CECA Innovation Report

Directions in policy for the UK's infrastructure sector

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Working for Infrastructure 1996-2016

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About the authors

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Kudzai is Innovation & Knowledge Manager at Skanska UK. He leads the development and implementation of event-based innovation knowledge exchange mechanisms, supports the identification of opportunities for new product development in relation to fields such as digital and creative, low carbon, advanced construction and sustainable urban development. He also leads market analysis and innovation, driving his team to generate new ideas and business streams to grow the business and identify innovation opportunities. He has been Chair of CECA's Innovation Group since September 2015.

Marie-Claude Hemming, Head of External Affairs, CECA

Marie-Claude is an experienced communications and policy professional. Having started her career in public affairs consultancy, she moved to a policy role at the Federation of Small Businesses in 2009, before joining CECA as Industry and Public Affairs Manager in 2012, becoming Head of External Affairs in 2014. She leads the team on all policy, public affairs and media relations activity, and also plays a key role in CECA's strategy and business development.

Introduction

Innovation in infrastructure is about improvement and collaboration. But it is often very difficult to identify the impact of its value.

Our sector has historically been slower than others in maximising the opportunities arising from innovation. While construction spend on R&D has risen quite fast compared with the average for UK plc, it still remains at a lower level than in other sectors.

Understanding innovation's value is vital in a fast moving business climate where markets and technologies are continually evolving.

The UK construction industry accounts for approximately 6.5% of GDP.[1] While we have built a highly successful and highly skilled industry to date, if we do not now focus on embedding innovation in our businesses and across the industry as a whole, there is a real risk that our reputation as civil engineering contractors will wane and we will remain fragmented and become uncompetitive.

We have taken substantial steps towards meeting this challenge, but further work is needed to successfully put innovation at the very heart of all that we do.

CECA believes that civil engineering contractors must develop a clear business case, which is underpinned by client and Government support, for investment in innovation. To this end, our Innovation Group proposed the publication of a report highlighting what must be done collectively to ensure that opportunities arising from innovation are fully grasped by clients and their supply chains. The report is based on extensive survey work within our membership and a series of workshops carried out in 2016.

Alongside this, we have also published an innovation toolkit for civil engineering contractors to act as a platform for those companies seeking to embed innovation into their business models. The toolkit is primarily aimed at those who might work as lower tier suppliers on projects and is intended to provide an overview of innovation, identifying the key players and opportunities.

The toolkit shows, that while there is substantial activity within the field of innovation across the infrastructure sector, it is often operating is silos, making it extremely challenging to understand its benefit to the industry as a whole.

1. *Construction industry: statistics and policy*, House of Commons Library, October 2015.

Definition, Benefits & Risks

Definition of Innovation

CECA's innovation research group has concluded that innovation is about:

- Challenging the status quo
- A change that is new to you
- Learning from experience
- Continuous improvement

Benefits of Innovation

CECA believes the benefits of innovation include:

- Improved safety
- Improved sustainability
- Improved value
- Cost reduction
- Improved productivity
- Employee engagement
- Improved staff quality
- Additional added value
- Better quality of service and product
- An expanded service and product offering
- Reduced environmental impact
- Better collaboration with supply chain resulting in better stakeholder engagement
- Futureproofing – less remediation or retrospective works to "upgrade" finished projects
- Cross-pollination of industries creates incidental innovations and solutions / products and processes.

Risks of Innovation

CECA believes the risks of innovation include:

- Threat of competition
- Unclear commercial return
- Lack of finance
- Uncertainty over the ownership of any intellectual property
- Fear of negative impact on project (commercial, financial, time / delays, not delivering to specification)
- Not tried and tested so clients may not agree to accept handover of assets / project on completion immediately
- The industry has shallow margins minimising the ability to allocate resources to dedicated innovation.

CECA Innovation Survey

The following data provides a snapshot of innovation across CECA's membership in 2016.

We believe that the findings are a reflection of a fragmented industry embedded with long established practices which have to date delivered the required results.

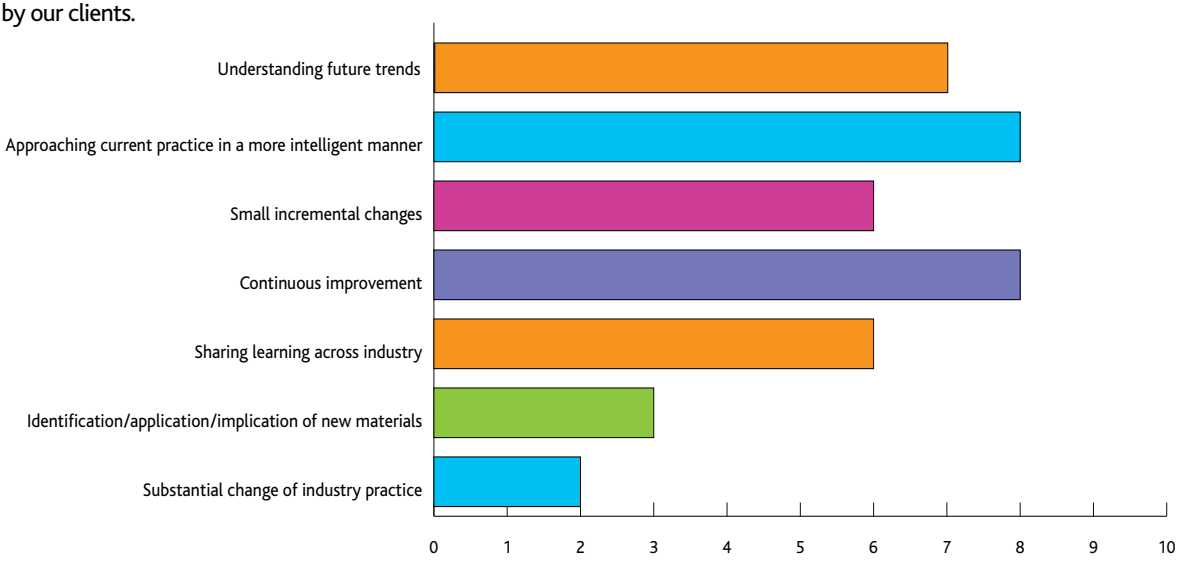
Yet other sectors are rapidly transforming as a result of new technologies and ideas. CECA believes that the infrastructure sector must learn how these developments can help them better deliver world-class infrastructure.

CECA members' definition of innovation

The challenges of understanding what innovation means is shown in the chart below.

Notably, we can see that businesses are primarily focused on winning and delivering work, but are taking little time to consider what an industry of the future may look like.

Research further indicated that these challenges are also shared by our clients.

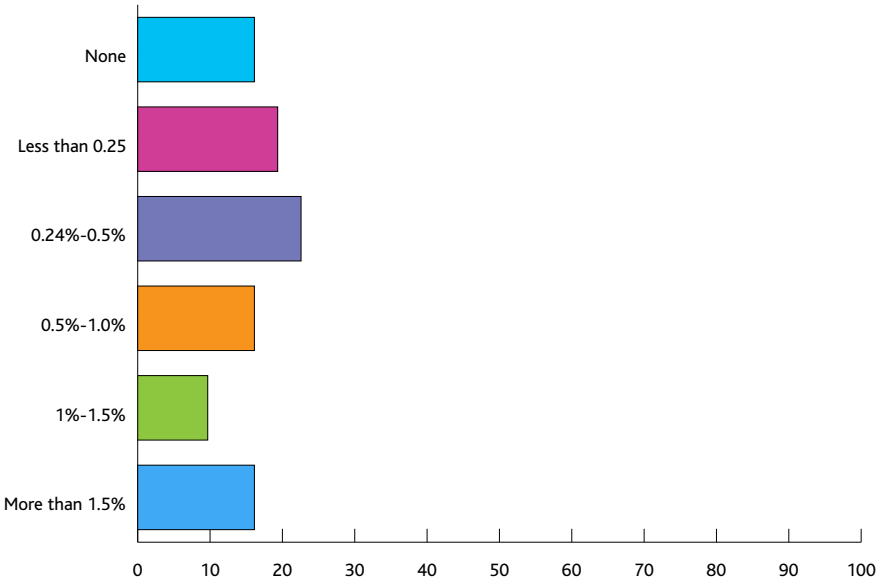


Percentage of turnover spent by CECA members on R&D and Innovation in the last three years

The business model of CECA members is based on cashflow and low profit margins.

This means that investment by these businesses is focused on areas of low or diminished risk, where returns are fast and noticeable.

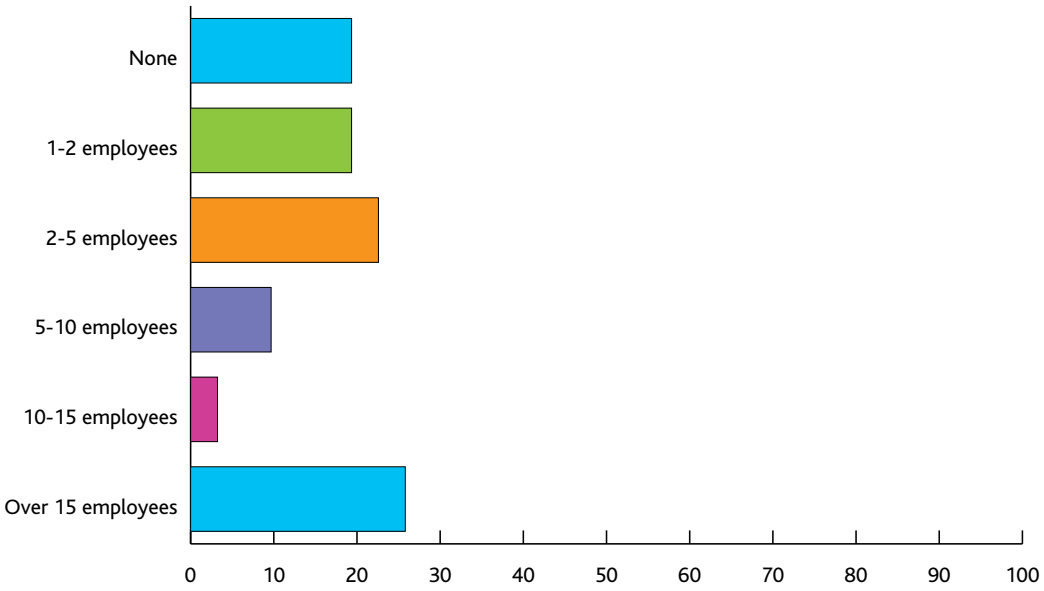
As such investment in R&D and innovation is fairly low.



Number of employees in CECA member companies actively engaged in R&D or innovation

A large proportion of CECA member companies have less than five employees actively engaged in R&D or innovation, although others work to ensure that innovation is part of each employee's role. Inevitably, it is generally the larger companies with those employees engaged in innovation.

CECA believes that the former is a reflection of the challenges civil engineering contractors face in attracting millennials and employees from a wide range of backgrounds.

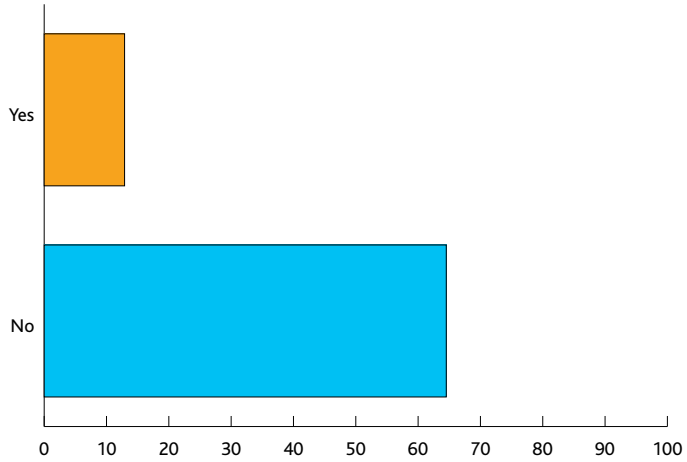


Percentage of dedicated innovation or R&D groups within CECA member companies

We asked the question: *Does your company have a dedicated innovation or R&D group?*

The majority of companies surveyed have not established dedicated innovation or R&D groups. These groups are important as they often generate information sharing across a business.

Our research also found that out of those companies who had established dedicated groups, the majority were set up in the last six years, which reinforces the view that the infrastructure sector has not yet fully recognised the importance of innovation.



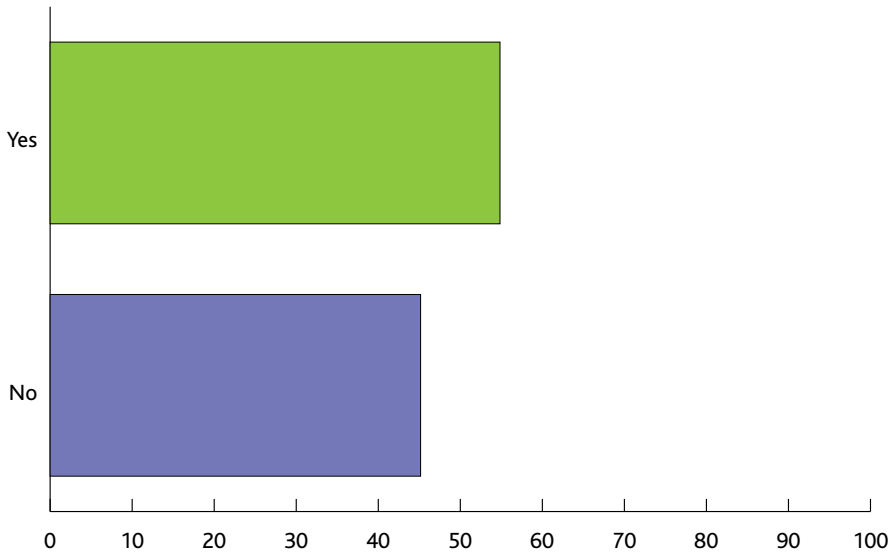
Application for R&D Tax Credits/Patent Box by CECA Member Companies

We asked the question: *Has your company ever applied for R&D Tax Credits / Patent Box?*

The survey shows that while a larger percentage of CECA member companies have embraced the opportunities surrounding R&D Tax Credits and Patent Box, a substantially larger proportion have not. This suggests that as an industry, we need to share more widely the lessons learnt on driving innovation within our businesses.

CECA also asked how many Knowledge Transfer Partnerships or PhDs have been funded by members in the past three years. Respondents that had funded them were on the whole from large companies funding around five each year.

In addition, for those that have received research funding over the past three years the range received was between £10,000 - £53m.



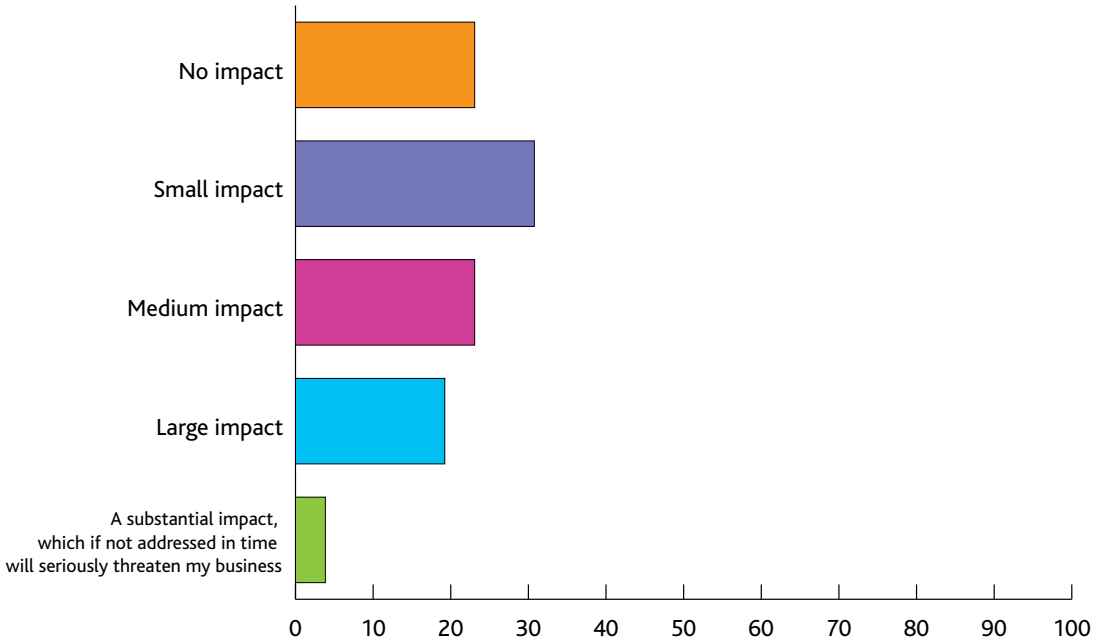
Anticipated impact of disruptive innovation on CECA members' core business in next decade

Our data shows that civil engineering contractors are taking steps to implement new opportunities in innovation, such as the adoption of digital technologies, but remain unclear as to the impact of future challenges.

Workshop sessions indicated that the adoption of mobile technology appears to be the area where substantial progress is being made. Increasingly companies are using mobile technology to ensure their staff can access all relevant documents both on and offsite. These systems can also be used to record work, linked to project management and to support commercial activities. Another major area where improvements through innovation are emerging is in the development of a production approach to delivery. Furthermore, the infrastructure industry is making substantial progress in the introduction of digital engineering and BIM.

However, there exists a challenge associated with how civil engineering contractors connect with the suppliers of these solutions. Firstly, this is a cultural challenge relating to the perceived demographic differences between the two industries, but there is often also a lack of understanding and awareness between both parties.

There are companies emerging that are designed to bring together SMEs and large projects, but our research has found that exposure of SMEs directly to large projects is always commercially difficult and often SMEs find themselves having to filter their ideas up through the supply chain. However, if the supply chain is not willing to share what is being done or appreciate the ideas coming from SMEs, a lot of potential innovation is being lost.



2016 Business Threat List

The business model for CECA members remains focussed on project and programme delivery. On the whole, innovation is undertaken by small incremental changes. It is often challenging to go further as those involved in project delivery must meet specified requirements within a tight parameter.

The opportunity for innovation varies depending on the nature of the project. Our research shows that where innovation has been successful, this has been because there has been the opportunity for longevity and the ability to form collaborative partnerships between clients and supply chains.

Our research had pulled together a civil engineering contractor 'Threat List' if we maintain the status quo and this is outlined below.

2016 Civil Engineering Contractor Business Threat List

- Low profit margin contractor business model
- Prime focus on securing work
- Clients operating within a risk averse environment
- Challenge of attracting diverse workforce
- Reluctance / inability to change the status quo as a lone company
- Challenge of understanding new technologies
- Challenge of information management
- Over-protection of intellectual property

CECA believes a clear business case must be articulated to ourselves, our clients and the UK Government for long-term commitment to innovation. Without a clear shared goal, the infrastructure sector will struggle to deliver the world-class projects needed to drive economic growth.

Recommendations

CECA advocates the following changes to drive forward a world-class, innovative and continuously evolving infrastructure sector.

Facilitate cross-industry collaboration on innovation

CECA believes that a truly collaborative culture must be established across the industry which must:

- Provide a welcome space for collaboration and co-investment
- Be relevant across the whole project life cycle
- Apply learning from world leading organisations

To this end, CECA supports the creation of the Infrastructure Industry Innovation Platform (I3P) as an innovation community that shares valuable ideas and opportunities across the infrastructure industry through a culture of collaboration.[2]

CECA recommends:

Civil engineering contractors engage with I3P.

I3P is supported by major clients in order to incentivise and drive real change across the industry.

2. The Secretariat for IP3 is Knowledge Transfer Network. For more information, visit https://www.i3p.org.uk/.

Address financial barriers to innovation

World-class innovation within our industry can best be delivered if we are supported by Government to do so.

CECA recommends:

Government should maintain funding in research and development, and pilot a collaborative innovation rebate programme via the Tax Credit system to encourage companies to innovate together.

Ensure the regulatory environment facilitates innovation

Regulations and processes impacting upon the construction industry must all work together in order to prioritise innovation in the supply chain

CECA recommends:

All regulations and processes impacting upon the construction industry must work together in order to prioritise innovation in the supply chain.

Industry and Government to evaluate procurement law and its operation in the UK post-Brexit

CECA does not advocate scrapping all procurement rules laid down by the European Union, but we believe that an opportunity has arisen to redesign the UK's compliance with EU law and to cement our understanding of both EU and UK driven rules, assumptions and interpretation to deliver a simpler and more rational approach to procurement, which in turn will drive forward innovation in the infrastructure sector.

CECA recommends:

CECA recommends governments work with industry and its clients to evaluate how procurement is undertaken in the UK. We suggest this is undertaken in two parts, the first must address immediate concerns, and the second must develop a series of new principles for procurement post Brexit. Both stages must specifically address the needs of SMEs as well as larger businesses.