Consultation Response

Invest 2035: The UK's Modern Industrial Strategy

Response from **UK Electronics Skills Foundation**

21 November 2024

The UK Electronics Skills Foundation is the voice for skills in the Electronics Industry. We are a charity with a mission to encourage more young people to study Electronics and to pursue careers in the sector.

A chronic skills shortage threatens the UK Electronics and semiconductor industry's ability to compete on a global stage. As semiconductors become more critical to the success of UK plc, there is an increased urgency to address this skills shortage, starting at the beginning of the semiconductor skills pipeline with greater focus and more investment in secondary education.

We engage with schools, universities and industry to put in place positive interactions with Electronics that help to address the skills shortage.

We have only provided evidence to the questions relevant to the furtherance of Electronics education and the Electronics sector.

Sectors

What.are.the.most.important.subsectors.and.technologies.that.the.UK.government.should. focus.on.and.why?

Response:

Across multiple sectors, from material science to biotech, transportation, energy, communications, manufacturing, healthcare, robotics, automotive, computing, defence, creative industries, retailing, education all the way to financial markets, data analytics and AI research, the UK's ability to succeed is ultimately dependent on Electronics systems.

This is because Electronics is the means for hardware to engage with the real world (sensors and displays), to hold information and to deliver the functionality needed in processing.

Therefore, Electronics and the underpinning semiconductors, are a vital foundational and cross-sector enabling sector for the UK.

What.are.the.UK's.strengths.and.capabilities.in.these.sub.sectors?

Response:

The Electronics sector is extremely important to the economy of the UK. According to data from Make UK, it contributes £8.4B GVA and £19.4B turnover, which represents 4.7% of manufacturing and 12% of R&D spend in the UK.

The UK is an attractive global location for semiconductor research and design activity. This was evidenced in the Semiconductor sector study (HM Government, 2024) which reported that 72% of the dedicated, internationally headquartered semiconductor companies undertake research, development, design and IP activity in the UK.

The UK is a particularly desirable location for investment and growth because our universities are in the top global tier for science and engineering.

What.are.the.key.enablers.and.barriers.to.growth.in.these.sub.sectors.and.how.could.the.UK.government.address.them? .

Response:

The biggest opportunity for the UK is developing a robust skills base. Having a strong skills base and secure pipeline of talent will be integral to future growth and will act as an investment magnet.

The biggest threat facing growth is that low undergraduate student numbers will limit research and innovation. Our country's well-regarded university research base, that underpins much innovation, will be eroded over time unless the number of undergraduates studying Electrical and Electronics Engineering (EEE) degrees increases.

Business Environment

What.are.the.most.significant.barriers.to.investment?.Do.they.vary.across.the.growth_driving.sectors?.What.evidence.can.you.share.to.illustrate.this?

Response:

Over many years, too few UK students have been studying Electrical and Electronic Engineering (EEE). As a result, there are insufficient graduate engineers to drive forward innovation and progress. In 2023, only 3,200 UK students enrolled on degrees in Electronic and Electrical Engineering and of these, fewer than 500 were female. This total is less than half the number of students (6,835) starting Mechanical Engineering degrees (source: UCAS).

The only sustainable solution to the overall skills shortage is to address the Electronics and semiconductor skills pipeline right from school. Tackling the shortage means a national-level, long-term, programme to incentivise (raise awareness, generate interest, encourage and support) more young people to pursue the study of Electronics and semiconductors.

At university, undergraduate EEE courses are often broadly focused and this means that students often leave without sufficient semiconductor knowledge and 'know how' and this results in skills gaps. This is particularly acute in areas such chip design, advanced packaging and design verification. They need supported in their professional development and provide with relevant and focused post-graduate training to develop key area of technical knowledge and understanding to contribute to innovation-led businesses and future semiconductors research and development.

Such is the importance of Electronics and semiconductors, that many countries are competing for the same talent, for instance the EU recently reported that the talent gap in the EU semiconductor industry is expected to widen annually by 2030, with current shortages amounting to an average of 3,830 unfilled graduate positions annually. Therefore, the UK cannot rely only on importing skills from an incredibly competitive marketplace. On the other hand, if we develop our own pipeline of skills, it will draw in investment, encourage innovation, as well as creating resilience in our industry.

Business Environment – People and Skills

Where.you.identified.barriers.in.response.to.Question.❸which.relate.to.people.and.skills. (including.issues.such.as.delivery.of.employment.support?careers?and.skills.provision)?what. UK.government.policy.solutions.could.best.address.these?.

Response:

The only sustainable solution to the overall skills shortage is to address the semiconductor skills pipeline right from school. Tackling the shortage means a national-level, long-term, programme to incentivise more young people to pursue the study of Electronics and semiconductors.

Successfully delivering such a programme would require commitment, leadership and investment from the government. There is a recent precedent of this type of commitment for digital skills and computing, through the Computing at Schools and National Centre for Computer Education. We need a similar national programme for Electronics/Physical Computing/Semiconductors based on: curriculum change, more engagement with the Electronics industry and improved careers advice.

Activities should include:

- Curriculum change
- More engagement with the Electronics industry
- Improved careers advice.

The principal call to action from the UK government is for more investment in schools to raise awareness and stimulate interest in Electronics (primary schools) and semiconductors (secondary schools). To scale up current efforts into a national programme and provide financial support to encourage greater diversity among students.

What.more.could.be.done.to.achieve.a.step.change.in.employer.investment.in.training.in.the. growth_driving.sectors?.

Response:

At university, there need to be more opportunities for students to develop specific know-how we need in semiconductors (e.g. Chip Design) and to gain work experience in the industry. Also, closer links between industry and universities to ensure courses reflected the needs of industry, for instance mapping of competencies against curriculum.

Further reform of the Apprenticeship Levy, beyond the changes already announced is required. Far more flexibility with how employers spend their Apprenticeship Levy money would incentivise greater employer engagement. For instance, promoting apprenticeship and careers advice and brining in-scope other training interventions and skills development.

We believe that vocational routes are important to help tackle the wider skills shortage in Electronics systems and to offer broader routes for young people into the sector. With T-Levels, apprenticeships and other vocational qualifications, there is often too much choice and too

little advice for employers. Therefore, streamlining and simplifying the system would be a welcome step. Further, there is a case to explore how concepts such as skills 'bootcamps' could be adapted and scaled-up to provide entry-level skills training and insight into vocational pathways for sectors like Electronics.