FIVe

What is FIVe?

Foundation Industries Ventures (FIVe) supports start-ups and spinouts in the UK Foundation Industries (FIs) of cement, metals, chemicals, paper, ceramics, and glass.

These industries contribute over £67bn to the UK economy and employ over 250,000 people, but in producing the 28m tonnes of products each year, generate 10% of the UK's annual CO_2 emissions.

To achieve net zero by 2050 and ensure that these crucial materials are still available way beyond that, we need to disrupt the FIs. This radical change requires new innovation, supported by industry, investors, academia, and the government.

FIVe is the first incubator and accelerator for the FIs and their supply chains to support decarbonisation through the development of new innovative materials, processes, and technologies.

We provide flexible office, lab, and events space. Tailored support services including IP and finance and access to the FIVengage network. FIVe is a vibrant ecosystem uniting innovators with industry, investors, experts and academics.

What is FIVengage?

FIVengage is the go-to network that is bringing people together to break down the regulatory challenges faced by the UK Foundation Industries. By uniting innovators, start-ups, industry, investors, and universities we are accelerating innovation and decarbonisation through three pillars.

- Collaboration: We are working with our partners to develop research to deliver regulatory science that will accelerate innovation.
- Education: Through the network we are identifying the training required to up-skill the innovation value chain and deliver targeted training as a valued education partner.
- Communication: We aim to become a trusted network to influence policy through the publication of research and innovator-informed evidence.

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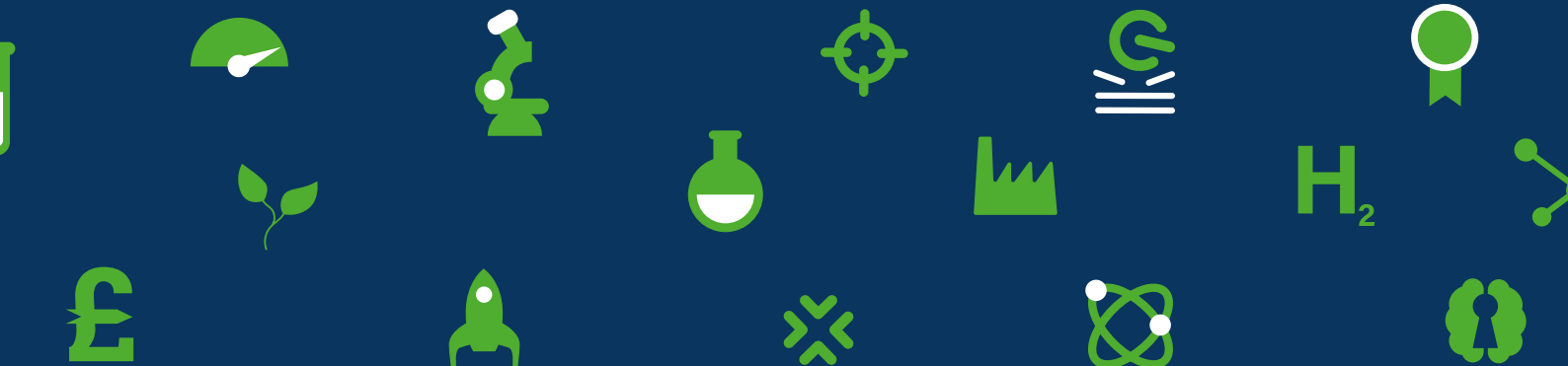
FIVengage



What is Regulatory Science?

The UK government defines regulatory science as the science of developing new tools and approaches that enhance regulatory decision making across product lifecycles (such as approvals, ongoing safety and performance monitoring) and supports policymaking that enables agile and proportionate regulation in response to innovation.

What does it mean for the Foundation Industries and supply chains?

As the UK pushes forward towards net zero, the FIs know they must act and do things differently, so new ideas and innovation are key. But despite this they are less competitive than in other countries. Over a third of businesses have not introduced innovation in the last three years. There is a clear hesitance around adoption and each industry faces its own regulatory challenges with many cross-cutting issues.

What work is being undertaken?

Anyone working in science and technology is familiar with the challenges of understanding and meeting regulatory requirements. These barriers can be complex, and innovators often fail to engage with the regulatory system early in their development, focusing instead on the product or technology rather than on regulatory compliance. When they eventually address regulatory considerations, they encounter multiple challenges that can make the journey to commercialisation and achieving technology readiness seem almost impossible. Despite these obstacles, the UK aspires to become a science and technology superpower by 2030.

AMION and CIVIKAS are undertaking a research exercise to support FIVengage and explore the regulatory barriers to innovation. A series of primary research including three workshops and consultations will inform a research report. An initial workshop explored the extent to which regulatory barriers are hindering organisational ambitions, innovation and progress to help us support the network. Outputs will include

What did the first discussions centre upon?

A workshop held on 4th June focused upon unpacking the topic, conversations and online post it notes centred upon the following themes and topics:

- During the workshop, participants emphasised the critical importance of adhering to health and safety regulations, particularly regarding safe materials and procedures in processes involving heat capture. The workshop also identified the complexity of environmental regulations, noting how they can impede the roll-out of new technologies. Participants cited examples of regulatory bodies being risk-averse or ill-equipped to handle novel situations. Key considerations included waste permitting, managing emissions to avoid environmental harm, and the challenges posed by stringent recycling regulations, which can hinder innovation and small-scale projects.
- Investment and funding regulations emerged as significant concerns, with challenges related to public subsidy control and the legal aspects of funding innovative projects. Participants called for clearer investment regulations to better support innovation. Discussions also delved into the complexities of using waste materials in new

products, such as the need for end-of-life licences and adherence to building control regulations in concrete binders. The slow process of creating and updating standards to match technological advancements was noted, as well as the regulatory complexities arising from different standards for the same material across various sectors.

- The workshop highlighted the impact of inadequate academic pathways, standards and the necessity for recognised and accredited qualifications to ensure industry competency and support innovation. Participants stressed the importance of advocacy networks to navigate regulatory challenges and the impact of slow permit processes on innovation and commercialisation. Additionally, the uncertainty and challenges of adapting to EU-UK regulatory differences post-Brexit, particularly in the context of the Carbon Border Adjustment Mechanism (CBAM), were identified.

- Participants identified significant regulatory barriers throughout the Technology Readiness Levels (TRL) "scale", especially during piloting and commercialisation stages. Emphasising the need for high-quality data to influence regulatory decisions, they called for considering regulatory impacts throughout the research and development lifecycle. The workshop also explored the potential to exploit regulatory differences for commercial opportunities, drawing on examples from other sectors like well-being, where regulatory flexibilities have fast-tracked innovations.

- The workshop highlighted the disproportionate impact of regulatory requirements on small and medium-sized enterprises (SMEs), often hindering their innovation and development. Complexities and delays in obtaining planning permits were noted as a significant barrier to the speed of innovation and commercialisation. The necessity for standardisation to ensure uniformity and compliance across the industry was underscored, along with the challenge of meeting existing regulations designed around incumbent products or methods, which can stifle new innovations. Specific issues like the plastics packaging tax, which creates problems for certain plastic manufacturers due to poorly targeted regulations, were also identified, emphasising the need for regulatory frameworks that support rather than hinder innovation.

How did the second workshop develop the focus?

- A second workshop on the 24th June began with an explorations of regulatory science framing, focusing on the foundation industries. Regulation was noted to cover various business activities, including employment rights, competitiveness, and consumer interactions. Three main themes emerged: economic regulation, social regulation, and legal regulation. Economic regulation aims to promote innovation through standards and pricing incentives, but outdated standards were seen as hindrances. Social regulation encompasses health and safety, consumer protection, environmental protections, and permits, with slow processes for permits and end-of-life certificates highlighted as significant obstacles. Legal regulation includes government legislation and compliance issues, impacting regulatory adherence. The need for a regulatory science network was discussed, aimed at gathering evidence, understanding legislation impacts, and advocating for regulatory positions. These points set the stage for further discussions and feedback.

- A major challenge identified was the issue of cheaper imports, which impact the market for low-carbon products. European manufacturers,

facing higher production costs, struggle to compete with these inexpensive, high-carbon imports. Within the glass industry, the importance of coatings was underscored as vital for profitability and sustainability. Innovations in coatings are essential to meet customer demand, particularly in sectors like automotive. Additionally, the role of universities in providing early-stage research was highlighted, with collaboration seen as a means to bridge gaps in fundamental research and innovation.

- Digitalisation and computational discovery in materials research were noted as significant accelerators of innovation, reducing trial and error, especially in the glass industry. However, challenges around intellectual property (IP) ownership with universities can complicate collaborations. Streamlining IP agreements was suggested as a way to enhance collaborative efforts and innovation output.

- The workshop addressed the substantial cost of achieving net zero emissions, highlighting that companies are unlikely to make significant investments in low-carbon products without a clear willingness from customers to pay more. This customer demand is crucial; without it, businesses may find it challenging to justify the investment to their shareholders. The discussion emphasised that effective regulations could play a key role in incentivising customers to choose low-carbon products. Suggestions included tax breaks or other incentives to drive consumer demand and support companies' sustainable practices.

Next steps

Please look out for the next event looking at the regulatory challenges around innovation and emerging solutions in the UK foundation industries, Thursday 11th July 12-13:30pm

Where can I find out more?
If you have any queries ahead of the workshop, please email **info@fiventures.org** or for more information about FIVe please visit **www.fiventures.org** or find us on **LinkedIn**.