



Industrial strategy EPC response

Pillar 1. Investing in science, research and innovation

5. What should be the priority areas for science, research and innovation investment?

Government should prioritize technologies that will lead to enhanced UK industry capability and competitiveness, such as:

- Robotics, automation and cognitive systems
- Intelligent data analytics
- Materials, manufacture and advanced design
- Energy and environment, low carbon transport technologies
- Telecommunications

Apart from the investment in specific areas of science, research and innovation, Government should also support potentially transformative research, bearing in mind that applied research takes time, money and additional skills beyond research alone.

6. Which challenge areas should the Industrial Challenge Strategy Fund focus on to drive maximum economic impact?

There is no industrial development without energy. More efficient use of energy is key, alongside increasing national capacity in clean energy with a view to self-sufficiency. As well as reducing energy consumption much more emphasis should be placed on reducing consumption of other scarce resources, some of which are being rapidly depleted.

7. What else can the UK do to create an environment that supports the commercialisation of ideas?

All the risk is on the entrepreneur at the moment e.g. financial and technical risk. There needs to be a greater sharing of the financial risk in the early stages so as to create an environment that supports people through from a good idea to a realisable commercial product/service.

Innovative SMEs, spin-outs and start-ups need help to connect to industrial challenges and implement new ideas while creating new jobs. For example, automation providers could provide solutions commensurate with much of the higher TRL work funded at Universities and HVM Catapults.

8. How can we best support the next generation of research leaders and entrepreneurs?

Enterprise training and accessible funding are fundamental to support the next generation of research leaders and entrepreneurs.

Technology-oriented higher education programmes should include enterprise education, as evidence shows that research leaders and entrepreneurs need more training in allied areas, especially in finance. More funding opportunities, and more accessible schemes, would also be essential to support start-up funding.

Enterprise training would also encompass facilitating better exposure to industry, and raising awareness of industry pressures. Academia and the metrics for HE performance imposed by Government (such as REF, TEF, league tables) need to recognise that academics should not all need to teach, do research and build links with external parties. Specialism on one of these alone should be acceptable and indeed encouraged.

9. How can we best support research and innovation strengths in local areas?

Financially facilitate and encourage collaboration. Reduce the "eggs-in-one-basket" focus on HVM Catapults and encourage greater participation between them and Universities who have their own established track record of industrial collaboration. At present, there is too much emphasis on competition rather than collaboration. For example, EPSRC grants are submitted competitively rather than collaboratively, and individual institutions then are assessed on how much they have won.

Pillar 2. Developing skills

10. What more can we do to improve basic skills? How can we make a success of the new transition year? Should we change the way that those resitting basic qualifications study, to focus more on basic skills excellence?

The primary and secondary education system is overburdened with formal targets and evaluations. Teachers need more time to teach basic skills and less time required to fulfil regulatory requirements.

STEM skills depend on physics and maths. Raise the standard of physics teaching, reward physics financially and reduce the number of staff teaching physics at GCSE or A level without a physics degree or fully equivalent qualification. Discourage combined science GCSEs being taken rather than individual science subjects. Target and reward schools on the numbers of student going on to physical science based courses after school.

11. Do you agree with the different elements of the vision for the new technical education system set out here? Are there further lessons from other countries' systems?

Yes, the new technical education system will fill a large gap in current education. The German system, which was used as a guide, is a clear choice for a similar size and economy compared to the UK.

12. How can we make the application process for further education colleges and apprenticeships clearer and simpler, drawing lessons from the higher education sector?

Having a system for FE similar to UCAS would make things simpler for students, but there would need to be additional methods for admission. FE students should have the option to apply at a later stage to specific course at FE providers.

13. What skills shortages do we have or expect to have, in particular sectors or local areas, and how can we link the skills needs of industry to skills provision by educational institutions in local areas?

STEM is clearly a major issue. There are also shortages in creative design, measurement and quality, and thinking and judgement.

Basic knowledge of budgeting and finance is a skill that most people need for their personal finances as well as in a number of occupations.

14. How can we enable and encourage people to retrain and upskill throughout their working lives, particularly in places where industries are changing or declining? Are there particular sectors where this could be appropriate?

The skills needed change increasingly quickly and skills need to be upgraded or new skills acquired throughout the course of one's employment. Training and education at the beginning of one's career is not sufficient. Professionals can keep up with new skills through CPD. However, semi-skilled and clerical workers may need complete re-training for a different occupation. There should be apprentice schemes for re-training of older workers not just young people entering the job market, and these schemes should offer more flexibility in entry requirements.

Pillar 9. Driving growth across the whole country

34. Do you agree the principles set out are the right ones? If not what is missing?

Yes, the whole country needs to be involved in growth. Current investment does not match regional contributions to manufacturing GDP; hence some realignment would be appropriate.

35. What are the most important new approaches to raising skill levels in areas where they are lower? Where could investments in connectivity or innovation do most to help encourage growth across the country?

Connectivity and innovation would be the most help within and between the cities (other than London). It's in here that there is large number of people to connect and where growth will occur by economy of scale. Cities that grow become more efficient. This can be extended to connecting clusters of cities, like Liverpool-Manchester-Leeds-Hull along the M62 corridor.

However, there are also large numbers of people and businesses outside cities. Most other countries have a much more balanced spread of resources, capability and infrastructure across their nation, than the UK with its London-centric ways of working.