

Science and Technology Committee (Lords)

The contribution of Innovation Catapults to delivering the R&D Roadmap 8th December 2020

Session I

Witnesses:

- Professor Dame Ottoline Leyser, chief executive, UK Research and Innovation (UKRI)
- Dr Ian Campbell, former executive chair, Innovate UK

Session II

Witnesses:

- Alexandra Jones, director of science, research and innovation, Department for Business, Energy and Industrial Strategy (BEIS)

Overview

In the first session, the committee heard from witnesses on the contribution of the UK Catapult network to UK scientific research and development. In the second, the committee questioned a BEIS official on the performance of the Catapult network in the context of various performance reviews and how Catapults might evolve going forward.

Role of Catapults

Chair Lord Patel (Crossbench) discussed the purpose of Catapults and their funding with witnesses.

Professor Dame Ottoline Leyser, chief executive, UKRI, said Catapults served to de-risk middle-tier elements in the development of new technologies as well as working to coordinate the research base via skills sharing.

Leyser said Catapults received a core budget from Innovate UK on a five-year basis amounting to £520m in 2019.

She accepted that this was not evenly distributed, with the high-value manufacturing Catapult receiving most of the share at £130m. Newer Catapults each had budgets of around £10-15 million, she said.

She said ultimately the goal of Catapults were to 'make themselves redundant' by de-risking key parts of the R&D system.

Dr Ian Campbell, former executive chair, Innovate UK stressed that Catapults had different origins: he distinguished between 'systems Catapults' 'asset-intensive' Catapults and a middle group blending elements of each of these.

Role of Catapults in increasing R&D spending

Lord Mair (crossbench) asked what role the Catapults had in delivering the government target of R&D spending amounting to 2.4 per cent of GDP by 2027 (around 2/3 of which would be from the private sector).

In response, Campbell said Innovate UK had to be able to fund high-risk innovation, which meant giving companies financial support where needed aligned to the capacities of each Catapult.

He said the present 'third-third-third' Catapult funding model and the geographical placements of specific Catapults meant they were well-placed to serve firms across the UK.

However, he said there was a strong argument for creating a single hub whereby firms could see and access all the Catapults.

Leyser complained that Catapults operated under significant budget constraints.

Successful Catapults

Asked by Lord Borwick (Con) what the most successful Catapult was, Leyser said it was difficult to say as they were at different stages of life.

She said the Advanced Manufacturing Research Centre in Rotherham was an example of a Catapult at the end of life, saying it had played a very strong role in regenerating the local manufacturing economy.

Leyser added that another more recent example was the Cell and Gene Therapy Catapult and said she was excited about the Advanced Compound Semiconductor Catapult which had every indication it would play a strong clustering role.

Campbell said the High Value Manufacturing Catapult had been the most successful bit this was a given due to the size of the particular market.

New developments

Lord Browne (Lab) asked what new developments in technology held most promise for commercialisation and whether they signified the need to create new Catapults.

In response, Leyser said there was a lot of discussion around various transformative technologies with very general applications, the most obvious being AI and machine learning.

She also mentioned the development of 'engineering biology' and other opportunities in the biotech sector such as the potential to use biotech for decarbonisation.

Campbell mentioned the need to explore the role of hydrogen, both in Carbon Capture and Storage and as a power source.

Smaller organisations

Asked by Baroness Hilton if Catapults could do more to engage with smaller organisations, Leyser said they should; she said UKRI should act as an intelligence-gathering device to try and work out innovations by SMEs and whether these needed to be spread/de-risked.

Campbell said Catapults had supported many thousands of SMEs but had faced challenge in obtaining funding for SMEs to apply for. He added that more could be done to allow SMEs to influence the innovation landscape by engaging with regulators and bigger firms.

Universities

Asked by Lord Hollick (Lab) if Catapults could do more to work with universities, Leyser said there was a huge diversity of levels of engagement with universities within the Catapult landscape.

She said however that there was still too much research Balkanisation, with too much incentive on academics to publish in top journals rather than do research in commercial contexts.

Leyser added that universities should see outreach to private business as a core part of their work rather than as an add-on.

Campbell said that Innovate UK knew collaborative R&D yielded better results and always wished to include academic partners in funding.

He said there was a challenge in that Catapults could only access 30 per cent of the Innovate UK CR&D funding for any one project and could not access broader research council funding – he said this should be less ringfenced.

Levelling-up agenda

Lord Kakkar (Crossbench) asked if Catapults had contributed to the levelling-up agenda via working to reduce regional inequalities.

In response, Leyser said this depended on the role of each specific Catapult and whether there were opportunities to link to local growth bodies. She stressed the Catapult system should not be seen as having a regional role per se.

She noted the Strength in Places Fund which was a key UKRI approach to addressing the Levelling-Up agenda by inviting universities to agglomerate to develop local partnerships.

KPIs

Mair asked whether current Catapult KPIs incentivised quantity over quality of research. In response, Campbell said this characterisation was correct and more needed to be done to reform the KPIs and also make KPIs more tailored to the specific functions of each Catapult.

Leyser said KPIs needed to become outcomes based.

Session II

Catapult reviews

Baroness Manningham-Buller (Crossbench) asked for comment on why there were so many reviews of the Catapults.

In response, Jones said there had been two formal reviews since the creation of Catapults in 2010, one in 2014 (to check 'what was going well') and one in 2017 to anticipate the forthcoming Spending Review and see how Catapults contributed to economic growth.

She said the new process which had begun in January 2020 was not a formal review and was an opportunity to understand what 'was working well' from the perspective of Catapults and whether government could do more to help.

Jones said the review had been paused due to Covid and the new Spending Review and stressed the intention was not to question whether Catapults should exist.

Asked by Manningham-Buller to comment on the success of Catapults, Jones said they had been successful in specific ways within their own sectors.

She noted the role of the High Value Manufacturing Catapult in the "ventilator challenge", noted the work of the Centre for Process Innovation in verging SME investment.

Jones agreed that Catapults played a key role in de-risking R&D but said the level of risk that each Catapult countenanced tended to vary by sector.

Asked by Patel if there was going to be another review of the Catapults, Jones said in general it was good practice to review 'every five years' but the form of any new review was not yet decided.

Asked later by Patel to give some indication on the future of Catapults, Jones said work presently underway was looking at various issues: she mentioned KPIs, making the most of Catapults in different sectors, looking at implications of the Spending Review and looking at how Catapults fit into the wider innovation landscape.

Return on investment

Asked by Ridley what the total return of investment had been from the Catapults, Jones said that since 2013 Catapults had supported over 8000 SMEs, 15,000 industry and 5000 academic collaborations.

Jones said the nature of the different Catapults meant there were 'various measures' of success.

She said £744m had been invested last year and noted the role of various user surveys in ascertaining success.

Jones agreed that the High Value Manufacturing Catapult tended to be the most commercially successful.

New technology

Baroness Sheehan (Lib Dem) asked what new technologies presented the best opportunities for commercialisations and whether there was an argument for new Catapults to be created.

In response, Jones said there were a wide range of areas, mentioning quantum and biotech as two examples.

She said on the question of new Catapults, the idea was to establish them if there was a global market + UK research capability and some form of market failure between this. She said any new Catapult had to be seen in his context and whether there was a gap in the exiting Catapult network.

Sheehan noted there seemed to be a lack of work on nature-based solutions to meeting Net Zero. Jones said no decisions had been made but a range of options would be looked at.

Meeting government R&D targets – private sector investment

Baroness Rock (Con) asked for comment on the role of Catapults in leveraging investment from the private sector to meet the government's 2.4 per cent GDP R&D investment target.

In response, Jones said there was no specific target on how much the Catapults had to contribute towards this.

She said the R&D roadmap – backed by £4.6 billion funding in the recent Spending Review – contained a range of ways (such as the Industrial Strategy Challenge Fund and competitive tax reliefs) – to leverage private investment to meet the target.

Small business

Asked by Baroness Walmsley (Lib Dem) if the Catapults were doing enough to engage with small businesses, Jones said there were many interesting examples of good practice in this area.

She mentioned the Offshore Renewable Energy Catapult which had worked with over 100 small businesses since 2016.

Asked by Walmsley if Catapult staff had enough specific skills to engage with SMEs, Jones said feedback from industry suggested Catapults had ‘many’ skills but said there was probably more they could do.

Levelling-up agenda

Baroness Young (Lab) asked for comment on the role of Catapults in the levelling-up agenda and on the interaction between Catapults and the Strength and Places Fund.

In response, Jones said Catapults were established to meet national objectives other than the levelling-up agenda but clearly had impacts on local areas, mentioning Catapults in Rotherham and Newport as examples of this.

Jones said there was presently an examination of how Catapults contributed to specific places and how this might be done more effectively – this would be published within the R&D Place Strategy, she said.

Jones said she had heard concerns that the focus of Strength and Places was too biased towards certain areas – she said this would be evaluated within the R&D Place Strategy.

Collaboration in R&D funding

Mair noted concerns in the first session Campbell had expressed about firms being only able to access 30 per cent of the Innovate UK CR&D funding for any one project not being able to access broader research council funding.

In response, Jones said this issue was being looked at within the present review.