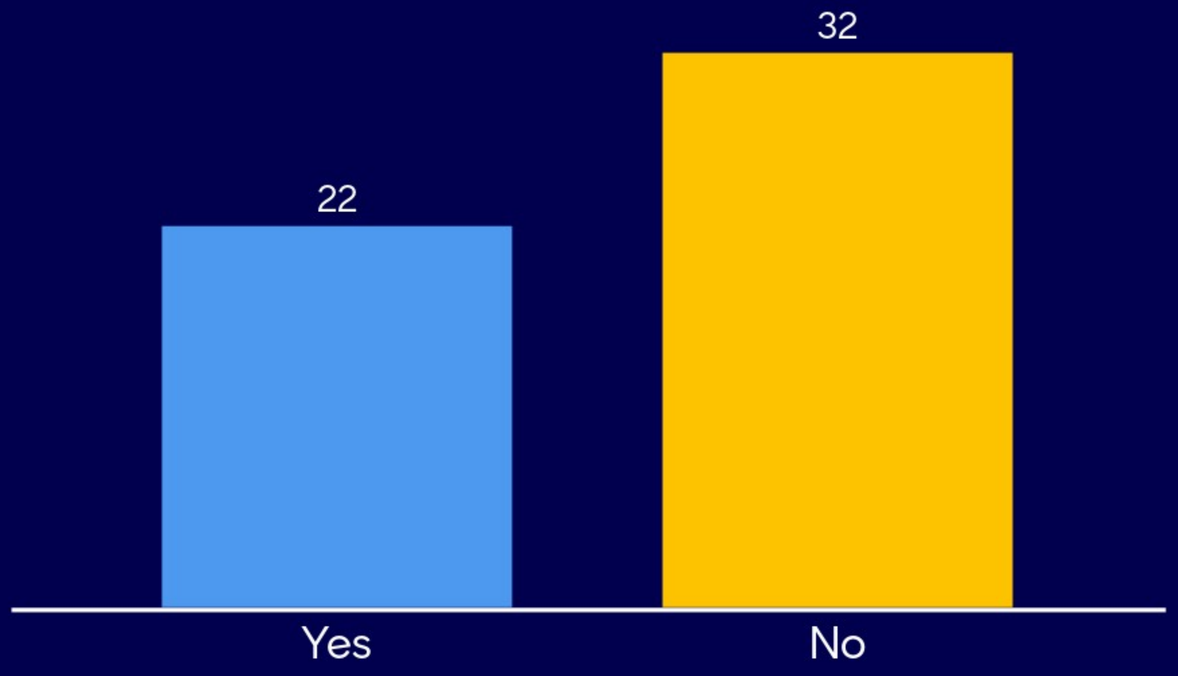
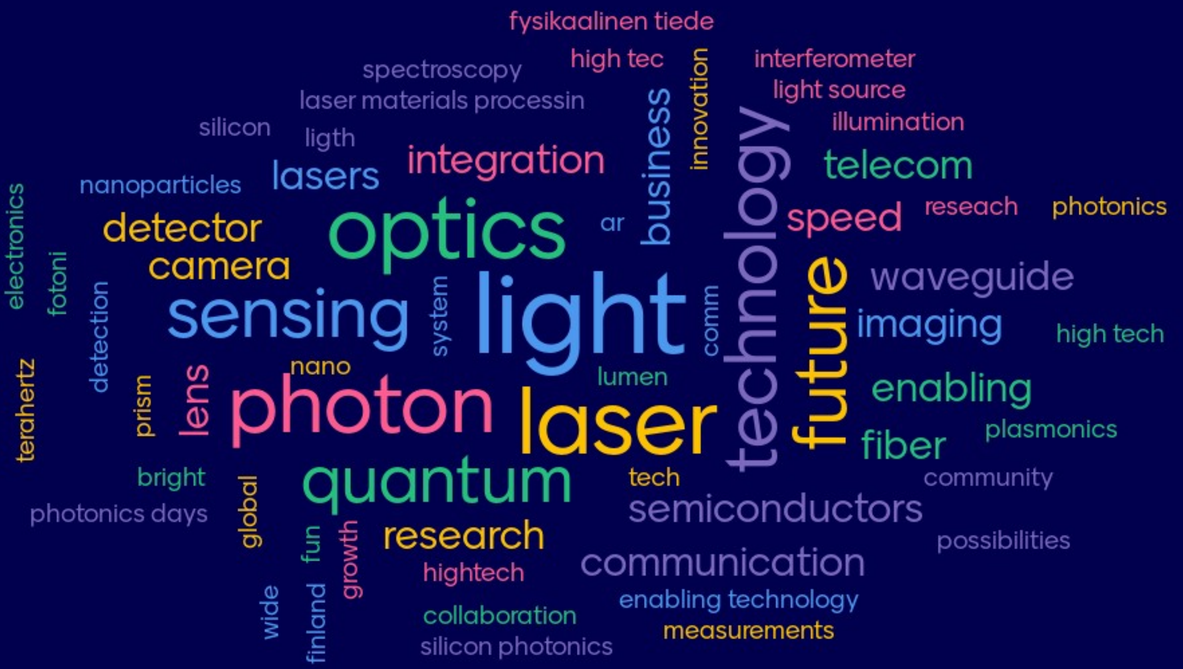
Is this your first time participating in the Optics and Photonics Days (OPD)?



What word comes to mind when you think of ‘photonics’?

157 responses



What aspect of photonics excites you the most for the future?

Integrated photonics and quantum photonics

Hyperspectral sensing + AI

Growth potential

Deep tech innovation

High quality of technology

Science of light

The multidisciplinary aspect of it.

New applications for customers

5

48

What aspect of photonics excites you the most for the future?

Enabling new possibilities

Growth projections

Creating lasers for precise applications. Applied optics

Biomedical applications with high precision and speed

Sensor technologies

Applications of photonics in industry

Quantum

All the possibilities what laser has to offer for Finnish industry, including materials processing

5

48

What aspect of photonics excites you the most for the future?

Quantum light matter interactions

Solar energy production

Enabling AI and AR

Improve the quality of life

Challenge to educate the future experts

Science!

Applications

Quantum materials for light applications

5

48

What aspect of photonics excites you the most for the future?

Integrated photonics	Improving energy efficiency.	Creating a better future	Quantum optics
New companies and products	real human centric lighting, including IR	Low energy display	Mixed Reality and Artificial Reality

5 48

What aspect of photonics excites you the most for the future?

Medical applications

Invisibility cloaks

Integrated photonics and lasers

Ai and quantum

Silicon photonics

Possibility for students

Quantum photonics

All-optical Computers

5

48

What aspect of photonics excites you the most for the future?

Quantum

Quantum world, photonic communications

Development of potential applications in luminescence field

AutonomyNon-invasivenessSpeed of light

New fundamental science and technologies related to quantum optics

Sustainability

Lidar

VR experienxeMetrology enablersMetamaterialsMaterial dev

5

48

What aspect of photonics excites you the most for the future?

Clean energy

Enabling completely new ways of smart sensing

Contact less characterisation of materials

Better life

Integrated photonics

Virtual reality

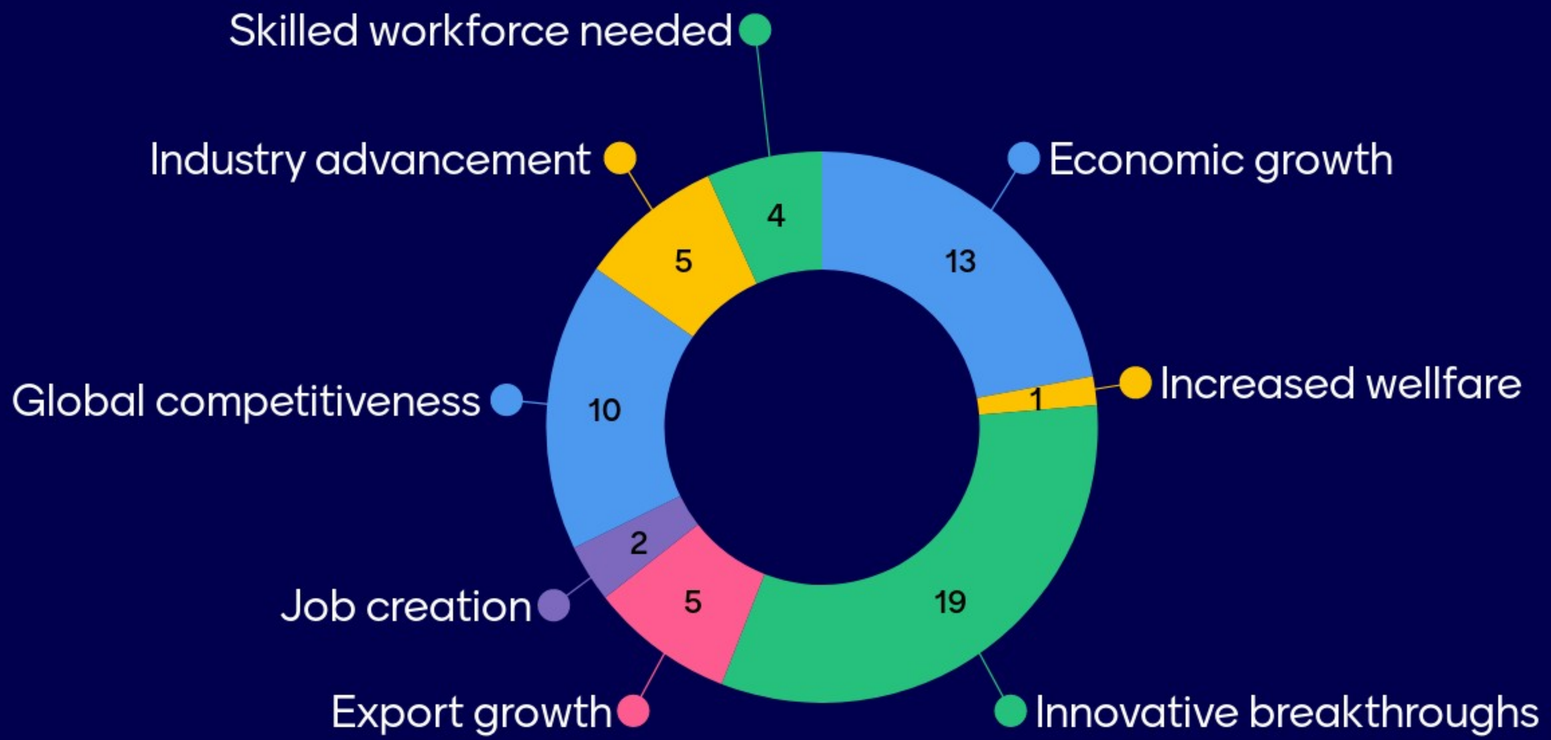
Science of light

5

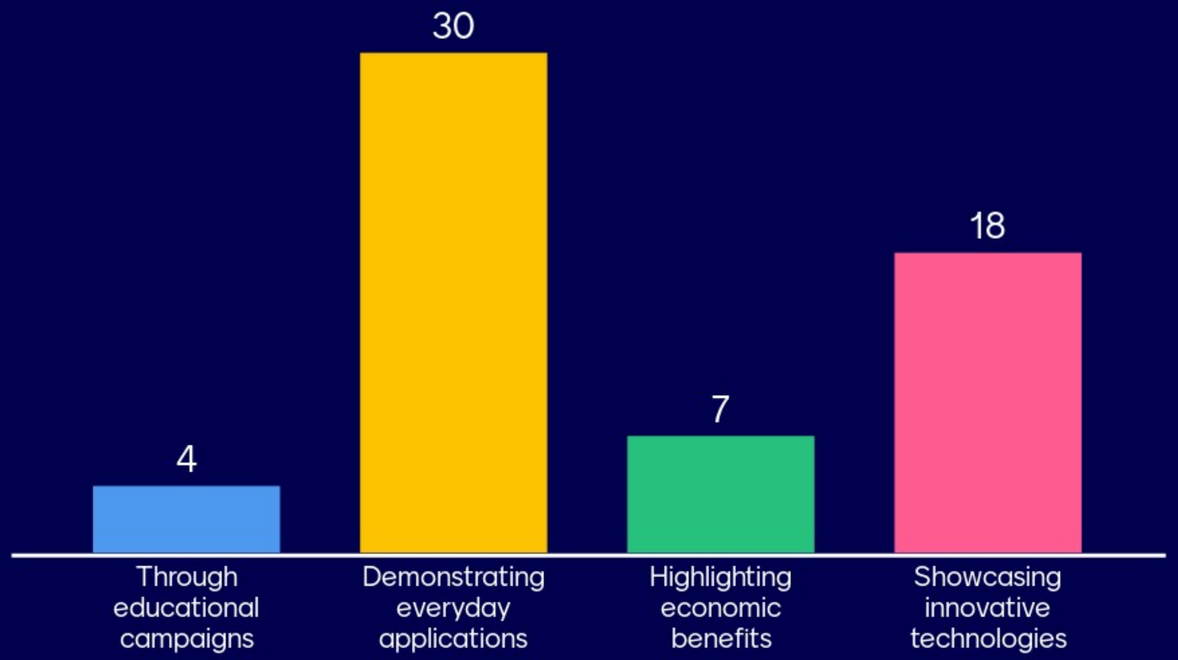
48

Time to start

Why Finland should invest in Photonics?

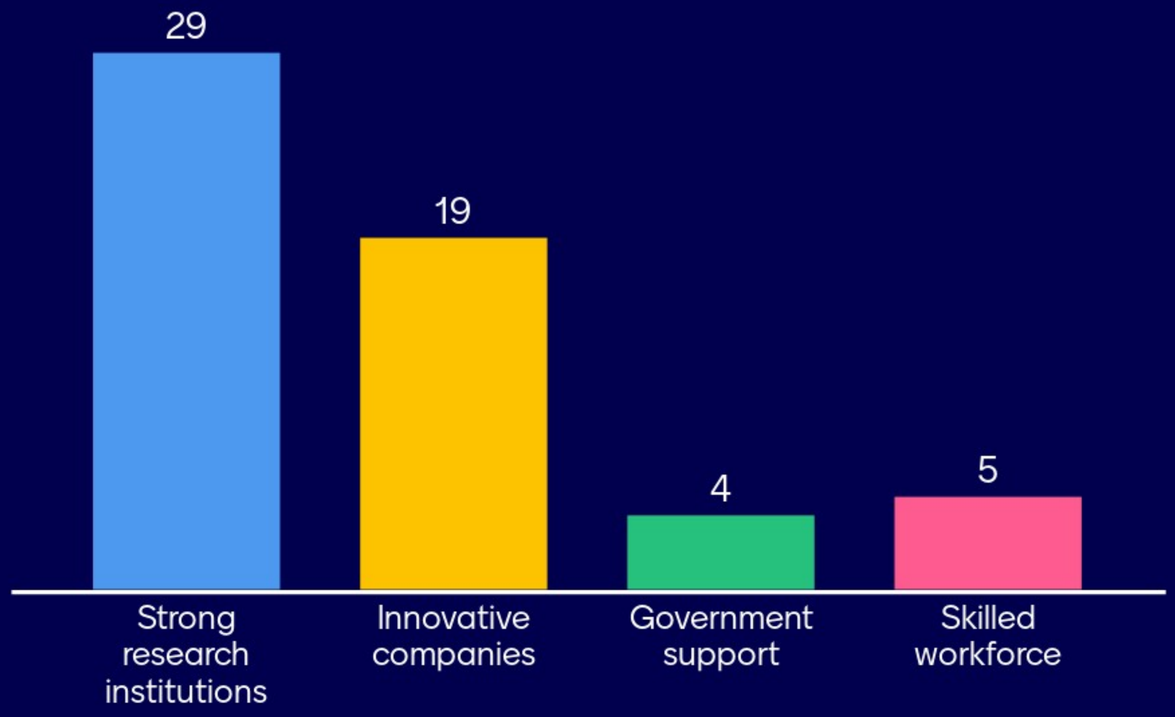


How can we best explain the importance of photonics to the general public?



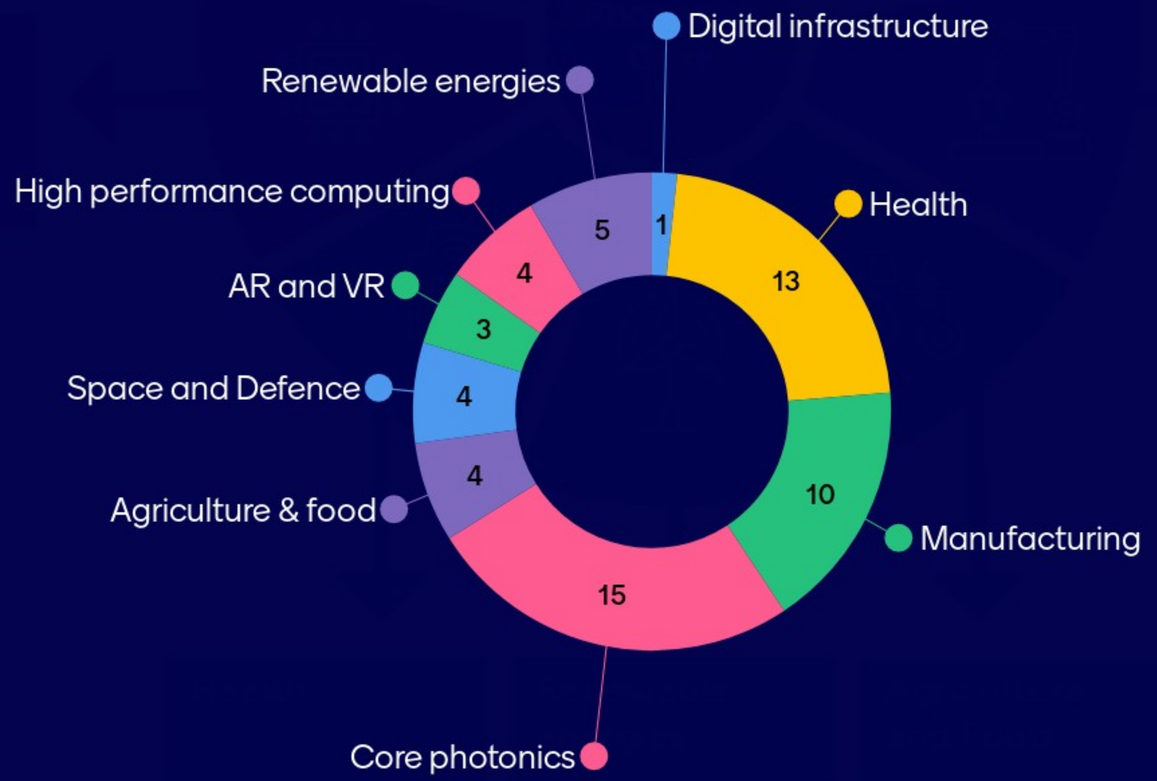
Next: Strengths and Opportunities

What is Finland's greatest strength in the photonics sector?



13 57

Which industry segment should Finland prioritize to enhance its photonics sector?



What is the biggest strength of Finland's photonics industry?

115 responses

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Additive manufacturing

Quantum computing

Industrial 3D printing

Build SMEs.

Support tech start-ups

Semiconductor and Quantum

Job opportunities

Biomedical sensing

4

46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

ALD	Investment in photonics	EU	Finnish capital investment
Laser materials processing	health care	Quantum computing	Investment

4 46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Be open to highly skilled immigrants	Semiconductor Quantum	Medical devices	Support SMEs and start-ups
Education and young generation	Quantum technologies applied in various fields	Quantum computing	Biomedical imaging

4 46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

New disruptive SMEs

Integrated photonics

Optical datacommunication

Startups

Digitalization and use of AI.

Linking academia with industry

Biomedical applications

Foreign capital investments

4

46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Quantum sensing	Solutions for climate change mitigation	Spectroscopy appilications	Integrated photonics
Startup	Universities profiling and government investing in photonics research and education.	Research projects in quantum	Additive manufacturing

4

46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Transition in technologies

Attract big talent

Innovative start-ups

Startups

Semiconductors

Applikcation solutions

Education and spreading the relevance and potential of photonics, paying special attention to the profitability of photonics.

Industrial 3D printing

4

46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Education to build deep knowledge in photonics.

Good collaboration between industry and academia

Investment

Quantum domain

Quantum sensing

chips from north

3D printing

New economies

4

46

What is the most significant opportunity for growth in Finland's photonics industry over the next decade?

Quantum sensing

Spectroscopy applications

Quantum sensing

Investments

Increased national R&D&I investment

Imagining

Support on start up companies

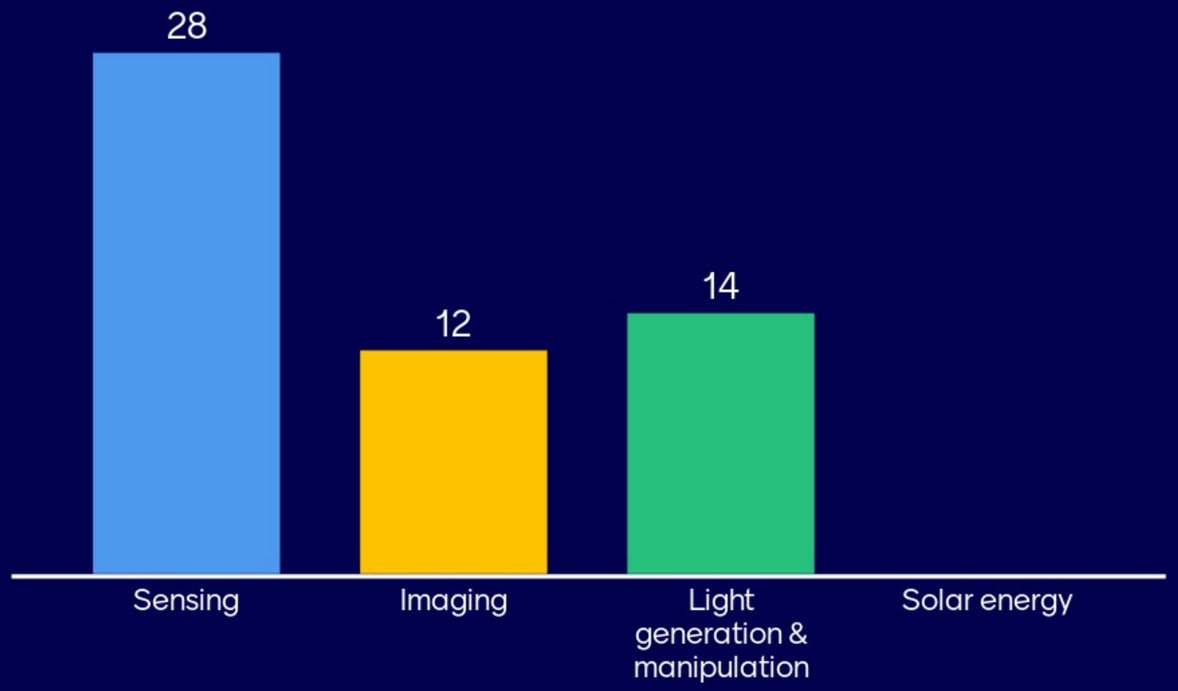
Hyperspectral

4

46

Next: Research and Development Focus

In which photonics subfield should Finland concentrate its research efforts?



Which area of photonics research should receive the most focus and funding, and why?

Manufacturing, our industry is based on it

Quantum photonics

Quantum optics

Cross-disciplinary Photonics

Climate change mitigation

Quantum

Integrated photonics

Industrial fabrication

10

49

Which area of photonics research should receive the most focus and funding, and why?

Spectroscopy

Imaging because imaging is the largest market being transformed

Manufacturing

Core photonics

AR and VR

Research of photonics

Quantum photonics

Integrated photonics

10

49

Which area of photonics research should receive the most focus and funding, and why?

Biomedical applications, as they are directly interfere with life duration and quality

Manufacturing

Quantum computing has high potential and there are ways to make it also efficiently.

Education of photonics

Applied optics focusing on measurement technologies in food, agriculture and health

Sensing, because there are plenty of applications

Integrated photonics

Biosensors for health and wellness applications

10

49

Which area of photonics research should receive the most focus and funding, and why?

Lasee illumination and sensing

Climate change research

Photonics integration

Material

Sustainability

Quantum photonics

Manufacturing, to increase global competitiveness

research and innovation

10

49

Which area of photonics research should receive the most focus and funding, and why?

Photonic circuitry

Generally fundamental research- should not put all eggs into one basket

Silicon photonics

Integrated photonics

hyerspectral imaging

Solid-state quantum

Application of Photonics in Healthcare because of its non-invasiveness, real-time, in vivo.

Fundamental research funded by the government because companies will not (usually) fund it.

10

49

Which area of photonics research should receive the most focus and funding, and why?

Integrated photonics

Camera and laser, have many industrial applications

Major industrial 3D printing technologies use laser

Materials and manufacture development

Applied photonics

Basic research

Quantum, huge growth potential globally

Additive manufacturing

10

49

Which area of photonics research should receive the most focus and funding, and why?

Solid-state quantum

3D printing

Imaging. Big growth potential.

Manufacturing large volume in high mix

Packaging - needed for industrialization

Optical tomography

Medical applications, we need more effective diagnostic techniques & treatments

AI algorithms

10

49

Which area of photonics research should receive the most focus and funding, and why?

Light manipulation techniques. Needed in all photonics applications.

Quantum sensing and imaging, as they promise breakthrought and relatively high TRL

Sensor technology

Climate change mitigation

biosensing

Sensing as the driver of resource and energy efficiency.

Experimental quantum research

Fast data communication, huge open possibility for new start-ups.

10

49

Which area of photonics research should receive the most focus and funding, and why?

Laser materials processing in used in big industrial companies

Quantum applications

Visible and Terahertz photonics. First is applicable, second is generate alternative for electronics.

Quantum sensing

Wearable sensors for point of care diagnosis

Buy light from Space for the winter

Big scary lasers

design for manufacturing

10

49

Which area of photonics research should receive the most focus and funding, and why?

Lack of capital

Photonic integration,.
Enabling everything else.

10

49

What is the most significant challenge facing photonics research in Finland?

105 responses

9 49

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Promotions	Workshops	Project	grants
Events	Continuation of the flagship programme.	Photonics cluster	Money

7 47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Simpler public funding schemes

IPR easy process

Taking material processing in too

Co-innovation projects

Mutual projects and funding

Industry must be more involved in education

Events

Workshops

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

University collaboration

Projects. Recruitment. Funding to industries.

Application driven workshops

By common research project

Communication, networking

Taking industrial 3D printing into account

Clear and updated roadmap for Photonics.

Industrial doctor programme

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Funding

Develop a culture of clusters (Espoo, Tampere, Oulu...)

Lobbying

Special tax regime

Joint project funding

More Industry in Academia and Research

Open discussion

Co owned IPR

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Internships

Long-term funding

Continue PREIN

Common projects

opportunities to meet, funding to collaborate

Shared clean rooms and research spaces

Industry needs to be more involved in education

Create a strong photonics cluster

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Ecosystem approach

Making project

Increased culture of internships at industry during studies

Lower the threshold for working with the university by making a funding vehicle for the high overheads.

Invite government officials to research facilities

industrial mentoringopen days for industry at universities

Need to get critical weight on activitvities at each category

Workshops

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Specific calls by RCF and BF

Making the goals and insights of the photonics technologies more clear to ordinary people

Industry photonics days at universities and vice versa

Make the university-level researches' salaries and contracts durations comparable to industry-level ones

Workshops

Making students engage with these 3 environments since very early in their careers, so we have people that can act like bridges

Make it easier to start collaboration with a small project.

Funding

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Support immovation projects

Joint projects, workshops

Special postdoc programs

Internship in companies, joint supervision, differentiating of graduate programs (academic industrial)

Webinars

PhD programmes should be a strong collaboration between academia and industry

Increase funding for photonics finland

Inernal forum, publications

7

47

How can we enhance collaboration between academia, industry, and government to accelerate innovation in photonics?

Infra investments

Business Finland should require industry and research cobefore giving money

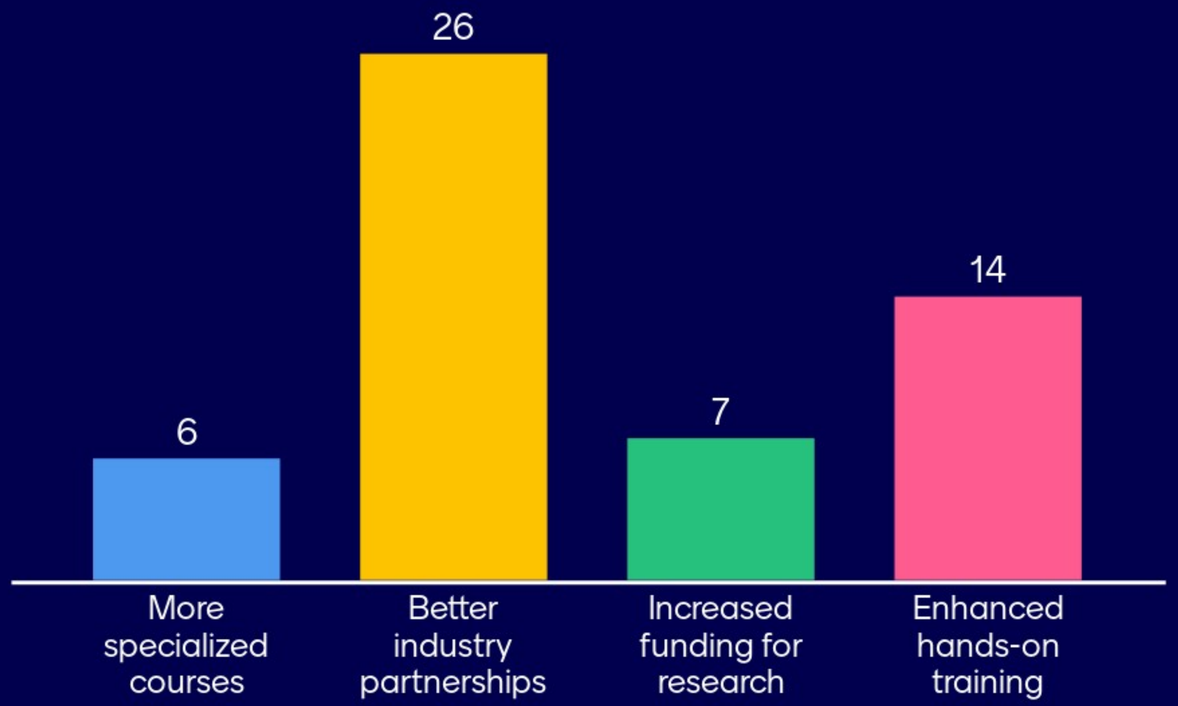
Make innovation centers in the univerities facility. Invite all to network

7

47

Next: Education and Workforce Development

What improvements are needed in photonics education to meet industry demands?



What initiative in photonics education would best prepare students for future careers in the industry?

Internship	Spending time in industry	Practical experience	No idea
Industrial training	Internship	Job fairs	Marketing skills

5 45

What initiative in photonics education would best prepare students for future careers in the industry?

Dual System

Internship

Learning by doing + dedicated mentorship

Internship

Training in industry

Inspire them! Good teachers needed! Storytellers

Combined science & business degrees

Internships

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Collaboration with industry

design for manufacturing training

Training

Internship

Ask entrepreneur to talk in schools

good basic optical education

Internship/traineeship and thesis positions.

Industrial doctor programme

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Simulations included in curriculum.	Time in industry	Practical training	Industry days
Collaboration between universities	Sponsored interships	Job fairs and exhibitions	Labworks proposed by companies

5 45

What initiative in photonics education would best prepare students for future careers in the industry?

Meet people from industry

industrial mentors

Visitor lectures from industry

Internships and trainee programs

Statistical thinking, 6s and the like. Not basic statistics but applied statistics.

intership work in industry

Internship or joint MS degree (not PhD!)

Optical design must be included in education.

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Internships

Universities needs to provide uniform education with national plan

Industrial internships, joint academic-industrial supervision, tuning studying curriculum

Research challenges to educaton

Part of the PhD education should be conducted in the industry - internships

Internships

Better equipped and more training in physics/photonics student laboratories

Apprenticeships

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Industries that care about students priorities

Special assignments and theses to be done in industry or at VTT

The possibility to make a secure career and invent something relevant

Tv show

Industry-driven curriculum

Higher salaries, as according to the student polls it is the key motivating factor

Strong emphasis on learning fundamentals, broadly covering all aspects of photonics

Summer works

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Enterpreneurship

Providing bachelor thesis topics

Relevant uptodate courses based on particulsr industries needs

Providing master thesis tooics

Companies need to commit to educational collaboration.

Discussion

Startup support

Thesis topics from industry

5

45

What initiative in photonics education would best prepare students for future careers in the industry?

Making sense of light and showing it's possibilities

Industries need to be ethical. Students care about that

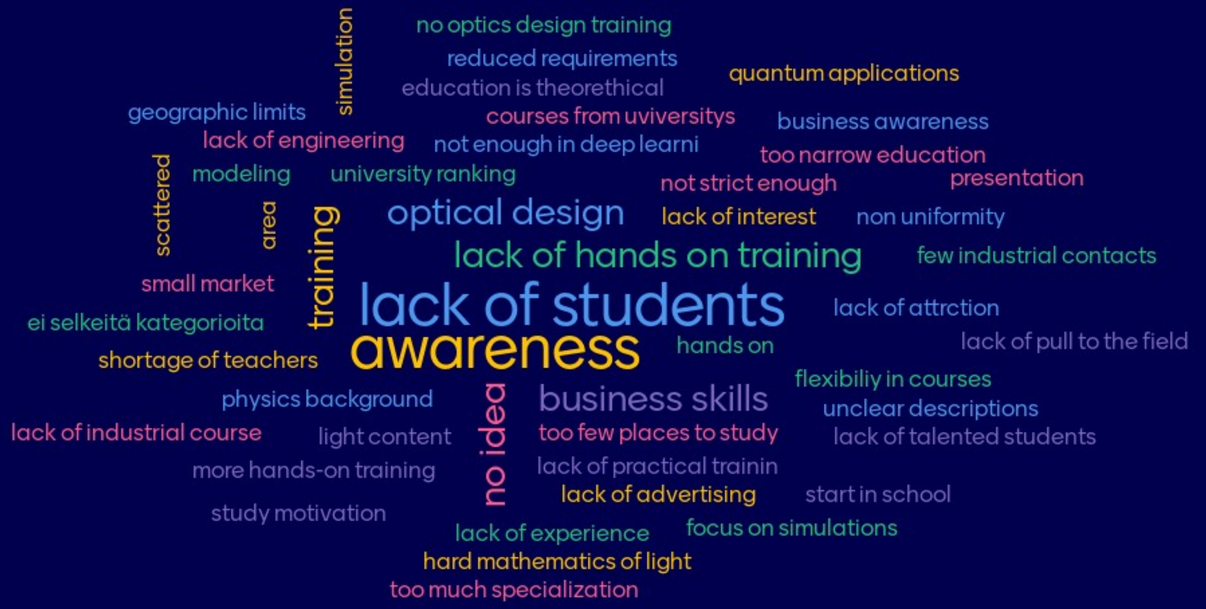
scattered

5

45

What is the biggest gap in Finland's photonics education and training programs?

62 responses



How can we ensure that photonics graduates find relevant employment?

Funding to industry

We need place to promote young talents

Job fairs and internships, student projects

Not a problem. Already lack of qualified graduates.

Matchmaking events between graduates and photonics industry

Make them meet industrial players

Better contact between industry and academia.

History

6

41

How can we ensure that photonics graduates find relevant employment?

Collaboration with companies before graduation

Train them to articulate their thoughts

Relevant skills

Quality of the graduation

educate industry, especially HR

Companies come to campus, students visit companies.

Internships

First find graduates

6

41

How can we ensure that photonics graduates find relevant employment?

Better employers

Education has high quality

Presentations given by companies as a part of some courses

We need more scale-up companies

Young talents need platform to show their capability

Collaboration with industry, and other institutes

More job opportunities

Closer collaboration with edu and industry

6

41

How can we ensure that photonics graduates find relevant employment?

More efficient match making

Internships

Multidisciplinary aspects

Student project and funding to industry

The field should be popular in general public, not geek-related. And money, of course.

Have people from industry come to campus

Company-education unit collaboration

Courses cover industry needs

6

41

How can we ensure that photonics graduates find relevant employment?

Innovation orientation

co-operation bw. university and industry

Succesful start-ups and SMEs

Lack of engineering

Broad enough education instead of focusing on a narrow sub field of photonics

Building Bridges between Industry needs and education

Internships

Internships

6

41

How can we ensure that photonics graduates find relevant employment?

Collaboration with industry, proper training, knowledge of industry needs, relevant courses by companies, internships, cosupervision

Making contacts with graduates

We can't

Motivation.. internship

Photonics needs also engineering sciences

Kategoriointi valon ominaisuuksille. Tutkitaanko energiaa, polarisaatiota vai vaihetta tmsSelitetään yhdessä diassa selkeästi mitkä ominaisuudet valolla ovat relevantteja milläkin alalla ja MIKSI

Boost other skills as well, need it all:fundamentals in sciece, business and skills in data analytics

skills meet the demand

6

41

How can we ensure that photonics graduates find relevant employment?

Informative talks+ incentive for students to attend	Updating the emplying method	Keep education level high, inxclude applicattions	We can't
We can't	Alumi	We can't	We can't

6 41

How can we ensure that photonics graduates find relevant employment?

We can't

Career days where companies and students can meet

We can't

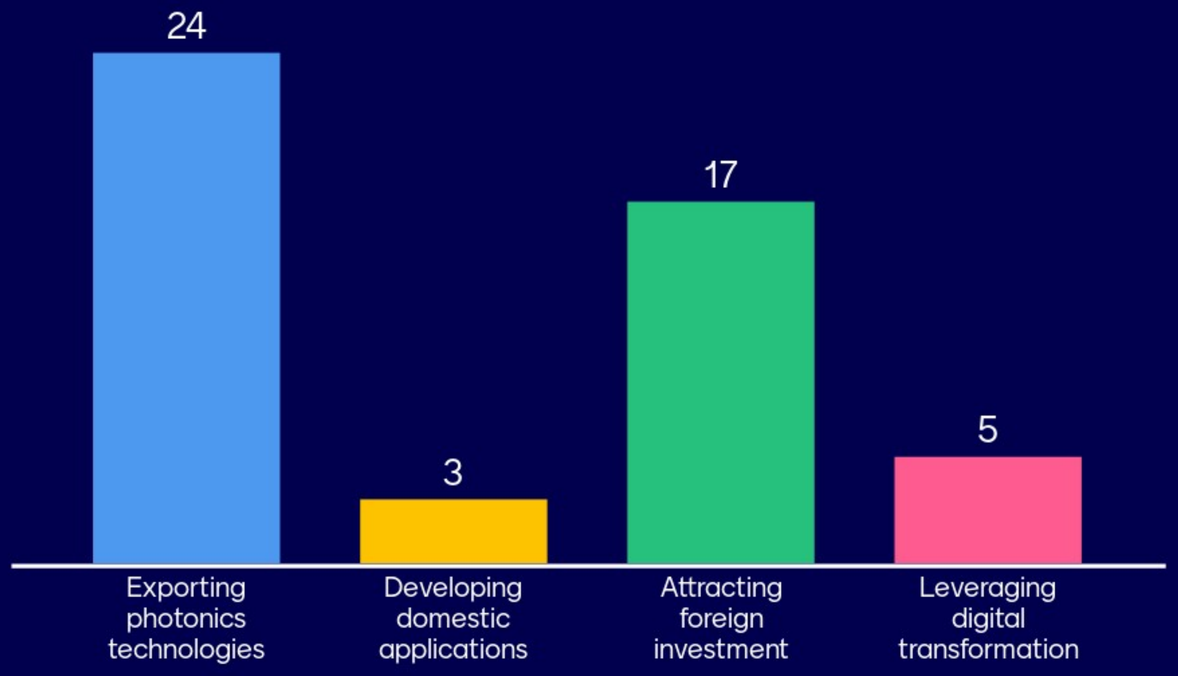
create smes

6

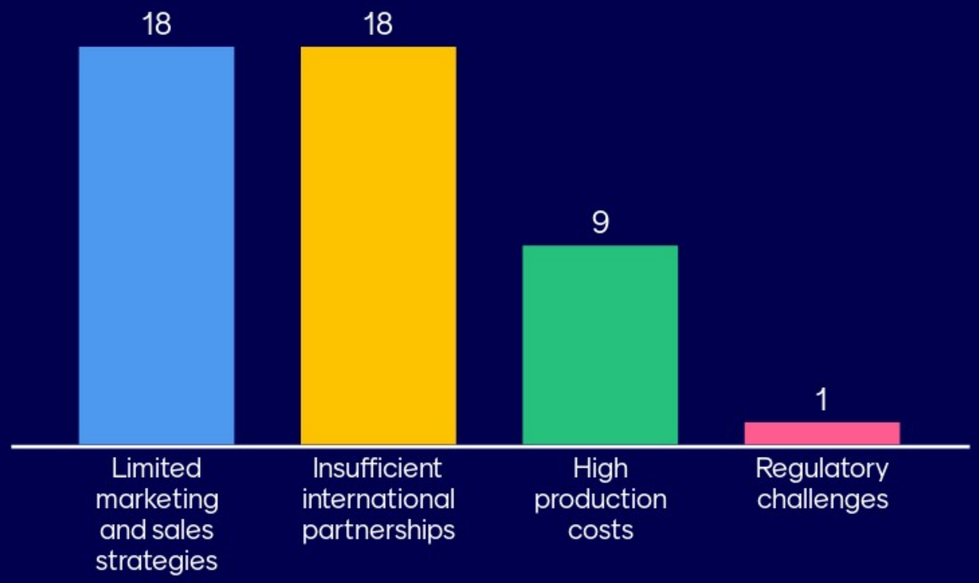
41

Next: Market and Industry Development

Which market opportunity for photonics should Finland exploit the most?



What is the main barrier to increasing the market penetration of Finnish photonics technologies?



What is the biggest weakness in Finland's photonics sector?

79 responses

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

Take engineering in

International talents

A big plan to attract talents

Build vertical value

Manufacturing needs to be included

Welcome foreign talent

Get more investments.

increase international collaboration

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

not only core tech

Attract international talent

By keeping its label of quality

Foreign talents

Shorten time from innovation to market

Aggressive marketing and sales

Mechanical engineers to be included

More international collaboration

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

Investment

Building strategic ecosystems, attracting private capital

co-operationIPR

Easier immigration for employees and experts

Better collaboration between industry and academia

Collaboration and efficient networking

Internalization and collaboration with eu most strong players

Attract talent, educate workforce, attract investment, improve global collaboration

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

International collaboration

Industrial 3D printing needs to be taken into account

Partner with large global manufacturing companies

Specialize in a few things

Improve focus

Strong collaboration in national and international levels

National and international collaboration

Specialisation

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

Improve economical benefit to invest in Finland

Avoiding exit-strategy and discovering room for improving the endemic technologies developed.

Attract investment and talent with incentives

co-operation bw. universities and industry

International talents and enteprenous

Innovative startups support, special tax regime

International Investment Strategies

Wide range research topics. Investments in strong infrastructure

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

We lack large photonics companies. SMEs and startups get bought by foreign companies. Fix that.

Attract more Finnish students as well

attract foreign talent

Innovative startups support

Attract foreign talent

Ease talent migration

Attract internationnal talents

International collaboration

4

40

What strategy should Finland adopt to strengthen its global competitiveness in photonics technologies?

teach school kids

finnish quality highlighted

Special tax regime

Make it easier to move to Finland.

Increase investments

1) hiring high class foreigners - needs changes in immigration attitude2) more effort on global marketing and advertisement3) higher salaries - high skilled and paid profi can everything

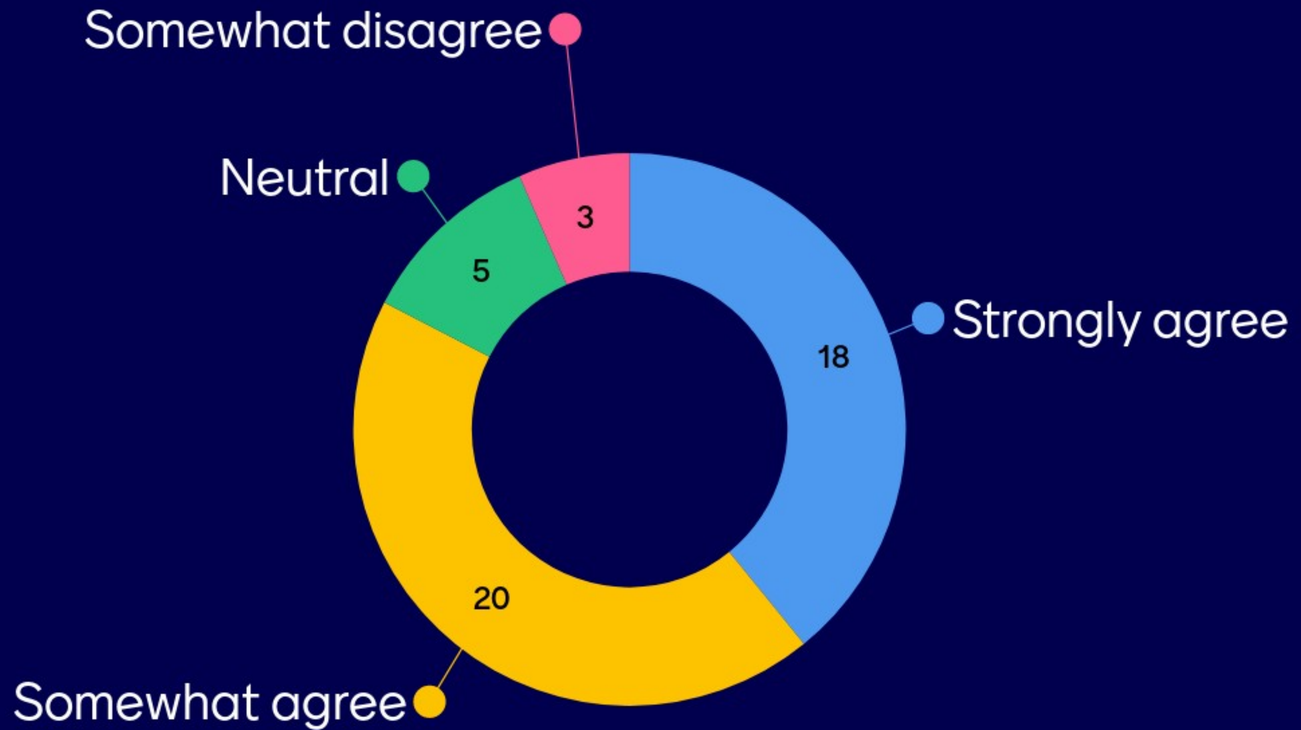
include sales and presentation skills on the photonic courses

4

40

Next: Vision and Final Thoughts

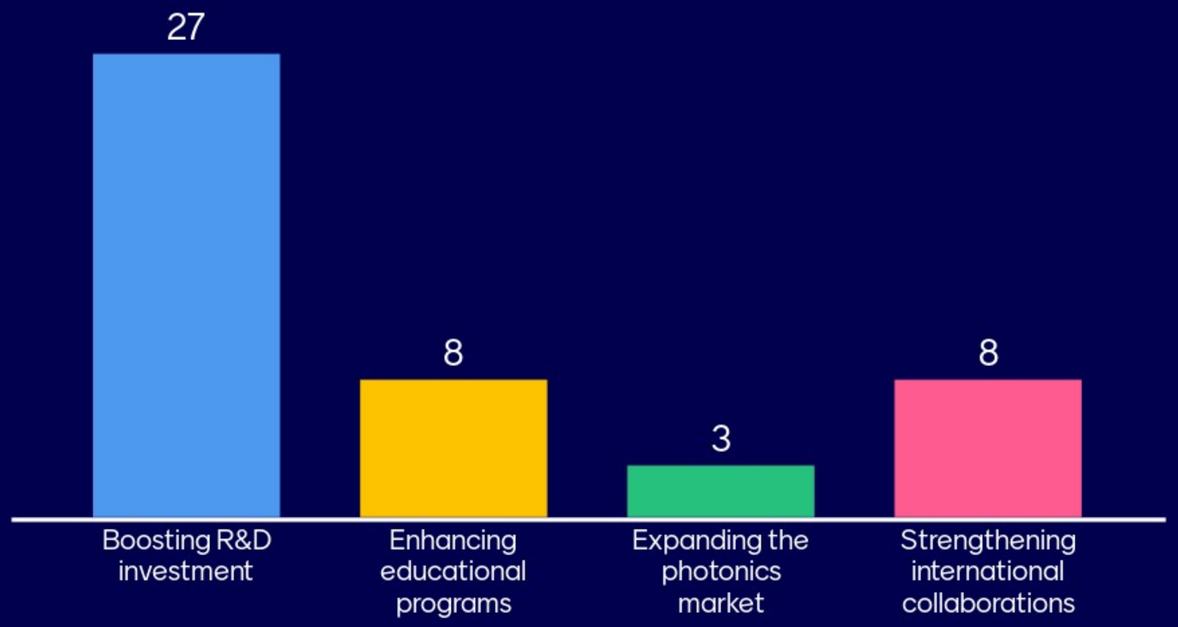
How well does this vision align with your expectations for the future of photonics in Finland?



VISIO in sentences

- Photonics is inclusive and recognized as an attractive future career option.
- Finland is a forerunner in collaborative photonics research, technology development, and innovation.
- Finland has one of the leading photonics ecosystems in Europe, which has doubled its photonics economy 2025 - 2030.
- Finland creates cutting-edge technology and top-tier companies, driving excellence in the field and achieving global recognition

What should be the top priority for achieving the Photonics Vision 2030 in Finland?



What is your vision for the future of photonics in Finland?

99 responses

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Attract talents

13 Popular

We should support research and early-stage companies (startups)

6

Focus on Universities and Education Program.

5

Specialisation

5

Engineering sciences needs to be in

4

Attract entrepreneurs

4

Try to connect talents between academy and industry

4

Startup support

4

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Include longer timescale- 2035? 4	Build on strengths 3	Attract talent 3	connect to phd pilot program 3
Research funding 3	Collaboration between academic research and industry. 3	Clear target 2	Make define concrete plans and actions in the roadmap 2

8 37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Utilize semiconductor experience

2

Make a clear focus

2

Increase national efforts to attract students to STEM and particularly photonics

2

We are good at technology, we should invest in marketing and sales

2

Strong vision

2

We need tobsupport entepneurship

2

Develop encouraging environment for entrepreneurship and investment

2

Highly skilled, competetively paid and socially secured professionals are capable of making real wonders

2

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Quality over quantity

2

Laser based manufacturing should be in

1

Quantify! No guess work

1

Mentimeter surveys for the whole photonics community

1

Create photonic ecosystem

1

More topical workshops

1

What do you mean with top tier companies? We have mostly small ones that have small impact.

1

Must be compared to other countries roadmaps

1

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

measure competitive edge and publish

1

Specialize

1

Define who implements the roadmap - clear division of tasks

1

Describe career paths in academy, research and industry

1

Improve business skills of students to boost start-up economy, invest in scale-ups, focus on how to get export and maximal revenue growth

1

Closer relationship with Industry

1

Even more collaboration between universities, RTOs and industry

1

Laser based industrial 3D printing needs to be in

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Focus on market needs

Photonics Finland is great

Atract talents

guess the future from science fiction

Clear vision and classification of the technologies of photonics

Stick to it!

No additional comments

More emphasis in promoting women in photonics related jobs and leadership positions

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

clear quidelines, common goal for small country

High and realistic goals

Now this all is quite much about optics and sensing but we absolutely forgot engineering and manufacturing which utilize laser as tool

We need to remember that laser is also a tool

Long term commitment to carry out the roadmap

Listen megatrends

How to get significant investment support for companies?

Benchmark other coutries roadmaps. Especially those that are almost same size (Sweden, Denmark?)

8

37

What additional comments or suggestions do you have for the Finnish National Photonics Roadmap?

Attract foreign talents

More mentimeter sessions

8

37