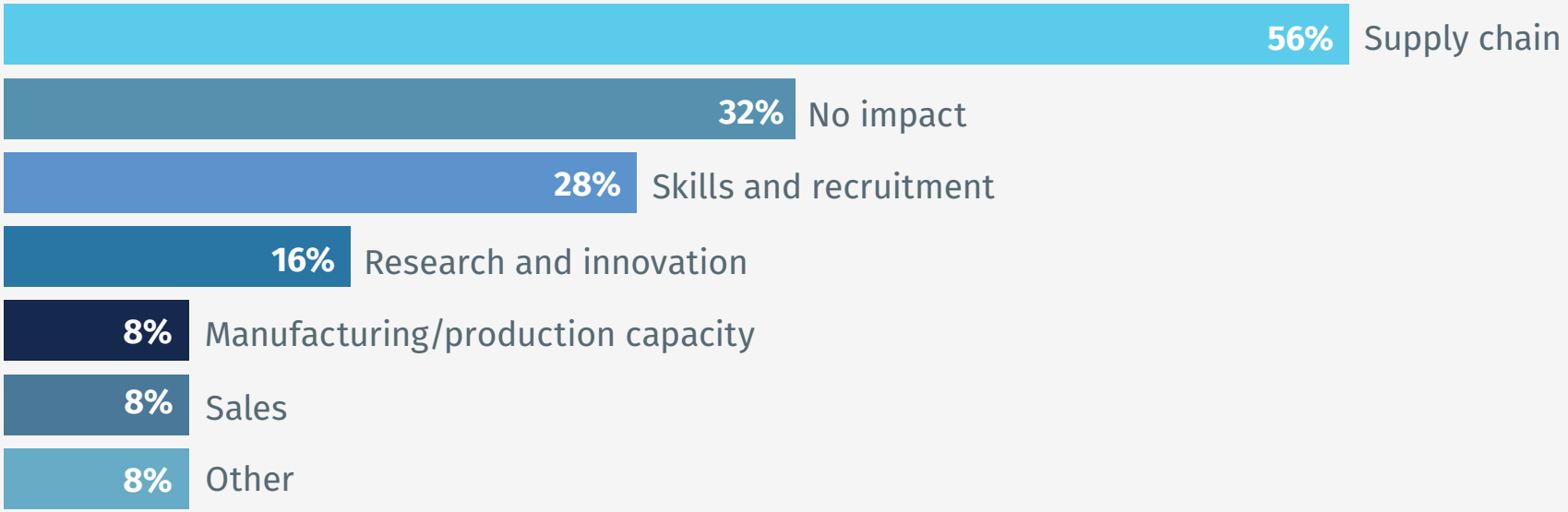


Supply chain challenges first reported last year continue. However, if, as expected, this issue stabilises over the next few years, the sector will be well positioned for accelerated growth.

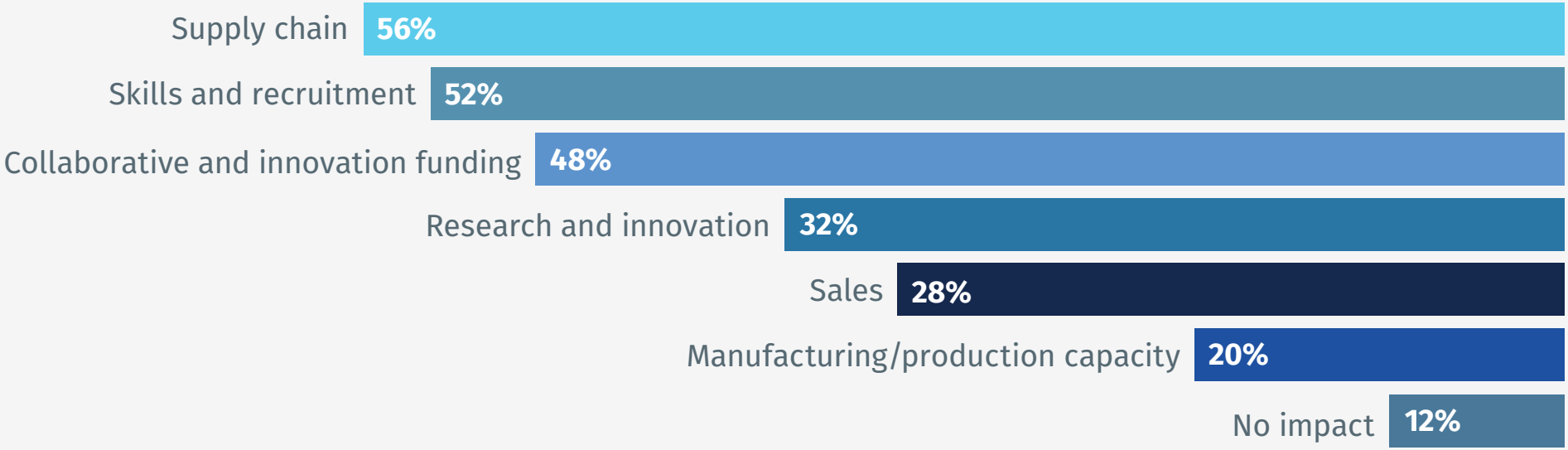
OPPORTUNITY

Impact of COVID and Brexit

Continuing impact of COVID-19



Continuing impact of Brexit



Community comments

WHAT ONE THING SHOULD THE GOVERNMENT AND ITS ENTERPRISE AGENCIES PRIORITISE TO SUPPORT SCOTLAND'S PHOTONICS SECTOR?