Impact Evaluation of the Industrial Strategy Challenge Fund

Final impact evaluation report

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Executive summary

The Industrial Strategy Challenge Fund (ISCF), launched in 2017 with £2.6 billion in government investment, represents one of the UK's most ambitious mission-oriented research and innovation (R&I) programmes. Spanning 20 distinct Challenges across four thematic areas – Healthy Society, Data and Digital, the Future of Mobility and Clean Growth – the Fund was designed to catalyse collaborative R&I, boost private investment, enhance cross-sector engagement, encourage multidisciplinary research, and strengthen the UK's innovation networks, all while addressing critical societal challenges.

The Fund was established through three sequential funding waves, with the Challenge selection approach evolving for each wave. An evaluation of the Fund's activities was commissioned to run in parallel to the programme waves across five phases; as a result, it draws from an assessment of Challenges against their individual objectives as well as the broader Fund-level evaluation framework. This report presents the results of Phase 4, the final impact evaluation (Phase 5 will be an econometric analysis). While the evaluation has been timed to coincide with the later stages of many Challenges, it is important to note that impacts are expected to continue beyond the evaluation period. As such, the findings in this report represent a snapshot in time of the impact accrued to date.

This evaluation, conducted by RAND Europe and Frontier Economics, draws on a wide evidence base, including Challenge-level evaluation reports, network analysis, investment outcomes analysis, project completion data, policy citation analysis and stakeholder engagement. The analysis focuses on five core themes: knowledge creation and innovation pathways; capacity building and investment; connected innovation ecosystems; economic outcomes and impacts; and wider societal benefits and impacts.

Data coverage varies by Challenge; with the exception of the Faraday Battery Challenge, Wave 1 Challenges concluded by August 2023, Wave 2 Challenges concluded by June 2024 and Wave 3 Challenges concluded by March 2025.

The findings reveal a programme that has decisively enhanced the UK's innovation capability and collaborative culture, while highlighting important lessons for future mission-led R&I initiatives.

Outlook

The ISCF has demonstrably achieved its core mission of accelerating multidisciplinary R&D, boosting private investment and strengthening UK innovation networks. The programme created a decisive uplift in the UKs innovation capability and collaborative culture, laying tangible groundwork from which economic and societal value can be further unlocked.

The evaluation identifies that tailored funding instruments, collaborative consortia, access to national test-beds/centres, and targeted SME support collectively de-risked R&D and accelerated proof-of-concept work. However, to convert technical wins into commercial impact, future mission-led funds need ring-fenced resources for Technology Readiness Level (TRL) 8–9 activities, embedded regulatory-engagement pathways, and stable policy 'hooks' that outlast organisational changes.

The evidence demonstrates that ambitious mission-oriented programmes can successfully catalyse innovation ecosystems and create lasting value. With over £6 billion in leveraged investment, thousands of high-skilled jobs created, and a collaborative network spanning thousands of organisations, the ISCF has proven the UK's capacity to execute large-scale innovation programmes.

However, the Fund's success as well as its limitations have created new opportunities for investment and improvements. Converting the ISCF's technical advances into widespread commercial and societal impact requires systematic attention to scale-up finance, regulatory alignment and equitable benefit distribution. The notable commercialisation challenge and patchy adoption outcomes indicate that future programmes must be designed with explicit pathways from research through to deployment and market adoption.

Most importantly, the ISCF has established that mission-led innovation programmes can create transformative collaborative ecosystems while generating measurable economic returns. The challenge now is to build systematically on these foundations, applying the lessons learned to ensure that future programmes can convert technical and collaborative achievements into the economic and societal transformations that justify such substantial public investment.

Key achievements and impacts

Innovation and technology development

The ISCF clearly succeeded at catalysing technical innovation and generating IP across diverse sectors. Across 12 Challenges reporting TRL advancements, TRLs of ISCF-funded projects increased by approximately 2.4 TRLs, with one-third of projects across all TRL-reporting Challenges reaching TRL 7–9, indicating readiness for commercial deployment. This progression significantly outpaced that of unsuccessful applicants, who typically advanced by 1.5 TRLs less than successful applicants across four Challenges reporting comparative data.

The Fund's impact on intellectual property generation has been substantial and measurable. Total IP assets increased from 319 to 442 based on evaluation of Challenge-level reports, with ISCF projects consistently outperforming matched non-funded comparators on IP generation in every Challenge where comparisons were available.

Portfolio flexibility, early demonstration funding and capacity-building platforms created a robust funnel of technologies and strengthened investor confidence. The Fund enabled projects to reach higher TRLs and technological maturity, with roughly half of participating organisations surveyed at project completion expecting the launch of new products or services within three years. However, the ISCF's contribution to the large-scale implementation and adoption of technological outputs is still uncertain. Challenge-level reports and stakeholder engagement revealed limited evidence of full commercial roll-out to date, highlighting a gap between technical validation and the business-readiness of ISCF outputs. Similarly, there were relatively few instances where business models or new processes developed through the ISCF had been successfully implemented at scale. However, this doesn't necessarily signify the Fund's lack of value, given that the transition from technical validation to full commercial roll-out often requires a significant amount of time. Additional factors limiting commercial realisation and the implementation of new business models and processes include market readiness, regulatory or policy barriers, and lack of financial resources.

Knowledge creation and policy influence

The ISCF has made significant contributions to knowledge creation, producing over 3,300 unique publications between 2017 and 2025 spanning journal articles, reports, policy papers and technical studies. The Fund's policy influence has been measurable and significant, with 1,596 domestic and international policy documents citing ISCF outputs. This represents a broad uptake of Challenge evidence across governmental and non-governmental bodies, with 59% of cited documents originating from governmental or legislative bodies, 22% from intergovernmental organisations and 19% from think tanks or NGOs.

At least five Challenges placed experts on UK and international committees, standards bodies and working groups, contributing to policy on a range of topics, from advanced therapy medicinal products, health data and local energy policy to nuclear robotics, drones, cyber-security and ethical AI. ISCF findings directly informed major UK strategies including the Innovation Strategy, Cyber Strategy, Quantum Strategy and Semiconductor Strategy, while sector-specific guidance shaped codes of practice in agriculture, energy data and nuclear safety.

The ISCF successfully supported high levels of knowledge creation, including diverse knowledge outputs such as academic publications, grey literature pieces, databases, software and tools. The Fund achieved strong reach and credible policy engagement, demonstrating that mission-led programmes can effectively position evidence where policy and industry decisions are made.

Capacity building and investment

The ISCF has bolstered UK R&D capacity, contributing to the training, upskilling, hiring and retention of technical and managerial employees. The Fund has delivered more than 140 training programmes and engaged over 12,500 individuals in capacity-building activities across

commercial, technical and collaborative skills. The Fund has created 3,563 full-time equivalent jobs to date, with 14,266 projected within five years, while retaining 7,499 FTE jobs with 11,308 additional retentions anticipated. These roles were predominantly high-skilled technical and managerial positions across sectors such as AI, genetics, robotics and R&D management.

At least 10 Challenges invested in capital and infrastructure, creating lasting assets: these include the UK Battery Industrialisation Centre (Faraday Battery Challenge), 22 data storage platforms (Data to Early Diagnosis Challenge), and various digital tools and research facilities that provide durable capability for follow-on research and scale-up.

The ISCF succeeded in raising UK R&D capacity for core technical and collaborative skills, with new facilities and digital platforms constituting a solid, long-term asset base if fully utilised and maintained. However, the Fund's impact on commercial acumen development and global talent attraction has been limited, as persistent skills shortages and concerns over sustaining the inflow of talent remain in several sectors.

Fund-level investment analysis highlights a positive outcome on investment. The ISCF leveraged £6.25 billion in private sector co-investment, achieving a strong public-to-private multiplier that more than doubled the government's initial £2.6 billion contribution and significantly exceeded the original target of £2.82 billion.

Analysis of firm-level investment outcomes revealed that participation in an ISCF collaborative project led, on average, to a statistically significant 57% increase in external investment three years after the project began compared with a matched control group of unsuccessful applicants. The impact on small firms was larger, at 79%. The ISCF significantly boosted both the likelihood and volume of private investment, especially in smaller firms, with clear and sustained impact extending beyond the immediate post-participation period. By the third year, the ISCF increased the probability of securing external funding by 3.8 percentage points (statistically significant at the 1% level), with effects that persist and strengthen over time. Of the £3.6 billion in total investments secured by ISCF-treated firms in the three years following treatment, approximately £1.2 billion is attributable to ISCF participation.

Geographic distribution of funds and investment

Looking at grant funding dispersed through the ISCF, while London and the South East received the largest share (approximately 40% of grant value), the ISCF achieved substantial geographic coverage with the West Midlands (14.4%), East Midlands (9.2%) and North West (7.9%) receiving significant shares. Some Challenges demonstrated broad geographic balance. Industrial Decarbonisation achieved one-to-one or better private co-investment across six clusters outside London and the South East, while Low Cost Nuclear directed 69% of spend to the Midlands and North.

A collaborative ecosystem

The ISCF has facilitated new partnerships and collaborations with organisations that would not have partnered otherwise. These collaborations have enabled businesses to align their priorities, share knowledge and resources, and leverage mutual expertise, leading to significant commercial and reputational benefits. Network analysis based on ISCF-supported projects identified over 7,000 collaborative connections among non-university organisations, rising to over 11,000 when universities are included. Each organisation collaborated with an average of seven others, with large businesses and Research and Technology Organisations playing key bridging roles in the ecosystem. This bridging of scale and agility was thus identified as a key design success.

The Fund provided a clear business opportunity for collaborative R&I. Nine Challenges documented 2,166 formal partnerships, including 455 cross-sector and 779 academic alliances. Crucially, 76% of project completion form respondents expect their collaborations to persist beyond ISCF funding, indicating the creation of durable innovation networks that extend well beyond programme timelines. The Fund's collaborative structures also served as key drivers for interdisciplinary and cross-sector publications and tools, with at least 14 Challenges reporting evidence of multi- and interdisciplinary research (MIDRI) activities.

The ISCF succeeded in catalysing new and diverse R&D partnerships, with high intent to continue collaborating being encouraging. However, administrative frictions and the legal complexity of large consortia created some impediments to collaborations.

Economic impact

Some evidence for broader economic impacts was available in Challenge-level reports. Where measured across multiple Challenges, mean turnover increases averaged 130% (ranging from 15–204%), collectively contributing at least £2.26 billion in added turnover. Gross Value Added impacts of at least £578 million can be connected to the ISCF through the Future Flight, Medicines Manufacturing and Low Cost Nuclear Challenges. Some Challenges also demonstrated remarkable productivity improvements, with Audience of the Future participants showing 200% productivity increases compared to 104% for unsuccessful applicants.

The Fund fostered measurable sector-specific growth, with at least four Challenges reporting increases in the number of active firms in sectors related to Challenge areas. However, these impacts cannot solely be attributed to the ISCF. Notable examples include a 41% increase in active companies in the precision medicine sector (from 305 in 2017–18 to 430 in 2021–22), supported by the Data to Early Diagnosis Challenge, and a 4% increase (79 companies) in the power electronics, machines and drives (PEMD) sector between 2019 and 2022, supported by the Driving the Electric Revolution Challenge.

59% of project completion form respondents (n=736) also believed their involvement with the ISCF had increased the likelihood of exports. Where evidence was available, 10 out of 20

Challenges reported evidence of exports and increased global market share – particularly strong in the Clean Energy cluster – influenced by the Challenges.

Overall, the economic impact of the ISCF remains at an early stage, making near-term quantification challenging. Further analysis of the economic impacts of the Fund, along with a Value for Money assessment, will be conducted in Phase 5 of the evaluation (commencing January 2026).

Wider societal impact

While direct health impacts remain largely unmeasured due to the longer time frames required, the ISCF has positioned the UK for future benefits. Some Challenges within the Fund delivered big data platforms, AI tools and a digitally skilled workforce poised to raise care quality and equity, though improvements in hard health metrics (such as life expectancy or NHS savings) are still years off. Five Challenges reported initial signs of health benefits, with 67% of surveyed ISCF representatives reporting an impact on quality of life and health inequalities to at least a limited extent.

Seven Challenges reported early signs of positive environmental impact, with the Fund contributing to UK Net Zero goals, greenhouse gas reduction and energy efficiency improvements. However, inconsistent metrics across Challenges blur the Fund-wide picture, highlighting the need for more standardised ways to capture environmental impacts in portfolio interventions where possible. Sustained funding to lock in environmental impacts was also identified as a key enabling factor.

The ISCF made positive contributions to infrastructure and services, with 78% of surveyed ISCF representatives and 56% of industry representatives reporting early signs of infrastructure development and implementation. Notable examples include 22 data storage platforms, extensive datasets for health research, and open access platforms that provide robust foundations for future innovation in clinical and biomedical research.

Challenges and barriers

Despite significant achievements, several systemic challenges have limited the ISCF's full potential, providing room for learning.

The most persistent challenge has been the drop in number of ISCF outputs transitioning from higher TRLs to full commercial deployment. Despite strong technical progress, over half of participating organisations cited insufficient funding as a significant barrier to exploitation of ISCF outputs after project completion. Stakeholders engaged in this evaluation identified limited tools for TRL 8–9 activities and a lack of regulatory navigation support as constraints further limiting scale-up and wider adoption.

Contracting delays, complex consortia governance and short funding windows constrained some large projects. These administrative frictions were widely reported across Challenges and particularly affected the ability of SMEs to participate effectively in large consortia.

Despite capacity-building efforts, persistent skills shortages remain, particularly in commercial and fundraising expertise. Global competition for talent, limited sector-specific incentives, and data-access bottlenecks have hampered full realisation of capacity aims.

Improving outcomes relating to Equality, Diversity and Inclusion (EDI) was not an explicit objective of the ISCF at its inception. This may have contributed to inconsistent integration and poor monitoring across the programme, with limited evidence of meaningful change. Only half of all Challenges reported EDI-related activities, reflecting uneven implementation of EDI strategies due to staggered roll-out and inconsistent mandates.

Shifts in government policy and the absence of long-term industrial strategies created uncertainty, particularly affecting sectors with long development cycles and leading to inconsistent implementation of policy agendas in several cases at both Challenge and project levels. The winding down of the previous Industrial Strategy Council also left no single platform for showcasing ISCF achievements consistently.

Recommendations

Based on the comprehensive analysis across all evaluation themes set out in the main report, we provide specific recommendations for future mission-led R&I portfolio programmes.

Strategic recommendations for future mission-led R&I programmes to increase impact:

1. **Embed tailored funding for scale-up and market-readiness**

Evidence from the ISCF shows a persistent challenge in bridging the gap between technological demonstration and commercial deployment. On average, projects were able to progress two TRL steps within programme timescales meaning that where programmes started at TRL 1–2, reaching TRL 7 was rarely achievable. By contrast, programmes beginning closer to market faced different barriers, including regulatory approvals, market-entry requirements, and complex IP negotiations that each project or Challenge had to resolve individually. To address these differences, UKRI should design programmes with this variation in mind by:

- Demarcating early-stage and late-stage pathways at the outset, recognising that programmes starting earlier will primarily deliver proof-of-concept and mid-TRL progression, while others may require dedicated late-stage support.

- Allocating a dedicated budget line (*c.* 15–20% of programme value where relevant) for scale-up activities including late-stage pilots, certification, regulatory engagement, IP and market-entry support, and first-of-a-kind demonstration plants.
- Linking funding design with monitoring and evaluation (M&E) to track TRL progression and commercial readiness consistently across programmes, ensuring that barriers to deployment are addressed proactively rather than ad hoc.

2. Align funding timelines with project maturity and scaling needs

High-value or capital-intensive initiatives for example battery gigafactories, nuclear SMEs or large-scale demonstration projects often need more than a short funding cycle to transition from proof of concept to commercial viability. Without continuity, promising projects risk ending prematurely despite strong potential.

Future schemes should therefore be structured to include longer or multi-phase awards, complete with staged reviews and conditional follow-on support. For example, 5- to 7-year 'umbrella' awards with review points and follow-on tranches would better align public investment with the realities of industrial build-out, while linking funding decisions to clear evidence through monitoring and evaluation.

3. Support consortia management and reduce collaboration overheads through a central portfolio office function

The ISCF demonstrated the value of large, multi-partner collaborations but these were often slowed by time-consuming administrative processes, such as negotiating complex contracts, IP clauses and data-sharing agreements. In some cases, projects stalled at the outset due to standstills in contracting, disproportionately affecting small and medium enterprises. Future programmes should support consortia management and reduce collaboration overheads by establishing a central portfolio office early in the programme design. This office would provide standard model contracts, template IP clauses and agreed data-sharing protocols. Programmes should also fund short onboarding sprints and allow projects to draw on a modest 'collaboration coordinator' budget, while building in sufficient lead-in time to put these supports in place.

4. Scale up skills development and address persistent talent gaps

Despite the provision of at least 148 training programmes and evidence of increased international mobility, a skills shortage persists across high-skill demand industries from battery R&D to robotics. Each Challenge should include an explicit skills and capacity-building strand (e.g. apprenticeships, industrial doctorates, mid-career reskilling) focused on the specific talent gaps

identified in the associated sector. Cross-sector secondments and streamlined visas for specialist recruits will help sustain the UK's competitive edge. While there was evidence of skills development and capacity building across the Fund, more targeted vocational investment might be needed in underserved sectors, upstream of challenge investment. This could be facilitated through a structured gap analysis on sector needs alongside the programme design and implementation phases.

5. **Stimulate international collaboration and market entry early**

ISCF evidence suggests that internationalisation is essential for scaling UK innovations, particularly in globally standardised sectors such as electric vehicles and diagnostics. 77% of PCF respondents expected to expand their market position outside the UK following ISCF activities, indicating the potential impact of global engagement. However, achievements in attracting inward investment and enabling talent mobility fell short of expectations, partly because these dimensions were not systematically tracked or incentivised.

Future programmes should therefore:

- Ringfence funding and activities for international collaboration including early missions, expert exchanges and export-readiness support to help projects align with global standards and market requirements from inception.
- Create incentives for foreign direct investment such as connecting with international investors and tailoring outputs to overseas markets.
- Support mobility and talent attraction, linking targeted visa packages with skills and incubation initiatives to bring in global expertise.
- Integrate monitoring of international collaboration and market entry into programme evaluation, so progress can be evidenced and scaled.

Fund design recommendations for strengthening monitoring and evaluation, ensuring alignment with broader policy goals and building confidence in Fund activities:

1. **Establish a centralised Fund-level impact and benefits management plan**

The evaluation of ISCF impacts was significantly complicated by the absence of consistent metrics. Challenges used varied indicators for economic, environmental and social impacts, often calculated differently, and with differing scopes, making comparison difficult and preventing aggregation of impact at the Fund level. This limited the ability to demonstrate additionality or capture the value of the Fund as more than the sum of its parts in certain domains. To address this, future Challenge Funds should:

- Develop a Fund-level impact and benefits management plan from the outset, setting out overarching missions and cross-Challenge metrics which should be socialised with Challenge teams.
- Establish a standard set of performance metrics for economic, environmental and social impacts, where appropriate complemented by Challenge-specific metrics.
- Provide consistent reporting templates and methods for data collection and analysis to ensure comparability.

This top-down framework, complemented by bottom-up reporting from individual Challenges, would improve clarity, comparability and transparency in assessing progress.

2. **Embed sustainability and other strategic metrics aligned to government agendas across future Funds**

The ISCF showed that projects outside explicitly environmental or health-related Clusters often achieved sustainability or wellbeing gains. However, these were not consistently measured, limiting the ability to assess the Fund's broader systemic impact. Future programmes could ensure such outcomes are captured, where they align with wider government and funder priorities, by:

- Introducing baseline indicators (e.g. energy consumption, emissions, potential health outcomes) for all projects, regardless of sector.
- Embedding consistent reporting frameworks so that unintended benefits can be identified, measured and compared across Challenges.
- Providing non-financial incentives such as recognition, visibility or portfolio-level benchmarking to encourage projects to integrate health and sustainability elements.
- Considering bonus or weighted grant mechanisms where green or health impacts align with wider government priorities, to stimulate systemic change.

This approach would ensure that broader societal benefits are visible and valued, without imposing excessive administrative burdens or diverting focus from primary programme objectives.

3. **Articulate a clear ask for programmes to integrate emerging cross-cutting priorities into their workflows and reporting**

A key lesson from the ISCF is the challenge of incorporating new priorities mid-programme. EDI provides a clear example: while some Challenges embedded EDI into business planning, many introduced strategies late and saw limited traction, partly because there was no consistent top-down requirement, yet expectations were applied retrospectively. Future funds should address this systemic issue by:

- Embedding clear expectations at programme launch for cross-cutting priorities that are already known (e.g. EDI, sustainability), including dedicated budgets, targets and monitoring.
- Providing a structured mechanism for new priorities that arise mid-programme, such as requiring all projects to provide a light-touch, qualitative update on how they are adapting.
- Ensuring proportionality, so that programmes are accountable for engaging with emerging agendas, but without unfairly penalising consortia or creating excessive administrative burden.

This approach would allow future mission-led R&I funds to adapt to evolving government priorities in a consistent, fair and transparent way, while ensuring progress is captured and valued at the Fund level.

4. Frame Fund and Challenge outcomes against broader policy agendas and regional priorities

ISCF Challenges sometimes struggled to adapt as policy priorities and government structures evolved around them, leaving stakeholders uncertain about long-term support. However, given the breadth of the Fund, many outcomes naturally align with at least one major government ambition, from Levelling Up to Net Zero to industrial competitiveness, even where this was not an explicit programme objective. Future Funds should capitalise on this by evidencing and framing outputs systematically against current government agendas, showing how ongoing investments are already delivering value for national priorities.

This will help maintain an agile Fund-level identity, enabling a visible contribution across multiple strategic policy areas without requiring major redesigns mid-programme. This approach provides a powerful policy lever: ensuring the Fund demonstrates its current relevance, strengthens investor and industry confidence and sustains political backing, while avoiding the disruption of retrospective programme redesigns.

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Abbreviations

ADD	Accelerating Detection of Disease [name of Challenge Fund]
AI	Artificial intelligence
AoTF	Audience of the Future [name of Challenge Fund]
ATF	Automotive Transformation Fund
ATMP	Advanced therapy medicinal products
ATTC	Advanced Therapy Treatment Centres
BAME	Black, Asian and minority ethnic
BEIS	Department for Business, Energy & Industrial Strategy
CCUS	Carbon capture usage and storage
CR&D	Collaborative research and development
CRL	Commercial Readiness Level
CQT	Commercialising Quantum Technologies [name of Challenge Fund]
Defra	Department for Environment, Food & Rural Affairs
DER	Driving the Electric Revolution [name of Challenge Fund]
DER-IC	Driving the Electric Revolution Industrialisation Centre
DESNZ	Department for Energy Security and Net Zero
DHTC	Digital Health Technology Catalyst
DOI	Digital Object Identifier
DSbD	Digital Security by Design [name of Challenge Fund]
DSIT	Department for Science, Innovation & Technology
D2ED	Data to Early Diagnosis [name of Challenge Fund]
EDI	Equity, diversity and inclusion

EDT	Energy Data Taskforce
EEN	Enterprise Europe Network
ERIS	Energy Revolution Integration Service
FBC	Faraday Battery Challenge [name of Challenge Fund]
FE	Frontier Economics
FF	Future Flight [name of Challenge]
FTE	Full-time equivalent
GBIP	Global Business Innovation Programme
GDP	Gross Domestic Product
GHG	Greenhouse gas
GVA	Gross value added
HA	Healthy Ageing [name of Challenge Fund]
HTA	Human Tissue Authority
IDC	Industrial Decarbonisation Challenge [name of Challenge Fund]
IKC	Innovation and Knowledge Centre
IP	Intellectual Property
ISCF	Industrial Strategy Challenge Fund
IUK-BC	Innovate UK Business Connect
LCN	Low Cost Nuclear [name of Challenge Fund]
MHRA	Medicines and Healthcare Products Regulatory Agency
MIDRI	Multi- and Interdisciplinary Research and Innovation
MMC	Medicines Manufacturing Challenge [name of Challenge Fund]
MRL	Manufacturing Readiness Level
MSI	Made Smarter Innovation [name of Challenge Fund – formerly Manufacturing Made Smarter]

NGS	Next Generation Services [name of Challenge Fund]
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NPIC	National Pathology Imaging Co-operative
Ofgem	Office of Gas and Electricity Markets [Regulator]
PCF	Project Completion Form
PEMD	Power Electronics, Electronic Machines and Drives
PfER	Prospering from the Energy Revolution [name of Challenge Fund]
PMO	Project Management Office
PSM	Propensity Score Matching
RAI-EE	Robotics and Artificial Intelligence in Extreme Environments [name of Challenge Fund – formerly Robotics for a Safer World]
R&D	Research and Development
R&I	Research and Innovation
RTO	Research and Technology Organisation
SIPF	Strength in Places Fund
SLES	Smart Local Energy System
SME	Small and medium-sized enterprises
SSPP	Smart Sustainable Plastic Packaging [name of Challenge Fund]
TCC	Transforming Construction Challenge [name of Challenge Fund]
TFI	Transforming Foundation Industries [name of Challenge Fund]
TFP	Transforming Food Production [name of Challenge Fund]
TRL	Technology Readiness Level
UKBIC	UK Battery Industrialisation Centre
UKRI	UK Research and Innovation

VC	Venture capital
VfM	Value for money
VMIC	Vaccines Manufacturing Innovation Centre
WGS	Whole Genome Sequencing

1. Introduction

1.1. Policy context of the Industrial Strategy Challenge Fund

The establishment of the 2017 Industrial Strategy Challenge Fund (ISCF) reflected the UK's commitment to support its industrial ecosystem with innovation, collaboration and strategic investment. The ISCF (also referred to here as 'the Fund') aims to leverage Research and Development (R&D) to support the UK government's Industrial Strategy, which identified several goals around job creation and to 'embrace and benefit from the opportunity of technological change'.[1]

Against this backdrop, the government's investment of £2.6 billion in the ISCF was a targeted attempt to amplify R&D outcomes and catalyse next-generation solutions to societal challenges. In this report, we explore how and to what extent ISCF funding mechanisms have contributed towards the UK's innovation ecosystem, economic growth and industrial resilience.

The ISCF has five overarching objectives:

- Increase investment from UK businesses in research and innovation (R&I) and improve capability and capacity to boost productivity, global competitiveness and long-term growth.
- Increase multidisciplinary and interdisciplinary research around the Challenge areas[2] to solve complex, cross-cutting problems that single disciplines can't tackle alone, for a modern industrialised economy.
- Increase business–academic engagement in activities relating to the Challenge areas to accelerate the maturity and commercialisation of cutting-edge research.
- Increase collaboration between younger, smaller companies and larger, more established companies within the value chain to combine agility with scale, driving innovation across industries.
- Increase overseas investment in R&I within the UK to bring in new capital, technologies and global opportunities.

[1] HM Government. 2018. *Industrial Strategy: Building a Britain Fit for the Future.* As of 24 September 2025: https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

[2] ISCF Challenges were grouped into 'clusters' which mapped to the Industrial Strategy's four 'Grand Challenges'.

Adopting a Challenge-led funding approach[3] to delivering the objectives of the ISCF, UK Research and Innovation (UKRI) established 20 Challenges (see Table 1) focusing on collaborative, cross-sector R&I across four key thematic areas aligned with the UK Government's previous industrial strategy,[4] which emphasised four 'Grand Challenges': ageing society, artificial intelligence and data, the future of mobility and clean growth. The Fund was established through three sequential funding waves, with the Challenge selection approach evolving for each wave. Challenge selection was led by UKRI and the former Department for Business, Energy and Industrial Strategy (BEIS).[8] Challenges were designed and implemented through Challenge-level governance structures composed of programme boards, advisory groups, Challenge programme teams and Challenge Directors.[5] Challenge-level governance structures informed a fund-level governance structure overseen by the ISCF Steering Board.

A full description of the Challenge aims, the funding process and waves can be found in the ISCF baseline, process and interim impact evaluation reports.[6] In brief, ISCF funding has been awarded primarily to businesses, academic institutions and consortia bringing together industry, academia and other partners. Funding has supported a wide range of activities including applied research, technology development and maturity, pilot projects, scale-up and commercialisation work, as well as networking, collaboration and skills development. A variety of fundings mechanisms have been utilised to meet market demands, where projects typically aimed to accelerate innovation in priority sectors, strengthen UK industrial capability and address societal challenges.

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[3] UK Research and Innovation. 2023. *Industrial Strategy Challenge Fund: Process Evaluation Report.* As of 24 September 2025: https://www.ukri.org/publications/industrial-strategy-challenge-fund-process-evaluation-report/

[4] HM Government. 2018. *Industrial Strategy: Building a Britain Fit for the Future.* As of 24 September 2025: https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future

[5] Challenge Directors are industry leaders drawn from relevant sectors, recruited to the ISCF to provide strategic leadership and oversight to the Challenges.

[6] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/; UK Research and Innovation. 2023. *Industrial Strategy Challenge Fund: Process Evaluation Report*. As of 24 September 2025: https://www.ukri.org/publications/industrial-strategy-challenge-fund-process-evaluation-report/; UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

1.2. Evaluation aims and scope

In 2020, UKRI commissioned RAND Europe and Frontier Economics to undertake a Fund-level evaluation of the ISCF. The overarching aim was to assess the effectiveness and overall impact of the ISCF, complementing evaluations of individual Challenges. The Fund-level evaluation has been distributed across five phases (see Figure 1): evaluation framework and baseline assessment (Phase 1, completed)[7]; process evaluation (Phase 2, completed)[8]; interim impact evaluation (Phase 3, completed)[9]; final impact evaluation (Phase 4, this report); and value for money assessment (Phase 5, to be conducted in 2026).[10] While the evaluation was conducted to align with the completion of the majority of the 20 funded Challenges and the publication of their evaluations, impacts are expected to continue beyond the timelines of this evaluation given the longer periods required for their realisation. By conducting an impact assessment at this stage, we provide evidence of benefits realised in the immediate and short term. This assessment can also serve as a platform for longer-term analysis of ISCF contributions towards impact.

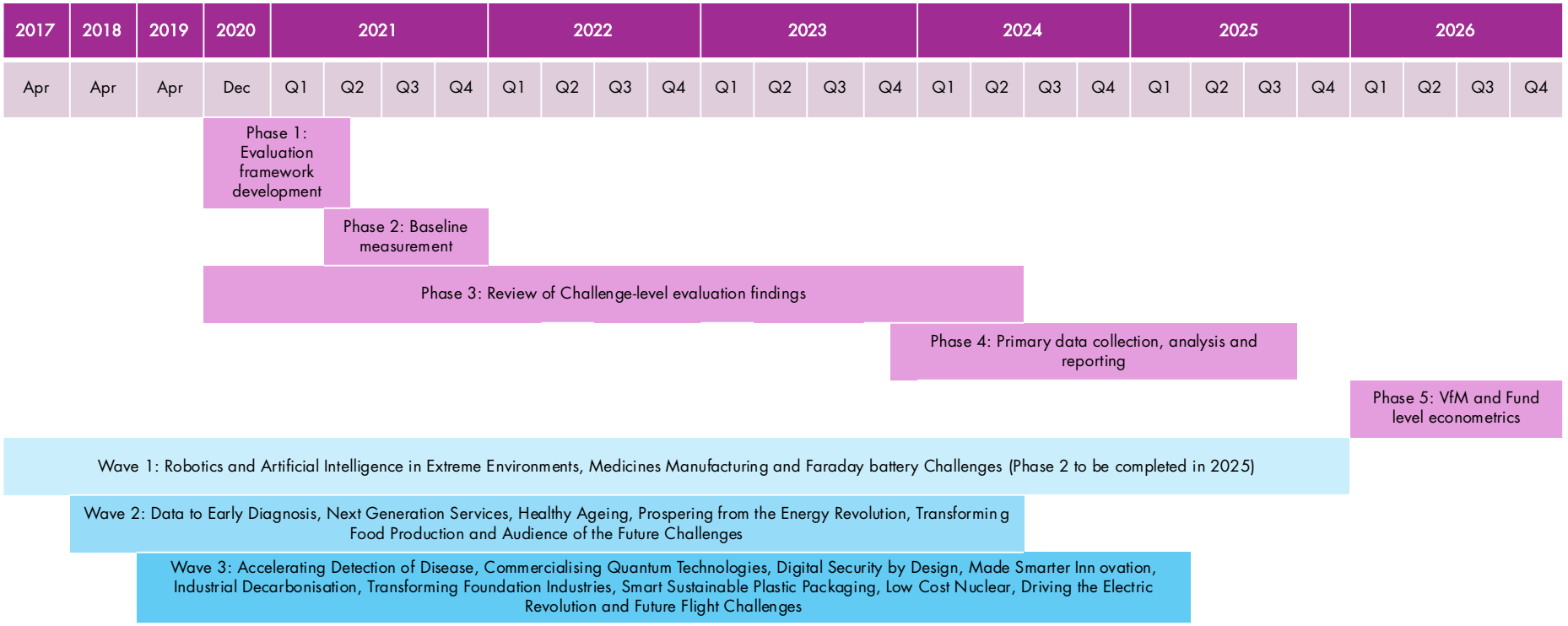
[7] UK Research and Innovation. 2022. *Evaluation of the Industrial Strategy Challenge Fund (ISCF)*. As of 24 September 2025: https://www.ukri.org/publications/evaluation-of-the-industrial-stategy-challenge-fund-iscf/; UK Research and Innovation 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/

[8] UK Research and Innovation. 2023. *Industrial Strategy Challenge Fund: Process Evaluation Report*. As of 24 September 2025: https://www.ukri.org/publications/industrial-strategy-challenge-fund-process-evaluation-report/

[9] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund.* As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[10] The phases presented here reflect a revision to the original evaluation structure as set out in the ISCF evaluation framework report. This revision was agreed with UKRI at the inception of Phase 3.

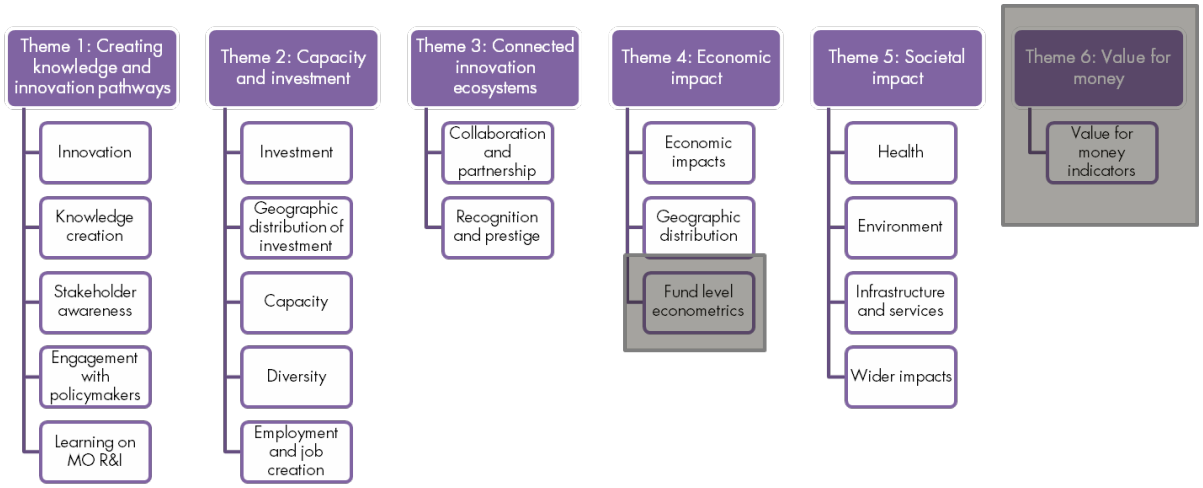
Figure 1. Timeline of the evaluation



Note: Timeframes included in the figure are Q1 (January–March), Q2 (April–June), Q3 (July–September) and Q4 (October–December).

As detailed in the interim impact evaluation report, the evaluation framework comprises six high-level evaluation themes and 20 impact subcategories (Figure 2).[11] Indicators of progress and data sources were mapped to 18 of these subcategories to arrive at a codebook for evaluation (see Annex B). All Fund-level evaluation themes were reviewed against each Challenge-level evaluation framework in order to explicitly state what was within the scope of a given Challenge. This avoided any misleading analyses of perceived gaps where an indicator may not have been within the scope of a given Challenge.

Figure 2. Impact evaluation themes and sub-themes



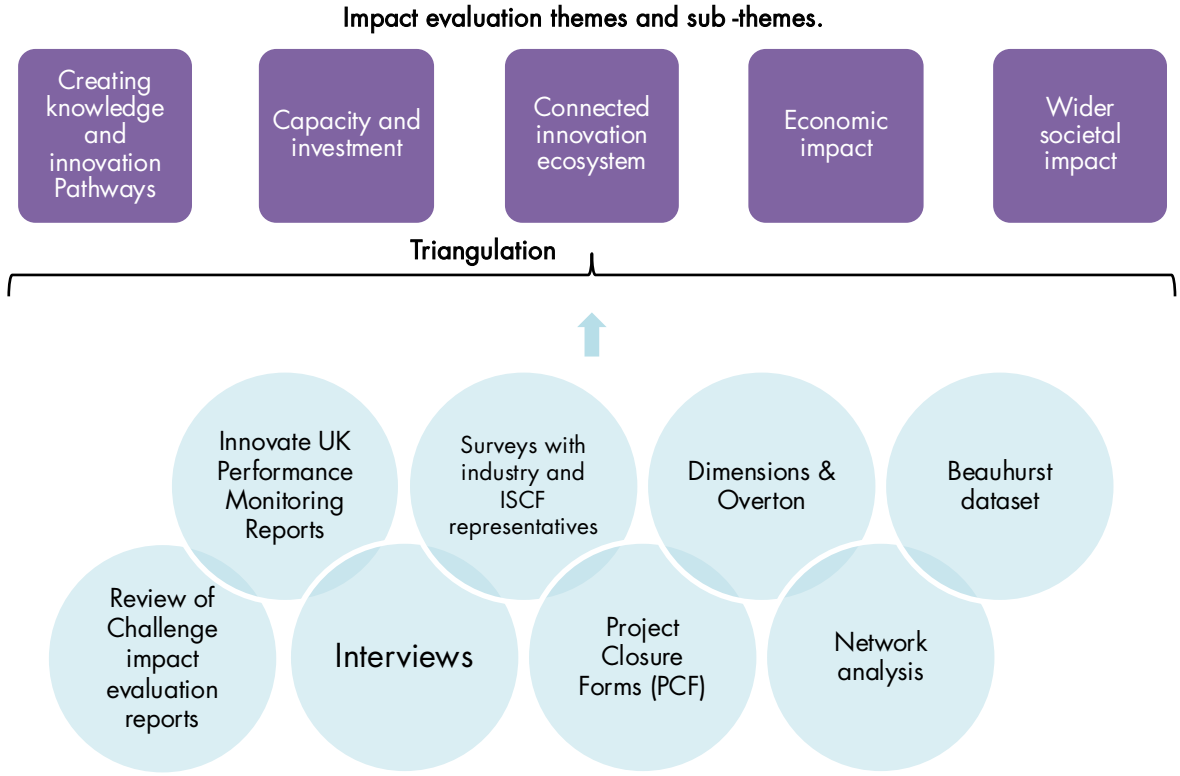
Source: RAND Europe.

Note: Theme 6 and Fund-level econometrics in Theme 4 will be assessed in a 5th Phase of the evaluation in 2026.

This evaluation has drawn on a range of data sources to establish a balanced understanding of Fund-level impact (see Figure 3).

[11] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

Figure 3. Phase 4 impact evaluation data sources



Source: RAND Europe.

Evidence collected from these sources was synthesised for analysis and triangulation. Key methodological actions undertaken for the evaluation are summarised below, and detailed methodological explanations are provided in the annexes.

Challenge evaluation reports

To collect evidence relating to the evaluation themes, we utilised information from Challenge-level interim and final impact evaluation reports (up to and including those submitted on 15 March 2025, as highlighted in Table 1), through a thematic coding exercise. Evidence of impact reported in Challenge reports was coded, aggregated and analysed at the Fund and cluster level. The coding framework can be found in Annex B and further details on the raw data and aggregation approach can be found in the Interim Impact Evaluation Report.

Surveys

To supplement the assessment of the Challenge-level evaluation reports and build on evidence gathered in earlier phases, two targeted surveys were circulated: one to ISCF representatives (n=46 invites with nine responses), and one to industry and third-sector representatives with prior ISCF involvement (n=40 invites with nine responses). Questions were tailored to each group but aligned to the overarching evaluation questions to support triangulation. Stakeholders were drawn from across Challenge areas, covering health and healthcare, energy, manufacturing and sustainability, transport and space, and the IT and data sectors. Survey data was analysed to produce summary statistics and qualitative insights on different themes of the ISCF's impacts.

Interviews

Evidence collected from previous ISCF evaluation phases, including surveys and interviews, was mapped against the Fund impact evaluation questions to identify remaining data gaps. This analysis drew on qualitative data and stakeholder sentiment captured across earlier phases. To address remaining gaps, particularly around pathways to impact, mechanistic insights and sector representation of ISCF participants, strategic interviews were conducted with commercial and non-commercial stakeholders (n=7). Interview data was thematically analysed for evaluation questions on collaboration and partnerships, sectoral growth, international investment and wider societal benefits (see Annex C for the interview protocol).

Dimensions dataset and Overton analysis

In collaboration with UKRI, we extracted the DOIs of papers from Challenges referencing the ISCF in their funding acknowledgements from the Dimensions[12] database as of 18 December 2024. The purpose of this exercise was to establish accurate numbers of publications and compare these against numbers aggregated from self-reported sources (e.g. project completion forms and Challenge evaluation

[12] Dimensions: A comprehensive collection of research-linked data across the research life cycle, from grants, publications, patents and datasets to clinical trials and policy documents. https://www.dimensions.ai/

reports). The DOIs were linked to Overton,[13] a grey literature citation index linking over 5 million documents to academic literature, to establish citations of ISCF outputs in policy documents. Further information on the methods used can be found in Annex D.

Project completion forms (PCF)

899 project completion forms (PCFs) were submitted to UKRI at the conclusion of the project reporting period. PCFs reported on project outputs and outcomes including new products, processes, services, IP, innovation, employment and skills, collaboration and networks, and economic impact. PCFs also reported on future plans, project management and finances. Collated PCF data from UKRI was mapped to the impact sub-themes to produce Fund-descriptive statistics and identify common trends at the Fund level. This was done for 16 relevant questions, as described in Annex E.

Network analysis

We analysed organisations involved in the ISCF to map interactions (or 'connections') between them using data from Delphi[14] and Innovate UK Business Connect (BC).[15] Connections were identified through involvement in collaborative projects funded by the ISCF, as well as through attendance at events organised by Challenges. Network analysis helped generate insights on collaborative ecosystems within the ISCF at two levels: as connections between organisations and between Challenges. An in-depth discussion of the methods used can be found in Annex F.

Econometrics analysis of business investment outcomes

A Propensity Score Matching (PSM) model was used to assess the effect of the ISCF on participating organisations' ability to secure external fundraising events and raise capital. The PSM model was used to compare Fund participants (i.e. those who successfully applied for project funding) with other applicants who were never successful in securing ISCF funding. By matching organisations with similar characteristics such as firm age, sector, number of employees and prior participation in an innovation accelerator, comparable control groups were created to isolate the

[13] Overton: The largest searchable index of policy publications and grey literature. https://www.overton.io/

[14] Delphi: An internal UKRI dataset that provides a list of organisations, the projects they were involved with, the grant funding they received for each project, and the Challenge that the project was associated with. Delphi data also provides some information on the type and size of organisations (e.g. academic or business; small, medium or large). While Innovate UK Business Connect data provides information specifically from ISCF events, Delphi helped capture formal collaboration activities that were realised and enabled by the Fund.

[15] Innovate UK Business Connect (BC) data: Previously known as the Knowledge Transfer Network (KTN), this dataset provides an anonymised list of attendees at events organised by ISCF Challenges and attended by organisations. It covers a broad range of events including briefings, webinars, workshops and networking events.

impact of ISCF participation on business investment outcomes. An 'analytical dataset' for the model was constructed by linking data from Delphi,[16] the Innovation Funding Service[17] and Beauhurst.[18] An in-depth methodological discussion of the PSM model can be found in Annex G.

Further econometric and value for money assessment will be conducted in Phase 5 (2026) to quantitatively measure the ISCF's Fund-level impact on business outcomes for participating organisations.

Table 1. ISCF Challenges and the latest Challenge evaluation reports available

Cluster	Challenges	Latest evaluation available for this Challenge	Date
Clean Growth	Industrial Decarbonisation (IDC)	Final	Sep 2024
	Low Cost Nuclear (LCN)	Interim	Mar 2024
	Prospering from the Energy Revolution (PFER)	Final	Aug 2023
	Smart Sustainable Plastic Packaging (SSPP)	Interim	Jan 2023
	Transforming Construction (TCC)	Final	Feb 2022
	Transforming Food Production (TFP)	Final	Feb 2024
	Transforming Foundation Industries (TFI)	Interim	Oct 2022

[16] The model uses raw data from the same Delphi dataset (used in network analysis).
[17] Innovation Funding Service (IFS): A central UKRI database containing information about both successful and unsuccessful applicants to funding competitions.
[18] Beauhurst: A commercial dataset that provides detailed information on UK companies, including financial information sourced from Companies House, various innovation metrics and a detailed industry categorisation using information from the company's website description. It also includes Company Registration Numbers, which allows Beauhurst data to be linked to Delphi and the IFS at organisation level. https://www.beauhurst.com/

	Audience of the Future (AOTF)	Final	Sep 2022
Data and Digital	Commercialising Quantum Technologies (CQT)	Interim	[Uncertain] 2023
	Digital Security by Design (DSbD)	Interim	Jun 2023
	Made Smarter Innovation (MSI)	Interim	Mar 2023
	Next Generation Services (NGS)	Final	Sep 2022
	Robotics for Artificial Intelligence and Extreme Environments (RAI-EE)	Final	Aug 2023
Future of Mobility	Driving the Electric Revolution (DER)	Final	Mar 2025
	Faraday Battery (Phase 1) (FBY)	Final	Oct 2023
	Future Flight (FF)	Final	Apr 2025
Healthy Society	Accelerating Detection of Disease (ADD)	Interim	May 2024
	Data to Early Diagnosis and Precision Medicine (D2ED)	Final	Oct 2023
	Healthy Ageing (HA)	Final	Jun 2024
	Medicines Manufacturing (MMC)	Final	Jul 2022

1.3. Limitations of the impact evaluation

Throughout the course of the impact evaluation, evidence drawn from multiple sources was triangulated to sense-check the findings, add nuance and ensure that the appropriate evidence was being captured. Despite these strengths, the following limitations should be noted:

- **Some Challenge-level evaluations are ongoing, and impacts are expected to accrue over a long time period given the nature of the sector and the industrialisation and commercialisation process**. Additionally, some Challenges are ongoing with reports of their progress pending. As of March 2025, we were able to review the final impact evaluation reports of 13 out of 20 Challenges. For the balance of the Challenges, evidence of impact, particularly regarding mid- and long-term outcomes, was difficult to collate in the absence of final evaluation reports (as set out in the theory of change in the ISCF Evaluation Framework Report). In addition, the 13 Challenges and their projects only concluded between 2 and 18 months prior to the time of reporting. Hence many impacts are as yet unrealised and likely to accrue over time. In summary, evidence used in this evaluation captures only a snapshot of the ISCF's impact, with more benefits expected to emerge in the long term.
- **Low response rate for surveys as stakeholders have moved on.** Despite inviting 45 and 40 stakeholders from the ISCF and industry representative groups, respectively, we only received 9 responses from each group. This left some gaps in the representativeness of the sample; for example, we received no responses from the transport industry. It also posed additional difficulties in triangulation of evidence where industry representatives' views were crucial to understanding external stakeholders' perceptions of the ISCF. However, the stakeholders involved in the follow-up interviews – and the interview guide – were selected with this in mind, to fill any remaining data gaps from the surveys, and were successful in doing so. In addition, evidence was also drawn from previous rounds of stakeholder engagement such as workshops and interviews done at the baseline and interim impact evaluation stage. Collectively this mitigates the low response rate in the latest round of stakeholder outreach.
- **Systematic aggregation from Challenge to Fund is not always possible**. Given the diverse sectors and projects represented across the 20 Challenges within the scope of this evaluation, it has not been possible to aggregate and represent all progress as a Fund-level narrative. For instance, impact indicators for environmental sector projects are not comparable to those of the Quantum sector. The nuances of individual Challenges, as assessed in their individual evaluations, are not represented in this Fund-level evaluation due to its systems-level overview. To counter this limitation, Fund-level data was collected in this evaluation phase using new primary and secondary sources (e.g. a new 'analytical dataset' for econometric analysis). Where appropriate, Challenge-level examples have also been highlighted to provide nuance in aggregate assessments of the Fund. A systematic mapping of indicators has been conducted for each Challenge indicator against Fund-level indicators to find meaningful groupings of evidence wherever possible.

1.4. Report structure

Subsequent chapters of this report are structured around specific themes of impact, assessing the extent of the ISCF's contributions to innovation, knowledge creation, follow-on investment, new and improved collaborative ecosystems, sectoral growth and wider societal benefits:

- Chapter 2 discusses findings relating to innovation, knowledge creation, stakeholder awareness and engagement with policymakers as a direct outcome of ISCF investment.
- Chapter 3 covers the ISCF's impact on investment and capacity-building through infrastructure, skills development and job creation.
- Chapter 4 examines the collaborative ecosystems within the ISCF, focusing on collaboration and partnership, recognition from Fund activities and results from network analysis.
- Chapter 5 presents findings on the ISCF's economic impact, focusing on turnover, productivity and broader sectoral growth.
- Chapter 6 evaluates evidence on the ISCF's wider health, environmental and societal impacts.

The report is supplemented with recommended policy actions for improving the ISCF's impacts across these themes, as recorded in Chapter 7.

2. Creating knowledge and innovation pathways

This chapter discusses findings relating to **knowledge creation, innovation, stakeholder awareness and engagement with policymakers** as a direct outcome of ISCF investment.

2.1. Knowledge creation

Evaluation question

- What has been the contribution of the ISCF to new knowledge addressing the Challenges, both within the UK and internationally?

Key summary of ISCF overall impact on knowledge creation

- The ISCF generated a significant volume of knowledge outputs, with over 3,300 publications and hundreds of non-traditional outputs, including datasets, tools and software, reported across Challenges.
- Publication activity exceeded that of unsuccessful applicants, with Fund-supported projects producing more think pieces, grey literature and higher-than-average citation scores in at least two Challenges.
- Collaborative models drove knowledge generation, particularly through cross-sector and interdisciplinary partnerships embedded in CR&D and early-stage research strands.
- Non-traditional knowledge outputs and knowledge exchange activities were a notable feature, including databases, training resources and software – especially in data- and health-focused Challenges.
- Dissemination was supported through a wide range of activities, including webinars, workshops and social media, extending the reach and utility of outputs beyond academia.
- Barriers included infrastructure misalignment and data-sharing challenges, particularly in partnerships with public institutions, as well as limitations in engaging academic partners less familiar with industry-facing knowledge creation.

Key conclusions

- The ISCF successfully supported high levels of knowledge creation, including publications and diverse non-traditional outputs which were of a high quality and at times higher quality compared to non-funded peers.
- Collaborative structures were key drivers, enabling interdisciplinary and cross-sector publications and tools.

- Barriers included data-sharing constraints and infrastructure misalignment, particularly in healthcare-focused Challenges.
- Overall, the Fund made a strong contribution to the UK's innovation knowledge base.

The activities of the Fund have resulted in more than 3,300 unique publications, including journal articles, book chapters, policy papers and reports. The ISCF has made significant contributions to knowledge creation through the generation of new outputs, as evidenced in Dimensions data, Challenge-level evaluations and survey responses from Fund representatives.[19]

Aggregation from the Challenge level revealed at least 3,800 publications from 15 Challenges,[20] spanning journal articles, reports, policy papers and briefings, consultancy reports, think pieces, working papers, conference proceedings, and books or book chapters.[21] This number is likely an underestimation, as some Challenges only reported publication outputs for specific strands or did not report final figures.[22] Qualitative assessments from statements across the Challenges indicated that most knowledge outputs were skewed towards journal articles and other written outputs (including blogs, brochures and technical studies).[23] The Fund's emphasis on knowledge creation is also reflected at the cluster level, as evidenced by all Challenges across the four clusters, with the exception of Low Cost Nuclear. PCF data provides an indicator of organisations aiming to produce knowledge outputs, with 99 of 163 academic organisations involved in ISCF projects intending to produce a publication as a result of their participation in their project (see Annex E).

Knowledge outputs were improved compared to unsuccessful applicants: for example, Next Generation Services projects averaged 9.7 think pieces (up from 6.6 before applying to the

[19] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report.* As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/

[20] The variation in number of total publications can be partially explained by duplication – i.e. one publication is linked to multiple ISCF projects.

[21] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Commercialising Quantum Technology (Interim)'; 'Audience of the Future (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Transforming Foundation Industries (Interim)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'; 'Industrial Decarbonisation (Final)'; 'Driving the Electric Revolution (Final)'.

[22] 'Audience of the Future (Final)'; 'Transforming Construction (Final)'; 'Healthy Ageing (Final)'; 'Prospering from the Energy Revolution (Final)'.

[23] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Industrial Decarbonisation (Final)'.

programme), compared to the unsuccessful applicants' publication record of 5.5 think pieces on average. Publication of grey literature by successful applicants also approximately doubled to an average of 9.2 outputs over the course of the Challenge; unsuccessful applicants, meanwhile quadrupled their grey literature output to an average of 4.0 publications.[24] Similarly, publications from Fund-supported projects in at least two Challenges often had higher-than-average citation scores.[25]

Collaboration was evidently a major driver of publications; at least three Challenges attributed between a fifth to a quarter of their publication outputs to collaborations.[26] Collaborations were established and fostered internationally and across disciplines and sectors, involving academics in the CR&D and other collaboration-focused strands or in early-stage research.[27]

Alongside publications, the activities of the Fund also produced a wider range of knowledge outputs and knowledge exchange activities. As reported in the interim evaluation, not all Challenges were funded in areas where a peer-reviewed publication is appropriate or warranted, and some Challenges may have focused on IP or capacity generation and training as opposed to knowledge generation.[28] While other knowledge outputs were often not the main output of Challenges, eight Challenges reported the creation of at least 182 databases and data platforms,[29] 16 instances of new software[30] and 51 tools.[31] Non-traditional knowledge outputs were especially relevant for three Challenges at the intersection of the Healthy Society and Data and Digital clusters. This was possibly driven by their thematic focus on improving digital facilities for better healthcare.[32] 67% of surveyed ISCF representatives (n=9) also corroborated the Fund's impact on

[24] 'Next Generation Services (Final)'.
[25] 'Prospering from the Energy Revolution (Final)'; 'Faraday Battery (Final)'.
[26] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'.
[27] Survey of ISCF representatives; 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Faraday Battery (Final)'.
[28] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/
[29] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[30] 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[31] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'.
[32] 'Accelerating Detection of Disease (Interim)'; 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'.

the creation of new data repositories and tools.[33] Other examples of knowledge outputs included research materials, best practice guidelines, processes and protocols.[34]

Outputs were disseminated through knowledge exchange activities such as webinars, virtual talks, open days, social media engagement, conferences and workshops that led to new training programmes and wider skill-building opportunities (see Section 4.1 for a discussion of collaborations and knowledge sharing).[35]

Some barriers were noted to developing knowledge outputs. The Data to Early Diagnosis Challenge experienced limitations in setting up new data-sharing platforms, due to complications in technical infrastructure compatibility with National Health Service (NHS) partners' infrastructure, as well as a wider barrier of understanding and awareness around data sharing processes and expectations. Separately, projects experienced difficulty in accessing high-quality, annotated NHS data quickly, which placed a heavy time burden on projects, aggravated by weak communication between partners.[36] One surveyed ISCF representative also suggested that the Fund's enhanced focus on industrial outputs led to lesser involvement of academic researchers, especially those who were unaccustomed to producing non-traditional outputs.[37]

2.2. Innovation and technology development

Innovation – a central tenet of the Fund – was assessed through updates to, or new developments in, technologies, processes, tools and services across the Challenges. Readiness of these outputs from a technology maturity and commercialisation perspective was also seen as an important indicator of innovation.

[33] Survey of ISCF representatives, question 6.
[34] 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Medicines Manufacturing (Final)'.
[35] Survey of ISCF representatives; 'Transforming Food Production (Final)'; 'Made Smarter Innovation (Interim)'; 'Prospering from the Energy Revolution (Final)'.
[36] 'Data to Early Diagnosis (Final)'.
[37] Survey of ISCF representatives.

Evaluation questions

- To what extent has the ISCF advanced the readiness of new technologies, products and processes?
- To what extent have ISCF outputs (technologies, products, processes, services, approaches, etc.) been implemented/adopted within society?

Key summary of ISCF overall impact on innovation

- Across the Fund, most projects progressed from TRL 1–4 to TRL 4–9, with an average gain of ~2 TRL levels and one-third of reporting projects reaching TRL 7+.
- Total IP assets climbed from 319 to 442 between the interim impact assessment and the final assessment and are expected to rise further; ISCF projects consistently out-performed matched non-funded comparators on IP generation.
- Roughly half of participating organisations expect to launch new products or services within three years, yet survey responses show significant uncertainty and only limited evidence of full commercial roll-out to date.
- Flexible funding instruments, collaborative consortia, access to national test-beds/centres and targeted SME support collectively de-risked R&D and accelerated proof-of-concept work.
- Fund-wide tools for TRL 8–9 scale-up, regulatory navigation and market-entry support were patchy; delivery-team capacity constraints further slowed adoption.

Key conclusions

- The ISCF has clearly succeeded at catalysing technical innovation and generating IP, but its contribution to large-scale commercialisation is still uncertain and fairly limited.
- Portfolio flexibility, early demonstration funding and capacity-building platforms created a robust funnel of technologies and strengthened investor confidence.
- To convert technical wins into commercial impact, future mission-led funds should ring-fence resources for TRL 8–9 activities, embed regulatory-engagement pathways and maintain stable policy hooks that outlast organisational changes.

2.2.1. Innovation

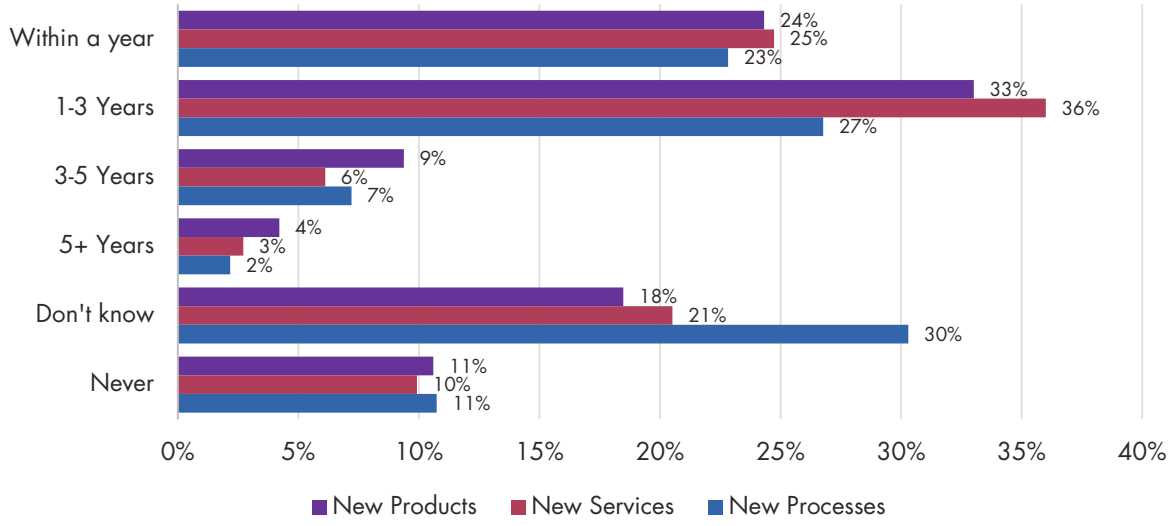
The ISCF has supported the development and improvement of new and existing technologies, products, processes and services across sectors.[38] At least 15 out of 20 Challenges credited the ISCF's positive contributions towards developing and improving new and existing technologies and services.[39] For two more Challenges, the ISCF's contribution in this regard is expected to be realised in the long term.[40] Analysis of PCF data further confirms that development of new products and services was the most common innovation aim within the Fund (as identified by 65% and 47% of all PCF respondents respectively; n=736). As a result of their participation in the ISCF, 57% of all PCF respondents (n=736) expected to produce new products while 61% expected to generate new services within three years of their ISCF projects (see Figure 4). However, there is considerable uncertainty in the responses, with 'don't know' being a common response. This potentially highlights businesses' uncertainty surrounding the future state of markets in the medium- to long-term horizon.

[38] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Transforming Foundation Industries (Interim)'; 'Medicines Manufacturing (Final)'; 'Audience of the Future (Final)'; 'Driving the Electric Revolution (Interim)'. Note: the Data to Early Diagnosis and Precision Medicine Challenge has been referred to interchangeably as the Data to Early Diagnosis in this report.

[39] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Transforming Foundation Industries (Interim)'; 'Medicines Manufacturing (Final)'; 'Audience of the Future (Final)'; 'Driving the Electric Revolution (Final)'; 'Commercialising Quantum Technology (Interim)'; 'Made Smarter Innovation (Interim)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'.

[40] 'Accelerating Detection of Disease (Interim)'; 'Digital Security by Design (Interim)'.

Figure 4. The time-bound expectations of producing new products (purple), new services (red) and new processes (blue) as a result of participating in ISCF projects



The Fund also supported the translation and application of technologies across sectors. The Next Generation Services Challenge, for example, supported the integration of AI and data analytics services into projects, with 84% of projects using these products and services at the end of the programme compared to 64% at the beginning.[41] The Transforming Food Production Challenge was acknowledged by stakeholders as having driven progress in robotics for production and harvesting in agriculture – a notable application-led use case.[42]

The ISCF has led to the development of IP across many sectors and is expected to continue to do so. An increase in Challenge IP levels has been reported since the interim evaluation report, from 319 IP and patent applications to 442.[43] Across Challenges where matched comparators were available, IP instances were always higher in ISCF projects. IP ranged from trademarks and trade secrets to copyright and patents, with 78 instances of awarded IP, copyright, license agreements and patents, and at least 500 planned or expected applications – the majority of the latter from the Transforming Food Production Challenge.[44] For the Next Generation Services Challenge,

[41] 'Next Generation Services (Final)'.
[42] 'Transforming Food Production (Final)'.
[43] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'.
[44] 'Faraday Battery (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Commercialising Quantum Technology (Interim)'; 'Audience of the Future (Final)'.

applicants had a 120% increase in patent activity from prior to the Challenge, while unsuccessful applicants experienced a 50% decrease in the number of patent outputs.[45] Based on qualitative evidence reported by at least 12 Challenges, the ISCF has facilitated IP applications, patent awards and licensing agreements among participating organisations.[46] Across the Fund, four other Challenges either provided no evidence or highlighted that the ISCF's impact in this regard was expected in the future.[47]

In some cases, the levels of IP reflect the UK's global standing in each sector. For example, UK Intellectual Property Office (UKIPO) data showed a 60% increase in patent applications relating to EV battery technology between 2021 and 2022 compared to 2015–2016 (the year prior to the creation of the ISCF).[48] The patent applications can be attributed, at least partially, to the Faraday Battery Challenge itself; collaborations reported that their expectations of commercial opportunity had increased due to the projects (see Chapter 4). Several features of the Challenge may have contributed to the increase in IP activity:

- The structured consortia model fostered cross-sector collaboration, enabling knowledge-sharing and complementary expertise that supported innovation.
- Targeted funding de-risked early-stage R&D and enabled firms to pursue patentable developments they might not otherwise have invested in.
- Additionally, government backing provided a clear signal of policy direction, increasing confidence in the future commercial viability of battery technologies and incentivising firms to secure intellectual property as part of longer-term competitive strategies.

Similarly, the Driving the Electric Revolution Challenge reported a 22% increase in the number of Power Electronics, Electronic Machines and Drives (PEMD) patents filed in the UK since the start of the Challenge.[49] This increase is consistent with survey respondents who reported a positive impact on their volume of patent filing between 2020 and 2023 in the Challenge-level evaluation, although they did not provide the number of patents directly attributable to the Challenge itself.

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[45] 'Next Generation Services (Final)'.
[46] 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'; 'Driving the Electric Revolution (Final)'; 'Commercialising Quantum Technology (Interim)'; 'Medicines Manufacturing (Final)'; 'Data to Early Diagnosis (Final)'; 'Audience of the Future (Final)'.
[47] 'Digital Security by Design (Interim)'; 'Made Smarter Innovation (Interim)'; 'Accelerating Detection of Disease (Interim)'; 'Transforming Foundation Industries (Interim)'.
[48] 'Faraday Battery (Final)'.
[49] 'Driving the Electric Revolution (Final)'.

In comparison to pre-award or to matched unsuccessful applications, increased IP activity from ISCF-funded projects has been a general trend. However, the proportion patent applications by Robotics and Artificial Intelligence in Extreme Environments Challenge projects decreased when compared to pre-award activity. This coincides with a drop in the UK's global standing in terms of volume of innovative products registered. Notably, the value of the patents produced in the UK was still high, with the UK ranked fourth globally (at the time of Challenge-level evaluation in 2023).[50] The Data to Early Diagnosis Challenge also presented no evidence on patent applications, but noted that longer a time frame and more resources were needed to set up contracting and governance structures prior to submission of the Challenge application (as well as during the first few months of delivery) in order to work through IP agreements.[51]

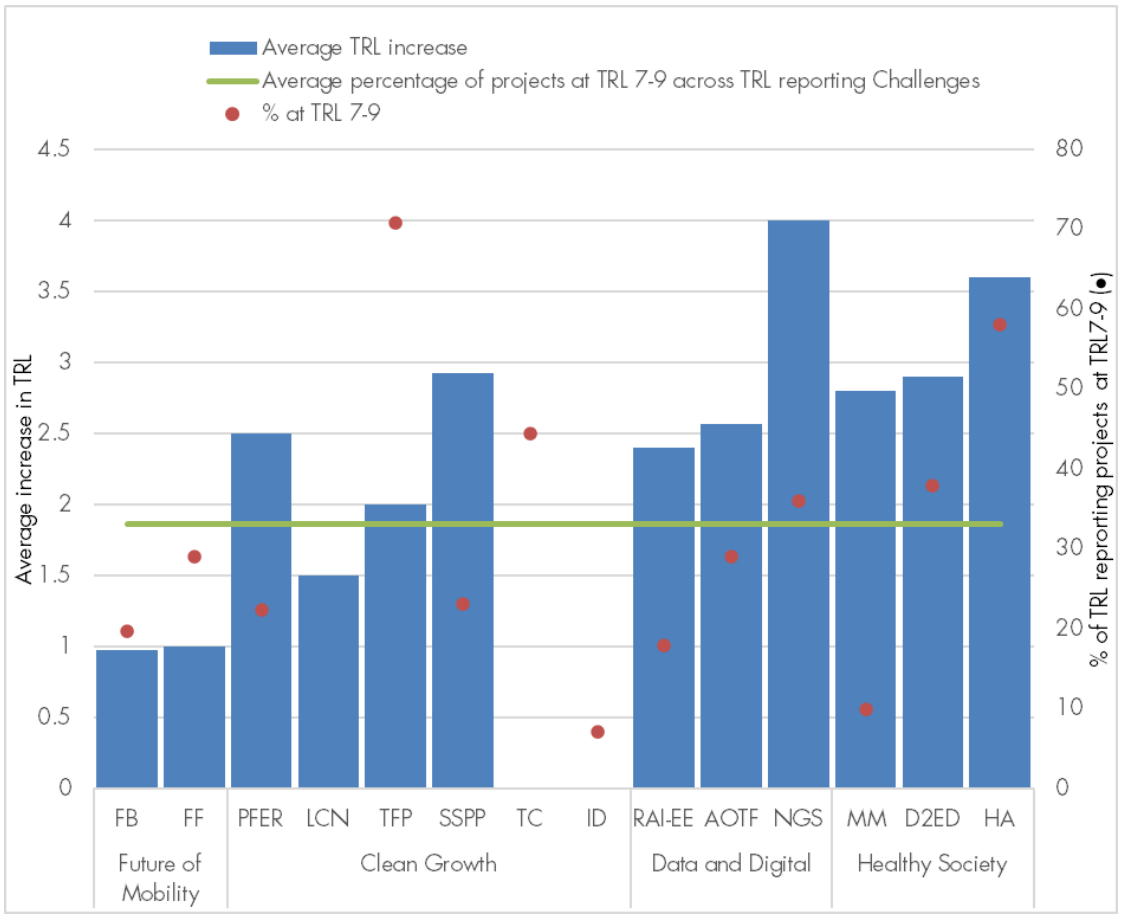
The acceleration of technologies towards commercialisation was reflected in the progression of TRL[52] levels. Of the innovations developed under the Fund that could be tracked by TRL, most projects reported TRLs of 1 to 4 at baseline assessment in 2022.[53] By comparison, by the end of their funding period, Challenges generally progressed TRLs to between 4 and 9, moving away from the early-stage research. For example, compared to start of Challenge, Faraday Battery projects most commonly progressed from TRLs 1–2 to TRLs 3–4 at the time of final Challenge-level evaluation (i.e. showing progression from developing basic principles to testing proof of concept). While the Faraday Battery Challenge did not report on average TRL progression, the proportion of projects testing their technologies in real, controlled environments (TRLs 5–6) also increased from 10% at the start of the Challenge to 34% by the end.[54]

On average, the Fund achieved progression of between 1 and 4 levels of TRL maturity, across all Challenges,[55] with one Challenge reporting an average increase of 4 levels (Next Generation

[50] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[51] 'Data to Early Diagnosis (Final)'.
[52] TRLs measure the maturity of a technology, from TRL 1 (basic principles observed) to TRL 9 (system proven in operational environment). The effort required to move between levels varies; early stages often progress more quickly, while later stages (e.g. TRL 5 to TRL 6) typically demand more extensive testing, demonstration and validation.
[53] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/. Challenges reporting on TRL at baseline: Audience of the Future, Future Flight, Prospering from the Energy Revolution, Commercialising Quantum Technologies, Medicines Manufacturing and Faraday Battery; the Audience of the Future and Commercialising Quantum Technologies Challenges were at an advanced TRL (8–9) at baseline.
[54] 'Faraday Battery (Final)'.
[55] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Made Smarter Innovation (Interim)'; 'Transforming Food Production

Services), as shown in Figure 5.[56] In some cases, this TRL progression was exceptional: a number of Healthy Ageing projects which had started at low TRLs, for example, moved from TRL 1 to 6, although this Challenge supported projects across the full innovation pipeline.[57] Overall, the proportion of projects at scale-up and commercialisation stage increased over the course of the Fund, with Challenges reporting anywhere between 18 and 71% of their projects reaching TRL 7 and above.[58] Across 13 Challenges for which figures were available in Challenge reports or PCF data, an average of 33% of projects reached TRLs between 7 and 9.

Figure 5. Average increase in TRL and % of TRL-reporting projects reaching a TRL of 7–9



Note: Percentages of TRL-reporting projects at TRL 7–9 are calculated from PCF data for RAI-EE, TC and ID, and from the most recent Challenge reports otherwise. Challenges are organised on the horizontal axis based on their clusters.

(Final)'; 'Audience of the Future (Final)'; 'Medicines Manufacturing (Final)'; 'Transforming Foundation Industries (Interim)'; 'Future Flight (Final)'.

[56] 'Healthy Ageing (Final)'; 'Audience of the Future (Final)'; 'Next Generation Services (Final)'.

[57] 'Healthy Ageing (Final)'.

[58] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Future Flight (Final)'.

TRL progress amongst successful applicants' projects was stronger than that of unsuccessful applicants, which stayed at the same level in many instances or progressed by 1 TRL less than successful applicants.[59] Across four Challenges reporting the TRL progression of unsuccessful applicants' projects, awarded projects progressed 1.5 TRLs more than unsuccessful applicants on average.[60] One Challenge highlighted that this TRL progression for successful applicants had occurred at a faster rate of development, compared to unsuccessful applicants, highlighting its ability to promote innovation.[61] Despite these figures, some stakeholders in receipt of ISCF funding noted that there were still poor links between early- and late-stage TRLs, limiting progression to higher, commercial-scale TRLs (8–9).[62] In particular, gaps in strategic coordination, prioritisation, and alignment with downstream partners (such as regulators, manufacturers or investors) were seen as barriers to advancing promising technologies, paired with lack of dedicated support for navigating processes across the Fund as a whole. For example, an interviewed stakeholder described one factor that affected the technology development process under their Challenge:

> 'We ended up with a thousand "flowers" blooming but there was no convergence towards what problems we were trying to solve. We did this bottom-up approach [to technology development] but… at some point we should have pivoted to do a top-down [exercise].'[63]

In the stakeholder's views, lack of prioritisation meant that new technologies outpaced existing collaboration with regulators, decreasing the extent to which all technologies could be tested for higher TRLs.

The ISCF's combination of tailored funding mechanisms, capacity-building activities and Challenge-level processes played a central role in supporting TRL progression across a range of sectors and technologies. The mix of early-stage research funding, collaborative R&D projects and large-scale demonstrator programmes enabled progression across different TRL stages, while capacity-building efforts, including industry engagement, access to specialised infrastructure and support for commercialisation, addressed key barriers to scaling technologies. While some Challenges noted the need for further resource as well as time to navigate IP and contractual

[59] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'.
[60] 'Transforming Food Production (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Audience of the Future (Final)'.
[61] 'Transforming Food Production (Final)'.
[62] 'Data to Early Diagnosis (Final)'.
[63] Interview: INT_03.

complexities, the integrated design of the ISCF's funding and support mechanisms was broadly effective in facilitating technology development from research through to higher TRL levels.[64]

Box 1. Spotlight on Fund mechanisms to innovation impact

Mechanisms to impact

- **Funding instruments:** Various funding instruments across ISCF Challenges enabled successful TRL progression and IP generation. For example, successful progression along the early and mid TRLs reflected the specific support provided through the Faraday Institute and collaborative research and development (CR&D) projects in the Faraday Battery Challenge.[65] Similarly, the Prospering from the Energy Revolution Challenge's Demonstrator projects resulted in higher TRLs than those in the Fast Start competition, for example, which focused on early-stage research.
- **Capacity-building activities:** TRL progression was also supported through the Fund's capacity-building efforts, facilitating industry engagement to help commercialise products.[66] The ISCF enabled access to infrastructure, including digital infrastructure, facilities and centres that supported companies with their manufacturing capabilities.[67] Access to physical and digital infrastructure supported projects across multiple stages, including design, piloting and testing of manufacturing processes and techniques.[68] However, the Data to Early Diagnosis Challenge noted that the Challenge/Fund needed to commit sufficient resources and time to work through IP and contractual obligations.[69]

Barriers to innovation impact

Some barriers obstructing the realisation of innovation impact are illustrated below using examples from three ISCF Challenges:

- **Administrative delays:** Challenges were hindered by slow administrative processes and delays which limited engagement with stakeholders. For instance, participants in the Healthy Ageing and Data to Early Diagnosis

[64] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[65] 'Faraday Battery (Final)'.

[66] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

[67] 'Medicines Manufacturing (Final)'; 'Driving the Electric Revolution (Interim)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

[68] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[69] 'Data to Early Diagnosis (Final)'.

Challenges faced barriers to impact due to longer time frames for award procedures during set-up and contracting.[70] More support from UKRI management to help mediate relationships with big industry and National Health Service partners was one recommendation made to overcome this barrier.[71]

- **Technical difficulties:** Of all PCF respondents (n=899), 67% reported technical, scientific or engineering challenges to advancing R&D as the biggest barrier to exploitation, slowing progress.[72] The Prospering from the Energy Revolution and Data to Early Diagnosis Challenges also highlighted issues surrounding access to data which affected the pace and extent of innovation impact within projects.[73]
- **COVID-19:** As an external barrier for Data to Early Diagnosis Challenge activities, the pandemic disrupted supply chains and aggravated existing pressures regarding skill shortages and lack of investment. It also affected patient recruitment and availability of sequencing capacity, which limited innovation.[74] However, the pandemic did place a spotlight on the benefits of digitalisation, including digital technologies and tools, as seen in the case of the Prospering from the Energy Revolution Challenge.[75]

2.2.2. Implementation

In some instances, the support that the ISCF provided to reach higher TRLs translated towards implementation and adoption of technologies and products. The adoption of products remains at an early stage, with positive signs such as the uptake of process-oriented ISCF outputs reported in six Challenges, indicating promise for further adoption.[76] While most ISCF Challenges discussed commercialisation in terms of progressing up the TRL scale, there were only a few examples where Challenges discussed wider adoption and implementation of specific high-TRL products. The Data to Early Diagnosis, Robotics and Artificial Intelligence in Extreme Environments, Next Generation Services and Health Ageing Challenges mentioned at least 45 outputs that were implemented after reaching TRL 7–9.[77] In addition, the Transforming Food

[70] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'.
[71] 'Data to Early Diagnosis (Final)'.
[72] Results from PCF data, question 48.
[73] 'Prospering from the Energy Revolution (Final)'; 'Data to Early Diagnosis (Final)'.
[74] 'Data to Early Diagnosis (Final)'.
[75] 'Prospering from the Energy Revolution (Final)'.
[76] Medicines Manufacturing (Final); Data to Early Diagnosis (Final); Next Generation Services (Final); Prospering from the Energy Revolution (Interim); Audience of the Future (Final); Transforming Construction (Final).
[77] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

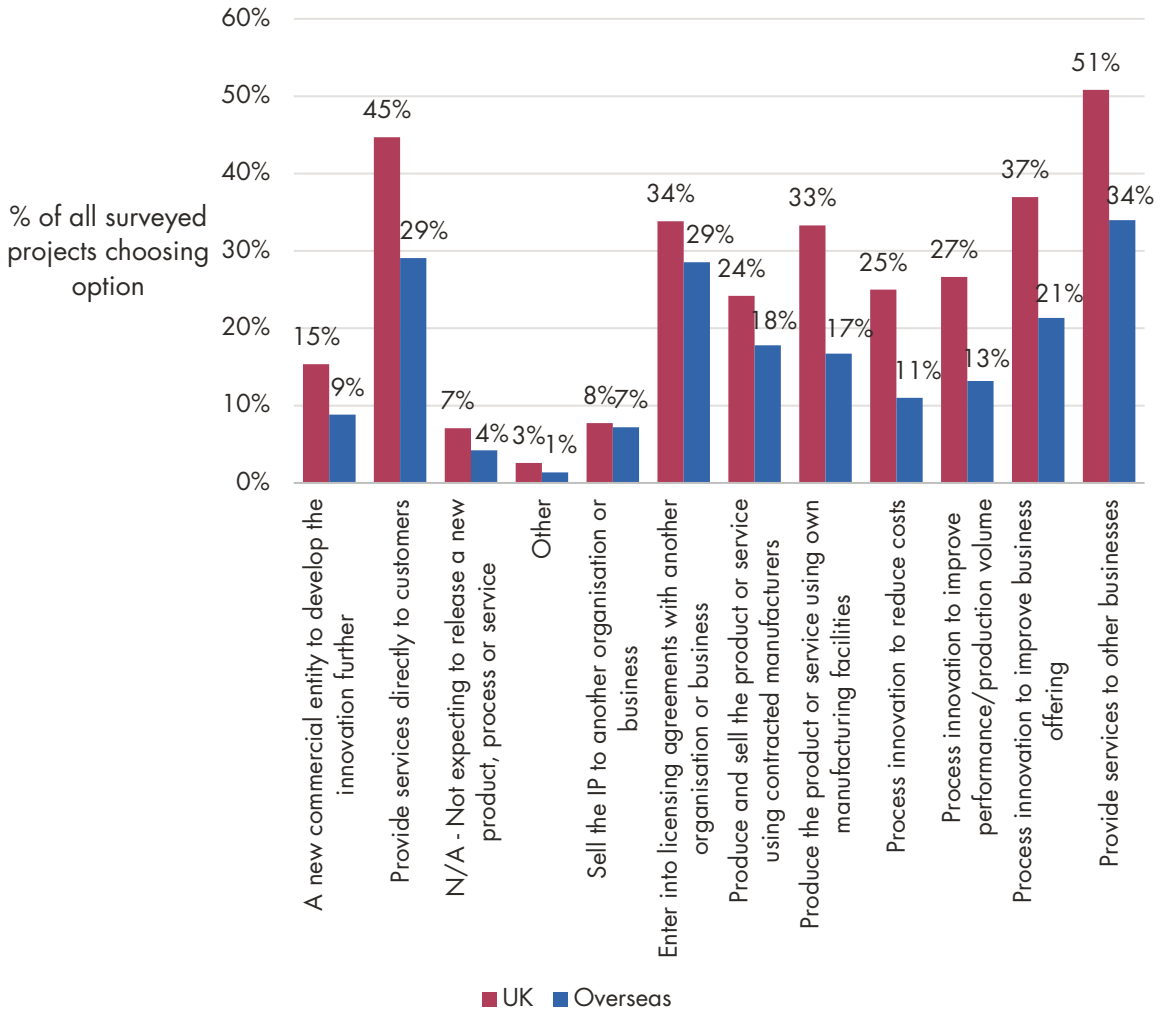
Production Challenge stated explicitly that technologies which hadn't been commercialised yet were close and anticipated imminent implementation, as they were at proof-of-concept TRLs.[78]

Wider adoption of ISCF outputs was evidenced across the Fund,[79] with some Challenges reporting high levels of adoption within their sectors (e.g. in the Transforming Food Production Challenge, where 40% of participants had introduced their products to market[80]). There were also reports of products and services which had been adopted more widely: at least four Challenges reported adoption in international markets or new sectors (see Section 5.1.2).[81]

PCF data builds this further as participating businesses shared expected pathways for market entry and adoption of new products, services and processes. Expected channels of exploitation are shown in Figure 6. Providing services to both customers and other businesses within the UK were the most popular expected sources of exploitation, with 45% and 51% of respondents respectively choosing this option. Businesses were more likely to say they planned to exploit in the UK than overseas for each option. Survey responses provide supplementary evidence supporting this outcome, with 100% of industry representatives reporting an increased level of adoption of new innovations in their sector after ISCF funding.[82]

[78] 'Transforming Food Production (Final)'.
[79] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Medicines Manufacturing (Final)'; 'Industrial Decarbonisation (Final)'.
[80] 'Transforming Food Production (Final)'.
[81] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Medicines Manufacturing (Final)'; 'Industrial Decarbonisation (Final)'.
[82] Survey of industry representatives.

Figure 6. The percentage of PCF respondents who expect to exploit their in-development product, service or process through each specified channel in either the UK (red) or overseas (blue) (n=736)



Stakeholders described the Fund as a catalyst for early-stage technical validation and investor confidence, but less effective at embedding the post-demonstration, business-readiness support needed for large-scale adoption. Interview and survey evidence confirms that the ISCF helped many projects move beyond proof-of-concept, yet it also reveals a persistent gap between demonstration and full commercial roll-out as exemplified below.

What worked for maturity and scaling

Enabler	Examples of progress
Flexible test-bed and demonstrator funding	Prospering from the Energy Revolution projects advanced business models to Commercial Readiness Level (CRL) 4–8 despite COVID-19 delays; Energy Superhub Oxford reached CRL 8.[83]
SME-focused instruments	The Faraday Battery Challenge's Investment Readiness and STEPS programmes paired SMEs with test-beds and investor networks, shortening time to market.[84]
Capacity-building platforms	Five Challenges created Centres of Excellence or knowledge-sharing portals (e.g. Data to Early Diagnosis Centres, Net Zero Go), which accelerated user uptake and skills transfer.[85]
Manufacturing-readiness support	59% of Driving the Electric Revolution projects increased their Manufacturing Readiness Level (MRL); nearly half felt this jump would have been smaller without ISCF funding.[86]

Where gaps remain in maturity and scaling

Post-demonstration scale-up

Many interviewees judged that the ISCF was critical for TRL 5–7 work, but fewer saw dedicated support for the costly TRL 8–9 transition (pilot lines, regulatory approval, market launch). Only five Challenges systematically tracked business-model maturity; uptake of Commercialisation Readiness Level metrics was uneven.

Regulatory and policy alignment

Delays or uncertainty in carbon capture usage and storage (CCUS), hydrogen, and industrial-decarbonisation policies were cited as deterrents to international investors, especially in regions seeking 'first-of-a-kind' plants. Several battery-sector stakeholders linked existing EU-related trade frictions and energy-price volatility in the UK to slower adoption, despite strong technical progress.

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[83] Technology readiness levels are used to estimate the maturity of a technological idea. Manufacturing readiness levels assess the extent to which developed technologies are prepared to be produced more widely. Commercial Readiness Levels help assess market need and customer demand to support full deployment of new technologies/products.

[84] 'Faraday Battery (Final)'.

[85] 'Data to Early Diagnosis (Final)'; 'Prospering from the Energy Revolution (Final)'.

[86] Driving the Electric Revolution was the only Challenge to report on MRLs; 'Driving the Electric Revolution (Final)'.

Business-readiness support

Interviewees from Future Flight and other SME-heavy Challenges wanted more structured help on routes to market (e.g. certification pathways, buyer engagement, service pricing).[87]

The ISCF's design excelled at catalysing collaborative R&D, proving concepts and moving the needle on technology maturity (its original remit), but commercialisation goals expanded faster than the available tools to deliver them. Ambitious adoption targets often relied on later funding 'handoffs' that did not materialise at the pace or scale required for a given technology/product.

Box 2. Spotlight on barriers to technology implementation and adoption

Barriers to implementation at the Fund level

Across the ISCF portfolio, several common barriers emerged that affected the implementation and adoption of technology outputs. These spanned technical, organisational, regional and system-wide issues:

- **Technical complexity and system readiness**: Technologies developed under the ISCF often faced challenges when integrated into complex systems, particularly where adoption depended on wider infrastructure, regulatory alignment, or data availability (e.g. Smart Local Energy Systems in the Energy Revolution Challenge). 'Further Technical, Scientific or Engineering challenges' was cited as a barrier to exploitation of ISCF technologies by 67% of organisations surveyed in PCF data, while at the same time, UK government and EU regulations were cited by 35% of respondents as a barrier.[88] These system-level complexities could slow the deployment of disruptive innovations.[89]
- **Delivery capacity and programme resourcing**: Limited delivery capacity within challenge teams, compounded by competing responsibilities and resourcing pressures, constrained the level of support available for stakeholder engagement, project management and programme coordination (e.g. Transforming Food Production).[90]
- **Regional and workforce constraints**: Some challenges faced regional disparities in skills and supply chain readiness, limiting the ability of businesses across the UK to fully engage with new technologies (e.g. workforce skill gaps in the battery manufacturing value chain).[91] A lack of

[87] 'Future Flight (Final)'.
[88] Results from PCF data, question 48. See Annex E.1.2.
[89] 'Prospering from the Energy Revolution (Final)'.
[90] 'Transforming Food Production (Final)'.
[91] 'Faraday Battery (Final)'.

qualified personnel was cited by 16% of responding organisations as a barrier to exploitation of ISCF technologies.[73]

- **Policy uncertainty and strategic direction**: Shifts in government policy and the absence of stable, long-term industrial strategies created uncertainty for certain sectors. This hindered industry confidence and investment in technologies with long development cycles (e.g. Low Cost Nuclear, affected by changes to national nuclear policy direction).[92]
- **Sustained funding and follow-on investment**: Resource constraints – both within individual Challenges (e.g. budget reductions in Transforming Food Production) and across the Fund more broadly – limited the depth of some projects and their ability to transition to commercialisation. Over half of survey respondents (53% of PCF respondents, n=899) cited insufficient funding as a key barrier to full exploitation of ISCF-supported outputs.[93]
- **Limited market capitalisation limiting adoption:**[94] Accessing UK-based markets and consumers was highlighted by 27% of responding organisations as a barrier to exploitation of ISCF-supported technologies. Additionally, 21% of respondents identified market domination by established players or intensive competition from new market entrants as barriers, emphasising the difficulty of securing market position for participating organisations, and expanding the adoption of ISCF-supported technologies.

Collectively, these factors highlight the cross-cutting need for sustained funding, delivery capacity, long-term policy stability and system-level coordination to maximise the impact of large-scale innovation programmes such as the ISCF.

There were relatively few cases to date where the approaches or processes developed through the ISCF were successfully implemented. While participation in the ISCF helped to produce useful outputs such as toolkits, guidance and examples of best practice – and also supported the adoption of new technologies, products and services – there is mixed evidence that it led to broader, sustained changes in sector-wide processes or organisational strategies.[95] PCF data shows that around half of respondents (n=736) expected to introduce new processes within three years of their ISCF-funded projects. However, 30% of respondents answered 'Don't know' when asked about their expectations.

[92] 'Low Cost Nuclear (Interim)'.

[93] 'Transforming Food Production (Final)'.

[94] Results from PCF data, question 48. See Annex E.1.2.

[95] 'Medicines Manufacturing (Final)'; 'Transforming Construction (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

One clear example of process adoption is the business model developed by the Cell and Gene Therapy Catapult, which, supported by ISCF funding, has since been replicated outside the UK.[96] However, as reported by at least four Challenges, the adoption of new processes or business models was less evident, often because these types of changes were not explicitly supported.[97] Overall, projects focused on technical development found it easier to commercialise their outputs, as these could be adapted to different markets and users. In contrast, the business models developed under the Challenges were often harder to commercialise and apply more widely.[98]

The implementation and adoption of ISCF outputs was also affected by external regulatory challenges, with 23% of PCF respondents (n=736) and two interviewed stakeholders identifying policy barriers to exploiting the results of their projects.[99] At least six Challenges provided examples of regulatory challenges such as the absence of standardised certification processes for new technologies, administrative delays and broader policy uncertainty.[100] For instance, the deployment of Low Cost Nuclear technologies was hindered by uncertainty around the future direction of Great British Nuclear (GBN) and anticipated government announcements in spring 2024. Lack of clear guidance on pathways to deployment within the Challenge also limited the ability of some projects and stakeholders to implement their innovations.[101]

This contrasted with smoother implementation processes in at least three Challenges, facilitated by pre-approved licensing agreements for participants and the active involvement of programme teams.[102] Such variations within the ISCF highlight the importance of programme design that explicitly considers how projects will scale up and move towards implementation. This should include identifying opportunities to align with follow-on deployment funding and ensuring that projects can connect to the wider systems or infrastructure relevant to their technologies.

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[96] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/; 'Medicines Manufacturing (Final)'.
[97] 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'.
[98] 'Prospering from the Energy Revolution (Final)'.
[99] PCF data, question 48; Interviews: INT_02 and INT_03.
[100] Regulatory barriers were identified by interviewed stakeholders and Challenge-level evaluation reports in six Challenges: Prospering from the Energy Revolution, Robotics and Artificial Intelligence in Extreme Environments, Low Cost Nuclear, Faraday Battery, Future Flight and Transforming Food Production.
[101] 'Low Cost Nuclear (Interim)'.
[102] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Prospering from the Energy Revolution (Final)'.

2.3. Stakeholder and public awareness

Evaluation question

- To what extent has the ISCF leveraged knowledge and insights to create increased awareness and understanding among key stakeholders of new technologies and outputs addressing the Challenges?

Key summary of ISCF overall impact on stakeholder and public awareness

- At least 953 formal events (workshops, conferences, trade shows, webinars and site visits) plus new research hubs and digital platforms connected ISCF projects with industry, academia and policymakers.
- 17 Challenges raised awareness by publishing research, launching collaborative R&D and upgrading university/industry facilities that showcased ISCF aims.
- Engagement activity helped attract private investment and improve supply-chain insight; several Challenges cite stronger investor interest or clearer routes to market after outreach.
- Participants reported better sector understanding and new cross-sector partnerships, particularly where Challenge teams actively brokered links.
- Most activity targeted professional audiences; mainstream public outreach was sporadic and weakly tracked, so wider public awareness and lasting impact remain uncertain.

Key conclusions

- The ISCF performed well in building professional networks and sector visibility, but its public-awareness footprint is limited and hard to evidence.
- Few Challenges tracked post-event outcomes, with a more skewed focus on activities.
- Stakeholder networks are essential for policy uptake and commercial roll-out – areas where the ISCF seeks long-term impact.

2.3.1. Awareness raising and influencing

Stakeholder awareness was assessed indirectly, using engagement and knowledge-sharing activities with industry, academic and public stakeholders as a proxy indicator. Engagement activities and knowledge exchange events were the main ways in which the Fund connected with external stakeholders, but it is unclear what the lasting impact of these exchange events has been. Quantitative evidence on engagement activities was reported by a number of Challenges, all belonging to Data and Digital and Clean Growth sectors. Challenge-level evaluations report that

at least 953 engagement activities were organised as part of the ISCF.[103] These activities included the creation of research hubs and platforms to enable researchers and innovators to share ideas, best practices, and knowledge,[104] as well as workshops, conferences, trade shows,[105] on-site visits,[106] media engagement,[107] webinars, panel discussions, presentations,[108] training sessions, and placements.[109] Of these, local and regional outreach events, conferences and workshops were reported to be especially valuable by ISCF participants.[110]

In addition to direct engagement activities, the Fund also supported initiatives (e.g. infrastructural upgrades and increased collaborations) in at least 17 Challenges that potentially and indirectly contributed to raising stakeholder awareness and understanding.[111] These activities encouraged the generation and dissemination of new knowledge, and increased collaborative R&D activity among stakeholders as well as investments in infrastructure. For example, improvements to industry and university facilities within the Faraday Battery Challenge helped to build visibility and awareness of the Fund's aims.[112] In another instance, strong dissemination of research is likely to have contributed to increased awareness and understanding of health data opportunities and challenges among academic stakeholders.[113]

ISCF outputs such as high levels of academic publications and other knowledge-sharing activities were also recognised for their broader impact by ISCF funding recipients and regulators. These outputs helped to improve stakeholder understanding of supply chains within industry and

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[103] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Data to Early Diagnosis (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'.
[104] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Data to Early Diagnosis (Final)'; 'Made Smarter Innovation (Interim)'; 'Industrial Decarbonisation (Final)'.
[105] 'Transforming Food Production (Final)'.
[106] 'Faraday Battery (Final)'.
[107] 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[108] 'Healthy Ageing (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'.
[109] 'Transforming Food Production (Final)'; 'Medicines Manufacturing (Final)'.
[110] Survey of ISCF representatives (n=9); Survey of industry representatives (n=9).
[111] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'; 'Driving the Electric Revolution (Final)'; 'Medicines Manufacturing (Final)'; 'Audience of the Future (Final)'; 'Digital Security by Design (Interim)'; 'Audience of the Future (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Transforming Construction (Final)'; 'Made Smarter Innovation (Interim)'.
[112] 'Faraday Battery (Final)'.
[113] 'Data to Early Diagnosis (Final)'.

informed the development of appropriate regulations, standards and testing methods (see Section 2.1).[114]

Stakeholder engagement under the ISCF played an important role in raising awareness of funded projects and their outputs, particularly among policymakers and industry stakeholders (see Section 2.4 on policy influence).[115] This, in turn, contributed to wider outcomes, including instances of policy influence, capacity building and increased understanding of commercial opportunities. Specific policy outcomes cited by ISCF representatives included the establishment of the UK Quantum Technologies Trade Association and the integration of Digital Security by Design technologies in multiple government strategies. These findings were supported by surveyed industry representatives (n=9), 78% of whom reported that ISCF activities had led to notable policy outcomes relevant to their sectors. Examples included investment in NHS data infrastructure for R&D, the development of an industrial decarbonisation project pipeline, and policy work related to small modular reactors (SMRs).

Beyond policy influence, stakeholder engagement also supported capacity building and partnerships (see Box 7, Chapter 4). For example, an interviewed stakeholder from the Future of Mobility cluster highlighted the Fund's role in mobilising stakeholders for problem solving and partnerships, noting that:

> 'it has created a lot of connections and working groups… so it has brought the community together… [to talk] about practical steps that we can do to move things forward and unblock some of the issues and challenges. I think at that level that group would never have existed prior to [the Challenge].'[116]

In at least seven Challenges, such efforts helped to secure private investment by de-risking projects and building industry confidence,[117] accelerated the development of technologies, supported skills development and intellectual property generation,[118] or enabled the inclusion of user input in product and business model development.[119] For example, in the Low Cost Nuclear Challenge, stakeholder engagement increased significantly following the reorganisation of the Programme Board and the involvement of the Programme Director in outreach activities.[120]

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[114] 'Faraday Battery (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'.
[115] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Prospering from the Energy Revolution (Final)'.
[116] Interview: INT_03.
[117] 'Industrial Decarbonisation (Interim)'; 'Faraday Battery (Final)'.
[118] 'Transforming Food Production (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Driving the Electric Revolution (Final)'.
[119] 'Prospering from the Energy Revolution (Final)'.
[120] 'Low Cost Nuclear (Interim)'.

Engagement activities improved project teams' access to relevant networks, enabling easier collaboration with external stakeholders, as evidenced by at least three Challenges.[121] This helped improve stakeholders' understanding of commercial opportunities and supported the identification of key contacts across supply chains.[122] For instance, in the Healthy Ageing Challenge, engagement with NHS Trusts led to increased collaboration with other stakeholders and users, fostering cross-sector partnerships.[123] Similarly, during Phase 3 of the Driving the Electric Revolution Challenge, enhanced engagement activities – alongside the practical demonstration of R&D outputs – helped raise awareness of opportunities in Power Electronics, Machines and Drives (PEMD) across the sector.[124]

While much of the reported benefit focused on external stakeholders, there is some evidence of increased awareness and understanding among Challenge participants themselves. For example, in the Transforming Food Production Challenge, 76% of surveyed beneficiaries reported that their involvement had improved their understanding of the agri-food sector. This was seen as a key factor in supporting the transfer of technologies from other sectors into agriculture.[125]

2.3.2. Focus on sector awareness over outputs

ISCF engagement activities helped raise awareness of wider sector challenges, skills needs and opportunities, particularly among industry and government stakeholders. However, there was less focus on promoting specific ISCF outputs and innovations.[126] For example, stakeholders in the Transforming Food Production Challenge suggested that there was a gap between the intention and execution of awareness activities due to a disconnect between project-level engagement and its alignment with broader Challenge or Fund objectives.[127]

While engagement activities reached a broad audience, they primarily targeted industry, government and public service stakeholders (e.g. the NHS). Broader public engagement was limited. A few Challenges explicitly stated that their Challenge activities lacked public relevance as

[121] 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Driving the Electric Revolution (Final)'.
[122] 'Next Generation Services (Final)'.
[123] 'Healthy Ageing (Final)'.
[124] 'Driving the Electric Revolution (Final)'.
[125] 'Transforming Food Production (Final)'.
[126] 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Low Cost Nuclear (Interim)'; 'Smart Sustainable Plastic Packaging (Interim)'.
[127] 'Transforming Food Production (Final)'.

they were too early stage or technical in nature to create meaningful engagement, though some welcomed lay involvement in governance and design processes.[128]

Media engagement and public-facing activities did occur, particularly in the Healthy Ageing Challenge, which used TV and radio broadcasts to reach general audiences – 70% of whom were international. However, these activities were sporadic and underreported in evaluation documents, making it difficult to measure their effect on public awareness.[129] Along similar lines, during the Low Cost Nuclear Challenge, a small (5%) increase in public awareness of small modular reactors was noted, but could not be directly linked to ISCF activities.[130]

Engagement activities were more effective in raising awareness and building capacity within academic communities, especially in the Clean Growth cluster.[131] Investments in university facilities, collaborative research, and training initiatives (such as new master's courses or mini-Centres for Doctoral Training in the Next Generation Services Challenge) supported knowledge sharing and strengthened academic networks. Surveyed ISCF representatives also highlighted the flexibility of the Fund in enabling cross-council collaboration, enriching academic engagement.[132]

Box 3. Challenge spotlight on stakeholder awareness[133]

Transforming Food Production

Aim: The Transforming Food Production Challenge (TFP) supports the development and adoption of new ways to produce food, with a view to improving the productivity and resilience of primary food production while also reducing emissions and pollution.

- **Platforms for knowledge exchange:** The Challenge placed a strong emphasis on knowledge exchange activities as a way of disseminating results and engaging stakeholders. Specifically, TFP has delivered 401 knowledge exchange events and has also invested in training and skills development through 80 training courses and 30 placements, apprenticeships and staff exchange programmes.

[128] Survey of ISCF representatives; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[129] 'Healthy Ageing (Final)'.
[130] 'Low Cost Nuclear (Interim)'; 'Faraday Battery (Final)'; 'Prospering from the Energy Revolution (Final)'.
[131] 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Low Cost Nuclear (Interim)'; 'Transforming Food Production (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'.
[132] 'Next Generation Services (Final)'.
[133] 'Transforming Food Production (Final)'.

- **Outcome:** Project awardees noted that dissemination events, as well as additional TFP marketing and promotional materials and events (e.g. a TFP Showcase at the House of Lords), were helpful with raising the profile of the Challenge and projects. Other outcomes included an improvement in the pace and quality of technology and skills development, as well as an increase in understanding around the scale-up and integration of technologies in the market.

Impact on industry ISCF participants: Internally, the Challenge was acknowledged by successful applicants to have improved their awareness and understanding of the agri-food sector. 76% of beneficiaries who responded to the Challenge survey reported a positive influence on their sectoral awareness, highlighting the Challenge's contributions to improve technology sharing between agriculture and other sectors.

- **Enablers:** 58% of collaborations established with businesses through this Challenge were new partnerships. This demonstrates the Challenge's ability to increase awareness about the sector and Fund among new industrial stakeholders. The structure of the Challenge also created an enabling environment, through investor support, to increase participants' understanding around commercialisation processes.

Impact on wider industrial stakeholders: The Challenge's external contributions included an improvement in the pace and quality of skills development, as well as an increase in understanding around the scale-up and integration of technologies in the market.

- **Enabler:** The TFP structure and governance team helped connect projects with support and stakeholders, signposting projects to national and international investors. Specific examples included engagement with growers in the Science and Technology into Practice (STiP) Demonstration project, which led to grower participation in trials and initial contracts.
- **Barriers:** External stakeholders noted that awareness around the Challenge and Fund was either too broad (high-level) or too focused on specific projects, and there was a gap in understanding about how the projects aligned with Challenge objectives. In addition, since the baseline Challenge evaluation, around half of survey respondents (from the wider sector) said they had not heard more about TFP, while 21% of respondents were unfamiliar with TFP's activities.
- **Consequences:** The Challenge evaluation noted that due to these barriers, 'external stakeholders then found it difficult to communicate/raise the profile of TFP on UKRI's behalf amongst their networks'. Some solutions were implemented (e.g. using showcasing documents), but there needed to be holistic efforts to leverage networks and communicate the successes of TFP.

2.4. Informing policy

Evaluation questions

- To what extent has the ISCF contributed to evidence-based policymaking surrounding the Challenges?
- To what extent has the ISCF enhanced understanding of the effectiveness of mission-oriented R&I programmes?

Key summary of ISCF on informing policy

- Overton analysis identifies 1,596 domestic and international policy documents citing ISCF outputs, demonstrating broad uptake of Challenge evidence.
- At least five Challenges placed experts on UK and international committees, standards bodies and working groups, feeding evidence into areas such as SMRs, ethical AI and local energy regulation.
- ISCF findings informed major UK strategies (Innovation, Cyber, Quantum, Semiconductor), while sector-specific guidance shaped codes of practice in agriculture, energy data and nuclear safety.
- Challenge-led autonomy, mission focus and dedicated programme boards eased access to policymakers; strand-specific policy groups (e.g. SLES in PFER) proved particularly effective.
- Influence was uneven across Challenges; regulator engagement lagged behind policymaker outreach, and few projects tracked follow-up, making it hard to attribute policy shifts solely to ISCF.

Key conclusions

- The ISCF achieved strong reach and credible policy engagement, but the depth of influence varies and is not always traceable to specific interventions.
- Policy influence amplifies R&D impact by shaping standards, investment signals and market conditions – critical for mission-led initiatives.
- Future funds should pair structured regulator engagement and outcome tracking with the existing publication-plus-committee model to ensure evidence not only reaches but also shapes policy implementation.

2.4.1. Policy and regulations

The Fund used knowledge outputs, dissemination and participation in committees as methods of engaging policymakers. Alongside the engagement activities described in Section 2.3, the Fund

carried out specific activities to engage policymakers and government representatives.[134] Workshops, talks and Challenge-level knowledge outputs helped the Fund engage policymakers both directly and indirectly.[135] Knowledge outputs included briefings, white and working papers, tools, frameworks and guidance on based on the research within the Challenge. In the opinion of five interviewees, the ISCF's contributions to policy changes have been realised or are expected in the near future through knowledge outputs and an improved evidence base for policymakers.[136] Even in instances where projects had no direct influence on policy, one interviewee believed that some participants still tried to align their activities with newer priorities defined by the government.[137]

Events alone allowed the Healthy Ageing Challenge to reach audiences of up to 500 policymakers, and 9% of the activities reached international audiences.[138] Based on examples reported within Challenges, the Fund was able to reach a range of policymakers, including institutes such as the National Institute for Health and Care Excellence (NICE), local and national government and regulatory stakeholders (such as representatives from across departments including Defra, Ofgem, HM Treasury, the Food Standards Agency, and government ministers[139]) as well as stakeholders outside of the UK.[140] Outcomes from the Fund's engagement with policymakers are also reflected in 1,596 policy documents that make reference to activities or insights recorded in ISCF publications.[141] This represents an increase from 789 policy citations at the baseline level.[142]

The Fund's policy engagement activities were reiterated by surveyed ISCF representatives (n=9), with 67% reporting the ISCF facilitated engagement with policymakers *to a large extent*. However, ISCF representatives were less confident in the ISCF's facilitation of engagement with regulators, which may suggest less influence of ISCF stakeholders on the actual implementation of proposed

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[134] 'Data to Early Diagnosis (Final)'; 'Next Generation Services (Final)'; 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'; 'Healthy Ageing (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Industrial Decarbonisation (Final)'.

[135] 'Prospering from the Energy Revolution (Final)'; 'Healthy Ageing (Final)'; 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'.

[136] Interviews: INT_01, INT_03, INT_04, INT_06 and INT_07.

[137] Interview: INT_05.

[138] 'Healthy Ageing (Final)'.

[139] 'Low Cost Nuclear (Interim)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'.

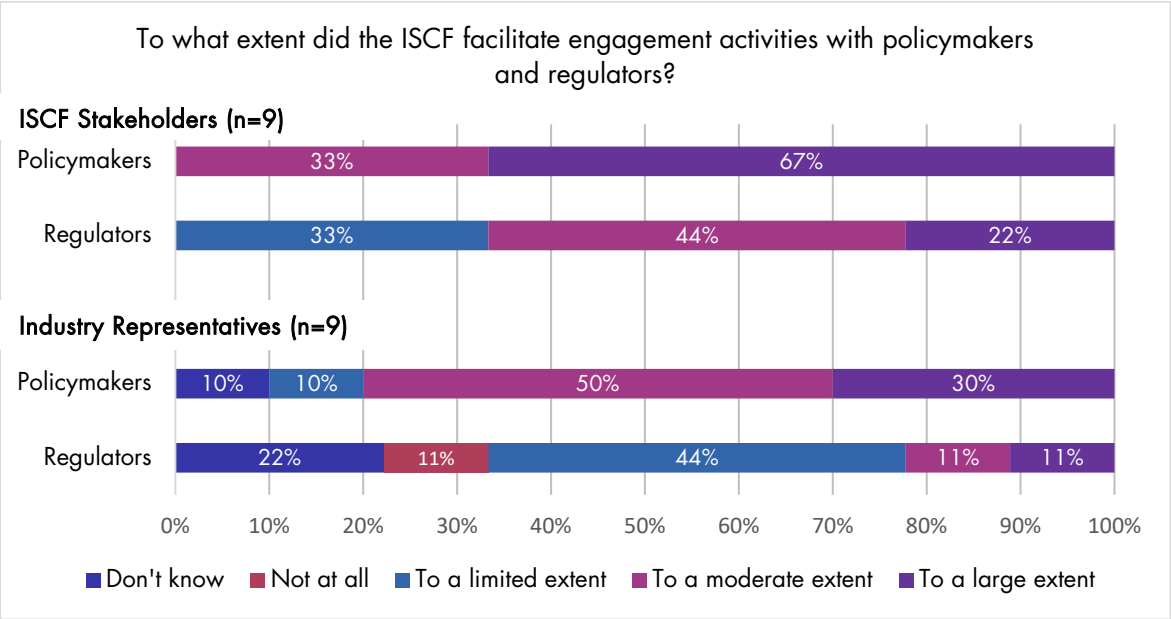
[140] 'Next Generation Services (Final)'.

[141] Results from Overton analysis; see Annex D.

[142] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/. Pre-ISCF baseline level for citation in policy documents has been calculated for ISCF award holders for the years 2014 to 2018.

policy options. A similar trend was seen in the industry representatives' responses to the same question (see Figure 7).

Figure 7. ISCF and industry representatives on engagement with policymakers and regulators[143]



Fund participants from at least five Challenges were able to engage policymakers directly by setting up or participating in discussion platforms, having meetings with government ministers, and working on advisory groups and committees – the latter being particularly helpful in ensuring their Challenge's work was policy relevant, especially during the earlier project stages.[144] Examples reported include participation in British Standards Association panels, contribution to development of aviation policies on drones and engagement with other regulatory bodies. Engagement with the Office of Nuclear Regulation and Culham Fusion through the Robotics and Artificial Intelligence for Nuclear Hub also looked to influence future nuclear robotics policy and regulation.[145] The Future Flight Challenge alone reported supporting and informing six different working and advisory groups in the aviation, air mobility and drone industry sectors.[146]

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[143] Survey of ISCF representatives; Survey of industry representatives.
[144] Survey of industry representatives; UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/; 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Medicines Manufacturing (Final)'; 'Digital Security by Design (Interim)'; 'Future Flight (Final)'.
[145] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[146] 'Future Flight (Final)'.

Knowledge outputs and events were acknowledged as being key to highlighting policy and regulatory gaps or recommendations for improvements, which were fed back into government.[147] PCF data shows that around 10% of responding organisations expected policymakers or politicians to be interested in the outputs of their projects. We also found evidence that additional marketing and promotional materials and events could be helpful in terms of raising the profile of the Challenge and project outputs to inform policy, as evidenced by the Transforming Food Production Challenge's Showcase at the House of Lords[148] – although this was not widespread across the Fund. Ultimately, the sectoral and technology-specific knowledge of ISCF participants was indispensable in influencing policymaking and informing regulatory panels and working groups.

Fund design, aims and management structures were highlighted as drivers for this kind of engagement. Most Challenges within the ISCF did not explicitly discuss enablers to policy engagement and influence. Where this information was available, evidence indicated that Fund structures and design helped to effectively engage policymakers,[149] and thus address a barrier highlighted at the baseline phase ('lack of coordination between policy actors').[150] Interviews and responses to the survey reiterated the broader importance of Fund design: 89% of survey respondents (n=9) and an interviewee believed that the Fund's focus on broad and solvable topics (e.g. critical technologies) helped facilitate translation of project outputs into evidence for policies.[151] Programme teams, the research directors' role in fostering cooperation at the Challenge-level and the scope of larger funds at the ISCF-level were additional enablers mentioned to have promoted policy impacts.

In some instances, Challenges had been specifically set up to provide policymaking leadership and advice, helping to direct their engagement efforts as well as project outputs and activities. For example, specific strands of the Prospering from the Energy Revolution Challenge, such as the SLES Demonstrators, were particularly suited to producing knowledge and recommendations to improve policy and regulation, as well as knowledge sharing for innovators and industry.[152] This Challenge incorporated a specific Policy and Regulatory Working Group to assist with this, leading to a number of influential outcomes.[153] Challenge directors and Challenge/strand teams, such as

[147] 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; Survey of industry Representatives.
[148] 'Transforming Food Production (Final)'.
[149] 'Low Cost Nuclear (Interim)'; 'Transforming Food Production (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Medicines Manufacturing (Final)'.
[150] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/
[151] Survey of ISCF representatives; Interview: INT_07.
[152] 'Prospering from the Energy Revolution (Final)'.
[153] 'Prospering from the Energy Revolution (Final)'.

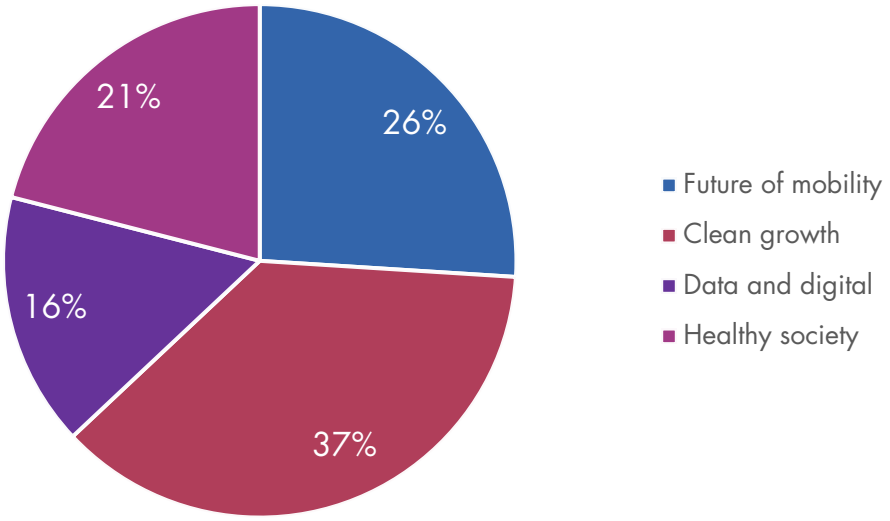
the Prospering from the Energy Revolution ERIS strand team, helped to connect Challenge participants with government and regulatory stakeholders, enabling participants to highlight regulatory and policy gaps and challenges and influence policy.[154]

The Fund reliably informed a number of policy positions and regulations through its knowledge outputs, but the extent to which Fund engagement influenced policy is less clear. Outcomes of engagement with policymakers may still be in progress in some instances,[155] but internal reporting suggests that the Fund has informed a number of UK government policy papers, regulatory strategies, guidance and frameworks, as well as standards development, with the exception of the Data to Early Diagnosis, Transforming Construction, and Medicines Manufacturing Challenges. There were instances across the ISCF of knowledge outputs (including business strategies) provided to or used by policymakers, evidenced through analysis of citations of Challenge publications.[156] Examples of policy documentation impacted by the ISCF include the UK Semiconductor Strategy, the UK Cyber Strategy, the UK Quantum Strategy and the Creative Industry Sector Vision. Notably, the Healthy Ageing Challenge reported that 15% of awardee publications were cited in international policy documents (including in intergovernmental publications), and 25% were cited in UK policy papers.[157]

ISCF outputs have been cited in both domestic and international policy papers. Figure 8 shows the distribution of publications resulting from ISCF-funded work within the four Challenge clusters (a full breakdown of the topics associated with each Challenge is available in Annex D). ISCF outputs have been cited by both governmental and non-governmental bodies, domestically (28% of all documents) and internationally (72% of all documents). 59% of cited documents originated from governmental or legislative bodies, while 22% and 19% cited documents respectively originated from intergovernmental organisations (IGOs) and think tanks or non-governmental organisations.

[154] 'Transforming Food Production (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Medicines Manufacturing (Final)'.
[155] 'Low Cost Nuclear (Interim)'.
[156] 'All Challenges'.
[157] 'Healthy Ageing (Final)'.

Figure 8. Distribution of policy outputs (1,713 hits across n=1,596 policy documents) citing ISCF publications based on Challenge cluster[158]



The *UK Innovation Strategy: Leading the future by creating it* from the Department for Business, Energy & Industrial Strategy (replaced in 2023 by the Department for Science, Innovation and Technology, and the Department for Business and Trade) refers to lessons learned from the ISCF which will inform funding policy in support of 'mission' objectives.[159] The document describes, for example, the implementation of a competitive research and innovation 'Challenge' funding approach to incentivise participation across a wide range of UK sectors and disciplines. The document also praises the successes of programmes funded by the ISCF such as the Digital Pathology and Imaging AI Centres of Excellence (e.g. boosting diagnostic capabilities) and ReFLEX (Responsive Flexibility) Orkney (demonstrating the interlinking of local electricity, transport and heating networks in an integrated, digitised and flexibly dispatchable energy system).

An example of the ISCF's influence on think tank policy outputs can be found in the Tony Blair Institute for Global Change's publication *A New National Purpose: The UK's Opportunity to Lead in Next-Wave Robotics.*[160] This document highlights the ISCF as the main vehicle for UK public investment in robotics, through the Challenges specific to robotics (Future Flight, Robotics and

[158] Results from Overton analysis; see Annex D.
[159] HM Government. 2023. *UK Innovation Strategy: Leading the Future by Creating It*. As of 24 September 2025: https://www.gov.uk/government/publications/uk-innovation-strategy-leading-the-future-by-creating-it
[160] Tony Blair Institute for Global Change. 2023. *A New National Purpose: The UK's Opportunity to Lead in the Next Wave of Robotics*. As of 24 September 2025: https://institute.global/insights/tech-and-digitalisation/a-new-national-purpose-the-uks-opportunity-to-lead-in-next-wave-robotics

Artificial Intelligence in Extreme Environments and Self Driving Vehicles), as well as those in which robotics is key (Made Smarter Innovation and Transforming Food Production), in the context of limited public funding instruments for robotics in the UK. The document also highlights key impacts of the Challenges such as new services, research hubs, and investments in robotics for applications in self-driving vehicles and food production, but it also stresses that more emphasis needs to be given to impacts such as commercialisation in UKRI-funded projects, due to concerns around how Challenge funds were spent. This leads to a recommendation to 'Review government investment programmes for robotics research, reallocating some of the funding from UKRI for a new approach.' This demonstrates how ISCF outcomes and impacts (or lack thereof) have informed policy recommendations.

Fund participants' technical understanding and guidance documents often aimed to advise the government on how to better align regulations to ensure technology compliance, or how to enhance the uptake of technologies in businesses.[161] The Low Cost Nuclear Challenge evaluation report noted, for example, that 'stakeholders state that collaboration between RR SMR and regulators for the GDA process is working well and that it is adding value by providing confidence in SMR design process'.[162] Similarly, participation on committees helped the Fund provide expert advice on methods and tools to facilitate the implementation, adoption and use of Robotics and Artificial Intelligence in Extreme Environments Challenge systems and products.[163]

Outcomes from the engagement events were often difficult to identify in relation to direct policy influence. In general, it is difficult to attribute policy influence solely to specific engagement events as impact is likely a culmination of different efforts. This was particularly true for activities such as meetings with government ministers to provide evidence on, for example, the UK Maritime Strategy or the UK's Civil Nuclear Roadmap in January 2024.[164] Similarly, changes to battery-related policies could not conclusively be linked to activities within the Faraday Battery Challenge.[165] However, accounts from internal and external stakeholders have been able to confirm the value of engagement in other instances: for example, internal and external stakeholders confirmed follow-on activities, including Ofgem's review of local energy system operation following engagement with Prospering from the Energy Revolution Challenge and the stimulation of further policy discussions, resulting from the Faraday Institution's (one of the three core

[161] 'Low Cost Nuclear (Interim)'; 'Prospering from the Energy Revolution (Final)'; 'Next Generation Services (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'.
[162] 'Low Cost Nuclear (Interim)'.
[163] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[164] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Low Cost Nuclear (Interim)'.
[165] 'Faraday Battery (Final)'.

elements of the Faraday Battery Challenge) publication of the *UK Electric Vehicle and Battery Production Potential to 2040.*[166]

In written evidence submitted by the Society of Chemical Industry to the UK parliament, the *UK Electric Vehicle and Battery Production Potential to 2040* report is cited in setting out the opportunities available to the chemical industry were a domestic EV supply chain and concomitant gigafactory pipeline established.[167] A separate submission by the Royal Society of Chemistry notes that the allocation of funding by the Advanced Research and Invention Agency (ARIA; in line with its high risk, high reward-oriented approach) from the £1 billion Net Zero Innovation portfolio should be mindful of Faraday Battery Challenge's goal-focused approach.[168] In a written evidence submission from the Institution of Mechanical Engineers (IMechE), correspondents stress the importance of a joined-up approach to funding fuel cell and hydrogen technologies akin to clear and fit-for-purpose funding landscape enjoyed by the batteries and electrification sector and supported by the ISCF. The FBC provides for early-stage innovation, while mid-stage innovation in power electronics and electric machinery is catered for by Driving the Electric Revolution and Faraday Battery Challenges.[169] These instances of parliamentary communication and informing a government policy options report demonstrate how the outputs of the ISCF and its Challenges have influenced policy discussions and strategy.

The Prospering from the Energy Revolution Challenge demonstrates the impact of the Fund on policy at the local level. In *Leveraging Local and Community Energy for a Just Transition in Scotland*, by ClimateXChange, experts from the Challenge were interviewed to inform a strategy for developing the local and community energy sector in Scotland in a way that delivers against Scotland's National Transition Objectives. Lessons learned from the Challenge and discussed in subsequent policy documents include Regen's suggestions of 'more dynamic and sustainable innovation support' and a 'clearer pathway to policy and regulatory change', and UK Parliament

[166] 'Prospering from the Energy Revolution (Final)'; 'Faraday Battery (Final)'.
[167] UK Parliament. 2021. 'Written evidence submitted to the House of Commons Science and Technology Committee: Society of Chemical Industry (SCI) – Written Evidence (BAT0037).' As of 24 September 2025: https://committees.parliament.uk/writtenevidence/25568/pdf/
[168] UK Parliament. 2022. 'Written evidence submitted to the House of Commons Science and Technology Committee: Royal Society of Chemistry – Written evidence (RSC BEV0015).' As of 24 September 2025: https://committees.parliament.uk/writtenevidence/36436/pdf/
[169] UK Parliament. 2021. 'Written evidence submitted to the House of Commons Science and Technology Committee: Institution of Mechanical Engineers (IMechE) – Written Evidence (BAT0029).' As of 24 September 2025: https://committees.parliament.uk/writtenevidence/25316/pdf/

Research Briefings discussing the importance of long-term infrastructure investment for most aspects of local area energy planning.[170]

Beyond the local and national levels, the Challenge outputs have influenced international policy, with evidence of publications being cited by the World Bank, OECD, International Institute for Sustainable Development, Stockholm Environment Institute and other international organisations.[171] Guidance from the Next Generation Services Challenge helped inform the EU and European Insurance and Occupational Pension Authority's policy on the ethical use of AI.[172] An example of the ISCF's influence internationally also comes from the European Commission in the shape of *Study Supporting the Assessment of EU Missions and the Review of Mission Areas*.[173] The ISCF is referred to among a list of non-EU countries' existing policies which have been reviewed in relation to climate neutrality, and smart cities, from which the EU can learn as they define and design the corresponding mission area. Specific mention is also made of the Industrial Decarbonisation, Low Cost Nuclear, Made Smarter Innovation, Prospering from the Energy Revolution, Smart Sustainable Plastic Packaging, Transforming Food Production and Transforming Foundation Industries Challenges. Another example comes from Norway's Battery Strategy, which includes the Faraday Battery Challenge in a knowledge base of national policy strategies that will inform Norway's own national battery strategy to develop domestic expertise and supply chains.[174]

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[170] Innovate UK. 2023. *Smart Local Energy Systems Insights Summary*. As of 24 September 2025: https://iuk-business-connect.org.uk/wp-content/uploads/2023/03/InnovateUK-smart-local-energy-systems-insights-summary.pdf; Collins, Abigail, & Alan Walker. 2023. *Local Area Energy Planning: Achieving Net Zero Locally*. Innovate UK. As of 24 September 2025: https://iuk-business-connect.org.uk/wp-content/uploads/2023/03/InnovateUK-smart-local-energy-systems-insights-summary.pdf

[171] 'Prospering from the Energy Revolution (Final)'.

[172] 'Next Generation Services (Final)'.

[173] European Commission. 2023. 'Study Supporting the Assessment of EU Missions and the Review of Mission Areas.' Publications Office of the European Union. As of 24 September 2025: https://op.europa.eu/en/publication-detail/-/publication/acf2c8ab-55ce-11ee-9220-01aa75ed71a1/language-en

[174] Government of Norway. 2022. *Norway's Battery Strategy*. As of 24 September 2025: https://www.regjeringen.no/en/dokumenter/norways-battery-strategy/id2921424/

Selection of policies directly influenced by the Fund, as highlighted in the Challenge evaluation reports

- The Low Cost Nuclear Challenge proactively informed the *Just Transition to Net Zero*
- The Next Generation Services Challenge informed the EU and European Insurance and Occupational Pension Authority's policy on the *ethical use of AI*
- The Prospering from the Energy Revolution Challenge informed the Energy Data Taskforce on a *strategy to create a modern digitalised energy system* as well as the 2021 *Smart Systems and Flexibility Plan*
- The Robotics and Artificial Intelligence in Extreme Environments Challenge provided evidence and advice on at least three pieces of government policy, including the *UK Maritime Strategy*, drone legislation and the *Robotics Sector Deal*
- The Transforming Food Production Challenge's engagement with the Health and Safety Executive and the Institute of Agricultural Engineers, influenced guidance (codes of practice) on *autonomous agriculture machinery and vehicles*, while evidence from Challenge outputs informed Defra and the Environmental Agency's *regulations on fertiliser production methods*
- The Digital Security by Design Challenge was referenced in the National Cyber Strategy 2022
- The Future Flight Challenge actively contributed to the previous government's strategic vision for the UK aviation sector, which is outlined in the ten-year plan *Flightpath to the Future* (2022)

2.4.2. Challenge autonomy and structural enablers of innovation

A defining feature of the ISCF was its challenge-led model, which gave each Challenge autonomy to define and adapt to sector-specific needs. This flexibility, supported by a portfolio approach and varied funding instruments, was intended to allow programmes to pivot in response to emerging opportunities, stakeholder engagement and implementation realities. Stakeholders across several Challenges viewed this design as a key enabler of innovation impact.

Five Challenges explicitly linked elements of their success to the ISCF's structural features.[175] These included collaborative competition processes, SME-specific support, access to demonstration

[175] 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; Industrial Decarbonisation (Interim); 'Low Cost Nuclear (Interim)'; UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025:

facilities and targeted engagement activities. These mechanisms helped to drive TRL progression, support IP generation and align innovation efforts with commercial and industrial needs (see Section 4.1). As one stakeholder reflected:

> 'Of all the funding areas from the government, I think it [the ISCF] is probably the one that's most known and seen as most useful… it did have a bigger industrial slant than most projects.'

Survey and interview feedback further indicated that the ISCF's clear mission focus and dedicated UKRI delivery teams supported alignment across stakeholders and helped build confidence within industry. In particular, the ISCF was seen to reduce barriers to private investment, support demonstration and knowledge exchange and foster sustained collaboration, particularly where industry partners were embedded in Challenge governance and delivery.

The Fund's governance structures, such as programme boards, were also seen as helpful in maintaining strategic focus and fostering engagement; the programme boards ensured the engagement of a wide array of stakeholders, sharing programme progress and communicating a shared sense of ownership to industry partners. However, where structures were reconfigured, as in the case of the Low Cost Nuclear Challenge, this sometimes led to confusion or delays in implementation, underscoring the importance of stable governance.[176]

Finally, the ISCF's funding flexibility was valued by both Challenge teams and stakeholders. The ability to allocate funding based on feasibility and strategic relevance allowed for the support of larger, more impactful projects. In some cases, this helped position UK sectors for further investment, such as follow-on academic programmes and commercial activity linked to the Prospering from the Energy Revolution Challenge and the UK Battery Industrialisation Centre (UKBIC) strand for later-stage TRLs.

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https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[176] 'Low Cost Nuclear (Interim)'.

Box 4. Challenge spotlight on ISCF programme structures[177]

Faraday Battery Challenge

- **Aims:** The Faraday Battery Challenge (FBC) aimed to drive the growth of a strong battery business in the UK through the development of battery technologies that are cost effective, high performing, longer range, faster charging, long lasting and recyclable. The Challenge aimed to support the UK automotive supply chain to meet deadlines for zero-emission vehicles.
- **Enablers:** The Challenge's Faraday Institute (FI) strand, deliberately progressed 12 'industrial sprint' projects (between 4 and 15 months) to 'tackle specific, short-term industry needs for research and innovation that have been identified by companies'.

  The set up and aims of the FBC were looked upon favourably by stakeholders as enablers of impact. In particular, innovation and knowledge creation impacts were enabled through the Challenge's funding of early-stage research, contributing to the growth in the UK's reputation and credibility in the battery sector. The CR&D strand fostered collaborations which contributed to publication and knowledge outputs. Support at the national level was also seen as an enabler to attract investors for innovation.
- **Barriers:** In general, stakeholders considered that the Challenge's focus was skewed towards early-and mid-stage TRL, and there were a few barriers to commercialising the innovations developed in the Challenge. Although the FBC supported innovation at the national scale, regional development constraints were not taken into account to support businesses within the full battery value chain (e.g. skills needed for manufacturing).

[177] 'Faraday Battery (Final)'.

3. Capacity building and investment

This chapter presents findings relating to capacity generation and investment-focused outcomes, specifically assessing **infrastructure, skills, diversity and employment**.

3.1. Investment

Evaluation questions

- To what extent has the ISCF increased UK business investments in R&D?
- To what extent has the ISCF increased overseas investment in R&D in the UK?
- How much additional public and private R&D investment has the ISCF contributed towards?
- To what extent has research supported by the ISCF opened up new avenues of investment (de-risking)?

Key summary of ISCF overall impact on investment

- ISCF participation led to a 57% increase in external investment by year three, rising to 79% for small firms, with £1.2 billion of £3.6 billion in secured investment attributable to the ISCF. It is likely that much of this is private investment and a mix of domestic and inward investment.
- Firms were more likely to fundraise and secured more fundraising events over time, with statistically significant effects by the third year.
- The ISCF leveraged £6.25 billion in co-investment, more than doubling the government's initial £2.6 billion contribution.
- Matched funding, due diligence processes and strategic strands (e.g. investor bootcamps, CR&D support) improved investor confidence and supported business cases for follow-on investment.
- ISCF initiatives attracted major international private funding (e.g. Roche, Canon, Siemens), supported foreign VC flows, and empowered local authorities to mobilise capital.
- In sectors hit by declining investment (e.g. creative industries, robotics), ISCF participation stabilised or boosted R&D expenditure.
- Uncertainty due to external shocks (the UK exiting the EU, COVID-19) hindered progress in some sectors and regions despite high interest in UK innovation.

Key conclusions

- The ISCF significantly boosted both the likelihood and volume of private investment, especially in smaller firms.
- The Fund's co-investment model achieved a strong public-to-private multiplier, with some Challenges more than doubling the initial government input.
- The ISCF unlocked new international and local capital, signalling UK commitment and enhancing investor trust across diverse R&D sectors.

The ISCF has helped participating organisations secure higher external investment over time, especially benefitting smaller firms in this regard.[178] In the first and second year following their first successful ISCF application, firms received 25% and 17% more external investment (not statistically significant). By the third year, it is estimated that the ISCF increased external investment by 57%, an effect which is statistically significant at the 5% level.[179] This effect is more pronounced for smaller firms (with fewer than 50 employees), with organisations securing an uplift of 79% in the amount fundraised by the third year. The Fund's impact on total capital raised may also become more pronounced beyond the three-year period, with firms taking some time to solidify their market position or scale up their operations.

It is likely that the investment impacts largely reflect additional private investment. While it has not been possible in the scope of this analysis to explore differences in the impact of receiving ISCF funding on raising private versus public investments, the overwhelming majority of investment (where the source is identified) in the underlying Beauhurst data was private investment.

Taking all ISCF applicants matched into the investment data, and looking at all investments raised by this group between 2017 and 2024 (as a proxy for the period since the creation of the ISCF), where the investor type is known only around 10% of the total investments come from public sources (central government, local or regional government, universities, European funds or Research Councils). The other 90% comes from private investors, in particular private equity and venture capital (40%) and corporate investors (15%).[180]

It is likely that the investment impacts reflect a mix of domestic and inward investment. Again, taking all ISCF applicants matched into the investment data and their investments raised between 2017 and 2024, around 34% of investments by value were reported to be from the UK, 31% from

[178] Econometric analysis of investment outcomes using Beauhurst, Delphi and IFS datasets; see Annex G.

[179] Econometric analysis of investment outcomes.

[180] Note that around 40% of investments by value over this period for ISCF applicants have missing or undisclosed investor types, but it is unlikely that this largely represents public investment.

other countries and 35% had a missing source country. Interestingly, only 12% of the investments by number of investment episodes were non-UK, suggesting that the average value of inward investments is much larger.[181]

The ISCF's impact on additional investment has been notable in two ways: benefitting firms that would otherwise not have been funded without ISCF support, and helping firms secure more funding than they otherwise would. Based on estimates of the impact of funding likelihood (the 'extensive' margin), we estimate that around 80 firms who received investment would not otherwise have done so at all in the absence of ISCF funding. Based on an assumed funding amount per firm, this is consistent with additional investment of between £40 million (taking the lower quartile of observed funding raised as the estimate of the amount raised per additional firm) and £133 million (taking the median) from this channel. More substantively, we also estimate that ISCF-treated firms receive more funding than non-treated firms (the 'intensive' margin) – in the absence of funding, treated firms would, we estimate, receive 36% less investment three years post-support. Of the £3.6 billion in investments secured by ISCF-treated firms in the three years after treatment, our analysis suggests that around £1.2 billion of that is due to ISCF participation.

Thus, the ISCF's impact on additional investments raised has been consistently evidenced in results from econometric analysis and validated through various sensitivity tests, as described in Annex G.

The ISCF has a clear, positive and sustained impact on participating organisations' ability to secure external funds and investments. Findings from the econometric analysis reveal that in the first year following participation, organisations are 1.7% more likely to secure external funds than matched non-participants, a result which is statistically significant. This positive effect persists over the following years, with an estimated increase of 2.3% in the second year, and a more pronounced 3.8% increase in the probability of fundraising by the third year, both of which are statistically significant beyond the 5% level.[182] Thus, ISCF participation is estimated to not only enhance the immediate probability of securing external investment but also have a lasting effect that extends beyond the immediate post-participation period.

The Fund's impact is similarly positive in terms of number of fundraising events secured. Three years after ISCF support, participants secured 0.32 more fundraising events (i.e. rounds of external investment) than the control group, a result that is significant at the 5% level.[183] This is a large impact: the control group on average had secured one fundraising event in the three-year period. A higher number of events secured suggests that ISCF-supported firms are more engaged with

[181] Where investment rounds included multiple investors (around one in three investment rounds in the data), it was not always possible to split the investment amount across investors. We therefore allocated the total investment evenly across investors in these cases.
[182] Econometric analysis of investment outcomes.
[183] Econometric analysis of investment outcomes.

investors over time. Thus, ISCF participation not only increases the likelihood of securing fundraising events but also leads to a higher volume of events secured over time.

The ISCF has facilitated a significant increase in private investment across its Challenges, with many programmes surpassing their co-investment targets. Challenges saw heightened investment as a result of ISCF funding, with the majority of programmes surpassing their projected targets. This success is largely attributed to matched funding and co-investments from both the private and public sectors. Specifically, the Fund has generated £6.25 billion in co-investment so far, exceeding the initial target of £2.82 billion as well as the government's £2.6 billion investment in the ISCF. Some organisations have also been able to raise follow-on investments (beyond matched funding), as reported by nearly 30% of all PCF respondents (n=736).

The ISCF has been instrumental in attracting significant public and private sector investments, leading to increased R&D spending. This growth is achieved through strategic matched funding and co-investments across sectors, often surpassing initial forecasts, with 19 of 20 Challenges quantitatively reporting co-investment figures. For instance, the Healthy Ageing Challenge secured £16.8 million in follow-on funding, while the Data to Early Diagnosis Challenge attracted £191 million in co-funding from global pharmaceutical companies and other partners, set to rise to £247.4million, underscoring the ISCF's role in enhancing R&D capacity.[184] Additional examples include the Accelerated Detection of Disease, Next Generation Services and Transforming Food Production Challenges, all of which have successfully leveraged substantial investments to drive innovation and development.

The ISCF has demonstrated a strong multiplier effect, with public investment successfully attracting additional private equity, acting as a primary driver for further investment in certain sectors. This is evident in the Prospering Energy Revolution Challenge, where firms raised £1.26 billion in external funding (of which £225 million can be directly attributed to the programme), with each £1 pound of public funding attracting an additional £1.07 to £2.56 in private equity.[185] The Faraday Battery Challenge offers another example, contributing to a 313% increase in venture capital fundraising for battery-related start-ups between 2017 and 2022, though this cannot be attributed solely to the ISCF.[186]

[184] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'.
[185] 'Prospering from the Energy Revolution (Final)'.
[186] 'Faraday Battery (Final)'.

Box 5. Challenge spotlight on private investment[187]

Accelerating Detection of Disease

- **Aims:** The Accelerating Detection of Disease Challenge (ADD) supports research into the early diagnosis, prevention and treatment of chronic disorders using biological and digital data from up to five million volunteers.
- **Impact on private investment:** According to one interviewed stakeholder, ADD's Our Future Health initiative was established as a public-private partnership. Under a two to one matched funding model, investments from businesses, charities and other government agencies were sought based on initial funding provided by the ISCF. The Challenge has successfully secured £160 million from industry and another £20 million from medical charities.
- **Enablers:** The Fund played a significant role as a catalyst encouraging subsequent investment partnerships with industries. For example, the programme team's support helped facilitate discussions with investors and symbolised the government's commitment to the initiative. The interviewee also credited the Our Future Health initiative's unique and ambitious nature, which provided an efficient platform for private sector involvement in the form of a large participant data resource. They further added, 'to have a programme of this scale, diversity and ambition in relation to prevention and detection [of diseases]… our industry partners can see that this was a unique opportunity for them as well to work with a really groundbreaking, internationally leading initiative'.

In the case of sectors experiencing broader declines, the ISCF has made a contribution to stabilising effects in R&D spending and fostering growth. Certain sectors, falling within the Data and Digital and Healthy Society clusters, and relating to the Next Generation Services and Audience of the Future Challenges, for example, were identified in the initial assessment as lacking sufficient resources or facing difficulties in securing public funding.[188] Despite a general downturn in spending and investment within the UK, particularly a 17% reduction in R&D expenditure in the creative/immersive sector from 2019 to 2022, companies involved with the Audience of the Future Challenge managed to defy this trend by either increasing or maintaining their spending levels, unlike those not participating in the Challenge.[189] The Robotics and Artificial Intelligence

[187] Interview: INT_04.
[188] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/
[189] 'Audience of the Future (Final)'.

in Extreme Environments Challenge also exemplifies this, with successful applicants raising over £1 billion in equity funding, countering the general downturn in UK robotics investments.[190]

De-risking of technologies remains a key enabling mechanism to attract investment, with evidence solidifying early analysis at the interim phase of the evaluation. Examples of this can be seen in the Transforming Food Production Challenge[191]: this Challenge has provided crucial evidence to support internal business cases for R&D investment, securing follow-on finance and attracting private sector interest. Its Investor Partnership strand further highlights the Fund's focus on addressing specific market gaps and providing comprehensive investor readiness support, including initiatives such as investor readiness bootcamps. Similarly, the Next Generation Services Challenge has created de-risked R&D investment opportunities, making solutions more appealing to private investors by enhancing their investment appeal.[192] In the Faraday Battery Challenge, the ISCF has contributed to creating an enabling environment that supports fundraising by providing pathways from low TRLs to commercialisation, further de-risking investments in the battery sector.[193] De-risking private investment was particularly important across the Clean Energy Cluster, with this mechanism referred to by 8 out of 9 Challenges.

Several mechanisms have helped to implement the Fund's strategic approach to enhance investment readiness and leverage private sector funding. In one instance, the ISCF's backing, along with its rigorous assessment and due diligence processes, served as a quality indicator to external investors, boosting entrepreneurs' confidence in their propositions.[194] In other examples, the ISCF's investments supported 'first-of-a-kind' innovations that would have been out of scope in other funding initiatives. It helped reduce technical risks, especially for novel R&I projects.[195] However, evidence of the Fund's added value is limited: two surveyed representatives found it difficult to distinguish the ISCF's model from existing, general models for de-risking investments (e.g. Innovate UK schemes).[196]

The ISCF and related initiatives have successfully opened new avenues of investment by leveraging international market expansion and fostering strategic partnerships. Established project teams have scaled their products internationally, receiving invitations to present in countries such as Hong Kong, Japan, Saudi Arabia, Sweden and Taiwan. This global exposure has showcased UK innovations on an international stage, highlighting their potential and attracting

[190] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[191] 'Transforming Food Production (Final)'.
[192] 'Next Generation Services (Final)'.
[193] 'Faraday Battery (Final)'.
[194] 'Transforming Food Production (Final)'.
[195] Survey of industry representatives.
[196] Survey of industry representatives.

foreign interest.[197] Public-private partnerships, exemplified by the UK Biobank WGS project, have brought together industry partners who typically do not collaborate, offering preferential data access and matching industry with public funding. This model has not only facilitated collaboration but also de-risked industry investments, adding credibility to projects.[198]

Local authorities also acted as players in fostering innovation through collaboration and stakeholder engagement in some cases. They made crucial contributions within the Prospering from the Energy Revolution Challenge, for example, uniting various stakeholders, embedding local energy systems within the community and actively supporting businesses in reducing risks.[199]

Significant match funding from international industry players such as Siemens, GE, Roche and Canon has also been secured through the Centres of Excellence, indicating strong overseas interest in UK R&D initiatives.[200] The ISCF has also contributed in some degree to catalysing foreign investment within the battery technology sector. A notable trend is a substantial increase in foreign venture capital investment in UK start-ups, which reached 81% in 2022, marking a fivefold rise in 2020-22, compared to 2016-2019.[201]

The global focus of Challenge areas, the Fund's commitment to R&D efforts and deliberate activities for international engagement are some key enablers fuelling the ISCF's impact on international investment. The Fund's effect on international investments has been facilitated by several factors such as the UK's commitment to increasing R&D efforts, the global nature of the ISCF's thematic areas and its deliberate focus on international engagements at the Challenge level.[202] In the first instance, the UK government's extensive commitment to innovation and technological advancement has been instrumental in attracting international investors.[203] The Cell and Gene Therapy Catapult, for example, was specifically highlighted for promoting Advanced Therapy Treatment Centres (ATTCs). The high-profile nature and interconnectedness of research and innovation activities across various sectors have further enhanced the attraction for international investment, with praise for the organisation around the Grand Challenges.[204] For example, innovations and ideas progressed through the Faraday Battery and Medicines Manufacturing Challenges were noted to be of international relevance due to their global focus areas.[205] Stakeholders also credited prioritisation of engagement at international forums and events

[197] 'Healthy Ageing (Final)'.
[198] 'Data to Early Diagnosis (Final)'.
[199] 'Prospering from the Energy Revolution (Final)'.
[200] 'Data to Early Diagnosis (Final)'.
[201] 'Faraday Battery (Final)'.
[202] Survey of ISCF representatives; Interviews: INT_01, INT_03, INT_04 and INT_07.
[203] Survey of ISCF representatives.
[204] Survey of ISCF representatives.
[205] Interview: INT_07.

as a key enabler.[206] For example, through broader Innovate UK initiatives and delivery partners, some Challenges have hosted global expert missions and global business innovation programmes, directly fostering international relationships.[207]

Despite the ISCF's successes, attracting overseas investment is not without its challenges, and is influenced by broader external factors. For example, while the UK is recognised as a strong destination for foreign investment in battery technology, its competitive standing has been affected by broader external factors – including trade policy uncertainty with the EU, high energy prices and geopolitical instability. Surveyed industry representatives also reported that international engagement was constrained by limited funding availability during the COVID-19 pandemic, as well as delays in key policy areas such as Carbon Capture, Utilisation and Storage (CCUS), hydrogen, and industrial decarbonisation. These perceived delays created uncertainty for potential funders and investors, limiting progress in some areas. The impact was particularly evident in regional investment developments, where inconsistent policy signals and economic pressures affected the ability to secure international capital.

[206] Interview: INT_07.
[207] Survey of ISCF representatives.

3.2. Geographic reach of investment and impact

Evaluation questions

- While the ISCF is place-agnostic, to what extent have the Fund's investments and activities been widely distributed across the UK?
- While the ISCF is place-agnostic, to what extent have the impacts of the ISCF been widely distributed across the UK?

Key summary of ISCF overall impact on geographic distribution of investment

- London and the South East still lead (around 40% of grant value), but substantial shares flow to West Midlands (14%), North West (8%), East Midlands (9%) and cluster-heavy regions such as Teesside, Humber and South Wales.
- Challenges such as Industrial Decarbonisation achieved one-to-one (or better) private co-investment across six clusters outside London/South East; Low Cost Nuclear directed 69% of spend to the Midlands and North.
- Local technology hubs (e.g. photonics in Scotland, compound semiconductors in Wales) and skilled-job projects (cryogenics in Lancashire, chemical recycling in Wilton) illustrate local growth, yet Data and Digital and Healthy Society spending remains concentrated in the South East.
- Grant postcode data does not always map to where R&D or deployment happens; many projects deliver solutions outside their registered region, obscuring true impact distribution.
- Skills shortages and poor fund-level agility to pivot toward new place priorities limited deeper regional gains; dispersed delivery teams also faced higher engagement costs with London-centric industries.

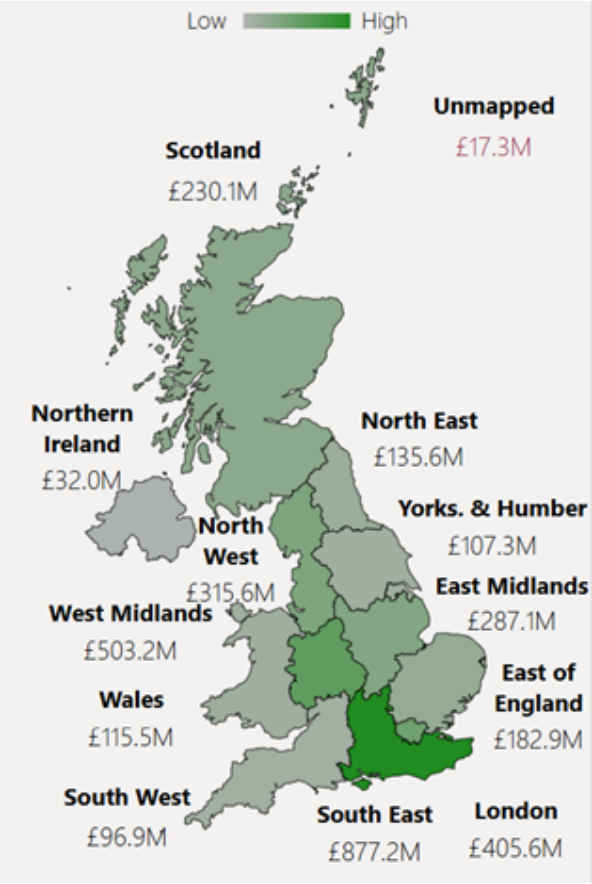
Key conclusions

- The ISCF moved significant funding and co-investment beyond traditional hubs, but regional concentration persists in high-skill, South East clusters.
- Reliance on applicant postcodes masks on-the-ground activity, making regional impact claims inherently uncertain.
- The ISCF's geographic reach is directionally positive but not transformative; future missions should embed place metrics, regional skills investment, and agile re-allocation powers to maximise nationwide benefit.

The ISCF had a mixed portfolio of geographically dispersed funding and regional impacts, with skills shortages acting as a barrier to promoting further regional growth. Just over half of the Challenges include mention of the geographic distribution of investment or activities across the UK. Data from UKRI at the Fund level reveals that although London and the South East

receive the majority of funding, there is a growing trend of investment in other regions, particularly the North West and the West Midlands, as shown in Figure 9.[208]

Figure 9. Map of ISCF committed grant funding by Nomenclature of Territorial Units for Statistics (NUTS1) Regions[209]



Source: UKRI analysis of Delphi data as of 1 June 2025.

In the most recent ISCF Portfolio Performance Report, the largest share of grants was awarded in the South East (27.1%), followed by the West Midlands (14.4%), London (12.9%), the East Midlands (9.2%), and the North West (7.9%).[210] When contextualising the proportion of funding with the number of businesses in each region claiming R&D tax credits, the West Midlands' share of grants is nearly equivalent to that of the South East.[211] The distribution of ISCF grants geographically differs from the IUK investment pattern noted at baseline. During the 2018/2019

[208] ISCF Portfolio Performance Report (Q2, FY23/24).
[209] The total grant funding allocated as per this figure is ~£3.3bn, and includes projects from non-Challenge associated programmes (Next Gen Aerospace, National Satellite Test Facility and Self Driving Vehicles), and projects marked as 'Withdrawn' in the Delphi data.
[210] ISCF Portfolio Performance Report (Q2, FY23/24).
[211] ISCF Portfolio Performance Report (Q2, FY23/24).

financial year, IUK investment was highest in the West Midlands (14.1% of a total £941 million), followed by the South East (13.7%), London (13.3%) and the South West (12.3%).[212]

The Industrial Decarbonisation Challenge provides an exemplary breakdown of public grant funding and private co-investment by region: the Challenge's Deployment and Cluster Plan workstreams – respectively accounting for 86% and 4% of the £210 million of public funding distributed through the grant – supported projects across six cluster regions outside London and the South East. The final evaluation showed that 25% of grant funding was awarded in the North East, 17% in Yorkshire and the Humber, 16% in the North West, 15% in Scotland, 10% in South Wales, and >1% in the West Midlands.[213] Similar numbers were found for private co-investment, though Teesside (North East), the Humber and the North West attained a rate of co-investment greater than one-to-one.

Although ISCF investment demonstrates some geographic spread in line with the previous UK government's Levelling Up White Paper,[214] the available data does not clearly indicate whether the spending and impacts of these investments are evenly distributed across regions. This is because the registered postcodes for funding allocations may not precisely represent the locations where the investments are executed. For example, one Challenge noted that although over 40% of survey respondents' organisations are based in southern England, only about 30% of solutions are delivered there, suggesting deployment beyond the organisations' main locations.[215] Indeed, the geographic distribution of ISCF investments into Challenges may not be where the funds were operationalised or where the research was conducted.

The geographic impact of ISCF investments was also affected by a lack of agility at the Fund level, as suggested by one interviewed stakeholder. In their experience, the ISCF's governance systems could not quickly adapt to and implement newer priorities on regional-specific investments. As a result, at the Challenge-level, 'all we could really do was just monitor the impacts [to regions and places] from each Challenge and create a narrative'.[216] Variations in the extent of the ISCF's geographic impact were also noted at the cluster level. Investment within the Healthy Society and Data and Digital clusters was more concentrated in London and the South East relative to the

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[212] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/. In figures, this equates to IUK funding in the West Midlands of £133m, in the South East of £129m, in London of £125m and in the South West of £116m.

[213] 'Industrial Decarbonisation (Final)'.

[214] HM Government. 2022. *Levelling Up the United Kingdom*. As of 24 September 2025: https://www.gov.uk/government/publications/levelling-up-the-united-kingdom

[215] 'Healthy Ageing (Final)'.

[216] Interview: INT_07.

Clean Energy and Future of Mobility clusters. This is due to broader geographic distribution of industry and infrastructure associated with successful projects within the latter clusters.

Box 6. Challenge spotlight on geographic spread of investment[217]

Low Cost Nuclear

- **Aims:** The Low Cost Nuclear Challenge aims to develop a UK-designed small modular reactor power station design concept in order to pass the regulatory milestone of Generic Design Assessment. The current phase (2) of the programme is led by Rolls Royce SMR, with UKRI acting as a delivery partner overseeing programme management on behalf of Department for Energy Security and Net Zero (DESNZ), aiming to make the UK a world-leader in SMR technology.
- **Alignment with Levelling Up Agenda:** The Challenge has strategically directed 69% of its regional spend to the Midlands and North. This allocation strategy supports equitable economic growth and job creation, particularly in regions with existing nuclear and manufacturing capabilities such as the North West, Midlands, North East and Bristol area. Investments in small modular reactor solutions further this focus, fostering skilled job opportunities and economic growth.

Some examples of the Fund's spread of localised impacts include the establishment of a large photonics cluster in Scotland, compound semiconductor activity in Wales, advancements in cryogenics in Lancaster and the development of a chemical recycling plant in Wilton (near Middlesborough) that created skilled jobs during its construction and commissioning phases.[218] Explaining mechanisms that enable localised impacts, two ISCF representatives stressed the importance of holding major conferences outside London and making funding available for projects outside London to help counterbalance the dominance of London-based institutions.[219] In contrast, another respondent raised concerns regarding decentralizing from London and the South East, pointing out that significantly deprived communities exist in these areas as well.[220] Despite this, they acknowledged the team's efforts to reach across the UK, such as tracking lead applicants' NUTS1 regions.

The ISCF empowered participants to organise their internal processes and mechanisms, which helped to strengthen regional capacities and to enable localised economic benefits, though

[217] 'Low Cost Nuclear (Interim)'.
[218] Survey of ISCF representatives.
[219] Survey of ISCF representatives.
[220] Survey of ISCF representatives.

projects faced a trade-off of distributed activity against access to centralised service-partners and flexibility in funding allocation. Surveyed ISCF representatives appreciated the ability to manage investments over time across multiple competitions, distribute several awards while limiting the number awarded to the London regions, and conduct targeted competitions to discover smaller, previously overlooked industry partners.[221] For example, one respondent highlighted the value of selecting investment partners that have a robust regional presence and having strong local representatives in advisory groups that facilitate connections to regional or devolved governance. This spread has facilitated engagement with regional institutions and firms, such as ICA Scotland and local business groups in Manchester and Leeds, creating new opportunities for collaboration and fostering regional innovation. Conversely, the distributed nature of these teams also poses challenges, particularly in engaging with London-centric industries such as accounting and law. The necessity for travel to London for engagement meetings increased costs and logistical complexities, which was seen as a barrier. Surveyed ISCF representatives also noted that a regional focus could sometimes pose limitations to funding eligibility, as exemplified by North Star Ventures, which was specifically linked to the North East England region.

[221] Survey of ISCF representatives.

3.3. Capacity

Evaluation questions

- To what extent and how has the ISCF increased individual capabilities and capacities in both research and innovation?
- To what extent has the ISCF attracted additional talent and Challenge-associated skills into the UK?
- How and to what extent has the ISCF contributed to improved infrastructure to support future R&I investment?

Key summary of ISCF overall impact on capacity

- The ISCF significantly improved UK R&D capacity, delivering at least 148 training programmes and engaging over 12,500 individuals in capacity-building activities. These spanned commercial, technical, and collaborative skills, particularly benefitting sectors previously identified with skills gaps, such as IT, energy and transport.
- Investments in physical and digital infrastructure are laying the groundwork for long-term innovation. These assets are especially impactful in the health and clean energy sectors.
- While some signs of international talent mobility emerged, overall evidence of sustained inflows or retention is limited. Sector-specific barriers, limited incentives and global competition continue to constrain long-term impact.
- Despite progress, skills shortages, particularly in commercial and fundraising expertise, persist in several sectors (e.g. batteries), highlighting a need for continued, targeted investment in both upskilling and workforce retention.

Key conclusions

- The ISCF has succeeded in raising UK R&D capacity for core technical and collaborative skills, yet falls short on commercial acumen and global talent attraction.
- New facilities and digital platforms constitute a solid, long-term asset base, if fully utilised and maintained.
- Global competition for talent, limited sector-specific incentives, and data-access or production bottlenecks hamper full realisation of capacity aims.
- It could be valuable to sustain funding for high-demand skills, embed business-readiness modules in future programmes, and pair new infrastructure with active talent-attraction and retention strategies.

The ISCF has significantly bolstered individual research and innovation capabilities across various sectors through its targeted programmes. All Challenges incorporated a learning and development aspect aimed at supporting skills and capacity building. This represents a positive

trend, especially in the IT, energy and transport sectors, which reported a lack of adequate skill development programmes at the baseline evaluation phase.[222]

Across the Fund, at least 148 training programmes and 41 staff exchange initiatives were organised, which helped build capacity and create platforms for cross-sector engagement.[223] While many Challenges didn't report exact figures for the number of individuals who received training, five Challenges reported 12,547 individuals receiving training, including students, professionals, researchers, clinicians and other employees and staff including those from enterprise.[224] This led to the enhancement of transferable skills, the creation of new knowledge, and an increase in workforce capacity, particularly in sectors experiencing shortages or where upskilling was necessary.[225] The ISCF's contributions towards building key competencies within the UK's workforce was also emphasised by four interviewed stakeholders.[226]

Where the ISCF has supported capacity building, the skills acquired have varied encompassing commercial and business expertise, technical abilities, and strategic or problem-solving skills. Based on evidence reported in PCFs (n=899), ISCF commonly supported improvements to participating organisations' problem solving (72% respondents), collaboration and partnering (69% respondents), and technical skills (58% respondents) which is consistent with pre-ISCF baseline trends.[227] On the other hand, ISCF's impact on fundraising and leadership is relatively limited, as was also the trend for other Innovate UK projects at the pre-ISCF baseline level. In areas where ISCF has facilitated positive change, its contribution has largely been in the form of improvements to already existing skills (see Figure 10). 'Collaboration and Partnerships' and 'Technical Skills/Knowledge' are notable exceptions to this trend, highlighting the Fund's impact also on fostering newer capabilities to support collaborative R&D.

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[222] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/

[223] 'Data to Early Diagnosis (Final)'; 'Next Generation Services (Final)'; 'Audience of the Future (Final)'; 'Transforming Food Production (Final)'; 'Faraday Battery (Final)'.

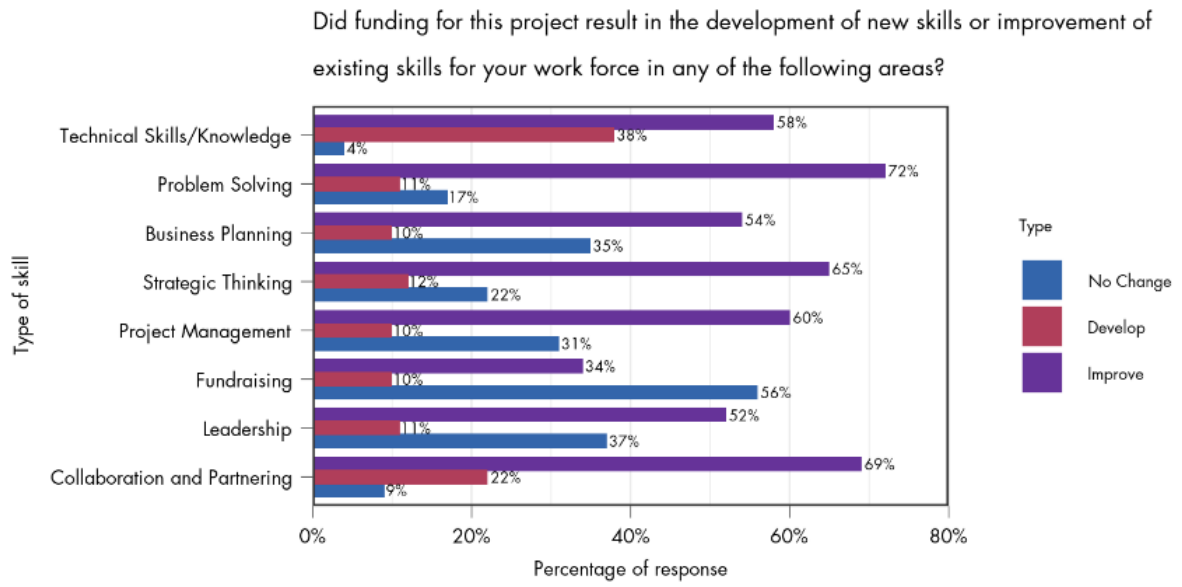
[224] 'Next Generation Services (Final)'; 'Digital Security by Design (Interim)'; 'Medicines Manufacturing (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Data to Early Diagnosis (Final)'.

[225] All Challenges except Industrial Decarbonisation, Prospering from the Energy Revolution, and Transforming Construction.

[226] Interviews: INT_01, INT_03, INT_04 and INT_06.

[227] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/. Technical skills or knowledge, problem solving and collaborating and partnering were the most reported skills by Innovate UK projects at the pre-ISCF baseline.

Figure 10. PCF respondents (n=899) on development or improvement to workforce capabilities through the ISCF, based on type of skill[228]



Training initiatives have been instrumental in enhancing skills and capacities, as evidenced by the Healthy Ageing Challenge, where 80% of survey participants in the Challenge-level evaluation reported improved skills in conducting healthy ageing research and understanding market needs.[229] Similarly, the Data to Early Diagnosis Challenge engaged 6,926 researchers and 1,807 clinicians in training events, leading to increased researcher registrations and projects using UK Biobank data, and reflecting heightened research capabilities. In the Robotics and Artificial Intelligence in Extreme Environments Challenge, nearly all participants reported enhanced understanding and skills in robotics and AI for extreme environments, thanks to hands-on experience through project delivery.[230]

Mechanisms such as targeted training and resource access have been central to these kinds of improvements. Structured training programmes and fellowships, as seen in the Healthy Ageing and Data to Early Diagnosis Challenges, have provided essential skills and knowledge.[231] Collaborative partnerships have also played a crucial role, with the Transforming Food Production Challenge demonstrating how partnerships with research institutes and industry stakeholders facilitated knowledge sharing and skill acquisition.[232] Other capacity-building efforts are still at an early stage, with full impacts yet to be realised, such as in the Driving the Electric Revolution Challenge where the Electric Revolution Skills Hub was launched to raise awareness of PEMD

[228] Results from project closure forms, question 23.
[229] 'Healthy Ageing (Final)'.
[230] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[231] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'.
[232] 'Transforming Food Production (Final)'.

career opportunities. The hub has initiated activities around retraining, upskilling and networking to meet the talent needs of PEMD supply chains.[233]

Despite these successes, several barriers persist, particularly in addressing skills gaps. The Faraday Battery Challenge highlighted ongoing skills shortages, especially in commercial skills such as fundraising and business planning, with demand for skills outpacing supply due to global competition. Survey evidence collected from Faraday Battery Challenge stakeholders indicated that while skill levels had improved, the perception of skills shortages remained consistent, suggesting limited progress in addressing these gaps.[234] Respondents also emphasised the need for a continued focus on training, including apprenticeships, to address skill shortages and ensure that development opportunities keep pace with industry demands.

International talent mobility has likely occurred as a result of the ISCF's activities; however, evidence remains limited. Since Challenge areas were broadly defined with explicit emphasis on knowledge transfer across sectors and countries, the likelihood of the ISCF contributing to an inflow of international workforce is high. However, just five Challenges provided vague accounts of international mobility through their activities.[235] For example, there was evidence, although indirect, of an increase in international researchers using UK Biobank data, indicating a growth in engagement from non-UK researchers in the Data to Early Diagnosis Challenge.[236]

More generally, the ISCF's contribution to international talent mobility was noted through its support for novel and groundbreaking research.[237] Increased remote working options also facilitated engagement with and recruitment of foreign nationals, but the benefits were greater in specific disciplines and sectors.[238] The Fund's impact on mobility differed at sector or Challenge level, possibly due to variations observed in mechanisms.[239] For example, while some Challenges encouraged businesses to move their hiring and R&D activities to the UK,[240] others faced considerable difficulties while subcontracting work outside of the UK.[241] Rising competition from other countries (especially in the Middle East) in terms of attracting international talent as well as

[233] 'Driving the Electric Revolution (Final)'.
[234] 'Faraday Battery (Final)'.
[235] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Driving the Electric Revolution (Interim)'; 'Audience of the Future (Final)'.
[236] 'Data to Early Diagnosis (Final)'.
[237] Survey of ISCF representatives.
[238] 'Audience of the Future (Final)'.
[239] Survey of ISCF representatives; Interviews: INT_07 and INT_03.
[240] Interview: INT_07.
[241] Interview: INT_03.

insufficient Challenge-level efforts to draw in international talent were other factors that potentially hindered the ISCF's impact in this regard.[242]

In sectors where the Fund helped increase the inflow of talent, stakeholders raised similar concerns regarding the sustainment of this inflow both internationally and domestically.[243] Internationally, it is unclear whether foreign researchers choose to remain in the UK after the completion of an ISCF-funded project, leading to questions on the potential benefits of short-term talent transfers.[244] Nationally, while the Fund's cross-sector focus enabled transfer of talent into newer sectors, the extent to which these roles can be sustained after the completion of ISCF support also remains doubtful.[245]

Overall, the ISCF seems to have promoted talent development and capacity building in multiple sectors, but there is limited evidence that it has significantly facilitated the mobility of international talent to the UK. Attracting international talent will likely necessitate a tailored approach for each sector, emphasising the opportunities and benefits of relocating to the UK.

The ISCF's investments in capital and infrastructure have led to the creation of a wide range of assets. Evidence of these investments can be seen in at least ten Challenges, with initiatives focusing on workforce development, technology and data platforms, as well as the establishment of innovation and excellence centres.[246] At the cluster level, infrastructural improvements have been most notable in the Healthy Society cluster, where all Challenges provided evidence of facilities developed or improved through ISCF activities.

Although assessing the future impact of these investments on research and innovation is challenging, and results will likely become more visible in the long term, it is highly likely that the ISCF's contributions will have a lasting effect on advancing R&D in the UK. This is especially true given our baseline observations, which noted deficiencies and outdated infrastructure that previously impeded scale-up efforts.[247]

The Fund has enhanced physical infrastructure such as advanced camera systems for the Robotics and Artificial Intelligence in Extreme Environments Challenge or the establishment of UKBIC,

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[242] Survey of ISCF representatives; Interview: INT_03.
[243] Interviews: INT_07 and INT_03.
[244] Interview: INT_07.
[245] Interview: INT_03.
[246] 'Transforming Construction (Final)'; 'Medicines Manufacturing (Final)'; 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Faraday Battery (Final)'; 'Driving the Electric Revolution (Final)'.
[247] UK Research and Innovation. 2022. *ISCF Fund-Level Evaluation: Baseline Report*. As of 24 September 2025: https://www.ukri.org/publications/iscf-fund-level-evaluation-baseline-report/

which provides a platform for testing and scaling up new battery technologies and serves as a crucial facility for deepening technological capabilities and commercialization prospects, which may in turn enhance attractiveness to investors.[248] The Fund's impact on digital infrastructure has been more pronounced in the Future diagnostics sub-cluster, where the Accelerating Detection of Disease and Data to Early Diagnosis Challenges have helped create new data storage facilitates, extensive participant resources for health research and other digital tools.[249] However, in other instances, the extent of the ISCF's impact on digital assets was reportedly affected by difficulties in improving access to high-quality data, meeting industry data access requirements amidst delays impacting project timelines and obstacles in expanding production capabilities.[250]

Overall, such infrastructural improvements have the potential to provide a robust foundation for future R&I efforts, particularly at the intersection of data and health, enabling comprehensive, efficient and data-driven approaches to healthcare services, detection and diagnosis.[251]

[248] 'Faraday Battery (Final)'.
[249] 'Accelerating Detection of Disease (Interim)'; 'Data to Early Diagnosis (Final)'.
[250] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'.
[251] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Medicines Manufacturing (Final)'; 'Accelerating Detection of Disease (Interim)'.

3.4. Employment and job creation

Evaluation question

- To what extent has the ISCF contributed to the creation and retention of new businesses and high-skilled jobs?

Key summary of ISCF overall impact on employment and job creation

- Fund-level data shows 3,563 FTE jobs created so far, with another 14,266 projected in the next five years. Meanwhile, 7,499 FTE have been retained to date, with 11,308 additional retentions anticipated.
- Roles created and retained predominantly focus on advanced technical and managerial positions, including AI engineers, geneticists, robotics specialists and R&D managers.
- Several sectors are poised for large-scale job creation once they transition to operational phases. For instance, the Industrial Decarbonisation Challenge expects to generate a peak of 35,000 jobs in construction, engineering and project management across multiple cluster regions, although immediate job numbers remained stable during the project's delivery phase.
- At least 35 businesses have been formed or are in development under the ISCF, though this is likely an underestimate. The Faraday Institution alone has fostered eight spinouts, up from five in 2020, reflecting the Fund's role in supporting entrepreneurship and innovation pipelines, which in turn boosts employment.
- Factors such as Brexit and COVID-19 exacerbated labour shortages, yet ISCF investments helped many firms weather these disruptions. These external pressures underscore the Fund's importance as a stabilising force for job retention, high-value employment and broader business growth.

Key conclusions

- Investment in new business formation, early-stage innovation and capacity building in technical sectors translated effectively into jobs.
- The Fund was less effective at producing job growth uniformly across sectors, with employment outcomes highly dependent on sectoral maturity and market demand.
- Varying definitions and inconsistent reporting across Challenges limit precise understanding of total employment impact.
- Job creation mechanisms often preceded skills development, highlighting a strength in stimulating demand-led workforce growth.

Overall, across the Fund, there has been an increase in new jobs created and retained, predominantly involving high-skilled technical employment across fields such as AI, genetics

and engineering, as well as managerial roles, brought about through business growth and the creation of new businesses. Fund-level analysis shows that the ISCF has resulted in the creation of at least 3,563 FTE jobs, with 14,266 FTE jobs predicted within the next five years. In addition to creating new roles, ISCF investment has resulted in the retention of 7,499 FTE jobs to date, with 11,308 retained FTE jobs predicted with the next five years).[252] PCF data highlights that it was much more common for respondents to report jobs retained during the project, with only 154 (21%) respondents saying no jobs were retained during the project, whereas 448 (61%) reported retaining 1–5 FTE jobs.

When comparing these figures to data recorded in Challenge-level evaluation reports, exact numbers of jobs created are difficult to estimate and are likely underreported due to differences in reporting and available information. Moreover, as metrics were measured to varying degrees and in varying ways, it is often difficult to distinguish between numbers of jobs created and those retained. Challenges that provided detailed evidence on job creation and/or retention included those in the fields of Clean Growth, Data and Digital and Healthy Society.[253] Examples of positive contributions include the Healthy Ageing Challenge, which reported a 50% increase in workforce size in the Designed for Ageing strand, while the Low Cost Nuclear programme contributed on average 344 high-skilled jobs between 2020 and 2023.[254] The Industrial Decarbonisation Challenge did not increase the number of jobs within the consortium over the Challenge delivery period, but projects the Deployment and Cluster Plan pipeline will generate a peak of 35,000 jobs in construction, engineering and project management upon reaching the construction and operational stage.[255]

The ISCF's impact on employment and job creation was enabled by its emphasis on capacity building for new projects, opportunities for collaboration and initiatives that stimulated demand for specific skills.[256] For example, three surveyed ISCF representatives noted the importance of funding for start-ups and credited the Fund's approach of stimulating demand for specific skills by creating jobs, rather than focusing solely on developing skills and hoping for increased demand. In their experience, the ISCF also helped create commercial collaboration opportunities in sectors that were previously less receptive to such partnerships (e.g. the NHS and

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[252] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[253] 'Faraday Battery (Final)'; 'Transforming Food Production (Final)'; 'Next Generation Services (Final)'; 'Healthy Ageing (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Digital Security by Design (Interim)'; 'Medicines Manufacturing (Final)'.

[254] 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'.

[255] 'Industrial Decarbonisation (Final)'.

[256] Survey of ISCF representatives.

arts). Mechanisms enabling the ISCF's impact in this regard include capacity building of new businesses, funding for projects in new areas of innovation and the development of new entry points to as yet unexplored or different markets.[257]

The jobs created or retained through the Fund predominantly involved high-skilled[258] employment across sectors such as healthcare, scientific activities and advanced technologies, including roles in genetics, imaging, algorithm development and AI.[259] This is also in line with surveyed ISCF respondents, who predominantly thought that the ISCF had a large (56%) or moderate (44%) impact on the creation of high-skilled jobs.

External factors, such as the UK's exit from the EU[260] and the COVID-19 pandemic,[261] created difficulties and exacerbated labour supply issues due to limited worker mobility and a fall in skilled worker immigration. Despite these challenges, the ISCF enabled significant business growth and the creation of new businesses, which contributed to job creation and retention. There have been reports of at least 35 businesses generated or in development across the ISCF, though this number is likely underreported due to the varying focuses of the evaluation reports. For example, since its inception, eight spin-outs have emerged from the Faraday Institution, up from five in 2020.[262] Where Challenges successfully created or retained jobs, it was due to the business growth and creation opportunities that the ISCF facilitated.

[257] Survey of ISCF representatives.
[258] Transforming Food Production, for example, refers to 'highly skilled' jobs including agricultural engineers, data scientists and software developers.
[259] 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Low Cost Nuclear (Interim)'; 'Transforming Food Production (Final)'.
[260] 'Data to Early Diagnosis (Final)'.
[261] 'Low Cost Nuclear (Interim)'.
[262] 'Faraday Battery (Final)'.

3.5. Diversity

Evaluation question

- How has the ISCF contributed to equity, diversity and inclusion (EDI)?

Key summary of ISCF overall impact on diversity

- Only half of the ISCF Challenges reported any EDI-related activity or impact, reflecting uneven integration of EDI principles across the Fund.
- EDI strategies were not consistently applied across Challenges due to staggered roll-out.
- Only about 50% of survey respondents agreed that the ISCF facilitated EDI process changes, despite the presence of guidance and dedicated budgets.
- Where EDI was prioritised (e.g. workforce diversity tracking or inclusive data design), localised improvements were observed but not scaled Fund-wide.
- Progress was hindered by sector-specific constraints, inconsistent data collection and limited reporting on outcomes beyond headline metrics.

Key conclusions

- EDI integration across the ISCF was patchy and poorly monitored, with limited evidence of meaningful change across the Fund.
- In Challenges where EDI was explicitly embedded into programme design, there were notable gains in diversity metrics (e.g. gender balance, dataset inclusion).
- Sectoral challenges, such as male-dominated workforces and limited regional diversity, were not systematically addressed.
- For EDI to be more than compliance-led, UKRI and similar funds need to mainstream goals early, align incentives with EDI outcomes, and prioritise tracking at both project and programme levels.

The integration of EDI monitoring requirements into the Fund, as well as a dedicated EDI budget, were key recommendations to UKRI identified during the ISCF's process evaluation.[263] As discussed in the interim report, mechanisms for monitoring EDI activities and

[263] UK Research and Innovation. 2023. *Industrial Strategy Challenge Fund: Process Evaluation Report*. As of 24 September 2025: https://www.ukri.org/publications/industrial-strategy-challenge-fund-process-evaluation-report/

impacts were not consistently incorporated across Challenges due to the staggered implementation of EDI strategy at the Fund level.[264]

Around half of the Challenges analysed in this report (9 out of 20) mentioned activities relating to EDI within their Challenge areas and/or more broadly in their sector. Similarly, only half the survey respondents agreed that the Fund facilitated changes to EDI processes within their Challenges. This is especially notable given the small sample size. Overall, the impact of the ISCF on the promotion of EDI has been mixed, underscoring the importance of continued efforts and dedicated strategies to ensure consistent implementation across all Challenges.

Examples of targeted EDI activities within Challenges include the Future Flight Challenge, which analysed representation of female and non-binary R&D staff within participating firms. There was a marked decrease in the proportion of surveyed firms reporting no females or non-binary R&D staff, from 34% to 23%. Firms also demonstrated greater gender diversity than UKBC respondents not directly engaged with the Challenge, where 43% had no female or non-binary staff.[265] Two Challenges within the Healthy Society cluster also considered greater engagement with diverse population groups in health datasets as a part of their EDI activities.[266] For example, Our Future Health from the Accelerating Detection of Disease Challenge aims to address the underrepresentation of diverse groups in data for public and individual health research.[267]

There were barriers to EDI progress due to inconsistent mandates, data gaps and sector constraints. Although measures such as the organisation of diverse assessor panels and interviewees were implemented, one Challenge noted that limited diversity in the sector was a particular barrier.[268] Factors such as a male-dominated workforce in some sectors as well as geographical constraints continue to hinder further progress. One Challenge noted that while progress has been made in increasing the representation of Black, Asian and minority ethnic (BAME) and LGBTQ+ groups, progress towards gender diversity targets remains lacking.[269] While female representation within Low Cost Nuclear projects aligned with national averages, the goal of a 40% female workforce by 2030 was seen as ambitious at the Challenge-level evaluation.[270] One respondent noted that EDI requirements shifted during the process due to UKRI policies rather than the ISCF's, but the material impact of this change was unclear and difficult to assess.

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[264] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

[265] 'Future Flight (Final)'.

[266] 'Data to Early Diagnosis (Final)'; 'Accelerating Detection of Disease (Interim)'.

[267] 'Accelerating Detection of Disease (Interim)'.

[268] 'Made Smarter Innovation (Interim)'.

[269] 'Low Cost Nuclear (Interim)'.

[270] 'Low Cost Nuclear (Interim)'.

From a monitoring and reporting perspective, one surveyed stakeholder suggested that audits were excessively focused on the Challenge Director role, thereby overlooking achievements in EDI at the project level.[271] Reporting requirements on EDI were also modified due to broader shifts in UKRI policies, which may have affected the Fund's ability to monitor EDI impacts.[272]

Overall, the Fund's emphasis on EDI considerations translated into Challenge-level activities in several distinct ways. The variations observed in EDI implementation and impact monitoring highlight the need for clearly defined goals and guidelines at the Fund level.[273]

[271] Survey of ISCF representatives.
[272] Survey of ISCF representatives.
[273] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

4. Connected innovation ecosystem

The chapter discusses findings relating to collaborative ecosystems within the ISCF, focusing on **collaboration and partnership**, **recognition from Fund activities** and results from **network analysis**.

4.1. Collaboration and partnership

Evaluation questions

- To what extent has the ISCF increased collaboration between businesses, including between younger, smaller companies and larger, more established companies up the value chain?
- To what extent has the ISCF increased business–academic engagement on innovation activities relating to the Challenge areas?
- To what extent has the ISCF increased multi- and interdisciplinary research around the Challenge areas?

Key summary of ISCF overall impact on collaboration and partnerships

- ISCF-funded projects reported 2,166 partnerships (spanning businesses, academia, NGOs and public agencies) across nine Challenges, including at least 455 cross-sector collaborations and 779 academic partnerships. Network analysis also revealed 11,865 collaborative connections among cross-sector organisations.
- Around 76% of PCF survey respondents (n=756) expect their collaborations to continue post-funding, underlining the ISCF's role in fostering long-term R&D partnerships – particularly those connecting SMEs with larger, more established firms.
- The ISCF has facilitated collaborations between businesses of different sizes and with competing interests. Partnerships have also extended across sectors to include government agencies, public sector institutions, academic researchers and university spinouts.
- While Challenge directors, governance structures and dedicated networking events were crucial in sustaining collaborations, many projects faced delays in contracting, complex consortia management, and short timelines. These factors often constrained the full benefits of cross-sector engagement, highlighting the need for clearer processes and extended grant durations.

Key conclusions

- The ISCF succeeded in catalysing new and diverse R&D partnerships; however, administrative frictions and uneven reporting limit the full realisation and measurement of benefits.

- Larger firms and RTOs in ISCF networks have often played the role of connecting hubs. Investments like the ISCF could explore how to exploit this role by encouraging key organisations to promote direct connections between their collaborative partners through hosting events.
- High intent to continue collaborating is encouraging, but long-term durability will depend on post-ISCF funding pathways, clearer adoption routes and better support for consortia governance.
- Future mission-led funds should:
  - Build in longer start-up windows and streamlined contracting procedures.
  - Provide template agreements and consortium management guidance.
  - Track partnership quality and MIDRI outputs systematically to capture ongoing value.

The ISCF has facilitated R&D activities with high levels of collaboration. Partnerships between businesses of diverse sizes and sectors, involving academic institutions, end-users, customers, public agencies and government departments, have been evidenced across the Fund. Drawing on insights from network analysis, we find that the ISCF has given rise to a rich pattern of collaborations, generating 7,839 collaborative connections between organisations, excluding universities. A collaborative connection is a distinct pairing of two non-university organisations on the same ISCF project. The number of collaborative connections facilitated by the ISCF increases to 11,865 when universities are also considered.

Each organisation on average collaborated with seven other non-university organisations (businesses, non-profits, public or third sector, and Research and Technology Organisations), receiving £866,000 of mutual ISCF funding on collaborative projects.[274] However, these averages are somewhat skewed by a relatively small number of large organisations that collaborated on many projects. For example, the Centre for Process Innovation (CPI) collaborated on 93 projects in total and Tata Steel collaborated on 69 projects. The median number of collaborators for each organisation was four and the median mutual funding received by each organisation on collaborative projects was £187,000.

[274] Mutual funding received on collaborative projects is defined as follows: for any two organisations that are both involved in a mutual project and receive grants of £A and £B respectively for this project, the minimum of A and B is the mutual funding received on that project for these two organisations. If these organisations are involved in multiple mutual projects, we take the sum of the minimum grants received by the two organisations across all mutual projects. The total mutual funding received on collaborative projects (known as the 'weighted degree') for an organisation is the sum of mutual funding received across all its connections. See Annex F for more information on Network analysis.

Furthermore, among Challenges where quantitative evidence is available, the Fund's contribution to collaborations has been highly positive. At least 2,166 partnerships have been reported across nine Challenges.[275] Challenges disaggregating impact metrics have highlighted that these collaborations have included at least 455 cross-sectoral (including industrial partners, trade associations and NGOs) and 779 academic partners and research organisations.[276] Qualitatively, the ISCF's impact on encouraging new partnerships and network-building activities between diverse companies and industries is also evident.

The rate of collaboration on ISCF projects has increased relative to the early stages of the Fund, although the magnitude of the increase is small. Comparison of network analyses between Phases 2 and 4 of the ISCF show that while the proportion of organisations collaborating (i.e. having at least one collaborative link to another organisation) was fairly constant during the life of the ISCF at around 95%, the average number of connections per organisation rose slightly from 7.09 to 7.42 (a 5% increase).[277] Similarly, the average amount of mutual funding received per organisation for collaborative projects increased by 10%, from £784,383 to £866,241. The graph density[278] in the network of Challenges also rose slightly from 0.59 to 0.67 (a 14% increase).

The ISCF has made positive contributions to promoting collaborations between businesses, especially with new partners and organisations of different sizes. At least 12 Challenges have been successful in encouraging partnerships among businesses, including the formation of new partnerships as well as strengthening of existing relationships.[279] Four Challenges noted that

[275] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Accelerating Detection of Disease (Interim)'; 'Commercialising Quantum Technology (Interim)'; 'Next Generation Services (Final)'; 'Audience of the Future (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Faraday Battery (Final)'; 'Industrial Decarbonisation (Final)'.
[276] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Accelerating Detection of Disease (Interim)'; 'Commercialising Quantum Technology (Interim)'; 'Audience of the Future (Final)'; 'Faraday Battery (Final)'; 'Industrial Decarbonisation (Final)'; 'Digital Security by Design (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Medicines Manufacturing (Final)'.
[277] Phase 2 results do not serve as a 'baseline' since they were based on early ISCF outputs, rather than data on the state of collaboration pre-ISCF. As such, these statistics are only informative regarding ISCF-supported changes in collaboration during the lifetime of the Fund, rather than reflecting any change in collaborative R&D activity relative to the pre-ISCF period.
[278] Graph density is a measure of how 'complete' the network is (i.e. the proportion of possible connections realised – a complete network would have density of 1).
[279] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Future Flight (Final)'; 'Driving the Electric Revolution (Final)'; 'Industrial Decarbonisation (Final)'.

without ISCF, these partnerships would either not exist or would lack a similar scale or level of engagement.[280]

Along similar lines, over one third (36%) of projects involving a small/micro-organisation involved collaboration with a large organisation of any type, and 32% involved collaboration with a large business.[281] Figure 11 illustrates the large network of organisations collaborating on ISCF-funded projects, differentiated by the size of each organisation. Each dot (node) represents an organisation and is coloured corresponding to its size categorisation (i.e. small, medium or large organisation). The size of each node in the visualisation is proportional to how well connected that organisation is.[282] The nodes are arranged in the visualisation such that more strongly connected nodes are closer together and nodes near the centre of the image have the most connections.[283]

[280] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Transforming Food Production (Final)'; 'Driving the Electric Revolution (Final)'.
[281] Network analysis of projects recorded in Delphi data.
[282] Specifically, it is proportional to the Page Rank of the organisation. Page Rank is a measure of a node's network centrality (i.e. connectedness) that accounts for the number and strength of a node's connections but also the number and strength of the nodes it is connected to in turn.
[283] Formally, we use the Yifan Hu Multilevel layout. See Hu, Yifan. 2005. 'Efficient, High-Quality Force-Directed Graph Drawing.' *Mathematica Journal* 10(1).

Figure 11. Network of organisations' collaboration on ISCF projects

Source: Frontier Economics analysis of Delphi data.

Note: The size of each node is proportional to how well connected the organisation is, measured by Page Rank, a measure of connectedness that accounts for both the number and strength of a node's connections and the number and strength of the nodes it is connected to. Nodes are arranged according to a Yifan Hu Multilevel layout in which more strongly connected nodes are closer together and nodes near the centre of the image have the most connections. Universities are not included in the analysis.

Interviewed stakeholders credited the Fund design as a key enabler for collaborations between firms of different sizes.[284] The ISCF provided a clear business opportunity for collaborative, exploratory R&D which helped participants align their priorities and expectations. This was reported to be especially beneficial when partnering with SMEs.[285] In addition, the ISCF's impact on collaboration has been fuelled in part by large organisations acting as hubs, as seen in Figure 11.

[284] Interviews: INT_06 and INT_07.
[285] Interview: INT_06.

Large organisations were slightly more well-connected and central in the ISCF collaborative network than small organisations (see analysis of average Page Rank in Annex F.3).

Collaboration was incorporated in the Robotics and Artificial Intelligence in Extreme Environments Challenge design from the onset, with different programme strands targeting partnerships across sectors and with companies of diverse sizes. These partnerships have since been sustained beyond the initial support offered by ISCF.[286] Examples of diverse partnerships are also evident across the Health Cluster (see Box 7). The Industrial Decarbonisation Challenge noted that businesses at all levels were involved in collaborations, while stakeholders of the Driving the Electric Revolution Challenge indicated that the Challenge's Industrialisation Centre (DER-IC) had connected companies across different points in the supply chain.[287]

Businesses from at least five Challenges reported early signs of sustaining these partnerships after the end of funding.[288] This is consistent with results from PCF data, with 76% of respondents (n=756) expecting their collaborations to continue. Such partnerships across the value chain have resulted in increased investment opportunities and access to funding – the latter was noted as particularly beneficial to smaller companies, with positive impacts on the company profile, reputation and commercialisation activities.[289]

[286] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[287] 'Industrial Decarbonisation (Interim)'; 'Driving the Electric Revolution (Final)'.
[288] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Next Generation Services (Final)'; 'Faraday Battery (Final)'; 'Future Flight (Final)'.
[289] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Driving the Electric Revolution (Interim)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'.

Box 7. Challenge spotlight on collaboration and partnerships[290]

Data to Early Diagnosis Challenge

- **Aims:** The Data to Early Diagnosis Challenge provides essential support towards the development of precision medicine for improved early diagnosis and treatment. It also aims to accelerate the use of research and health data.
- **Impact on collaboration and partnership:** The Challenge played a significant role in encouraging collaborations within the health sector. It helped strengthen existing relationships and provided opportunities to build new relationships through prescribed funding for collaborative research. It successfully facilitated partnerships between companies that were otherwise unlikely to work together through increased opportunities for engagement between smaller companies with larger businesses in the sector. For instance, the UK Biobank Whole Genome Sequencing (WGS) strand is a major model of success globally, bringing together leading pharmaceutical companies and smaller firms, alongside significant funding matched by private entities.
- **Enablers:** The Challenge's investments into the sector, reputational leverage gained from the ISCF award, and leadership support from funding agencies (UKRI, the Medical Research Council and the Wellcome Trust) were identified as key enablers that facilitated partnerships. Additional guidance on collaboration consortium management and contracting would have further enabled positive experiences for all parties involved.
- **Barriers:** Data sharing was a common challenge for several projects across collaboration partners as it prolonged negotiation processes and led to delays in project timelines. Some participants also reported insufficient support from UKRI in the planning process, which had negative impacts on the benefits derived from partnerships.

All Challenges have reported some degree of cross-sector partnerships, especially collaborations among businesses from different sectors. In particular, the well-defined scope of several Challenges helped identify shared areas of interest between businesses, bringing together firms with varying specialisations but transferrable expertise. In at least seven Challenges, cross-sector collaboration was a necessity due to their reliance on technologies from other sectors.[291] For example, an interviewed industry stakeholder from the Data and Digital cluster reported, 'If you

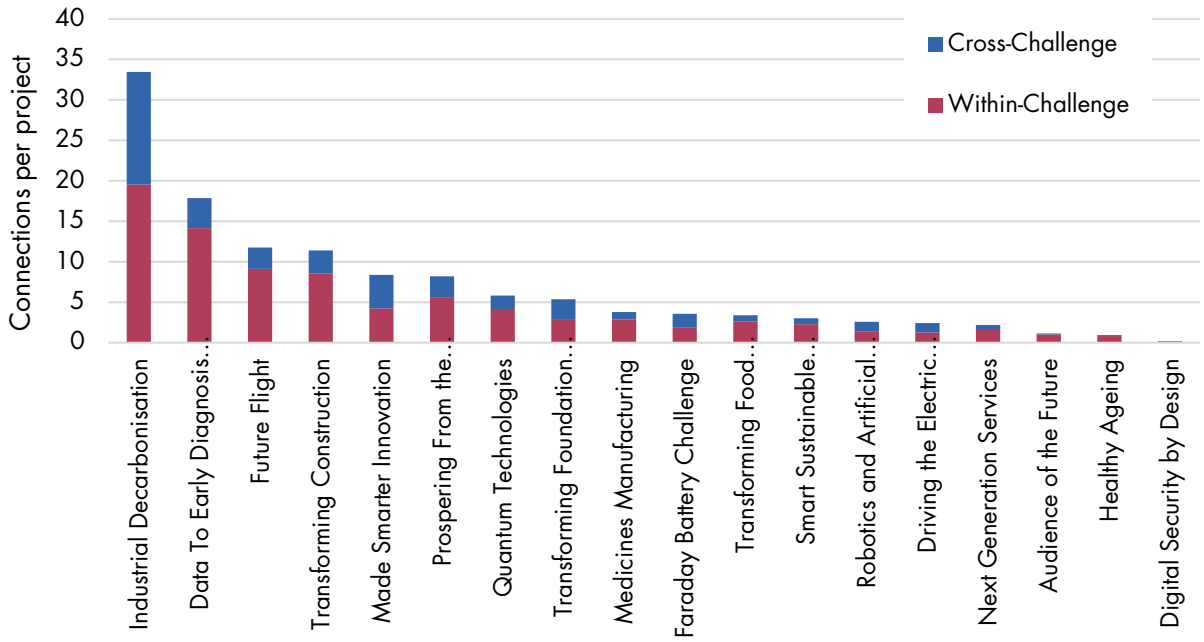
[290] 'Data to Early Diagnosis (Final)'.

[291] According to one interviewee (INT_07), the seven Challenges are: Medicines Manufacturing, Commercialising Quantum Technologies, Data to Early Diagnosis, Industrial Decarbonisation, Accelerating Detection of Disease, Smart Sustainable Plastic Packaging and Future Flight.

had a computer and that computer had sensitive information, these technologies would have an impact,' highlighting the cluster's cross-domain relevance for commercial activities and partnerships.[292]

Results from network analysis also suggest the potential wider collaborative impact of the ISCF. Figure 12 shows the average number of connections between non-academic participants created by the Challenges and classifies the connections as either cross-Challenge or within-Challenge. The Industrial Decarbonisation and Data to Early Diagnosis Challenges created the highest number of connections with other organisations within their Challenge. Descriptive analysis also shows that almost 10% of non-university beneficiaries worked on projects with two or more Challenges, including almost 16% of large business beneficiaries and more than 40% of RTOs.

Figure 12. Connections created per project



Source: Frontier Economics analysis of Delphi data.

Note: Low Cost Nuclear is not shown due to the very small number of projects associated with this Challenge.

Cross-sector collaborations were also encouraged by dedicated mechanisms such as programme events and an emphasis on transferrable innovation within the Fund design.[293] For example, the

[292] Interview: INT_01.

[293] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund.* As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/; Interviews: INT_01, INT_03, INT_05 and INT_07.

establishment of Our Future Health as an independent organisation within the Accelerating the Detection of Disease Challenge facilitated greater involvement of industry and charity institutions.[294] Similarly, the Faraday Battery Challenge's targeted funding streams facilitated cross-sector partnerships through training and skills development, early-stage explorative projects and industry-led commercialisation activities.[295] Aligned to this view, one interviewee believed that while their Challenge and its projects contributed to cross-sector collaborations, mechanisms to facilitate the same were lacking at the Fund level. The extent to which the ISCF encouraged such collaborations depended more on initiative shown by Challenge directors and programme teams to advise participants.[296] Another interviewee highlighted a drawback of the programme design: '…getting the balance right between innovators and conventional sector players [is key]. I think the pendulum swung probably too much towards innovators.' While innovators developed new technologies, their adoption in existing supply chains was constrained due to a lack of sector-specific knowledge. An in-depth market understanding was noted to be crucial in the mobility sector, since it is heavily regulated.[297]

At least ten Challenges emphasised and positively contributed to the growth of industry–academic collaborations.[298] 43% of PCF respondents (n=866) reported working with university partners on their current project, and 67% of respondents reported having worked with a university partner on previous projects.[299] Collaborations with university partners on current projects were similar for academic respondents (44%) and non-academic respondents (41%). The importance of academic–industry collaborations is also seen in the Fund-level project data used to inform the network analysis. Of the 1,887 funded projects recoded, 34% included both a university and business partner.

Challenges explored different forms of industry–academic partnerships through dedicated funding instruments,[300] specialised outreach strategies, as well as new platforms for industry–academic interaction. For example, all Use-inspired research hubs established within the Robotics and Artificial Intelligence in Extreme Environments Challenge were designed for collaboration, and

[294] 'Accelerating Detection of Disease (Interim)'.
[295] 'Faraday Battery Challenge (Final)'.
[296] Interview: INT_07.
[297] Interview: INT_03.
[298] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Industrial Decarbonisation (Final)'; 'Driving the Electric Revolution (Final)'; 'Future Flight (Final)'.
[299] PCF data, question 28.
[300] Interview: INT_07.

included more than seven partners on average, among them universities, businesses and government agencies.[301]

ISCF events helped connect many industry and academic organisations with overlapping sectors and commercial interests. Innovate UK Business Connect (BC) data on ISCF events records 359 events held between August 2017 and December 2023, attended by 6,434 distinct organisations and 24,358 unique participants. This includes a broad range events, including briefings, webinars, workshops and networking events. Overall, 27% of organisations attending ISCF events were universities or academic institutions.

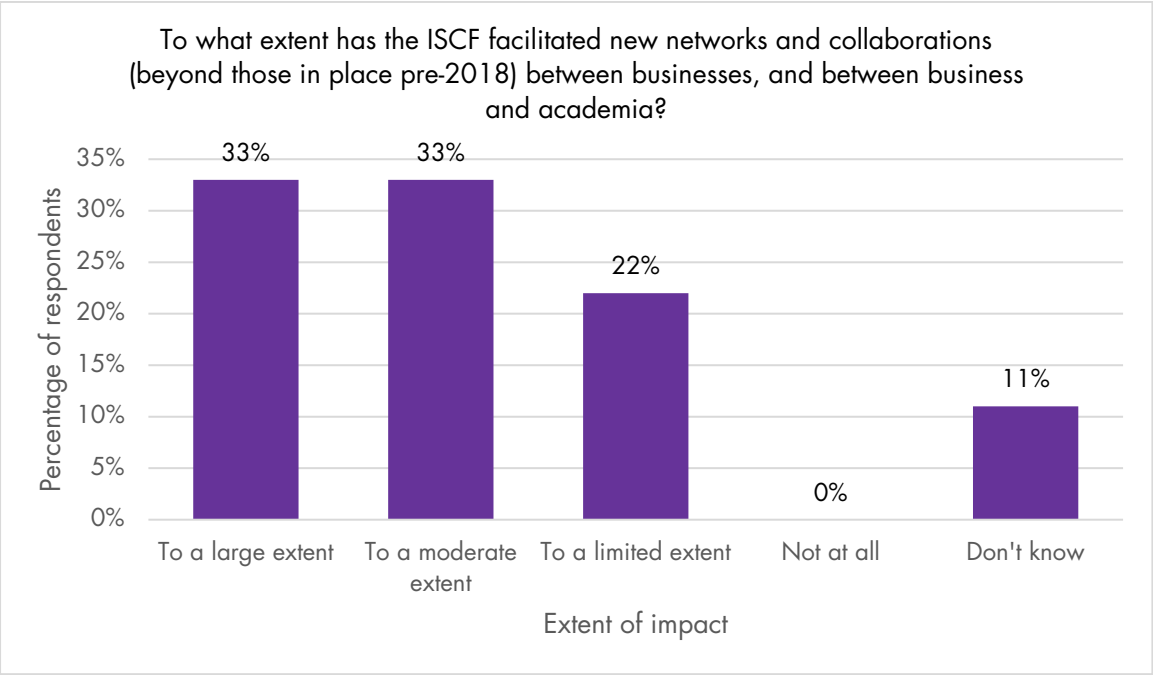
Across all Challenges, Healthy Ageing organised the highest number of events (30), followed by Audience of the Future (29). Although Robotics and Artificial Intelligence in Extreme Environments held the lowest number of events (5), its activities garnered a significant response, with the highest median numbers of participants and organisations per event.

In another instance, collaborations were encouraged through repeated engagement with Faraday Battery Challenge processes; participants with more than one grant application had more partners on average. The Challenge's significant contribution to partnerships is also evident quantitatively: more than 80% of participants from its CR&D strand reported an increase in partnerships, 88% of whom attributed this to their participation in the ISCF.[302]

Surveyed industry representatives also provided insights into the Fund's contributions towards new collaborations between businesses and with academic researchers, with 67% respondents believing this impact to be at least to *a moderate extent* (see Figure 13). However, according to interviewees, the Fund could have further encouraged involvement of academic organisations, but efforts were constrained by lack of clear goals, different funding scales and contrasting ways of working between academics and businesses.[303]

[301] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[302] 'Faraday Battery (Final)'.
[303] Interviews: INT_03, INT_04, INT_06 and INT_07.

Figure 13. Industry representatives (n=9) on new networks and collaborations after ISCF[304]



Beyond academic partners, Challenge participants reported new relationships with practitioner groups such as customers, end-users and policymakers (as described above in Section 2.4). For example, the Next Generation Services Challenge enabled participants to collaborate with new end-users, vastly aiding technology progression. As a result, participants had increased opportunities to engage with end-users as compared to unsuccessful applicants. Participants on average established 2.4 new end-user partnerships per project, surpassing an average 1.5 new partnerships per project for unsuccessful applicants.[305]

While ISCF support, programme design and engagement activities played a significant role in enabling partnerships, difficulties in negotiations have hindered the extent to which these were fruitful. Several mechanisms highlighted in sections above outline the ISCF's impact on collaborations within and across sectors. The ISCF's programme design, with particular emphasis on industry–academic collaborations as a funding requirement, encouraged partnerships in at least five Challenges.[306]

[304] Survey of industry representatives, question 21.
[305] 'Next Generation Services (Final)'.
[306] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Robotics and Artificial Intelligence (Final)'; 'Transforming Food Production (Final)'; 'Faraday Battery (Final)'.

Support from funding agencies for the organisation of more engagement activities was additionally noted to be beneficial for collaboration.[307] Examples of such engagements included networking events, workshops, webinars and training events that facilitated knowledge exchange and dissemination (see Section 2.1). Survey responses further support this claim, with both Challenge and industry representatives highlighting annual events, webinars and network alliances as major ISCF mechanisms enabling partnerships.

As reported at the interim stage, promotion of these events by crucial stakeholders (such as the Department for Business and Trade) garnered further interest from the sector.[308] For instance, the Next Generation Services and Transforming Food Production Challenges organised engagement events which helped businesses expand their networks and build relations with national and international stakeholders.[309]

However, partnerships (both within and across sectors) were negatively affected by several factors, of which delays in negotiations and difficulties in managing timelines were the most common. Delays in negotiating and finalising contracts, especially within large consortia, hindered the start of project activities and led to dissatisfaction among industrial partners.[310] Similarly, cross-sector partnerships were impacted by varying project timelines and ways of working between academic and industry professionals.[311] For instance, as a result of short project timelines, industrial and academic partners in the Prospering from Energy Revolution Challenge had limited opportunities for external engagement.[312]

Box 8. Challenge-level enablers to successful partnerships

The financial and reputational benefits of securing ISCF funding, along with existing relationships with key stakeholders, aided businesses while approaching new partners.[313] Additional enabling mechanisms, highlighted at the Challenge level, included:

- **Support from funders:** At least five Challenges mentioned funding agencies' support as a crucial factor encouraging collaborations.[314] Participants

[307] 'Data to Early Diagnosis (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'.
[308] 'Audience of the Future (Final)'.
[309] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'.
[310] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Transforming Food Production (Final)'.
[313] 'Data to Early Diagnosis (Final)'.
[314] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Data to Early Diagnosis (Final)'; 'Transforming Foundation Industries (Interim)'; 'Faraday Battery (Final)';

benefited from funders' involvement providing managerial support, backing novel research and organising events for engagement, demonstrations and high-level networking. However, two survey responses highlighted that frequent changes to governance structure or leadership can limit the extent to which participants can leverage this support.

- **Communication and coordination:** The Transforming Food Production Challenge successfully brought together academic institutions, agricultural colleges and private innovation centres. Projects ensured continuous and consistent communication between partners through knowledge exchange sessions, clear division of responsibilities, strong project management structures, aligned interests and platforms for sharing feedback regularly. Relatedly, 92% of survey respondents in the Challenge evaluation reported that they would continue to undertake collaborative R&D based on the foundational support received from the ISCF.[315]
- **Project management structures:** The Robotics and Artificial Intelligence in Extreme Environments and Future Flight Challenges reported several project-level mechanisms for efficient, collaborative working. The former instituted a bespoke project committee for managing partnerships and adaptive working styles to co-develop projects with different partners.[316] An interviewed stakeholder from the Future Flight Challenge spoke about the benefits of quarterly meetings: introduced by the Challenge support staff, the format helped partners clarify objectives, divide responsibilities and establish broader ways of working.[317]

  Along similar lines, an interviewed stakeholder described benefitting from the Fund's invoicing system. On the Innovation Funding Service website, each partner could submit their proof of spend directly to the funder, rather than invoicing through the project lead. This feature helped reduce the administrative burden on the project lead, eliminating longer waiting periods for invoicing in some instances.[318]
- **Provision of distinct and valuable R&D capacity:** The Driving the Electric Revolution Challenge provided start-of the art equipment, creating a nexus for

'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Medicines Manufacturing (Final)'.

[313] 'Data to Early Diagnosis (Final)'.

[314] 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'; 'Data to Early Diagnosis (Final)'; 'Transforming Foundation Industries (Interim)'; 'Faraday Battery (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Medicines Manufacturing (Final)'.

[315] 'Transforming Food Production (Final)'.

[316] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

[317] Interview: INT_06.

[318] Interview: INT_05.

conversations and collaborations between universities and companies. The resultant improvements in capabilities have allowed firms to access mutually beneficial expertise and identify opportunities for further collaboration beyond the scope of activity at DER-ICs and which would not have occurred otherwise.[319]

Box 9. Challenge-level barriers to successful partnerships

Several factors hindered collaborative working among ISCF participants and partners, of which delays in negotiation and difficulties in managing timelines were the most commonly reported. At least five Challenges reported that delays in contracts negotiation, data sharing and financial agreements significantly affected the extent to which partners could work collaboratively.[320] As a result, at least five Challenges reported difficulties in managing project timelines with partners, accounting for varied ways of working between industrial and academic institutions.[321] Other commonly highlighted barriers include:

- **Consortia sizes:** The Data to Early Diagnosis and Transforming Food Production Challenges reported difficulties in collaboration due to consortia sizes. Some consortia involved multiple partners and required more time for establishing project processes. However, due to the shorter Challenge timelines, larger consortia became difficult to manage and generated less than expected benefits for partners.[322]
- **Large and varied stakeholder networks:** Businesses participating in the Prospering from the Energy Revolution Challenge reported that their ability to identify business models that satisfied stakeholder requirements was challenged by the need to engage with a large and unorganised set of energy sector stakeholders. When combined with short project timelines, this also impacted the scope of opportunities for external engagement.[323]
- **Difficulties in financial monitoring:** Two interviewed stakeholders from the Clean Growth and Future of Mobility clusters raised concerns regarding the auditing and financial monitoring system. While one interviewee found the system to be burdensome, the other highlighted difficulties in ensuring

[319] 'Driving the Electric Revolution (Final)'.
[320] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Transforming Food Production (Final)'; 'Accelerating Detection of Disease (Interim)'.
[321] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Healthy Ageing (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'.
[322] 'Data to Early Diagnosis (Final)'; 'Transforming Food Production (Final)'.
[323] 'Prospering from the Energy Revolution (Final)'.

financial oversight and accountability among partners without intervention from the Challenge programme team.[324]

Recommendations:

Six Challenges provided multiple recommendations to overcome these barriers and facilitate greater partnerships through the ISCF.[325] For instance, extended grant timelines that provide more time for establishing new consortia were suggested to mitigate the wider consequences of contracting delays between businesses and across industry, academia and government bodies. Additional guidance from funders to industries on initiating, negotiating and managing collaborations was also recommended to ensure efficient ways of working across partners. From the partners' perspective, Transforming Food Production Challenge participants recommended harmonisation discussions at the start of the project to foster alignment of priorities, responsibilities and expectations.[326]

Collaborations fostered through the ISCF were seen as vital to progressing commercialisation and innovation. Collaborations within the ISCF had notable outputs, leading to several financial, commercial and broader intangible benefits for partners involved. In the first instance, the ISCF has accelerated innovation.[327] Businesses supported by the Fund have reported commercial benefits from their participation in the Challenges, through greater access to investors and end-users, more opportunities to improve and demonstrate utility of their technologies, a reduced timeline to commercialisation, and increased investor confidence.[328] For example, collaborative R&D projects in the pharmaceutical industry have helped accelerate commercialisation and foster future collaborations in the sector.[329] ISCF-facilitated collaborations have also enabled sharing and scaling of knowledge outputs. Surveyed ISCF and industry representatives reiterated these outcomes, with the majority of them identifying knowledge sharing and increased stakeholder engagement to be crucial outcomes of their collaboration. The benefits to innovation and knowledge exchange brought by partnerships are explored in more detail in Chapter 2.

[324] Interviews: INT_05 and INT_06.
[325] 'Data to Early Diagnosis (Final)'; 'Industrial Decarbonisation (Final)'; 'Medicines Manufacturing (Final)'; 'Transforming Food Production (Final)'; 'Healthy Ageing (Final)'; 'Prospering from the Energy Revolution (Final)'.
[326] 'Transforming Food Production (Final)'.
[327] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Low Cost Nuclear (Interim)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'.
[328] 'Transforming Food Production (Final)'; 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'.
[329] 'Medicines Manufacturing (Final)'.

In addition to knowledge outputs, ISCF-fostered collaborations have also facilitated wider skills development for business and academic partners alike. Skills have been promoted through a number of initiatives, including capacity building within the organisation, staff exchanges, training for early-career researchers, increases in the number of skilled workers employed, increases in internal investments to R&D, the development of new approaches, increased investment opportunities, knowledge sharing with other stakeholders and greater involvement in sector-wide activities.[330] There is evidence that collaborations have also led to wider, intangible benefits such as improvements to R&D capabilities as well as reputational benefits for organisations involved (see Sections 2.1 and 3.3).[331] Such increased channels of engagement across stakeholders have helped sustain collaborative approaches to R&D that were initiated or strengthened by the ISCF.

The ISCF has fostered multi- and interdisciplinary research and innovation (MIDRI), leading to follow-on activities that benefit stakeholders among and beyond its immediate beneficiaries. Collaborations within the ISCF have extended across various disciplines and sectors, with 14 Challenges reporting evidence on MIDRI activities.[332] Network analysis further confirms that collaborations leveraged natural communities of innovation, targeting common overlaps in sectors or subject areas at the Fund level. Figure 14 visualises this network of collaborations across Challenges, showing the extent to which Challenges are connected by organisations working on projects across different Challenges.[333]

Using a 'community detection algorithm', Challenges which are more closely connected to each other than to the rest of the network are grouped together, with a colour code assigned to each unique community.[334] The four observed communities generally reflect natural collaborations in

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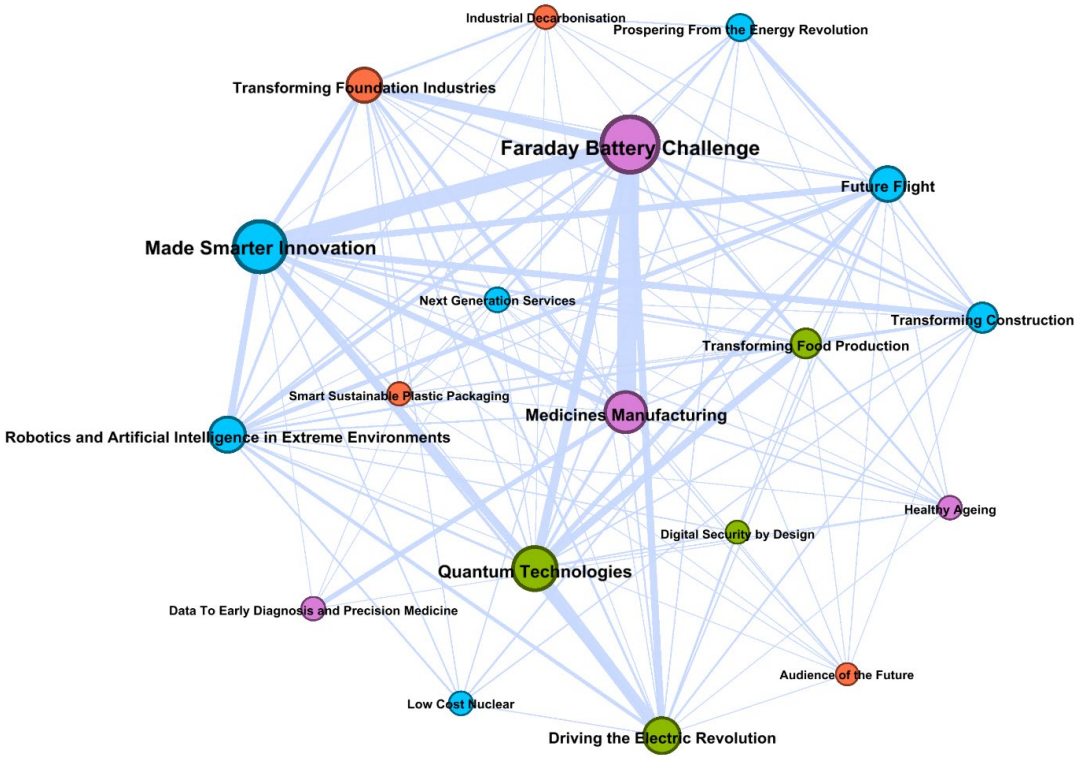
[330] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Next Generation Services (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Industrial Decarbonisation (Final)'.
[331] 'Audience of the Future (Final)'; 'Transforming Food Production (Final)'; 'Driving the Electric Revolution (Final)'; 'Industrial Decarbonisation (Final)'.
[332] 'Digital Security by Design (Interim)'; 'Commercialising Quantum Technology (Interim)'; 'Data to Early Diagnosis (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Audience of the Future (Final)'; 'Medicines Manufacturing (Final)'; 'Future Flight (Final)'; 'Transforming Foundation Industries (Interim)'; 'Transforming Construction (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Industrial Decarbonisation (Final)'; 'Future Flight (Final)'.
[333] Each node of the figure represents a Challenge, and the size of each node corresponds to its network centrality as measured by its Page Rank. Line thickness between any two Challenges corresponds with the total grant funding received by organisations involved in both Challenges (through funded projects associated with the two Challenges).
[334] The community detection algorithm has been implemented to group nodes (i.e. Challenges) based only on connections within the network, without using any prior knowledge about the nature of these Challenges.

sectors and disciplines between the Challenges. Examples include a community containing Challenges from the Healthy Society cluster (Healthy Ageing, Medicines Manufacturing and Data to Early Diagnosis Challenges), another with several Data and Digital cluster Challenges (Made Smarter Innovation, Robotics and Artificial Intelligence in Extreme Environments, and Next Generation Services Challenges) and a third community with several Challenges from the Clean Growth cluster (Transforming Foundation Industries, Industrial Decarbonisation and Smart Sustainable Plastic Packaging Challenges). A detailed discussion of the network model is provided in Annex F.

Figure 14. Network of collaboration across ISCF Challenges

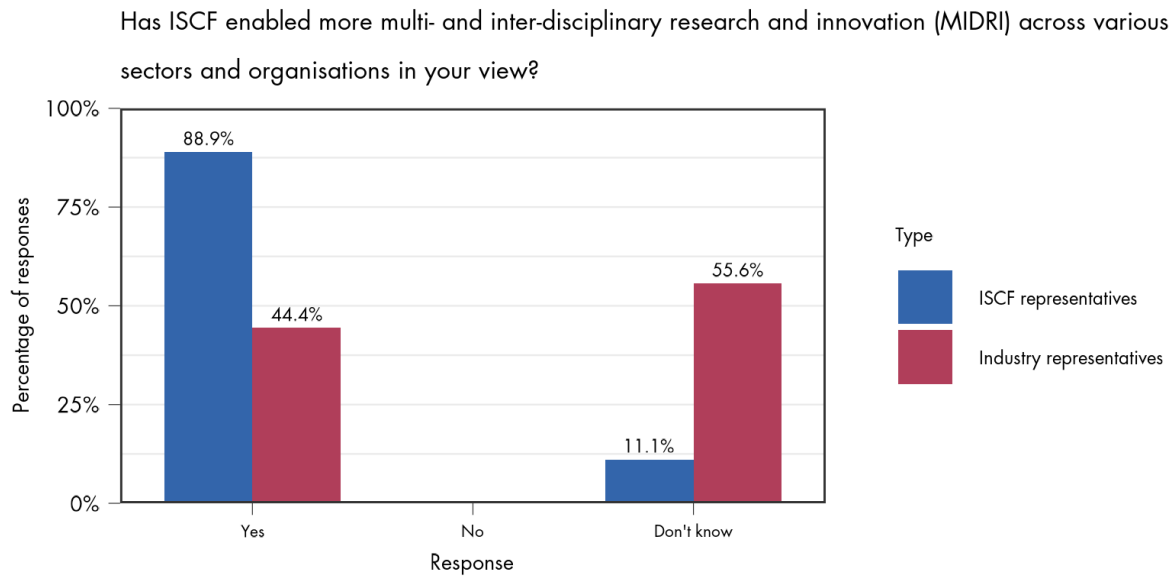


Source: Frontier Economics analysis of Delphi data.
Note: Nodes are arranged according to a Fruchterman-Reingold layout.[335] Nodes are coloured according to their 'community' as identified by a community detection algorithm.

[335] The Fruchterman-Reingold algorithm arranges nodes such that those that are connected (the blue lines) are pulled closer together, while nodes within a certain proximity repel each other to avoid overlap. This layout organises the nodes in a way that minimises line overlap and clutter while visualising the underlying structure of the network. Fruchterman, T.M.J., & E.M. Reingold. 1991. 'Graph drawing by force-directed placement.' *Software Practice and Experience* 21(11).

The Fund's impact on MIDRI activities was also confirmed by both ISCF and industry representatives engaged through surveys in this evaluation, though awareness of the impact varied between both groups (see Figure 15).[336]

Figure 15. ISCF representatives (n=9) and industry representatives (n=9) on multi- and interdisciplinary research[337]



By identifying MIDRI as an explicit goal at the programme level, three Challenges facilitated multidisciplinary engagements within and beyond their participant stakeholders.[338] At least three Challenges also encouraged MIDRI activities through sub-programmes or strands adapted for the formation of multidisciplinary research teams and widespread knowledge transfer.[339] Centres of Excellence and research hubs, progressed under multiple Challenges, also played a role in bringing together experts from diverse disciplines and sectors.

For example, the IDRICs established through waves 1 and 2 of the IDRIC workstream of the Industrial Decarbonisation Challenge included multidisciplinary research as one of their main objectives, and cross-cutting research was conducted in the areas of technology, policy, economics and regulation through Multidisciplinary Integrated Programmes.[340] In the Future Flight Challenge, a novel area of interdisciplinary research was established through the social science

[336] Survey of ISCF representatives; Survey of industry representatives.
[337] Survey of ISCF representatives; Survey of industry representatives.
[338] 'Transforming Food Production (Final)'; 'Healthy Ageing (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[339] 'Robotics and Artificial Intelligence in Extreme Environments (Final);' 'Healthy Ageing (Final)'; 'Transforming Food Production (Final)'.
[340] 'Industrial Decarbonisation (Final)'.

workstream in collaboration with universities, UKRI and the ESRC, producing social science research on topics such as public attitudes to future flight technologies, innovation ecosystem dynamics, and community impacts.[341]

4.2. Recognition and prestige

Evaluation question

- To what extent have institutions and clusters participating in the ISCF Challenges been recognised for their expertise within the UK and internationally?

Key summary of ISCF overall impact on recognition and prestige

- At least eleven Challenges reported notable reputational gains within the UK, often through policy advisory work, publications and high-profile engagement events. For example, the Industrial Decarbonisation Challenge's blueprint for industrial clusters garnered sector-wide recognition, although the majority of academic respondents in project closure forms (82% of n=163) indicated no formal awards or accolades.
- Challenges also achieved global notice, enhancing the UK's competitiveness in areas such as battery technology, smart energy systems and genomics. High-profile strands such as Data to Early Diagnosis are cited as world-leading models for public-private R&D collaboration, drawing interest from investors and international policymakers.
- 100% of ISCF and 89% of industry survey respondents believed that the Fund had raised sector visibility to at least *a moderate extent*, but fewer perceived a strong effect on international recognition.
- Evolving UK policy priorities, including the transition from the Industrial Strategy Council to newer governance arrangements, made it harder to maintain a single, clearly branded 'ISCF identity', which impacted its international visibility and continuity.

Key conclusions

- The ISCF raised national prestige and niche international credibility, but did not fully translate into a consistent global brand.
- Recognition outcomes are good domestically, but uncertain globally. Future mission-led funds should embed a stable cross-government branding and communications plan that can outlast policy shifts and systematically target international platforms.

[341] 'Future Flight (Final)'.

ISCF projects have generated substantial attention in the UK through extensive stakeholder engagement activities. At least 11 Challenges reported reputational gains in the UK through their participation in the ISCF.[342] As compared to the interim evaluation, more Challenges have now evidenced national recognition garnered by participants. At the cluster level, enhanced national reputation was most notably reported by seven of the ten Clean Growth Challenges and three of the four Healthy Society Challenges. Participants and partners engaged with relevant stakeholders at external events, which helped draw attention to their work. In contrast, evidence from PCFs highlights that recognition gained through such engagements may have varied at the Fund level, with 82% of all academic respondents (n=163) reporting receiving no awards or recognition from their involvement with the ISCF.

Some examples of engagement activities provided within Challenges include participation in policy advisory committees, dissemination events, publications, policy papers, evidence submission to the UK Parliament and government departments, and knowledge exchange sessions. More commonly, these events enabled participants to engage with investors, policymakers, technical experts, end-user groups and at times, the wider public. For example, the Industrial Decarbonisation Challenge gained recognition for its blueprinting and demonstration of the industrial cluster approach, with Challenge stakeholders viewing the Challenge as having had a visible influence on wider industry.[343]

The Transforming Food Production Challenge highlighted that organisations gained reputational benefits by fostering connections with sector leaders and demonstrating the utility of their technologies. Surveyed ISCF and industry representatives highlighted examples of reputational gains for participants within their sectors. Some projects achieved greater recognition through targeted dissemination activities and strategic engagement at cross-sectoral knowledge exchange events. However, participants noted that more could be done in this area, especially with ISCF's active support in commercialisation and user engagement.[344]

The ISCF has generated some degree of international recognition through policy and business engagement. 13 Challenges have evidenced recognition gained internationally for ISCF activities and outputs, which is a slightly higher number than the 11 Challenges which reported gaining

[342] 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Accelerating Detection of Disease (Interim)'; 'Data to Early Diagnosis (Final)'; 'Driving the Electric Revolution (Final)'; 'Industrial Decarbonisation (Final)'.

[343] 'Industrial Decarbonisation (Final)'.

[344] 'Transforming Food Production (Final)'.

national recognition.[345] Challenge activities have positively contributed to improving the UK's reputation and competitiveness in several sectors such as smart energy systems, agritech, genomics technology and battery research. This has helped attract greater attention from international investors, gain access to new markets and contribute to policymaking in other countries. For example, ISCF publications have been cited in international policy documents released by the World Health Organization, the United Nations and other national governments.[346] Meanwhile the Driving the Electric Revolution Challenge has influenced policies affecting the PEMD sector – including the UK National Semiconductor Strategy – and has attracted international recognition from industry players through the activities of the DER-Industrialisation centres – particularly the Midlands DER-IC.[347]

The ISCF has also benefited businesses, with the Medicines Manufacturing and Data to Early Diagnosis Challenges representing globally leading models for fostering collaboration. Similarly, products from the Healthy Ageing Challenge gained commercial attention in countries with an ageing population, increasing businesses' potential to expand to newer markets.[348] In the Future Flight Challenge, activities such as technology showcase events, investment and networking opportunities improved the visibility of SMEs at an international level.[349]

Stakeholders noted that, once the Industrial Strategy Council was wound down, there was no longer a single, high-profile policy platform through which ISCF achievements could be consistently showcased. In their view, this diffusion of branding and governance made it harder to sustain a clear narrative about the Fund's contribution at home and abroad, especially as wider policy priorities continued to evolve.[350] Future mission-led programmes might benefit from communication and legacy plans that remain resilient to changes in the broader policy landscape.

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[345] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Industrial Decarbonisation (Final)'; 'Medicines Manufacturing (Final)'; Interviews: INT_04.

[346] 'Healthy Ageing (Final)'; 'Prospering from the Energy Revolution (Final)'.

[347] 'Driving the Electric Revolution (Final)'.

[348] 'Healthy Ageing (Final)'.

[349] 'Future Flight (Final)'.

[350] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

5. Economic impact

This chapter presents findings relating to **economic impacts**. The focus is on emerging Challenge-level evidence relating to impacts on business performance, productivity and the regional distribution of these benefits. Note that the Challenge-level data reported on has varying levels of counterfactuals.

The extent to which firms could raise investment as a result of ISCF support is clearly a key economic outcome, and this has been discussed in Section 3.1. This chapter instead focuses on longer-term economic outcomes in terms of business and wider economic performance that result from the investment, collaboration and other benefits explored in previous chapters. These business performance impacts will also be a specific focus of a future Fund-level econometric analysis and value for money assessment in 2026–27.[351]

5.1. Economic impact

Evaluation questions

- To what extent have the ISCF Challenges supported the growth of UK businesses and created new markets, or enabled increase of UK's share in global market in their respective sector?
- What has been the increase in gross value added (including the creation of new products and services in relevant sectors and/or the creation of new markets)?
- What has been the productivity change (capital, labour or combined)?

Key summary of ISCF overall impact on economic impact

- Multiple Challenge participants reported mean increase in turnover was 130% (range 15–204%). Collectively, Challenges have contributed at least £2.26 billion in added turnover, driven largely by the launch of new products/services, expansions into international markets, and the de-risking of R&D activities for smaller firms.
- Many companies funded by the ISCF (59% in one PCF survey) indicated that ISCF participation made them more likely to export; a large fraction also

[351] *The Green Book* defines VfM as the value of socio-economic impacts relative to the costs of delivering a given intervention. HM Treasury. 2025. 'The Green Book and Accompanying Guidance and Documents.' As of 24 September 2025: https://www.gov.uk/government/collections/the-green-book-and-accompanying-guidance-and-documents

reported successful entry into new international and cross-sector markets (e.g. precision medicine, agritech, robotics).

- Some Challenges, such as Future of Flight, Low Cost Nuclear and Audience of the Future, reported tangible gains in GVA (up to £400 million for FFC) and marked improvements in productivity (200% in Audience of the Future vs. 104% for a comparison group).
- Most Challenges' economic impact remains at an early stage, making near-term quantification challenging. The next and final phase of the fund evaluation, commencing in 2026, will expand our evaluation of economic impact.

Key conclusions

- Promising commercial traction, but too early for a verdict on macro impact. Strong early turnover gains and higher export propensity show that the ISCF can translate R&D into revenue, yet GVA/productivity evidence is still immature and uneven across sectors.
- Clear missions, matched funding and SME-friendly support are the main drivers behind the revenue uplift and private-capital leverage seen to date.
- Full economic proof will require time and better data. Long-lead projects, patchy counterfactuals and shifting market conditions mean definitive impact will only be confirmed after the planned 2026–27 econometric evaluation.

5.1.1. Turnover

The ISCF has had a positive economic impact, increasing turnover for firms involved in Challenges, supporting the generation of new products and services, and supporting access to new and international markets. Across the Fund, 15 of 20 Challenges reported increased turnover or indicators of higher turnover (e.g. Low Cost Nuclear Challenge participants identified 'high turnover'; 76% of successful business applicants for Transforming Construction funding reporting a positive impact of the challenge on turnover; and 64% of completed projects in the Smart Sustainable Plastic Packaging Challenge increased revenue).[352] Where measured, the average turnover increase ranged from 15–204%, with an average of 130%. The Medicines Manufacturing, Commercialising Quantum Technology, Data to Early Diagnosis, Faraday Battery, Prospering from the Electric Revolution, Future Flight, Next Generation Services and Transforming Food Production Challenges reported exceptionally positive financial impacts, totalling £2.07 billion in turnover collectively.[353] In the Accelerating Detection of Disease

[352] 'Low Cost Nuclear (Interim)'; 'Transforming Construction (Final)'; 'Driving the Electric Revolution (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'.

[353] 'Medicines Manufacturing (Final)'; 'Commercialising Quantum Technology (Interim)'; 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Prospering from the Energy Revolution

Challenge, £179.5 million of revenue has been committed by partners looking to leverage the resources developed through the Our Future Health programme. This revenue stream is provided as matched funding by industry and charity members.[354] Comparing across clusters and subclusters, only four out of nine Challenges within the Clean Energy cluster quantitatively reported increases in turnover, compared to all three Challenges in the Future of Mobility cluster, all four Challenges in the Healthy Society cluster and seven of the nine Challenges in the Data and Digital cluster.

Box 10. Challenge spotlight on turnover[355]

Audience of the Future

- **Aims:** The Audience of the Future (AOTF) Challenge supports the development of immersive experiences and technologies in the UK-based creative sector, including research to better understand audiences for immersive productions.
- **Impact on turnover:** Challenge participants had gained a much larger absolute increase in the median turnover than unsuccessful applicants (£128,000 vs £20,000 respectively), corresponding to a 178% median turnover increase for programme participants compared to a 40% median turnover increase for unsuccessful applicants (excluding one unsuccessful applicant outlier reporting turnover of over £50 million, 7,000 FTEs and two successful companies).

The chief offering of firms involved in the AOTF – i.e. immersive content and technologies – produced much higher revenue for successful applicants relative to unsuccessful applicants.

There is limited evidence to suggest increased revenue across the Made Smarter Innovation Challenge, with the interim report only providing details for a single company.[356] Similarly, insufficient detail is available for the Digital Security by Design, Transforming Foundation Industries and Industrial Decarbonisation Challenges.[357] And despite positive impressions from surveyed companies in the Driving the Electric Revolution Challenge, Business Structure Database

(Final)'; 'Future Flight (Final)'; 'Transforming Food Production (Final)'; 'Next Generation Services (Final)'.

[354] 'Accelerating Detection of Disease (Interim)'.

[355] 'Audience of the Future (Final)'.

[356] 'Made Smarter Innovation (Interim)'.

[357] 'Digital Security by Design (Interim)'; 'Transforming Foundation Industries (Interim)'; 'Industrial Decarbonisation (Final)'.

(BSD) data did not show any significant impact over time on the average turnover of either successful or unsuccessful applicants to the DER-C.[358]

Indicators such as new products and services, increased employment and increased R&D and private investment are good predictors of future turnover.[359] Turnover growth across the ISCF primarily comes from the selling of new products and services or accessing of new customers, including through export to foreign markets.[360] In the Commercialising Quantum Technologies Challenge, for example, around 90% of revenue stems from new products and services enabling quantum technologies,[361] while 43% of respondents in the Smart Sustainable Plastic Packaging Challenge report additional revenue generation as a result of exports.[362] The ISCF has chiefly supported businesses in developing new products, services and consumer bases by helping small enterprises build their credibility and profile and de-risking product development and research activities. A significant example of the Fund's impact through this mechanism comes from the Driving the Electric Revolution Challenge, where the Challenge played a critical role in helping CIL create the largest semiconductor packaging facility in the UK.[363]

Survey responses also corroborate the importance of de-risking product development and R&D, with two ISCF representatives pointing out that the general scale, scope and duration of the ISCF aided the adoption and distribution of innovative technologies. This is particularly relevant for larger projects where adoption may have been too risky or complex for stakeholders to have funded and delivered without the support provided by the ISCF.[364] Another ISCF representative stressed the 'special treatment' required for the development of emerging and critical technologies, positing that 'ISCF has proven a capable vehicle in this respect'. Such de-risking of technology development may enable subsequent commercialisation and diffusion of innovation: 'Once the technology has been demonstrated, there's a lot more commercial interest leading to diffusion'.[365]

An enhanced profile can also help firms attract a user base that is both profitable and sustainable.[366] Enhanced profile and credibility, in turn, facilitates securing funding and investment, enabling firms to develop new products, hire new employees, and commence or progress R&D activities. An illustrative example arises from the Prospering from the Energy Revolution Challenge, where

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[358] 'Driving the Electric Revolution (Final)'.
[359] 'Next Generation Services (Final)'.
[360] 'Commercialising Quantum Technology (Interim)'; 'Audience of the Future (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'.
[361] 'Commercialising Quantum Technology (Interim)'.
[362] 'Smart Sustainable Plastic Packaging (Interim)'.
[363] 'Driving the Electric Revolution (Final)'.
[364] Survey of ISCF representatives.
[365] Survey of ISCF representatives; Survey of industry representatives.
[366] 'Healthy Ageing (Final)'.

firms leveraged an additional £1.07–2.56 of private equity funding for every £1 of public spending.[367] The Smart Sustainable Plastic Packaging Challenge also sported a high leverage rate of co-investment, raising £2.45 for every £1 of challenge funds, while Our Future Health (ADD) raised £1.38 for every £1 of public funding.[368]

The proximity of the ISCF to industry stakeholders has helped facilitate the commercialisation of technological outputs.[369] For instance, one surveyed ISCF representative emphasised the importance of 'understanding the industry's needs and working closely with them to design stretching but investable projects and programmes'. Building on this notion, other ISCF and industry representatives also credited the involvement of venture capitalists and existence of cross-cutting projects with participation from both product developers and end-users as key enablers for commercialisation.[370] Thus, engagement between the Fund and industry stakeholders fostered alignment with industry needs in project design and delivery, in turn encouraging co-investment. Investor relationships have also supported the establishment of new partnerships which have led to new markets and opportunities.[371] Other mechanisms for turnover growth include the licensing of IP[372] and, in the Transforming Construction Challenge, the application of concepts leading to beneficial business practices and revenue outcomes[373].

5.1.2. Sector growth and new markets

ISCF funding coincided with increased sectoral activity and growth. Sectoral activity across the Fund was demonstrated through the increased number of active firms supported by Challenges,[374] firm growth,[375] development of sector-specific supply chains,[376] growth in customer base,[377] a greater number of and scaling of industrial collaborations and partnerships,[378] and increased levels

[367] 'Prospering from the Energy Revolution (Final)'.
[368] 'Smart Sustainable Plastic Packaging (Interim)'; 'Accelerating Detection of Disease (Interim)'.
[369] Survey of ISCF representatives
[370] Survey of ISCF representatives; Survey of industry representatives.
[371] 'Prospering from the Energy Revolution (Final)'.
[372] 'Faraday Battery (Final)'.
[373] 'Transforming Construction (Final)'.
[374] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Next Generation Services (Final)'; 'Driving the Electric Revolution (Final)'.
[375] 'Future Flight (Final)'.
[376] 'Faraday Battery (Final)'; 'Low Cost Nuclear (Interim)'; 'Commercialising Quantum Technology (Interim)'; 'Driving the Electric Revolution (Final)'.
[377] 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'.
[378] 'Prospering from the Energy Revolution (Final)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

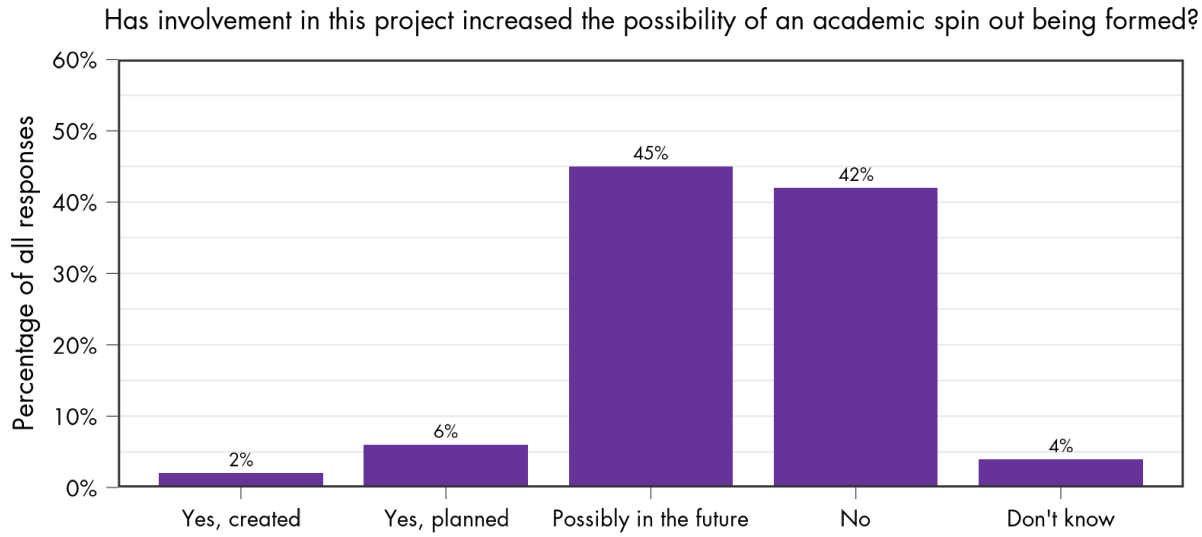
of private investment (as detailed in Chapter 3).[379] In the Data to Early Diagnosis Challenge, the number of companies active in the precision medicine sector increased by 41% (from 305 to 430), while more than 2,300 new firms joined the battery supply chain over the course of the Faraday Battery Challenge between 2017 and 2022, and the number of companies active in the PEMD sector increased by 79 (a 4% increase between 2019 and 2022) during the Driving the Electric Revolution Challenge.[380]

One ISCF representative pointed out the importance of UK leadership in breaking up the vertical integration of early computing companies (e.g. River Lane, Quantrol OX, Nu Quantum, Universal Quantum, ORCA)[381] for developing the sector.[382] Less vertical integration supports the domestic growth of sectors and healthy competition (because of a lower barrier to entry), which fosters innovation, specialisation, collaboration and product development.

It is difficult to assess the ISCF's impact on sectoral activity at the Fund-level for several reasons. The Challenge's influence from broader market factors such as an increase in demand for technologies after the COVID-19 pandemic is hard to distinguish. Apart from the four Challenges mentioned above, other Challenges did not report on new firms. Analysis of PCF data highlights that creation of new firms might also have varied due to type of organisation. For example, only 8% of all academic respondents in PCFs (n=163) reported creating or planning to create academic spin-out firms from their participation in the ISCF, as illustrated in Figure 16. In 11 of 20 Challenges, it is either too early to determine whether the Challenge has had impact on business growth, or the Challenge has not led to a significant change in business growth trajectories.[383]

[379] 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Data to Early Diagnosis (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Audience of the Future (Final)'; 'Medicines Manufacturing (Final)'; 'Accelerating Detection of Disease (Interim)'.
[380] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Driving the Electric Revolution (Final)'.
[381] 'Commercialising Quantum Technology (Interim)'.
[382] Survey of ISCF representatives.
[383] 'Data to Early Diagnosis (Final)'.

Figure 16. PCF respondents (n=163) on the possibility of creating an academic spin out[384]



Box 11. Challenge spotlight on sectoral growth[385]

Faraday Battery Challenge

- **Aims:** The Faraday Battery Challenge aims to drive the growth of a strong battery business in the UK through the development of battery technologies that are cost effective, high performing, longer range, faster charging, long lasting, safe and recyclable. The Challenge aims to support the UK automotive supply chain to meet deadlines for zero-emission vehicles.
- **Trends in sectoral growth:** An average of 460 new firms joined the battery manufacturing phase of supply chain each year, aggregating to over 2,300 firms since 2017. In particular, all 30 SMEs in the Challenge's Investment Readiness Programme reported positive effects on investments and opportunities for collaboration.
- **The extent of the ISCF contribution to sector growth is uncertain:** The extent to which ISCF support was responsible for trends in sector growth observed is unclear. The Challenge was launched in parallel to similar other schemes such as the Advanced Propulsion Centre Technology Developer Accelerator Scheme (APC-TDAS), and at the same time as a surge in the number of new battery start-ups. Investment supported by venture capital was 300% higher in 2022 compared to 2017, suggesting that sectoral growth partially reflected broader trends in venture capital flows to the UK. Though the battery

[384] PCF data, question 36.
[385] 'Faraday Battery (Final)'.

sector may be particularly attractive, this may be in part due to the UK's enabling environment of interventions in favour of battery development, including the ISCF.

Major barriers to successful sector growth, as discussed in Section 2.2.2, include those relating to data (accessibility, useability, relevance, speed and certainty in delivery), skills gaps and labour shortages (mentioned by 11 of 20 Challenges),[386] and demand assurances (e.g. for firms in the Data to Early Diagnosis Challenge, the willingness and capacity of the NHS to adopt their products). Demand was frequently highlighted as a barrier to the success of funded projects, with seven Challenges reporting on this specific barrier. Insufficient demand can be linked to risk aversion from distinct stakeholders:

- Product or service developers, as in the case of firms in the Audience of the Future Challenge where an immature market dissuades development of XR, VR and AR products,[387] or the Industrial Decarbonisation, Driving the Electric Revolution and Prospering from the Energy Revolution Challenges where there is lacking or fluctuating market demand.
- Customers, as found in the Digital Security by Design Challenge where customers have low confidence in and awareness of products,[388] and in the Robotics for Artificial Intelligence and Extreme Environments Challenge, which faces the risk averse nature of clients in industries such as the nuclear industry.
- Suppliers, as in the case of the Faraday Battery Challenge, with uncertain demand discouraging chemical supply chain development for the UK automotive industry.[389]

A surveyed ISCF representative also shared concerns relating to public procurement priorities, saying the social care system, to which their work applied, needed general reform, to 'value quality over cost'. Other general factors affecting sector growth were the cost of inputs, regulation of

[386] 'Made Smarter Innovation (Interim)'; 'Audience of the Future (Final)'; 'Digital Security by Design (Interim)'; 'Faraday Battery (Final)'; 'Industrial Decarbonisation (Final)'; 'Medicines Manufacturing (Final)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Transforming Construction (Final)'; 'Transforming Foundation Industries (Interim)'; 'Driving the Electric Revolution (Final)'.
[387] 'Audience of the Future (Final)'.
[388] 'Industrial Decarbonisation (Final)'; 'Driving the Electric Revolution (Final)'; 'Prospering from the Energy Revolution (Final)'.
[389] 'Faraday Battery (Final)'.

technologies, and the UK's exit from the EU – all highlighted as constraints on sector development by the majority of survey respondents in the Driving the Electric Revolution Challenge.[390]

Despite mixed evidence of sectoral growth, the ISCF has supported efforts to increase UK firms' share of global non-UK markets in challenge-relevant sectors. 59% of PCF respondents (n=736) believed that their involvement in the ISCF has increased the likelihood of exports. Similarly, 56% of surveyed ISCF representatives (n=9) and 44% of surveyed industry representatives (n=9) indicated a positive effect of the ISCF on new exports. Based on evidence reported by surveyed representatives and in Challenge-level evaluations, various factors such as the ISCF's focus on areas of global relevance and improvements to production capacity have enabled this impact.[391] Whereas some Challenges aimed to expand the activities of existing small companies into new markets for diagnostic, precision technologies, robotics, and software as a service,[392] others aimed to build UK production capacity and consolidate supply chains, skills or domestic demand in order to afford opportunities for global export (e.g. SMR production and manufacturing of modules under Low Cost Nuclear Challenge).[393]

Where Challenges report concrete contributions from the fund to export growth and entry to global markets, there has been a broadly positive impact.[394] For example, the Audience of the Future Challenge reports average export growth for participants of 109%.[395] 10 of 20 Challenges reported evidence of increased exports and greater global share of international markets, with the Clean Energy Cluster showing particularly positive progress. As shown in Table 2, six out of nine Challenges in the Clean Energy Cluster and subclusters reported evidence of increased exports.

The ISCF also increased firms' activity and reach towards new markets. According to PCF data, 77% and 75% of all respondents (n=736) expect that their ISCF projects would result in expansion of their organisations' international and domestic market positions respectively. Figure 17 illustrates further details of the ISCF's market impacts. At the Challenge level, this has been demonstrated by the development, demonstration or certification of new products and technologies in the EU, the US, the Middle East and East Asia,[396] which has opened new market opportunities for a variety of different industries and applications. The Fund has supported the

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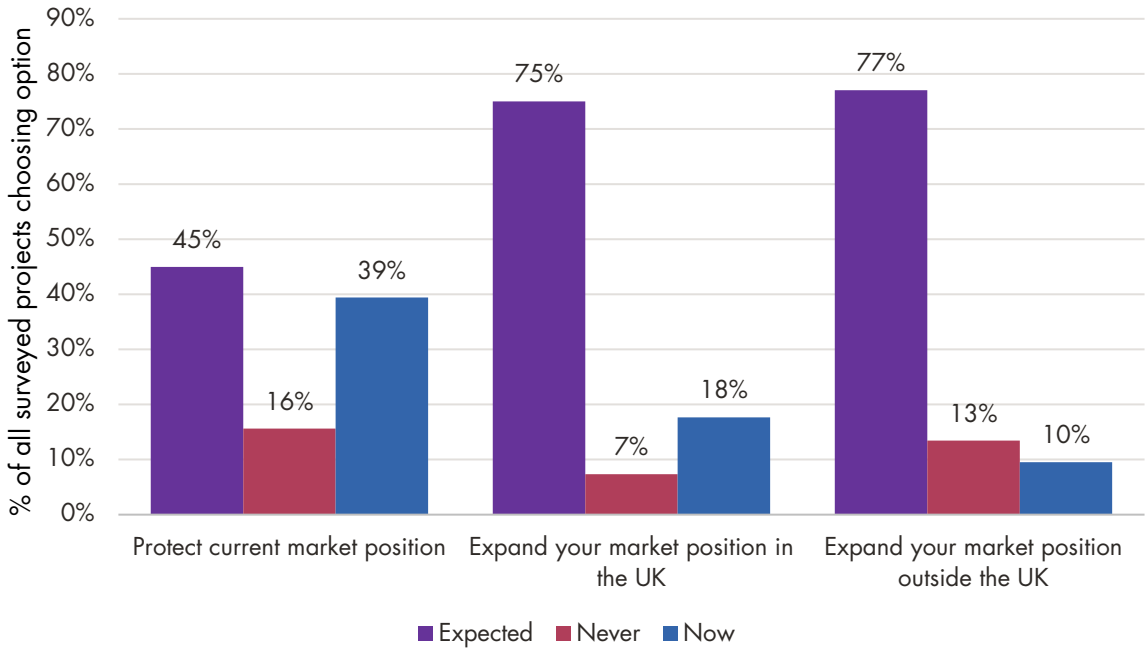
[390] 'Driving the Electric Revolution (Final)'.
[391] Survey of ISCF representatives; Survey of industry representatives.
[392] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'.
[393] 'Low Cost Nuclear (Interim)'.
[394] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Construction (Final)'; 'Audience of the Future (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'.
[395] 'Audience of the Future (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'.
[396] 'Data to Early Diagnosis (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'.

intentions of participants to enter new markets,[397] which has led to the striking of formal agreements with and interest from customers in new markets such as Esports in Japan, construction in the United States and animal husbandry supply chains in South Africa (Audience of the Future, Robotics and Artificial Intelligence in Extreme Environments and Next Generation Services, respectively).[398]

Figure 17. PCF respondents (n=736) on the market impact of their ISCF project[399]



Taking the Next Generation Services Challenge as an example, 92% of participants expected the Fund would improve their ability to enter a new market, while in the Digital Security by Design Challenge, participants expected that adoption of their products will lead to 60% market share.[400] As explained by a surveyed ISCF respondent, the global orientation of their challenge required global solutions, stressing the importance of international markets for the success of ISCF.

Progress towards the adoption of products, services and technologies developed through ISCF funds in new markets outside the UK is limited by the immaturity of projects, with most Challenges at this stage only reporting expectations to expand into new markets over the next few

[397] 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Audience of the Future (Final)'.
[398] 'Audience of the Future (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Next Generation Services (Final)'.
[399] Results from PCF data, question 41.
[400] 'Digital Security by Design (Interim)'.

years.[401] Surveyed ISCF representatives provided further context, crediting the nature of their challenges as a key influence on the prioritisation (or lack thereof) of exports.[402]

The ISCF has improved participants' efforts to enter new sectors. Certain Challenges reported a much broader range of sectors for new products, services and technologies (see Table 2) – largely due to the broader range of possible applications for those products, services and technologies. For example, Healthy Society cluster Challenges (Data to Early Diagnosis, Medicines Manufacturing and Healthy Ageing) did not report any new sectors as funded firms focused on producing digital services, medical products and other outputs for specific sector demands.[403]

Surveys show that 44% of surveyed ISCF representatives indicated awareness of adoption of ISCF-funded products services and technologies in sectors beyond those they were developed in. Two representatives specified that their projects were cross sectoral by nature, and hence most of the adoption of their project outputs happened in other sectors. In contrast, 89% of surveyed industrial representatives didn't know of examples or weren't sure of instances of adoption outside their sectors.

[401] 'Audience of the Future (Final)'; 'Next Generation Services (Final)'; 'Data to Early Diagnosis (Final)'.
[402] Survey of ISCF representatives; Survey of industry representatives.
[403] 'Data to Early Diagnosis (Final)'; 'Medicines Manufacturing (Final)'; 'Healthy Ageing (Final)'.

Table 2. New international markets, new sectors, and activities associated with their access

Cluster	Challenge	International markets	New sectors		Activities
Clean Growth	Prospering from Energy Revolution		Shipping Electric Vehicles	Energy Grids	Testing commercial viability of operating in key markets International partnership to launch low-cost smart charging EV cable
Clean Growth	Industrial Decarbonisation		New carbon-use industries		-
Clean Growth	Transforming Construction	–	–		Driven policy to adapt TCC concepts in other countries, creating opportunities for UK firms
Clean Growth/ Future of Mobility	Faraday Battery	Northwest Europe	Aerospace	Energy Grids	20 businesses demonstrate technologies in regional test beds

Cluster	Challenge	International markets	New sectors		Activities
Clean Growth/ Future of Mobility	Driving the Electric Revolution	USA Germany	Rare earths recycling Automotive Energy and Energy Grids	Defence and Security Telecommunications Aerospace	Technology roll-out in new markets/sectors; new recycling plants based on UK plant design
Future of Mobility/ Data and Digital	Robotics and Artificial Intelligence in Extreme Environments	United States Europe The Caribbean	Space Pharmaceuticals Natural resource exploration Mining Water utilities Mine Clearing Oil and Gas Shipping Offshore Renewables	Search & Rescue Construction Remote teleoperation/ telepresence Agritech Manufacturing Waste Disposal Healthcare Nuclear Logistics Infrastructure	Commercialisation of robot platforms for radiation monitoring (CARMA) Demonstration, integration and adaption of intelligent path-planning algorithm Ground-based robotic demonstrator Sale of uncrewed surface vehicle for collecting oceanic, climactic, meteorological data Discontinued project informed the development of a new robotic platform product for remote use in harsh marine environments Commercialisation of shipping simulator

Cluster	Challenge	International markets	New sectors		Activities
Data and Digital	Next Generation Services	United States South Africa	Legal services Financial services	Commodity trading	Participation in the Global Business Innovation Programme Singapore Mission
Data and Digital	Commercialising Quantum Technologies	–	–		Exporting quantum technology products and services
Data and Digital	Audience of the Future	Japan	Esports Education Space	Emergency Response HR Services	Securing contract for delivery of Esports tournament Delivering services including Software as a service
Data and Digital/ Healthy Society	Data to Early Diagnosis and Precision Medicine	EU and US markets	–		Product development Certification of tools developed through the Digipath strand

Cluster	Challenge	International markets		New sectors	Activities
Data and Digital/ Healthy Society	Healthy Ageing	Hong Kong Japan Saudi Arabia Sweden	Taiwan Sierra Leone Gaza	–	Product presentations to expert stakeholders Speaking at international conferences, pop-ups and as part of UK trade delegations
Healthy Society	MMC	Germany Norway Russia	United States Canada Middle East	–	Commercial deployment and partnerships Securing contracts with clients, health systems overseas 12 firms able to export their technologies overseas

5.1.3. New products and services

ISCF funding has led to the development of a plethora of new products and services, providing new materials, components, applications, devices and tools for a wide variety of sectors. The ISCF has supported scaling, demonstration and commercialisation of new products, particularly through the de-risking of research and development activities for small organisations lacking resources to fully fund these pursuits. To date, the development of AI, data, software and other digital products through ISCF-funded activities is particularly notable, with the Data and Digital and Healthy Society clusters being significant in this respect, generating a range of new products and services. Examples include AI diagnostic and triaging tools which have been adopted in clinical settings, data platforms supporting research, data access, analytics and trading, and IoT sensors for monitoring building occupancy.[404] Additional examples such as the repurposing of AI capabilities to map ocean floors and the use of the Health Data Gateway for better discoverability in administrative data, demonstrate how the Fund has directly led to the delivery of new applications, products and services.[405] Both the Healthy Society and Data and Digital clusters were more focused on the generation of new products and services as opposed to new processes, industrial capacity or manufacturing capabilities in the Clean Energy cluster.

As discussed in previous sections, across Challenges reporting TRL progression, 31% of projects achieve a TRL of 7–9, signifying products having reached a state of demonstration, certification, commercialisation or adoption. The Robotics and Artificial Intelligence in Extreme Environments and Transforming Food Production Challenges were particularly productive, with several new 'robotics as a service' offers being brought to market through the former, and 40% of Transforming Food Production survey respondents introducing new agritech products to market.

[404] 'Data to Early Diagnosis (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Medicines Manufacturing (Final)'; 'Accelerating Detection of Disease (Interim)'.
[405] Survey of ISCF representatives; Survey of industry representatives.

Box 12. Challenge spotlight on new products and services[406]

Prospering from the Energy Revolution

- **Aims:** The Prospering from the Energy Revolution Challenge aims to accelerate innovation in smart local energy systems.
- **Impact on new products and services:** The Challenge has had a significant impact on the development of new products and services, across several strands. New data platforms and services have helped generate interest and incentives for further R&D in the energy sector. For example, the 'Modernising Energy Data Applications (MEDApps) Competition', organised within the Challenge, was used to fund the development of innovative smart local energy systems (SLES) products and services. Leveraging the use and promotion of open energy data platforms in the sector, new SLES products and services can help reduce energy costs and emissions, improving the efficiency of existing energy storage facilities.

Challenge-level evaluation suggests that participating organisations were also successful in securing follow-on funding for further development and commercialisation of new SLES products and services.

5.1.4. GVA and productivity

Measures of gross value added (GVA) are emerging, but broadly speaking the Fund outputs are at too early a stage to make concrete assessments of GVA. To date, at least £578 million in GVA can be connected to the ISCF, predominantly relating to the Future Flight Challenge. The Medicines Manufacturing, Low Cost Nuclear and Future Flight Challenges have added £34 million, £144.3 million and ~£400 million respectively.[407]. Across these Challenges, methods for calculating GVA differ.[408,409]

[406] 'Prospering from the Energy Revolution (Final)'.
[407] 'Medicines Manufacturing (Final)'; 'Low Cost Nuclear (Interim)'; 'Future Flight (Final)'.
[408] 'Medicines Manufacturing (Final)'; 'Future Flight (Final)'.
[409] MMC: GVA for each firm was defined as earnings (from survey data) plus profit. Appropriate multipliers provided by the ONS were added to reflect indirect and induced GVA multipliers. To convert from gross to net impact, the figures were adjusted to account for various additionality factors.
LCN (Interim): Labour deployed to date in Phases 1 and 2 of the LCN programme was used as a proxy measure.
FFC: GVA of firms similar to FFC applicants was derived from the Annual Business Survey data. Conservative calculations, focusing on traditional aviation and aerospace sector-linked activities,

For the Next Generation Services Challenge, £0.8–1.2 billion of growth in GVA has been forecast by Frontier Economics in the lawtech sector up to 2026, but it is unclear how much of this can be attributed to the ISCF.[410] Figures for agricultural sector growth since 2019 in the Transforming Food Production evaluation allow us to estimate ~3% growth in GVA since the start of the Challenge; however, precise measurement of GVA and attribution to challenge funding is a general concern.[411]

For some Challenges, project lifetimes are too immature for the evaluations to capture the accrued economic impact of funding on metrics such as GVA.[412] For example, the Faraday Battery Challenge highlights that the key drivers of GVA for this sector – i.e. battery production through gigafactories and the production of electric vehicles – both lie several years ahead, and the Digital Security by Design Challenge describes an expected GVA impact of ~£1 million.[413] Other challenges make no mention of GVA impact.

Box 13. Challenge spotlight on GVA[414]

Low Cost Nuclear

- **Aims:** The Low Cost Nuclear Challenge aims to develop a UK-designed small modular reactor power station design concept in order to pass the regulatory milestone of Generic Design Assessment. The current phase (2) of the programme is led by Rolls Royce SMR, with UKRI acting as a delivery partner overseeing programme management on behalf of DESNZ, aiming to make the UK a world-leader in SMR technology.
- **Unclear links between GVA impact and the ISCF:** Evidence from the Challenge-level evaluation suggests that LCN has added GVA amounting over £144 million to date. Participating stakeholders reported the Challenge's ability to generate potential benefits. However, they also reported concerns about the reliability of a precise GVA estimate and the extent to which a figure could be wholly attributed to the ISCF.

suggested a GVA-to-turnover ratio of approximately 1:3. Based on this, additional GVA from FFC-supported projects was estimated at around £400 million.
AOTF: GVA was calculated similarly to the FFC, but median participant GVA growth is reported as opposed to aggregate Challenge-generated GVA growth.

[410] 'Next Generation Services (Final)'.

[411] 'Low Cost Nuclear (Interim)'; 'Next Generation Services (Final)'; 'Transforming Food Production (Final)'.

[412] 'Healthy Ageing (Final)'; 'Faraday Battery (Final)'.

[413] 'Faraday Battery (Final)'; 'Digital Security by Design (Interim)'.

[414] 'Low Cost Nuclear (Interim)'.

The ISCF has improved productivity across several challenges, but the form and significance of productivity improvements varies significantly by Challenge. For example, Data to Early Diagnosis Challenge funding enabled firms to double the number of genomic diagnostic tests they made available to the NHS.[415] Productivity gains have not only been demonstrated in the activities of ISCF-funded firms but also in the activities of their clients and customers. £1.7 billion has been gained annually in productivity for legal services providers served by Next Generation Services-supported firms' new products and services,[416] and Challenges discuss projected productivity improvements for clients stemming from increased automation, scaling and cost-cutting of processes.[417] The Digital Security by Design Challenge's projects reported productivity benefits from reducing lost working days to cyberattacks.[418]

In some cases, attributing increases in productivity to ISCF was not possible, as the sectors in which they operate were experiencing increasing productivity that preceded implementation of the Fund.[419] No significant productivity outcomes were found in the majority of Challenges, due to general project immaturity, sectors being too new, and lack of validation, scaling or roll-out.[420] Stakeholders in the Driving the Electric Revolution Challenge noted that lag between Challenge support and productivity impact has been exacerbated by external factors such as suppliers struggling to meet quality requirements.[421]

In one case (Audience of the Future), a Challenge-level evaluation reported on economic performance according to a set of metrics including GVA and productivity (GVA/FTE), comparing supported firms with a counterfactual group of unsuccessful applicants. Supported firms saw a median increase in GVA from £36,000 to £100,000 (+183%) and a productivity increase of 200%, compared with unsuccessful applicants who experienced a GVA increase of £25,000 to £35,000 (+52%) and a productivity increase of 104%.[422]

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[415] 'Data to Early Diagnosis (Final)'.
[416] 'Next Generation Services (Final)'.
[417] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Low Cost Nuclear (Interim)'.
[418] 'Digital Security by Design (Interim)'.
[419] 'Transforming Construction (Final)'; 'Transforming Food Production (Final)'.
[420] 'Low Cost Nuclear (Interim)'; 'Digital Security by Design (Interim)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Medicines Manufacturing (Final)'; 'Healthy Ageing (Final)'; 'Driving the Electric Revolution (Final)'; 'Industrial Decarbonisation (Final)'.
[421] 'Driving the Electric Revolution (Final)'.
[422] 'Audience of the Future (Final)'.

Box 14. Challenge spotlight on productivity[423]

Faraday Battery Challenge

- **Aims:** The Faraday Battery Challenge aims to drive the growth of a strong battery business in the UK through the development of battery technologies that are cost effective, high performing, longer range, faster charging, long lasting, safe and recyclable. The Challenge aims to support the UK automotive supply chain to meet deadlines for zero-emission vehicles.
- **Impact on productivity:** The Challenge contributed towards growth in production capacity, helping new firms engage in the sector. 28% of the participants responding to the Challenge-level evaluation reported that their involvement in the Fund had helped increase production capacity more quickly. 15% of respondents also believed that this achieved level of increase would not have been possible without the ISCF. As a result, the Fund enabled participants to advance their technological innovations and production capacity, which has had an impact on the long-term R&D model and conditions for collaboration within the UK's battery sector.

5.1.5. Geographic distribution

While the majority of activity across the Fund took place in London, the South East and the East of England, new activity across the UK has been achieved across a breadth of regions – particularly in the traditional industrial heartlands of the North East, North West and the Midlands. For example, there has been a growth in activity due to the Low Cost Nuclear Challenge in the Midlands, North East England and North Wales, and due to the Data to Early Diagnosis Challenge in Northern England, Scotland and Northern Ireland.[424] Similarly, while the largest concentration of precision medicine companies remains in London, the South East and East of England, a cluster of PM companies have grown from a low base in Manchester, Leeds, Newcastle, the central belt in Scotland, and Belfast.[425] All projects in the Industrial Decarbonisation Challenge were located outside London and the South East.[426] Other activity evidenced through the survey of ISCF representatives and industry representatives spanned the Midlands, Yorkshire & the Humber, Scotland, the South West, the North West and Wales.

According to one interviewed stakeholder, balanced distribution of impact was in scope for some Challenges, indicating that spillover benefits from these Challenges would be applicable to the

[423] 'Faraday Battery (Final)'.
[424] 'Low Cost Nuclear (Interim)'; 'Data to Early Diagnosis (Final)'.
[425] 'Data to Early Diagnosis (Final)'.
[426] 'Industrial Decarbonisation (Final)'.

whole of the UK three to five years after most funding is delivered.[427] The interviewee also highlighted the Fund's indirect economic impacts on geographic distribution: in instances where the ISCF helped participating businesses generate commercial gains or increase their interactions with academics, it also enabled them to secure additional funding through programmes such as Strength in Places and the Levelling Up initiative. 'I think, without the ISCF, those businesses and partnerships would not have been in a position to make use of those other funds.'[428]

A broad geographic distribution of economic benefits was downstream of funding decisions, and towards this aim, ISCF representatives made concerted efforts to diversify away from London and the South East. For example, in the Driving the Electric Revolution Challenge, grant funding was targeted at regions with existing PEMD activity, influencing the location of DER-Industrialisation Centres established through the challenge in the North East, Scotland, the Midlands, the South West and Wales.[429] Similarly, a surveyed ISCF representative highlighted that they did not give themselves specific geographic constraints but orientated the distribution of their funds according to current capabilities. Another representative revealed that they made 'considerable efforts… to promote projects across the UK [and] outside of the South East of England', with 78% of the creative clusters of their challenge located outside London and the South East, and considerable activity in Leeds and Belfast.[430]

Box 15. Broader points on Fund design and implications for economic benefits

The ISCF's Fund-level and Challenge-level programme design instrumentally influenced most activities supported through it, creating conditions that affected the ability of participants to realise economic benefits. The following paragraphs explore some features of the Fund design in greater detail:

Well-defined focus areas

As one ISCF representative described it, the ISCF excelled in setting targets (for example in co-investment, job creation and upskilling, as seen in Chapter 3) with accountability to fulfil these, in turn incentivising Challenge participants to engage in activities with economic returns. An industry representative reinforced this notion, mentioning in their survey response that 'the sharper focus' of ISCF helped products to gain value while a 'loosely connected academic style [of] research' would have hindered adoption. By de-prioritising more exploratory 'loose' research, the ISCF supported value-adding activities and the development and adoption of new innovations with direct economic relevance across a range of sectors. Two ISCF representatives further reported that the Fund's focus on addressing economic

[427] Interview: INT_07
[428] Interview: INT_07
[429] 'Driving the Electric Revolution (Final)'.
[430] Survey of ISCF representatives

challenges and developing commercial solutions was central in realising economic benefits.

Duration of funding

One ISCF representative, responding to the survey, found the duration of the Smart Sustainable Plastic Packaging Challenge to be too short relative to the competition process. The shorter time frame was highlighted to have particularly affected more challenging and ambitious projects. Two ISCF representatives also mentioned oncoming difficulties in tracking progress, enabling full adoption of outputs and attracting follow-on funding after the ISCF due to its limited time frame. It also restricted the ability of evaluators to detect benefits at the Challenge level as these benefits may only be realised beyond the short-term funding and evaluation cycle. On the ISCF's potential impacts, one ISCF representative further added, 'a single Challenge is not going to be able to establish capabilities where there are none. Other government policies are needed'. Their comment on the longevity of ISCF's impact emphasised the need for multifaceted policy support that builds from and extends beyond the ISCF.

Nature of ISCF Challenges and associated timelines

Challenges frequently fell within one of two streams: those focused on R&D activities yielding innovative new technologies, products and services (e.g. Robotics and Artificial Intelligence in Extreme Environments, Next Generation Services and Audience of the Future), and those focused on establishing infrastructure that builds skills and capabilities (e.g. Transforming Construction, Transforming Foundation Industries and Transforming Food Production). The different streams demonstrate variations in expected outcomes and impact at different timescales, with the latter's impact typically emerging only in the long term. Thus, the nature of Challenges is key to understanding which outcomes were realised and to what extent.

For example, one ISCF representative stated that their project was focused on the early development stage, and that economic benefits would be felt at a later stage. Another ISCF representative provided the example of the Accelerating Detection of Disease Challenge, where building exports was secondary to creating an environment that enables the development of future products and services. Developing the 'full support and translation of underlying science' was more important than late-stage funding (i.e. to support exports and the commercialisation of proven products). However, one Industry representative respondent thought that funds were targeted at academic research and low-TRL projects that 'served no purpose', indicating a concern about the real-world impact of funded efforts. The Fund design was also criticised by an ISCF representative for being insufficiently ambitious in scale. They had hoped for more funding, saying that the ISCF 'was not brave enough'.

6. Wider societal impact

This chapter evaluates the evidence on the wider **health**, **environment and societal impacts** that are expected or may emerge from the ISCF, across sectors and communities.

As noted in the interim report, a full assessment of the wider impacts is limited by three factors: the need for longer time frames, the scope of many of the Challenges, which didn't extend to these wider benefits, and the external factors and contexts that could limit the achievement of these impacts. These limitations are described in full in the interim impact evaluation report.[431] Overall, the assessment of wider impacts and their attribution to the ISCF should involve a longer-term evaluation, to be conducted in future through qualitative enquiries, implementing suitable methods such as process tracing and outcomes harvesting. Assessment in this report is based on proxy measures across health and environment to anticipate the possibilities for future impact.

[431] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

6.1. Health impacts

Evaluation question

- To what extent has the ISCF contributed to health and wellbeing benefits, including quality of life, life expectancy, reduced health inequalities and reduced healthcare costs?

Key summary of ISCF overall impact on health

- Direct effects on health outcomes (e.g. life expectancy, healthcare costs) remain largely unmeasured due to the relatively short evaluation timeline. Most Challenges do not track these metrics, and any eventual gains will take years to materialise and are difficult to attribute solely to the ISCF.
- Challenges such as Medicines Manufacturing, Data to Early Diagnosis, Accelerating Detection of Disease, and Healthy Ageing are already demonstrating preliminary benefits, such as better access to healthcare services, increased use of digital health tools, and targeted innovations to reduce inequalities.
- The Fund's emphasis on training, apprenticeships and upskilling, especially in digital health, supports longer-term adoption of new medical technologies. Such capacity-building efforts are poised to drive downstream benefits for healthcare systems and patient outcomes.

Key conclusions

- The ISCF's health-focused Challenges have delivered big-data platforms, AI tools and a digitally skilled workforce poised to raise care quality and equity, but improvements in hard health metrics (life-expectancy, NHS savings) are still years off.
- Future evaluations must follow cohorts and health-economic indicators to validate impact attribution.

Health impacts materialise over a long time frame and therefore direct impacts are out of scope for most Challenges. Metrics used to scan the Challenge evaluation reports for health impact data spanned improvements in quality of life, life expectancy, health inequalities and healthcare costs. In general, these develop over a much longer timescale than the timing of this evaluation allows.[432] The assessment of the Challenge evaluation reports supported this: health metrics were broadly out of scope across the Fund, and in many cases we found no evidence in the Challenge evaluation reports to suggest that the ISCF has had an impact on them. Surveyed ISCF

[432] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/

and industry representatives found it similarly difficult to assess long-term health impacts, with '*Don't know/Not applicable*' a common response in several categories. Even with realisation of health benefits in the long term, increases to health indicators, such as life expectancy, would be difficult to attribute to the Fund.

Proxy indicators and emerging findings from this evaluation may be used in future as a 'baseline' for future assessments of health metrics.

There is early evidence that the ISCF has positively contributed to improvements in health and wellbeing via the directed efforts within the Healthy Society cluster. Most of the Fund's activities around improving health and wellbeing have been directed through Challenges in the Healthy Society cluster. This was as expected, as these were the only Challenges (namely Medicines Manufacturing, Data to Early Diagnosis, Accelerating Detection of Disease and Healthy Ageing) with an explicit focus on health and wellbeing. While the majority of benefits are likely to materialise in the long term, Challenges within the cluster reported early signs of impact (see Box 16).

The ISCF is positioned to support improvements in health through the development of services, technologies and new capabilities across sectors. Five Challenges have reported initial signs of health benefits, potentially leading to long-term improvements in quality of life, equitable healthcare services, new health research data, and vital support to policymakers.[433] For example, an interviewee from the Healthy Society cluster pointed to how certain Challenges could provide long-term benefits such as better outcomes for patients, better population health and improvements to the healthcare system.[434] 67% of surveyed ISCF representatives also reported that the ISCF had impacted quality of life and health inequalities at least *to a limited extent*. However, there is little evidence yet to suggest that the ISCF has impacted life expectancy.

[433] 'Healthy Ageing (Final)'; 'Medicines Manufacturing (Final)'; 'Data to Early Diagnosis (Final)'; 'Accelerating Detection of Disease (Interim)'.
[434] Interview: INT_04.

Box 16. Challenge spotlight on health and wellbeing[435]

Healthy Ageing

- **Aims:** The Healthy Ageing Challenge aims to enable businesses, including social enterprises, to develop and deliver scaled-up products, services and business models to support people as they age.
- **Impact on access to healthcare services:** The Healthy Ageing Challenge has led to improved healthcare services and a reduction in costs, especially for vulnerable populations and ethnic minorities. For instance, 10% of innovations developed within the Challenge specifically cater to lower-income groups. A further 80% of the innovations focus on multiple socioeconomic groups, including lower-income households.
- **Enablers:** This Challenge is strongly positioned to contribute to the reduction of healthcare inequalities through its explicit focus on socioeconomic considerations and opportunities for engagement. In particular, involvement of diverse end-user groups enabled projects to develop inclusive and user-friendly technologies.

The ISCF is also expected to contribute to a reduction of healthcare costs through new technologies developed. Challenges within and beyond the Healthy Society cluster have advanced technologies with significant cost-savings benefits for service providers and patients. For instance, the Next Generation Services Challenge has reported the development of an AI tool for diagnostic uses and detection of mental health needs through a voice-based tool.[436] Some technologies, such as those advanced by the Medicines Manufacturing Challenge, have already been adopted and deployed within the UK and internationally.[437]

As discussed at the interim stage, the ISCF has supplemented these developments with significant capacity-building activities (see Section 3.3).[438] Challenges have supported apprenticeships and upskilling opportunities in digital health to facilitate the uptake of improved technologies.[439] Thus, the Fund has shown early signs of impact in multiple dimensions that can be leveraged for better healthcare and wellbeing in the long term.

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[435] 'Healthy Ageing (Final)'.
[436] 'Next Generation Services (Final)'.
[437] 'Medicines Manufacturing (Final)'.
[438] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/
[439] 'Medicines Manufacturing (Final)'.

6.2. Environmental impact

Evaluation question

- To what extent has the ISCF contributed environmental and sustainability benefits, including reduced emissions, progress towards net zero, and growth of the circular economy?

Key summary of ISCF overall impact on environmental impacts

- Environmental impacts were a key focus for the ISCF, particularly within the Clean Growth and Future Mobility clusters.
- Several Challenges reported early contributions to the UK's Net Zero goals, decreasing greenhouse gas emissions and promoting energy efficiency and the development of clean energy sources.
- Tracking environmental progress across the Fund has been inconsistent, reflecting each Challenge's unique goals (e.g. greenhouse gas reductions in Transforming Food Production vs. circular economy metrics in Smart Sustainable Plastic Packaging). Standardising data collection and impact reporting would help capture Fund-wide environmental benefits more clearly.

Key conclusions

- Clean Growth Challenges already show early carbon and efficiency wins, but inconsistent metrics blur the Fund-wide picture.
- The ISCF is on a Net-Zero trajectory but needs standardised carbon accounting and sustained roll-out funding to lock in impact.

ISCF Challenges targeted different aspects of environmental impacts, quantitative evidence of which will emerge only in the long term. Environmental impacts were of central importance within the ISCF, particularly in the Clean Growth and Future Mobility clusters. Seven Challenges have reported early signs of positive impacts on environment and sustainability, and these impacts are expected to grow in the long term.[440] Compared to the interim stage analysis, there is now more evidence of the ISCF's environmental impact, mainly due to the strong Net Zero focus of the Industrial Decarbonisation, Low Cost Nuclear and Prospering from the Energy Revolution Challenges. The Fund has contributed in different ways: supporting the UK's Net Zero goals, facilitating energy security and efficiency and promoting clean energy sources through policy reforms. ISCF activities are also expected to contribute towards the reduction of energy costs and

[440] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Low Cost Nuclear (Interim)'; 'Faraday Battery (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Transforming Food Production (Final)'; 'Smart Sustainable Plastic Packaging (Interim)'; 'Transforming Construction (Final)'; 'Digital Security by Design (Interim)'.

the development of crucial infrastructure to foster future innovation.[441] However, there is limited evidence (except for responses submitted by surveyed ISCF representatives) that suggests the ISCF has encouraged the circular economy.

Similarly to health impacts, environmental impacts are also likely to materialise in the long term, necessitating consistent and regular reporting on impact metrics. For Challenges where environmental impacts are in scope, impacts also rely on numerous external factors. For example, the Driving the Electric Revolution Challenge's potential environmental impacts were hindered by an absence of stakeholder mobilisation as well as the fragmented semiconductor policy landscape.[442]

In the environmental sphere, Challenges crucially focused on contributions to the UK's Net Zero objectives and the reduction of greenhouse gas emissions. For Challenges that explicitly focused on the environment, reducing emissions and facilitating Net Zero goals were amongst the key areas of contribution. The Industrial Decarbonisation and Low Cost Nuclear Challenges helped advance technologies for lower carbon emissions and build capacity surrounding clean energy.[443] In the Industrial Decarbonisation Challenge, an early indication of decreasing emissions (CO_2e) has emerged from four industrial clusters in the Humber, South Wales, the North West and the North East, though it is otherwise too early to assess the overall impact of the Challenge.[444] The ISCF's contributions to reducing emissions has also extended across sectors. For example, the Transforming Food Production Challenge encouraged agritech innovations to help reduce greenhouse gas emissions and prompt further investments into Net Zero. Similarly, the Smart Sustainable Challenge has engaged with wider regulations on plastic production by aligning its activities with relevant policy directives.[445]

[441] 'Smart Sustainable Plastic Packaging (Interim)'.
[442] 'Driving the Electric Revolution (Interim)'.
[443] 'Industrial Decarbonisation (Final)'; 'Low Cost Nuclear (Interim)'.
[444] 'Industrial Decarbonisation (Final)'.
[445] 'Smart Sustainable Plastic Packaging (Interim)'.

Box 17. Challenge spotlight on environmental impacts[446]

Prospering from the Energy Revolution

- **Aim:** The Prospering from the Energy Challenge aims to accelerate innovation in small local energy systems.
- **Impact on energy efficiency:** The Prospering from the Energy Revolution Challenge has fostered significant advancements in energy efficiency as well as cost-savings at local and national levels. SLES developed by the Challenge are expected to reduce greenhouse gas emissions and increase savings by between 2% and 108%. The Challenge had a direct impact on leading energy strategies and Ofgem policies, and its activities mobilised sectoral support for increased R&D activities on clean energy.
- **Enablers:** The Challenge developed capabilities among local authorities in order to support uptake of smart energy systems. This was supplemented by essential policy engagement for reforms. Through its Energy Data Taskforce, the Challenge disseminated vital evidence, demystifying and encouraging wider adoption of local energy systems.

As reported at the interim stage, Challenges have incorporated a wide range of metrics to measure environmental impacts. Some examples include direct GHG emissions reduction, impact on public perceptions, impact on industry behaviours and similar metrics on recycling, energy use and sustainability.[447] As a result, Challenges within the Fund have adopted varied forms of reporting and measurement, making it difficult to aggregate insights on realised or expected impact. This view was echoed by a Challenge representative's response in the survey, which highlighted the lack of standardised reporting or tracking mechanisms to measure societal benefits generated across the ISCF.[448] This highlights the need for some degree of harmonisation between Challenges as well as guidance on data collection across projects.

[446] 'Prospering from the Energy Revolution (Final)'.
[447] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/
[448] ISCF Challenge representatives survey.

6.3. Infrastructure and services impact

Evaluation question

- To what extent has the ISCF contributed benefits to infrastructure and services, including broadened access, increased resilience and increased safety?

Key summary of ISCF overall impact on infrastructure and services

- The ISCF has made positive contributions to infrastructure and services, resulting in improvements to R&D facilities and accessibility through collaborative R&D approaches as well as guidance to secure follow-on funding.
- New labs, data hubs and test-beds broaden UK R&D access and resilience via cross-sector consortia.
- The ISCF has created durable asset legacy, but without longer-term budgets and utilisation plans, benefits could taper off.

The ISCF's impact on infrastructure and services has led to notable improvements in R&D facilities and accessibility. As noted in the preceding sections, wider health and environmental impacts were largely due to the ISCF's involvement in developing new and enhancing existing infrastructure. This is also true across the Fund more broadly, with similar impacts being seen across other clusters.[449] For example, the Data and Digital cluster has positively contributed to new infrastructural facilities, resulting in the creation of data storage facilities and extensive datasets that generate further evidence and partnerships among stakeholders.[450] Notable instances include development of 22 storage platforms under the Data to Early Diagnosis Challenge, and the creation of an open access platform within the Prospering from the Energy Revolution Challenge.[451] Such developments have tremendous potential for wider impacts through the creation of new methods and capabilities, engagement with end-users, new upskilling opportunities and greater support for new initiatives.[452]

Collaborations fostered across Challenges have played a major role in the ISCF's positive impact on infrastructure and services. The Fund has improved access to existing and new R&D infrastructure by fostering new and resilient collaborations (see Section 4.1). Participants across

[449] 'Data to Early Diagnosis (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'.
[450] 'Data to Early Diagnosis (Final)'; 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'.
[451] 'Data to Early Diagnosis (Final)'; 'Prospering from the Energy Revolution (Final)'.
[452] 'Smart Sustainable Plastic Packaging (Interim)'.

Challenges have partnered and engaged with stakeholders across industry, academic, government and civil society sectors. Such activities have led to skills development, new training for capacity building, increased knowledge sharing and infrastructural improvements across sectors.[453] For example, 78% of surveyed ISCF representatives and 56% of surveyed industry representatives reported early signs of the ISCF's contributions towards the development and implementation of new infrastructure. Data to Early Diagnosis Challenge participants also credited the ISCF's guidance in securing follow-on funding to sustain the impact of developed infrastructure. On the contrary, shorter project timescales and lack of consistent funding support can affect the extent to which infrastructural benefits are accrued in the future.[454]

The ISCF improved access to services and promoted collaborative approaches for leveraging existing infrastructure. These impacts have not been restricted to one sector, instead involving multiple stakeholders to improve access to healthcare services, legal advisory and safe working environments.[455] For example, the Robotics and Artificial Intelligence in Extreme Environments Challenge has reported early signs of positive impact. Through its innovations relating to the use of robotics, the Challenge has contributed to safer working conditions for people employed in hazardous environments such as offshore energy and nuclear decommissioning.[456] Such benefits are expected to grow further in the long term.

[453] 'Smart Sustainable Plastic Packaging (Interim)'; 'Future Flight (Final)'; 'Medicines Manufacturing (Final)'; 'Data to Early Diagnosis (Final)'; 'Audience of the Future (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Industrial Decarbonisation (Final)'; 'Driving the Electric Revolution (Final)'.
[454] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/; 'Data to Early Diagnosis (Final)'.
[455] 'Healthy Ageing (Final)'; 'Next Generation Services (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.
[456] 'Robotics and Artificial Intelligence in Extreme Environments (Final)'.

6.4. Wider societal benefit

Evaluation question

- To what extent has the ISCF contributed wider societal benefits, including unexpected and unintended consequences?

Key summary of ISCF overall impact on wider societal benefit

- The ISCF's societal impacts have been varied. Challenges have reported wider benefits through policy reforms, evidence creation, implementation of equality, diversity and inclusion policies and increased public awareness. In addition, the Fund's positive impact on organisations' reputation and collaborations has exceeded original expectations.

The ISCF has generated wider societal benefits in some sectors through extensive public and policy engagement at the Challenge level. Alongside environmental, health and infrastructural impacts, we also looked to record any instances of unanticipated wider social and behavioural impacts as a result of ISCF activities, defined as 'wider societal benefits'. As reported in the interim evaluation, the level of evidence available for assessment varies across the Fund as some Challenges have recorded additional insights on societal benefits despite the lack of formal tracking mechanisms for these metrics across evaluations.[457]

The ISCF has positively contributed to developing capacity and collaborations in the health sector, generating new evidence for policymaking (Section 2.4), promoting diversity and inclusivity in sector workforce (Sections 3.4 and 3.5), and improving public perceptions.[458] In particular, at least four ISCF Challenges have reported some degree of public engagement, raising public understanding and awareness (Section 2.3) on health research, cybersecurity, future flight technologies, clean energy, the ethical use of AI, and energy systems.[459] Knowledge generated and transferred through the ISCF has extended across sectors and spurred further progress in Challenge areas. For example, a surveyed ISCF representative identified the Fund's impact on quantum

[457] UK Research and Innovation. 2024. *Interim Impact Evaluation of the Industrial Strategy Challenge Fund*. As of 24 September 2025: https://www.ukri.org/publications/interim-impact-evaluation-of-the-industrial-strategy-challenge-fund/; 'Next Generation Services (Final)'; 'Transforming Construction (Final)'; 'Faraday Battery (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Prospering from the Energy Revolution (Final)'.

[458] 'Next Generation Services (Final)'; 'Healthy Ageing (Final)'; 'Low Cost Nuclear (Interim)'; 'Prospering from the Energy Revolution (Final)'.

[459] 'Next Generation Services (Final)'; 'Low Cost Nuclear (Interim)'; 'Prospering from the Energy Revolution (Final)'; 'Digital Security by Design (Interim)'; 'Accelerating Detection of Disease (Interim)'; 'Future Flight (Final)'.

technologies as a direct contributor to subsequent UK government action on quantum technology missions.

The ISCF's impact and the level of evidence available on such societal benefits varies greatly across Challenges. For example, the Prospering from the Energy Revolution Challenge translated the societal impact of its activities to an expected £431 billion in monetary terms. However, the Faraday Battery Challenge highlighted that social benefits generated from the Challenge could exacerbate inequality if their distribution is uneven or concentrated in few regions and sectors.[460]

The ISCF has also generated unanticipated benefits for participants, especially in terms of reputational gains and collaborative abilities. At least four Challenges have reported evidence on unexpected benefits generated from their participation in the ISCF.[461] These include broader adoption of technology in the legal sector after the outbreak of the COVID-19 pandemic, greater policy influence through engagement with local and national regulators and increased organisational support for collaborative working. Several industry representatives highlighted in their survey responses that the ISCF's impact on collaborative working was unexpected, leading to improvements in their relationships with other stakeholders. For example, Transforming Food Production Challenge participants reported reputational benefits from ISCF funding to their organisations which were unexpected and enabled them to partner with senior businesses in their sector.

Thus, the wider benefits accrued through ISCF activities have fostered increased public awareness and networking opportunities, while also changing perceptions and mobilising various sectors for further research and innovation.

[460] 'Prospering from the Energy Revolution (Final)'; 'Faraday Battery (Final)'.
[461] 'Next Generation Services (Final)'; 'Prospering from the Energy Revolution (Final)'; 'Robotics and Artificial Intelligence in Extreme Environments (Final)'; 'Transforming Food Production (Final)'.

7. Conclusions and recommendations

The ISCF set out to mobilise UK research and innovation around 20 mission-led Challenges across four thematic areas – the Future of Mobility, Clean Growth, Data and Digital, and Healthy Society. Drawing on Challenge evaluations, econometric analysis, project-closure data and new stakeholder evidence, we conclude that the ISCF has delivered a decisive uplift in the UK's innovation capability and collaborative culture. At the same time, many impacts remain emergent, and a consistent architecture for post-demonstration scale-up, monitoring and equitable benefit-sharing is still taking shape.

Across 16 of the 20 Challenges, participating projects moved materially up the technology readiness levels curve, from proof-of-concept to late-stage demonstration. On average, projects advanced by roughly two TRLs and one-third of those reporting now sit at TRL 7–9, ready for commercial deployment. IP generation followed suit: total IP assets rose from 319 to 442 between the interim and final assessments, with funded consortia out-performing matched non-funded applicants in every Challenge where comparisons were possible. These advances were not confined to a single sector either.

Critically, tailor-made funding instruments explained much of this momentum. Structured demonstrator grants, SME 'sprint' competitions and access to UK-scale test-beds reduced technical risk and signalled policy backing, thereby sourcing in private capital. By March 2025, the Fund had attracted £6.25 billion in co-investment, more than double its original £2.82 billion target and exceeding the Government's own £2.6 billion contribution.

The ISCF has also enriched the UK's knowledge base. Dimensions and Challenge data record over 3,300 peer-reviewed publications. Knowledge also shifted beyond academia with 1,713 domestic and international policy documents citing ISCF outputs, and with programme experts serving on UK and global committees shaping standards for ethical AI, small-modular reactors and local energy regulation. Such reach demonstrates that the Fund not only generated evidence but also positioned it where policy and industry decisions are made.

Skills and infrastructure investments form the backbone of longer-term impact. The Fund delivered 148 training programmes and 12,500 trainees, filling gaps in power-electronics, genomics, AI and advanced therapies. Physical and digital assets from battery pilot lines to 22 health-data platforms now provide durable capability for follow-on research and scale-up. These inputs have begun to translate into employment: organisations self-report 3,563 full-time equivalent jobs created and 7,499 retained, predominantly highly skilled technical or managerial roles. While London and the South East remain strong beneficiaries, deliberate choices such as locating DER Industrialisation Centres in the North East, Midlands, Scotland, South West and

Wales, or cluster-planning funds for industrial decarbonisation, have seeded growth in traditional industrial heartlands.

Network analysis, project data and qualitative evidence all point to an unprecedented level of cross-sector collaboration. Nine Challenges documented 2,166 formal partnerships, including 455 cross-sector and 779 academic alliances. Three-quarters of PCF respondents expect their collaborations to persist beyond ISCF funding, signalling durable ties between SMEs, large firms, academia and public agencies. These connections have already opened new investment channels, accelerated standards work and helped SMEs reach end-users they could not access alone.

Despite clear technological and collaborative success, commercial adoption lags behind technical maturation. Only five Challenges systematically measured CRLs, and interviewees repeatedly highlighted a 'valley' between TRL 7 pilots and market launch, citing regulatory hurdles, limited manufacturing finance and weak demand-side pulls (e.g. slow NHS procurement, uncertain CCUS policy).

Administrative frictions further dulled momentum: contracting delays, complex consortia governance and short funding windows constrained some large projects. Progress on EDI remained patchy with no evidence of impacts from changes in practice where they were evident. While the Fund catalysed health and environmental innovation, concrete gains in life expectancy, healthcare costs, emissions or circular-economy metrics will take years to surface and require clearer tracking frameworks.

Taken together, the evidence shows that the ISCF achieved its core mission of accelerating multidisciplinary R&D, boosting private investment and strengthening the UK's innovation networks. There are now additional imperatives to focus on: matching technical advances with scale-up finance, regulatory alignment and demand-side incentives; harmonising impact metrics; and ensuring that benefits are shared across regions and communities.

The following recommendations address these imperatives and outline how future mission-oriented programmes can convert the ISCF's foundations into longer-term and enduring impact through future challenge programmes. We delineate between strategic recommendations which can be characterised as additional activities and inputs up-stream of long-term impacts, and recommendations to improve monitoring, accountability, alignment and integration of the Fund within the broader policy landscape.

Strategic recommendations for future mission-led R&I programmes to increase impact

1. Embed tailored funding for scale-up and market-readiness

Evidence from the ISCF shows a persistent challenge in bridging the gap between technological demonstration and commercial deployment. On average, projects were able to progress two TRL steps within programme timescales, meaning that where programmes started at TRL 1–2, reaching

TRL 7 was rarely achievable. By contrast, programmes beginning closer to market faced different barriers, including regulatory approvals, market-entry requirements, and complex IP negotiations that each project or Challenge had to resolve individually. To address these differences, UKRI should design programmes with this variation in mind by:

- Demarcating early-stage and late-stage pathways at the outset, recognising that programmes starting earlier will primarily deliver proof-of-concept and mid-TRL progression, while others may require dedicated late-stage support.
- Allocating a dedicated budget line (*c.* 15–20% of programme value where relevant) for scale-up activities including late-stage pilots, certification, regulatory engagement, IP and market-entry support, and first-of-a-kind demonstration plants.
- Linking funding design with monitoring and evaluation (M&E) to track TRL progression and commercial readiness consistently across programmes, ensuring that barriers to deployment are addressed proactively rather than ad hoc.

2. Align funding timelines with project maturity and scaling needs

High-value or capital-intensive initiatives, for example battery gigafactories, nuclear SMEs or large-scale demonstration projects, often need more than a short funding cycle to transition from proof of concept to commercial viability. Without continuity, promising projects risk ending prematurely despite strong potential.

Future schemes should therefore be structured to include longer or multi-phase awards, complete with staged reviews and conditional follow-on support. For example, 5- to 7-year 'umbrella' awards with review points and follow-on tranches would better align public investment with the realities of industrial build-out, while linking funding decisions to clear evidence through monitoring and evaluation.

3. Support consortia management and reduce collaboration overheads through a central portfolio office function

The ISCF demonstrated the value of large, multi-partner collaborations but these were often slowed by time-consuming administrative processes, such as negotiating complex contracts, IP clauses and data-sharing agreements. In some cases, projects stalled at the outset due to standstills in contracting, disproportionately affecting SMEs. Future programmes should support consortia management and reduce collaboration overheads by establishing a central portfolio office early in the programme design. This office would provide standard model contracts, template IP clauses and agreed data-sharing protocols. Programmes should also fund short onboarding sprints and allow projects to draw on a modest 'collaboration coordinator' budget, while building in sufficient lead-in time to put these supports in place.

4. Scale up skills development and address persistent talent gaps

Despite the provision of at least 148 training programmes and evidence of increased international mobility, a skills shortage persists across high-skill demand industries from battery R&D to robotics. Each Challenge should include an explicit skills and capacity-building strand (e.g. apprenticeships, industrial doctorates, mid-career reskilling) focused on the specific talent gaps identified in the associated sector. Cross-sector secondments and streamlined visas for specialist recruits will help sustain the UK's competitive edge. While there was evidence of skills development and capacity building across the Fund, more targeted vocational investment might be needed in underserved sectors, upstream of challenge investment. This could be facilitated through a structured gap analysis on sector needs alongside the programme design and implementation phases.

5. Stimulate international collaboration and market entry early

ISCF evidence suggests that internationalisation is essential for scaling UK innovations, particularly in globally standardised sectors such as electric vehicles and diagnostics. 77% of PCF respondents expected to expand their market position outside the UK following ISCF activities, indicating the potential impact of global engagement. However, achievements in attracting inward investment and enabling talent mobility fell short of expectations, partly because these dimensions were not systematically tracked or incentivised.

Future programmes should therefore:

- Ringfence funding and activities for international collaboration including early missions, expert exchanges and export-readiness support to help projects align with global standards and market requirements from inception.
- Create incentives for foreign direct investment such as connecting with international investors and tailoring outputs to overseas markets.
- Support mobility and talent attraction, linking targeted visa packages with skills and incubation initiatives to bring in global expertise.
- Integrate monitoring of international collaboration and market entry into programme evaluation, so progress can be evidenced and scaled.

Fund design recommendations for strengthening M&E, ensuring alignment with broader policy goals and building confidence in fund activities

6. Establish a centralised Fund-level impact and benefits management plan

The evaluation of ISCF impacts was significantly complicated by the absence of consistent metrics. Challenges used varied indicators for economic, environmental and social impacts, often calculated

differently, and with differing scopes, making comparison difficult and preventing aggregation of impact at the Fund level. This limited the ability to demonstrate additionality or capture the value of the Fund as more than the sum of its parts in certain domains. To address this, future Challenge Funds should:

- Develop a Fund-level impact and benefits management plan from the outset, setting out overarching missions and cross-Challenge metrics which should be socialised with Challenge teams.
- Establish a standard set of performance metrics for economic, environmental and social impacts, where appropriate complemented by Challenge-specific metrics.
- Provide consistent reporting templates and methods for data collection and analysis to ensure comparability.

This top-down framework, complemented by bottom-up reporting from individual Challenges, would improve clarity, comparability and transparency in assessing progress.

7. Embed sustainability and other strategic metrics aligned to government agendas across future Funds

The ISCF showed that projects outside explicitly environmental or health-related Clusters often achieved sustainability or wellbeing gains. However, these were not consistently measured, limiting the ability to assess the Fund's broader systemic impact. Future programmes could ensure such outcomes are captured, where they align with wider government and funder priorities, by:

- Introducing baseline indicators (e.g. energy consumption, emissions, potential health outcomes) for all projects, regardless of sector.
- Embedding consistent reporting frameworks so that unintended benefits can be identified, measured and compared across Challenges.
- Providing non-financial incentives such as recognition, visibility or portfolio-level benchmarking to encourage projects to integrate health and sustainability elements.
- Considering bonus or weighted grant mechanisms where green or health impacts align with wider government priorities, to stimulate systemic change.

This approach would ensure that broader societal benefits are visible and valued, without imposing excessive administrative burdens or diverting focus from primary programme objectives.

8. Articulate a clear ask of programmes to integrate emerging cross-cutting priorities into their workflows and reporting

A key lesson from the ISCF is the challenge of incorporating new priorities mid-programme. EDI provides a clear example: while some Challenges embedded EDI into business planning, many introduced strategies late and saw limited traction, partly because there was no consistent top-down requirement, yet expectations were applied retrospectively. Future funds should address this systemic issue by:

- Embedding clear expectations at programme launch for cross-cutting priorities that are already known (e.g. EDI, sustainability), including dedicated budgets, targets and monitoring.
- Providing a structured mechanism for new priorities that arise mid-programme, such as requiring all projects to provide a light-touch, qualitative update on how they are adapting.
- Ensuring proportionality, so that programmes are accountable for engaging with emerging agendas, but without unfairly penalising consortia or creating excessive administrative burden.

This approach would allow future mission-led R&I funds to adapt to evolving government priorities in a consistent, fair and transparent way, while ensuring progress is captured and valued at the Fund level.

9. Frame Fund and Challenge outcomes against broader policy agendas and regional priorities

ISCF Challenges sometimes struggled to adapt as policy priorities and government structures evolved around them, leaving stakeholders uncertain about long-term support. However, given the breadth of the Fund, many outcomes naturally align with at least one major government ambition, from Levelling Up to Net Zero to industrial competitiveness, even where this was not an explicit programme objective. Future Funds should capitalise on this by evidencing and framing outputs systematically against current government agendas, showing how ongoing investments are already delivering value for national priorities.

This will help maintain an agile Fund-level identity, enabling a visible contribution across multiple strategic policy areas without requiring major redesigns mid-programme. This approach provides a powerful policy lever: ensuring the Fund demonstrates its current relevance, strengthens investor and industry confidence and sustains political backing, while avoiding the disruption of retrospective programme redesigns.