INNOVATION & RESEARCH CAUCUS

INDUSTRIAL STRATEGY AND MISSIONS:

An evaluation of the role of social sciences in the ISCF

IRC Report No. 034

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This document relates to IRC Project IRCP0023: Industrial Strategy and Missions.

Acknowledgements

This work was supported by the Economic and Social Research Council (ESRC) grant ES/X010759/1 to the Innovation and Research Caucus (IRC) and was commissioned by the ESRC. We are very grateful to the project sponsors at UK Research and Innovation (UKRI) for their input in this research. The interpretations and opinions within this report are those of the authors and may not reflect the policy positions of the ESRC.

We would also like to acknowledge and appreciate the efforts of the IRC Project Administration Team involved in proofreading and formatting, for their meticulous attention to detail and support.

About the Innovation and Research Caucus

The Innovation and Research Caucus supports the use of robust evidence and insights in UKRI's strategies and investments, as well as undertaking a co-produced programme of research. Our members are leading academics from across the social sciences, other disciplines and sectors, who are engaged in different aspects of innovation and research systems. We connect academic experts, UKRI, IUK and the ESRC by providing research insights to inform policy and practice. Professor Tim Vorley and Professor Stephen Roper are Co-Directors. The IRC is funded by UKRI via ESRC and IUK, grant number ES/X010759/1. The support of the funders is acknowledged. The views expressed in this piece are those of the authors and do not necessarily represent those of the funders.

Cite as: Ortega-Argiles, R., Yu, X., Yuan, P. and Roper, S. October 2025. *Industrial Strategy and Missions: An Evaluation of the Role of Social Sciences in the ISCF*. Oxford, UK: Innovation and Research Caucus.

Industrial Strategy and Missions: The role of social sciences in the ISCF

Executive Summary

This report evaluates the role of social sciences in the Industrial Strategy Challenge Fund (ISCF) and its implications for the development of the new UK industrial strategy, "Invest 2035: the UK's Modern Industrial Strategy." The primary aim of this project is to enhance our understanding of how social sciences contribute to mission-oriented approaches in industrial strategy, particularly in the context of the ISCF.

The ISCF was established to address significant societal challenges through mission-oriented industrial policies. This report captures key learnings from the ISCF and prepares for the delivery of the new industrial strategy, which aims to tackle pressing global challenges through a mission-led approach.

The research employs two main approaches: a structured literature review on mission-oriented innovation and industrial policy programs, and an evaluative analysis of the ISCF. The literature review identifies best examples of mission-oriented policy initiatives, key stages in mission development (mission formulation, mission design, and mission implementation), and highlights the role of social sciences in each of them. The evaluative analysis gathers evidence from the ISCF and its evaluations, focusing on how social sciences contribute to mission development within the fund. It employs different qualitative data methodologies linked to keyword analysis.

The findings underscore the critical role of social sciences in defining and structuring complex societal challenges. Social sciences ensure that mission-oriented projects address real-world issues effectively by encouraging public participation, iterative learning, and adaptation. The ISCF serves as a case study illustrating the importance of social sciences in mission-oriented policy development.

The analysis reveals that social sciences should be a core principle in mission-oriented industrial policies. The ISCF demonstrates the value of social sciences in implementing mission-oriented policies, although it is not always prominently featured in assessment reports.

The report recommends enhancing the role of social sciences in each step of developing mission-oriented policies, including the creation of guides, toolkits, or playbooks to support their integration.

Among the key recommendations:

Enhance the Role of Social Sciences: The report emphasises the importance of integrating social sciences into mission-oriented industrial policies. It recommends that the social sciences should be a core principle in the development and implementation of these policies.

Develop Guides and Toolkits: To support the integration of social sciences, the report suggests creating guides, toolkits, or playbooks. These resources would provide guidance on how to consider the role of social sciences in the formulation, design, and implementation of different grand challenges (missions).

Improve Evaluation Methods: The report highlights the need for better evaluation methods to ensure accurate assessments of project viability and outcomes. This includes setting up robust data collection systems and feedback loops to make necessary adjustments based on evaluation results.

Address Regional Disparities: The report calls for addressing regional disparities in funding to ensure that all areas receive equitable support. This aligns with the government's "levelling up" agenda.

Streamline Approval Processes: To expedite funding allocation and reduce bureaucratic delays, the report recommends streamlining approval processes.

Encourage Collaboration: The report suggests fostering greater collaboration between stakeholders, including public and private sectors, academia, and civil society. This would enhance the effectiveness of mission-oriented policies and ensure broad support and legitimacy.

Adaptation and Learning: The report underscores the importance of continuous learning and adaptation in mission-oriented policies. It recommends using insights gained from monitoring and evaluation to adapt and enhance policies over time.

Background

This project aims to contribute to increasing our understanding of the role of social science in mission-oriented approaches to industrial strategy. To achieve this, we strive to capture learnings from the Industrial Strategy Challenge Fund (ISCF) and prepare for the delivery of the new industrial strategy: Invest 2035: the UK's Modern Industrial Strategy, published on 23 June 2025 by the UK Government. This new industrial strategy approach, as depicted by the UK government, aims to be mission-led in tackling some of the most pressing global challenges.

In anticipation of the implementation of the new UK Industrial Strategy and the development of ESRC's upcoming Strategic Delivery Plans, we aim to contribute to the debate by analysing:

- The different stages of mission development
- The role and need for social science in the development of missions and an Industrial Strategy
- How UKRI funds missions and the role of social science research in tackling global challenges.

Approach and Case Selection

The research examines two main approaches to evaluate mission-oriented industrial policy design and development. First, it conducts a structured literature review on mission-oriented innovation and industrial policy programs to identify key stages in mission development, which informs the search for exemplary policies and highlights the role of social sciences. Second, it gathers evaluative evidence from the UKRI Industrial Strategy Challenge Fund (ISCF), which tackled significant societal challenges aligned with the 2017 UK Industrial Strategy's four themes: clean growth, ageing society, future mobility, and artificial intelligence/data economy. The analysis focuses on how social science contributes to mission development within the ISCF, considering fund-level evidence and specific ISCF projects considered significant in the evaluation reports.

1. Introduction

This strategic review was commissioned to build on work on mission-oriented approaches to industrial and innovation strategies. In particular, the new industrial strategy, Green Paper Invest 2035: the UK's Modern Industrial Strategy and White Paper, published by the UK government on 24 October 2024 and 23 June 202 by the current UK government, aims to be mission-led in tackling some of the most pressing global challenges.

First, this strategic review aims to contribute to our general understanding of mission-oriented approaches in designing and implementing industrial strategies and the role of social sciences in these policy processes. Second, it aims to draw lessons from the mission-oriented background of the Industrial Strategy Challenge Fund (ISCF) delivery. Finally, the review will also attempt to present examples of mission-oriented programmes for industrial strategy development implemented elsewhere.

1.1 Research Questions

This project investigates, among others, the following questions:

- What are the different stages of mission development?
- What is the role and need for social science in developing missions and an Industrial Strategy?
- How does UKRI fund missions and the role of social science research in tackling global challenges?
- Can we find good examples of mission-oriented industrial strategy programmes?

Questions related to the project that were not addressed in this report include a socio-economic assessment of the individual impact of ISCF projects. This literature review is an ex-ante evaluation of the fund from the perspective of the role of social science in its formulation, design, and implementation, and a partially ex-post evaluation looking at independent reviews of the ISCF programme. The report does not intend to evaluate the economic impact of the ISCF projects, programmes, and funds.

1.2 Methodological Approach

We take two primary research approaches to evaluate mission-oriented industrial policy design and development.

First, we draw on a broad literature on mission-oriented innovation and industrial policy programmes to identify the most important stages in the development of missions. This structured literature review serves as the basis for our search for good examples of mission-oriented policy programmes and for reflecting on the role of social sciences in these processes.

Second, we collected evaluative evidence to capture learnings from the UKRI Industrial Strategy Challenge Fund (ISCF). ISCF addressed the grand societal challenges faced by UK businesses and consisted of 23 challenges covering the four themes of the 2017 UK Industrial Strategy: clean growth, ageing society, future of mobility, and artificial intelligence and data economy. We analyse the role of social science in the development of missions within the context of the ISCF by examining the evidence at the fund level and exploring the evidence from specific projects that the assessment reports have identified as interesting cases.

1.3 Contribution, findings and implications

1.3.1 Contribution

In this project, we contribute to the literature in three ways. First, the main contribution is a detailed analysis of how social sciences inform mission-oriented policy development by examining the influence of societal factors. Second, we use the ISCF as a case for illustrating the role of social sciences in the development of mission-oriented policy programmes. Finally, we present anecdotal evidence on how specific projects may have incorporated the role of social science at different stages of the development of their missions, reflecting the different approaches taken when addressing different challenges.

1.3.2 Findings

With the perspective of social science as the integration of social aspects, such as public participation. The role of social sciences is determinant in mission-oriented policy approaches as it can help define and structure complex societal challenges, ensuring that mission-oriented projects address real-world issues effectively. Social sciences can also encourage iterative learning and adaptation within projects, allowing for continuous improvement based on societal feedback. Social science aspects, such as public participation, are crucial for ensuring broad

support and legitimacy in mission-oriented projects and programmes, as they help policymakers to develop governance frameworks that foster transparency, accountability and fairness. Instead of focusing on technological advancements, social sciences guide mission-oriented projects toward structural transformation in policy, behaviour and institutions.

Our main findings exacerbate the important role of social science in the development of mission-oriented policy programmes in today's industrial and innovation policy formulation, design, and implementation. In particular, we identify how the UK Research and Innovation Council has addressed the importance of social science in mission-oriented policy approaches such as the Industrial Strategy Challenge Fund (ISCF).

Evidence found in assessment reports has identified the ISCF as an example of mission-oriented policy (OECD, 2021). Our findings corroborate the role of social science across the different stages of the ISCF development, from mission formulation to implementation. In mission formulation xx

The anecdotal evidence from investigating specific projects that tackle particular missions shows different approaches to integrating social science. This report adds to previous evidence that the Innovation and Research Caucus has already generated towards the topic of mission-oriented innovation policy initiatives (Nelles et al., 2024).

1.3.3 Implications

First, the main implication for our analysis is that social science constitutes and should constitute a core principle in mission-oriented industrial policies.

While the ISCF fund constitutes a good illustration of the importance of social science in implementing mission-oriented industrial and innovation policies, it does not appear as much in its assessment reports as it should.

Given our evidence, our policy recommendations would be to consider specific opportunities to strengthen the role of social sciences at each step of developing mission-oriented (industrial and innovation) policy initiatives. A guide, toolkit, or playbook providing information on how to consider the important role of social science in the formulation, design, and implementation of different grand challenges (missions) should be considered.

2. Stages of Mission Development and Delivery

In this section, we conduct a light review of the literature on mission-oriented policies, focusing on:

- Policy design
- Policy implementation
- Industrial Strategy
- Innovation/technology Strategy
- Social Science perspective

The literature review consists of academic publications in peer-reviewed journals and reports from institutions such as the OECD, the UCL (Barlett Institute for Innovation and Public Purpose), the Fraunhofer Institute for Systems and Innovation Research, and the European Commission.

2.1 Mission-Oriented Policies Design and Implementation/Delivery

Mission-oriented policies structure their design and implementation around missions that tackle critical societal challenges. Due to their nature, mission-oriented policies have had significant developments and breakthroughs in recession or crisis periods, such as in modern times, after the financial recession of 2008 and during and after the Covid-19 pandemic (Ayres et al., 2025).

The following diagram depicts key stages in developing and implementing mission-oriented policies. Designing, implementing, and evaluating mission-oriented policies starts by identifying an overarching goal or mission the policy aims to achieve.

Figure 1. Mission-Oriented Policy Development and Implementation

The stages in the process of mission-oriented policy development and implementation are the following:

1. **Identification of the mission:** This stage centres on defining the overarching goal or mission the policy aims to achieve. This could be an environmental goal related to climate change, advancing technological change, or social change.
2. **Stakeholder engagement:** Mission-oriented policies typically involve an inclusive development process that ensures collaboration with the relevant stakeholders, including governmental institutions, private sector partners, academic institutions, and the wider community.
3. **Strategy development:** Actors creating a mission-oriented policy will formulate a comprehensive strategy outlining the actions, timelines, and resources required to achieve the mission. This includes setting specific, measurable objectives.
4. **Policy design:** The mission-oriented policy strategy will be accompanied by a series of specific policy measures and instruments to support the mission. These include establishing the necessary regulatory conditions, creating various incentives for different types of actors, and tailoring funding mechanisms and partnerships.

5. **Implementation plan:** The mission-oriented policy implementation plan must include a comprehensive outline of assigned responsibilities, establish governance structures, and ensure that appropriate resources and capacities are adequately allocated.
6. **Monitoring and evaluation:** To monitor the progress of achieving the mission, a series of mechanisms for monitoring and evaluating the policy's impact should be developed. This includes setting up data collection systems and feedback loops to make necessary adjustments whenever possible.
7. **Adaptation and learning:** Mission-oriented policies and procedures use insights gained from monitoring and evaluation to adapt and enhance the policy over time. Global challenges are dynamic and may evolve over time. Addressing emerging challenges and opportunities linked to mission goals set in the policy is important to ensure continuous learning and maintain adaptability and flexibility.

2.2 Mission Development Stages

A broader description of the different stages in mission-oriented policy development and implementation can be summarised in three main steps: mission formulation, design, and implementation.

Following Wittmann et al. (2021, 2022)[1] the main stages of mission development can be defined as:

Step 1: Mission Formulation

The translation of societal challenges into specific missions with dedicated priorities and goals.

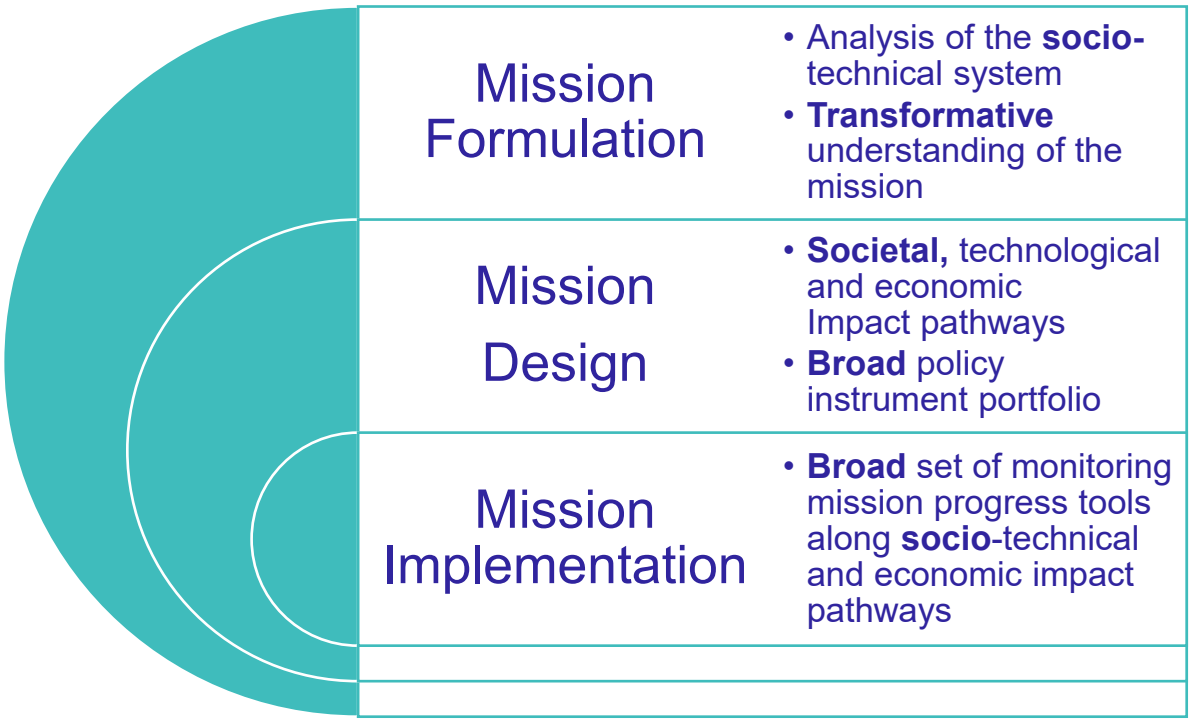
Step 2: Mission Design

The translation of mission goals into a specific set of instruments (Instrument Portfolio), activities and coordination structures (Impact Pathway).

Step 3: Mission Implementation

The translation of mission activities into impacts.

[1] These stages are based on the Fraunhofer Institute for Systems and Innovation Research's Mission-Oriented Policy for Transformative Change Toolbox that builds on insights from the scientific support action to the German High-Tech Strategy 2025.



Note: adapted from (Wittmann et al., 2021)

Figure 2. Mission-oriented policy stages and the role of social sciences

Step 1. Mission Selection/Formulation

Table 1. Mission formulation

MISSION DIMENSION	Main task to be achieved	Features
Mission Formulation: Strategic orientation	Informing and selecting specific societal challenge(s) and strengthening the legitimacy of focused policy intervention towards clear and precise objectives	*Legitimacy* A consensus is found among a wider group of stakeholders (including citizens) regarding the need and relevance of the mission
		Directionality The policy is guided by clear and well-informed orientations and strategic guidance formalised in a mission
		Intentionality Specific and well-articulated need-based goals, with a clear timeline and milestones, are derived from the mission
		Flexibility The targets and means of intervention to meet can be revised at different stages of the process when needed

Note: adapted by the OECD Mission-oriented Innovation Policy Online Toolkit

The OECD Mission-oriented Innovation Policy Online Toolkit outlines the key dimensions of mission formulation, emphasising strategic orientation, legitimacy, directionality, intentionality,

and flexibility. It highlights the importance of informing and selecting specific societal challenges, achieving consensus among stakeholders, guiding policy with clear strategic directions, setting specific goals with timelines and milestones, and allowing for revision of targets and intervention methods as needed.

When selecting a mission, Mazzucatto (2018) encouraged policy designers to choose bold, inspirational missions that resonate with a wide audience and engage society. They should be framed with targeted, measurable, and time-bound objectives to ensure clarity and focus. While ambitious in pursuing research and innovation, the mission should remain realistically achievable within the established timeframe. Emphasising cross-disciplinary and cross-sectoral collaboration, missions should invite diverse actors to contribute to and enhance the innovation (or industrial) process. Furthermore, the approach should be open to a range of bottom-up solutions, fostering creativity and inclusivity in tackling the challenges ahead. The mission formulation stage requires analysing the socio-technical system to clarify the scope of the mission and conceptually clarifying the type of transformative understanding that links missions to ideal types and thereby helps to highlight their distinct challenges and obstacles (Wittmann et al., 2021, 2022).

Step 2. Mission design

The mission goals are translated into a specific set of instruments (Instrument Portfolio), activities, and coordination structures (Impact Pathway).

The OECD Mission-Oriented Innovation Policy Online Toolkit identify three main mission-oriented policy design principles: strategic orientation, policy coordination and policy implementation.

Table 2. Mission Design

MISSION DIMENSION	Main task to be achieved	Features
Mission Design: Policy coordination	Coordinating the strategies and activities of the different institutions involved in the policy	*Horizontality* The plans and activities of policy bodies covering different policy fields are coordinated to achieve the mission
		Verticality The plans and activities of policy bodies at different levels of government are coordinated to achieve the mission
		Intensity The decisions regarding the intervention (objectives, modalities, level of resources) are taken collectively by the involved policy bodies and are binding on them.
		Novelty The plans and activities of different policy bodies and stakeholders are coordinated (e.g. via a portfolio approach) to cover and experiment with various alternative solutions to achieve the mission

Note: Adaptation from the MIOIP OECD Mission-Oriented Innovation Policy Online Toolkit

The OECD Mission-oriented Innovation Policy Online Toolkit defines the mission design stage as the **policy coordination** dimension, which aims to align strategies and activities with the different involved institutions. It relates to the ability of an initiative or a country to ensure the consistency of the action frameworks of different public and private bodies covering various policy fields and actors to address the targeted societal challenges. The main features highlighted in this dimension are horizontality (field-wide coordination), verticality (multi-government alignment), intensity (collective decisions), and novelty (experimenting with solutions).

Step 3. Mission Implementation

The implementation of mission-oriented innovation policies concerns the ability to consistently implement, monitor, and evaluate an integrated package of interventions across different sectors/areas, stages of the innovation cycle, and/or disciplines to address the targeted societal challenges. It ensures consistency and efficacy in mobilising resources to meet objectives. It covers a consistent mix of policies, mobilisation of resources, evaluative indicators for feedback, and reflexivity for informed adjustments (Larrue, 2021).

The OECD, in its Mission-Oriented Innovation Policy Online Toolkit, describes the policy implementation stage in mission-oriented policies as the one that has the task of ensuring consistency and effectiveness of the modes of intervention and resources of the actors mobilised to achieve the mission. It outlines four key aspects: providing a diverse and coherent mix of policy interventions across various disciplines and sectors; securing commitment from stakeholders to allocate resources for the mission; establishing indicators and evaluation procedures to assess progress and facilitate continuous improvement; and using evaluation results to inform decision-making and adapt the initiative as necessary to achieve the mission

Table 3. Mission Implementation

MISSION DIMENSION	Main task to be achieved	Features
Mission Implementation: Policy implementation	Ensuring the consistency and effectiveness of the modes of intervention and resources of the public and private partners mobilised to achieve the policy objectives	*Policy mix consistency* The policy encompasses a diverse and consistent set of policy interventions (technical, financial, regulatory, etc.) to support different disciplines, sectors, areas and markets, across the innovation cycle, as needed to achieve the mission
		Fundability Public and private stakeholders involved in the different facets of the initiatives (phases of the innovation process, sectors, markets, etc.) are mobilised to commit resources to achieving the mission.
		Evaluability The policy is endowed at the outset with input and output indicators, as well as valuation procedures adapted to its systemic nature, to assess results and learn from its implementation in view of continuous improvement.
		Reflexibility Evaluation and monitoring results are used to inform decision-making and reform the initiative (revision of objectives, adaptation of governance and operating procedures, etc.) as needed to achieve the mission

Note: Adaptation from the MIOIP OECD Mission-Oriented Innovation Policy Online Toolkit

Implementing the steps in mission implementation for industrial policy can be quite challenging due to the following points:

- **Complexity of societal challenges:** Translating broad societal challenges into specific missions with dedicated priorities and goals can be difficult. This requires a deep

understanding of the underlying socio-technical systems and the distinct obstacles associated with each mission.

- **Stakeholder coordination:** Ensuring effective collaboration among diverse stakeholders, including governmental institutions, private sector partners, academic institutions, and the wider community, has proven to be challenging. Different stakeholders may have varying interests, priorities, and levels of commitment.
- **Resource allocation:** Formulating a comprehensive strategy that outlines the actions, timelines, and resources required to achieve the mission is complex. Adequate funding tools and incentives, human resources, and technological capabilities must be allocated appropriately.
- **Regulatory conditions:** Establishing the necessary regulatory conditions and creating various incentives for different types of actors can be challenging. This involves tailoring funding mechanisms and partnerships to support the mission.
- **Governance structures:** Developing a detailed implementation plan that includes assigned responsibilities and establishing governance structures can be difficult. Ensuring that appropriate resources and capacities are adequately allocated is crucial.
- **Monitoring and evaluation:** Setting up mechanisms for monitoring and evaluating the policy's impact requires robust data collection systems and feedback loops. Making necessary adjustments based on the evaluation results can be challenging.
- **Adaptation and learning:** Mission-oriented policies must be adaptable and flexible to address emerging challenges and opportunities. Continuous learning and policy enhancement over time are essential but difficult to achieve.

2.3 The role of social science in mission design, development and implementation

Implications for the design and implementation of mission-oriented industrial strategies from a social science perspective –

- **Proactive State Role and Dynamic Capabilities:** Mission-oriented policies demand a state that actively shapes markets rather than merely correcting market failures. This requires public-sector "dynamic capabilities" to steer innovation toward societal goals (Mazzucato, 2018; Kattel & Mazzucato, 2018), for example, through state-led coordination across sectors and institutions, supported by measurable targets and public-private

partnerships (Institute for Innovation and Public Purpose, 2019). Dynamic capabilities in this context refer to the ability of public institutions to adapt, learn, and implement strategies effectively to achieve mission objectives. For example, the state can play a proactive role by investing in research and development, setting ambitious goals, and creating incentives for private and third-sector participation. Dynamic capabilities include the flexibility to manage diverse projects, monitor progress and adjust strategies as needed to ensure systemic impacts. In the context of social science, the proactive role of the state and its dynamic capabilities are crucial for addressing societal challenges. The state acts as a catalyst for change, fostering collaboration among various stakeholders, including academia, industry, and civil society. For example, the state can proactively address social inequalities by designing policies that promote inclusive growth and sustainability. Dynamic capabilities enable the state to respond to emerging social issues, such as climate change or digital transformation, by leveraging data, engaging communities, and fostering inclusive innovation.

- **Directionality and Inclusive Governance:** Directionality in mission-oriented industrial policies refers to the strategic focus on achieving specific (societal) goals, such as sustainability or technological advancement. It involves setting clear objectives and aligning resources, investments, and innovation efforts to steer industries towards these goals. Inclusive governance complements directionality by ensuring that diverse stakeholders (governments, academia and civil society) are actively involved in decision-making processes. This approach fosters collaboration, transparency, and equity, making policies more effective and widely accepted. For example, inclusive governance might involve creating platforms for public-private partnerships, engaging marginalised communities in policy design, or ensuring that the benefits of industrial transformation are distributed fairly. Transformative innovation policies (TIP) stress the directionality of socio-technical systems and the importance of participatory and inclusive approaches (Schot & Steinmueller, 2018; Diercks et al., 2019). Socio-technical transitions need long-term commitment and sustaining support (Haddad et al., 2022). Instead of focusing solely on technological advancements, social sciences guide mission-oriented projects toward structural transformation in policy, behaviour and institutions (Wiarda et al., 2023). Together, directionality and inclusive governance create a framework for addressing complex challenges while promoting social and economic inclusivity.

- **Context-Specificity and Experimentation:** Policies should adapt to local institutional and economic contexts. Context-specificity and experimentation are vital in mission-oriented policies, especially when addressing complex societal challenges. Context-specificity ensures that policies are tailored to a particular region or community's unique social, economic, and cultural conditions. This approach enhances the relevance and effectiveness of interventions. For example, regions can leverage unique strengths via entrepreneurial discovery processes (Foray, 2018). Experimentation, on the other hand, allows for adaptive learning by testing innovative solutions, evaluating their outcomes, and scaling successful initiatives. Flexible policy tools that enable iterative learning, experimentation, and adaptation to local conditions (Goulden & Kattel, 2024) should be utilised.

  These elements play a crucial role in social science. Social scientists contribute by analysing local contexts, identifying key stakeholders, and understanding societal dynamics. They also design and evaluate experiments, providing evidence-based insights to refine policies. For instance, social science research can help policymakers understand how different communities respond to climate change initiatives or digital transformation efforts, ensuring that policies are inclusive and equitable.
- **Systemic Coordination and Collaboration:** Systemic coordination ensures that various actors (government agencies, industries, research institutions, and civil society) work together toward a shared mission. This approach helps align resources, investments and policy frameworks to drive innovation and industrial transformation. Mission-oriented industrial strategies necessitate cross-sectoral and cross-institutional coordination. For example, public development banks, strategic procurement policy and state-owned enterprises are critical tools to mission success (Mazzucato et al., 2024); and aligning policies across ministries and fostering international knowledge-sharing are also important (Larrue, 2021). Collaboration plays a crucial role by promoting knowledge exchange, reducing duplication of effort, and enabling the co-creation of solutions (Mazzucato, 2018b). For example, mission-oriented industrial policies often involve public-private partnerships, where governments set strategic goals while businesses and research institutions contribute expertise and technological advancements. Cross-sectoral collaboration also enhances policy effectiveness by integrating diverse perspectives and ensuring inclusivity.
- **Legitimacy and Power Dynamics:** Legitimacy and power dynamics play a crucial role in mission-oriented industrial and innovation policies. They influence how policies are designed, implemented and accepted by stakeholders. Legitimacy refers to the acceptance

and credibility of policies among stakeholders, including governments, businesses and civil society. It ensures that policies are perceived as fair, effective, and aligned with societal needs. Mission-oriented policies can create situations that favour special interests and yield uneven benefits (Fagerberg, 2018). Therefore, establishing legitimacy through transparent decision-making, evidence-based policymaking, or public engagement is crucial.

Power dynamics shape who influences policy decisions, how resources are allocated, and which innovations, groups of firms, particular sectors, or technologies receive public support. The variety of actors and policy approaches should be acknowledged to accommodate marginalised voices (Diercks et al., 2019). When involving multiple actors, there are challenges, including trust-building, empowerment issues, stakeholder apathy, difficulty promoting institutional entrepreneurship, and coordination of directionality across actor networks (Haddad et al., 2022). An example of these situations is the Green Deal or other sustainability initiatives, in which governments, industries, and research institutions negotiate power dynamics to drive sustainable innovation (Mazzucato, 2018b).

- **Capacity Building:** Effective design and implementation hinge on institutional capacity. Different types of missions imply different capabilities to design, implement and evaluate missions; the success or failure of mission-oriented innovation policies relates to both the investments in R&D capabilities and market-shaping capabilities; the public sector capabilities for developing policy directionality exist at different levels, from high-level support to operational or design-level expertise; and public organisations should become dynamic learning organisations that welcome uncertainty, exploration and experimentation (Kattel & Mazzucato, 2018). Capacity building plays a crucial role in mission-oriented industrial policies, ensuring that institutions, industries, and stakeholders have the necessary skills, resources, and infrastructure to drive innovation and achieve strategic missions. It involves strengthening human capital, institutional frameworks, and technological capabilities to support long-term industrial transformation. Examples of initiatives are training programs and education initiatives to upskill or reskill (i.e., Germany's Engiewende policy includes workforce training for renewable energy sectors) or investments in R&D to strengthen the technological infrastructure (i.e., Brazil's Inova Programme focused on bioethanol and oil and gas industries, aligning technical capabilities with industrial needs). Capacity building encourages partnerships between government, academia and industry to co-create solutions.

» **Global and Cross-Border Learning:** Many mission-oriented policies are implemented nationally, given their overarching goals and significant investments. However, some missions require transnational alignment of policies, funding, and standards (Mazzucato et al., 2024). Learning from global case studies can inform adaptive strategies as they may enable knowledge exchange, technological diffusion and collaborative problem-solving internationally. In general, social science plays a pivotal role in shaping mission-oriented policies by providing insights into human behaviour, social structures, and policy effectiveness:

- **Understanding Human Behaviour**: Social science research helps policymakers design missions that align with people's thoughts and actions. For instance, behavioural studies can inform strategies to encourage sustainable practices or improve public health.
- **Evidence-Based Policy Design**: Social scientists synthesise existing research to identify what works and what doesn't. This ensures that missions are grounded in proven methods and can adapt to changing circumstances.
- **Stakeholder Engagement**: By studying social dynamics, social scientists can guide the inclusion of diverse voices in mission design, ensuring equitable and widely supported policies.
- **Evaluating Impact**: Social science provides tools to assess mission effectiveness and offers feedback for continuous improvement.
- **Addressing Complex Challenges**: Many missions tackle "wicked problems" such as climate change and inequality. Social science provides frameworks for understanding and addressing these interconnected issues.

2.4 Examples of mission-oriented policies

To introduce mission-oriented policy examples, we generate a word cloud to summarise the main keywords identified in their narratives.

Mission-oriented policies often benefit from the insights and methodologies of social sciences. Here are some examples where social science contributions have been pivotal:

Healthy Urban Development in England: Democratically elected mayors have implemented mission-oriented policies to improve public health through urban planning. Social science research has guided these efforts by providing evidence on the link between urban environments and health outcomes (Ayre et al., 2025).

European Green Deal: This policy aims to make Europe climate-neutral by 2050. Social sciences contribute by studying behavioural changes required for sustainable practices and analysing the social impact of transitioning to green technologies (Mazzucato and Kattel, 2025).

Cancer Moonshot Initiative: In the U.S., this mission accelerates cancer research. Social scientists play a role in understanding patient behaviour, improving healthcare delivery, and ensuring equitable access to treatments (Westlake, 2024).

Net-Zero Transition Policies: Countries like Denmark and New Zealand use mission-oriented approaches to achieve net-zero carbon emissions. Social sciences help by evaluating the societal impact of these policies and fostering community engagement (Mowery et al., 2010; Mazzucato, 2018; Nelles et al., 2024).

These examples highlight how social sciences provide the tools to understand societal dynamics, evaluate policy effectiveness, and ensure equitable outcomes.

Examples of "best" mission-oriented projects

Examining the missions covered by the ISCF, we can identify several examples of projects that align with the Fund in terms of the topics and their design and implementation.

Table 4. Mission-oriented projects

	Clean Growth	Aging Society	Future of Mobility	AI & Data Economy
High-Tech Strategy 2025 (Germany)	Y	?	Y	Y
Cross-ministerial Strategic Innovation Promotion Program (Japan)	Y	Y	Y	Y
The Alchemist Project (Korea)	Y	Y	Y	Y
Acceleration Strategies (France)	Y	?	Y	Y
Business Finland Missions	Y	?	Y	Y
National Research Council of Canada (NRC) Challenge programs	Y	Y		Y
Challenge-driven Innovation Initiative (Sweden)	Y	Y		Y
Comprehensive Plan to Solve Social Problems Based on Science and Technology 2023-27 (Korea)	Y	Y		Y
Mission Driven Top-Sector and Innovation Policy (Netherlands)	Y	Y		
Pilot-E (Norway)	Y		Y	
Research Ireland Challenge Programmes (Ireland)	Y			Y
Horizon Europe missions	Y	?		

- Six societal challenges: 1) Health and Care, 2) Sustainability, Climate Protection and Energy, 3) Mobility, 4) Urban and Rural Areas, 5) Safety and Security, and 6) Economy and work 4.0;
- Three fields of action: 1) tackling the grand challenges, 2) developing future competencies, and 3) establishing an open innovation and venture culture; and
- Twelve mission areas: 1) developing safe, networked and clean mobility, 2) putting artificial intelligence intro practical application, 3) building up battery cell production in Germany, 4) achieving substantial greenhouse gas neutrality in industry, 5) creating sustainable circular economies, substantially reducing the plastic discharged into the environment, 6) preserving biological diversity, 7) digitally networking research and healthcare – for intelligent medicine, 8) combating cancer, 9) finding new sources for new knowledge, 10) ensuring good living and working conditions throughout the country, and 11) shaping technology for the people.

2.4.1 Cross-ministerial Strategic Innovation Promotion Program (Japan)

Japan's SIP programme was launched in 2014 to promote integrated research, innovation and demonstration activities, to tackle societal challenges and boost economic growth. The SIP programme essentially supports "incremental innovation", with IP rules incentivising industry adoption of R&D outcomes. It operates in 5-year phases (i.e. 2014-2018, 2018-2023, 2023-2028). The ongoing third phase has 14 programmes (missions), including:

1) creating an integrated healthcare system,
2) innovation of an inclusive community platform,
3) building a platform for learning and working styles in the post-pandemic era,
4) creating a national platform for innovative ocean development,
5) creating an intelligent energy management system
6) development of a circular economy system,
7) development of a resilient smart network system against natural disasters,
8) creating a smart infrastructure management system,
9) building a resilient and nourishing food supply chain management for a sustainable future,
10) development of a smart mobility platform,
11) expansion of fundamental technologies and development of rules promoting social implementation to expand HCPS Human-Collaborative Robotics,

12) development of foundational technologies and rules for expansion of the virtual economy,

13) Promoting Application of Advanced Quantum Technologies to Social Challenges, and

14) Creating a materials innovation ecosystem for industrialisation.

2.4.2 The Alchemist Project (Korea)

The Alchemist is a challenge-based R&D initiative designed to foster disruptive technologies and address Korea's risk-averse R&D culture. It was launched in 2022 with a budget of ₩414.2 billion (approximately £216.8 million) over 10 years. It aims to develop new technologies to transform existing industries or create new ones, thereby countering Korea's economic stagnation. Unlike other R&D programmes in Korea, where researchers face penalties for not achieving goals, the Alchemist encourages risk-taking by eliminating penalties for failure, with the slogan "we accept failure". It is operated by setting themes and supporting a group of projects under each theme using a stage-gate approach, starting with 6 projects in year 1, narrowing to 3 in year 2, and then funding 1 project for 5 years. The missions involved in the project include "sustainability beyond plastics", "ultimate semiconductor", "next generation humanoid: humanoid that think, feel and communicate like a human"; "idea to product: intelligent manufacturing platform with ultra-connectivity", "a multiverse avatar platform that shares sensations and experiences aging reversal", "urban carbon dioxide capture and utilisation technology", "aging reversal", "ultra-realistic metaverse visualisation", "biomimetic carbon resource recycling", "brain to X", "Body protective smart suit", "Gene self-correction and healing technology", "soft implant without immune rejection", "off-the-ground mobility", "in-situ virus detection and analysis system", "AI based supercritical materials", "molecular level printer", "CO2 free low-cost hydrogen production" and "Artificial eco food".

2.4.3 Acceleration Strategies (France)

Part of the 4th Investments for the Future Programme (PIA) under the broader France 2030 investment plan, the Acceleration Strategies for Innovation Programme allocates a total of €12.5 billion to drive innovation in priority sectors, with dedicated amounts at different stages of innovation. 18 strategies were launched in 2022, with additional ones starting later. The strategies include:

1) Decarbonated hydrogen,
2) Recycling and reincorporation of recycled materials,
3) Biobased products - Sustainable fuels,
4) Biotherapies and bioproduction of innovative therapies,
5) Digital health,
6) Emerging infectious diseases - Nuclear, radiological, biological and chemical threats,
7) Cybersecurity,
8) Quantum technologies,
9) Artificial intelligence,
10) Cloud,
11) 5G and future telecoms network technologies,
12) Digitalisation and decarbonisation of mobility,
13) Sustainable and healthy food,
14) Sustainable agricultural systems and equipment contributing to the ecological transition,
15) French cultural and creative industries,
16) Decarbonisation of industry,
17) Education and digital technology,
18) Sustainable cities and innovative buildings,
19) Digital Responsibility,
20) Advanced technologies for energy systems,
21) Space, and
22) Batteries.

2.4.4 Business Finland Missions

The Finnish government launched the National Roadmap for Research, Development and Innovation in 2020 to boost Finland's R&D spending from 2.7% to 4% of GDP by 2030. The roadmap was later updated for 2021-2025, adopting a challenge- and mission-based approach to implement and fund research and innovation. Two pilot missions, Digital Native Finland and Zero Carbon Future, were launched in August 2021. They are followed by three missions released in 2023: Circular Transition for Zero Waste, Healthcare Reimagined 2035, and Immersive Digital Life.

2.4.5 National Research Council of Canada (NRC) – Challenge programmes

The NRC Challenge programmes were launched in 2019 as part of Canada's Innovation and Skills Plan, aiming to tackle pressing economic, societal and environmental challenges through collaborative, transformative, high-risk and high-reward research. The first four Challenges programmes, which are 1) Disruptive Technology Solutions for Cell and Gene Therapy, 2) Artificial Intelligence for Design, 3) Materials for Clean Fuels, and 4) High-Throughput and Secure Networks, are later expanded to 11 programmes: 5) Pandemic Response, 6) Aging in Place, 7) Internet of Things: Quantum Sensors, 8) Arctic and Northern, 9) Applied Quantum Computing, 10) Low Carbon Built Environment, and Construction Sector Digitalization and Productivity.

2.4.6 Challenge-Driven Innovation Initiative (Sweden)

Challenge-Driven Innovation (CDI) was launched in response to the 2009 Lund Declaration, which advocated for a focus on "grand challenges" aligned with the Global Goals defined in the UN's 2030 Agenda. CDI is structured around four societal challenges with potential for internationally pioneering innovation – future healthcare, sustainable, attractive cities, information society 3.0 and competitive production. The missions within the challenges include "AutoPlan3", "Återhus 3.0", "Implementing Svensk Kolinlagring in the food system", "For an equal and sustainable menstrual health", "Circular management of upgraded excavated materials", "Sustainable stormwater and cloudburst management in development districts", "Ecosystem for an age-friendly village", "Hospital at Home - Regional remote monitoring of severely ill patients" and "EPD Berg".

2.4.7 Comprehensive Plan to Solve Social Problems Based on Science and Technology 2023-27 (Korea)

The 3rd Comprehensive Plan (CP3) directs the Korean government's STI investments toward the most pressing social challenges facing the Korean people. It emphasises addressing social problems over mere R&D by including groups that would benefit from the solutions to the difficulties in identifying issues, proposing solutions, participating in R&D and applying new technologies. The plan targets 10 broad social domains, 43 specific topics, and 10 broad tasks. 5 out of the 43 problems are prioritised with defined missions, sub-priorities and specific targets for each sub-priority. The missions that have been developed so far include "Ageing -Ensuring elderly life safety", "Ageing - Bridging the digital divide", "Cybercrime - Preventing personal data

leakage", "Cybercrime - Reducing personal cybercrime damage", "Reducing fine dust", "Reducing microplastics" and "Reducing household waste".

2.4.8 Mission Driven Top-Sector and Innovation Policy (Netherlands)

The Mission Driven Top-Sector and Innovation Policy (MTIB) was introduced in 2011 as the "Dutch Top Sectors". It focuses on public-private collaboration for R&D and innovation across nine key economic sectors. Recalibrated in 2018 and 2023, it shifted focus from Dutch competitiveness to addressing societal challenges while emphasising market creation and valorisation. A mission-oriented approach has been followed since the 2018 revision. The MTIB focus on 5 overarching missions (with 20 sub-missions) in 1) energy transition, 2) circular economy, 3) agriculture, water, and food, 4) health and Care and 5) security.

2.4.9 Pilot-E (Norway)

Pilot-E was a mission-oriented scheme launched in 2016 that accelerated the development and utilisation of climate-friendly energy technologies to reduce emissions and spur business growth. The missions include "Increased efficiency and flexibility in the power grid", "Zero emission maritime transport", "Zero emission land-based transport", "Sustainable industrial processes", "Hydrogen value chains" and "Zero emission building and construction activities".

2.4.10 Research Ireland Challenge Programmes (Ireland)

The National Challenge Fund (€65 million) is a challenge-based programme targeting green transition and digital transformation, rooted in Innovation 2020 (2016) and Impact 2030 (2022).

2.4.11 Horizon Europe missions

The European Commission's Horizon Europe (2021-2027) integrates a mission-oriented approach within its Global Challenges and European Industrial Competitiveness pillar to address pressing societal issues. It responds to past evaluations of the EU Framework Programme, which called for enhanced strategic focus and coordination. Five mission areas aim to deliver concrete solutions through ambitious, interdisciplinary projects. These mission areas are: 1) adaptation to climate change, including societal transformation, 2) cancer, 3) climate-neutral and smart cities, 4) healthy oceans, seas, coastal and inland waters, and 5) soil health and food.

3. Learnings from the UKRI Industrial Strategy Challenge Fund (ISCF)

3.1 ISCF: General Description

We build on the various efforts already made to assess the UKRI Industrial Strategy Challenge Fund (ISCF) and provide a brief description. In particular, we based our general description of learning on the ISCF Fund in the following evaluation reports:

- The UK Research and Innovation's management of the Industrial Strategy Challenge Fund by the National Audit Office (2021)
- Evaluation of the Industrial Strategy Challenge Fund: evaluation framework report by RAND Europe and Frontier Economics (2021).
- Industrial Strategy Challenge Fund: process evaluation report by RAND Europe and Frontier Economics (2023).

The UK Research and Innovation's management of the Industrial Strategy Challenge Fund by the National Audit Office (2021)

This document from the National Audit Office (NAO) evaluates the management of the Industrial Strategy Challenge Fund (ISCF) by UK Research and Innovation (UKRI) and the Department for Business, Energy & Industrial Strategy (BEIS).

The National Audit Office (2021) document aims to deepen our understanding of the ISCF fund. It describes the ISCF's aim to address industrial and societal challenges through innovation, focusing on four "grand challenges"—clean growth, future mobility, artificial intelligence and data, and the ageing society. The document supports projects by encouraging co-investment from industry and academia.

3.1.1 National Audit Office ISCF – policy design and implementation

The National Audit Office ISCF report (2021) describes the Fund's budget over eight years, from 2017 to 2025, as £3 billion, with £1.2 billion already spent by January 2021. The industry has contributed significantly, providing £567 million alongside public funding. By 2021, the Fund had successfully supported 1,613 projects across 24 challenges.

The report indicates that management challenges have arisen due to delays in approving funding waves and staffing issues, which have significantly impacted overall efficiency. Additionally, there are concerns about fairness, as some regions receive disproportionate funding, raising questions about alignment with the government's "levelling up" agenda.

The report presents several recommendations to enhance the overall efficiency of funding and project evaluation. It suggests improving evaluation methods to ensure more accurate assessments of project viability and outcomes. Streamlining approval processes is also highlighted as a crucial step to expedite funding allocation and reduce bureaucratic delays. Furthermore, the report emphasises the need to address regional disparities in funding, ensuring that all areas receive equitable support. Finally, it calls for a thorough review of co-investment requirements to encourage greater collaboration between stakeholders and maximise resource utilisation.

The impact of COVID-19 has been significant, leading to delays in various projects and challenges in securing co-investment. However, the pandemic has also prompted necessary adjustments within the funding landscape. Notably, funds have been re-profiling to better align with evolving needs, alongside extra support specifically designated for vaccine development. These adaptations reflect a responsiveness to the crisis, highlighting the importance of flexibility and innovation in funding strategies during unprecedented times.

The report highlights the need for clearer objectives at the Fund level and greater focus on long-term impacts.

3.2 ISCF: Mission Development, Design and Implementation and the role of Social Science

a. Keyword Analysis: The ISCF social science keyword methodology

The National Audit Office published a report on UKRI's management of the ISCF (A) in February 2021. In November 2020, UKRI commissioned RAND Europe and Frontier Economics to undertake a fund-level evaluation of the ISCF, for which a report presenting the evaluation framework was published in May 2021 (B), and the report of the fund-level process evaluation of the ISCF was published in March 2023 (C). Drawing on these reports, we collect the keywords highlighting the lessons learnt from the ISCF, from the perspective of "social science". These keywords represent the aspects of the ISCF relevant to the mission formation, design, and implementation steps, as well as the translation processes, of the mission-oriented

innovation policy (MOIP) toolbox proposed by the Fraunhofer Institute for Systems and Innovation Research. Some of the factors that the keywords signal were applied to the processes of the ISCF or acknowledged by the time the reports were compiled, whereas others indicate opportunities for further improvement.

These keywords show that:

For mission formation, social science plays an important role by helping identify the biggest challenges facing society and industry. For example, UKRI invited businesses and academics to share ideas about important issues that the UK should tackle. Over time, they have refined their approach to identifying Challenges by focusing more on what industry and academia need, making the Challenges more relevant. The Challenges cover different sectors and continue to support broader government agendas beyond the Industrial Strategy, showing that understanding social and economic contexts helps keep the missions meaningful and up to date. The selection of Challenges took into account the areas where the UK could lead globally with its scientific and business capabilities. Here, social science helps by examining how markets, technologies, and policies interact, again, ensuring the missions are meaningful.

For mission design, social science helps shape the way the Challenges are developed, ensuring they address societal needs and align with policy goals. For example, social science helps ensure the social and economic goals of the ISCF are reflected in the design of the Challenges. Social science also helps ensure that the Challenges are relevant from the perspectives of different stakeholders and that the stakeholders' opinions are included, by informing how UKRI can engage with stakeholders in the processes. Additionally, social science influences the variety of funding instruments that were deployed, aligning with the markets' needs and supporting cross-sector research and innovation collaboration. It helps as well to balance between comprehensiveness and timeliness or between simultaneous implementation of funding instruments and a staged approach over time, ensuring that the processes are efficient and thorough in the long term. Further, social science helps define the high-risk areas and promote a culture of failure acceptance in mission design; and it supports efforts to improve equality, diversity and inclusion, which is important for involving a wide range of ideas and perspectives in mission design, and for encouraging applications from smaller businesses and diverse regions.

Evidence box. The role of social science in ISCF's "mission design"

We recognised fairly early on that, ***the social sciences would play an important role in delivery of the challenge****. In particular looking at the* ***human behavioural issues that inhibit the take up of innovation in the sectors and looking at business models, industry structures etc****.*
As a pioneer, we were also taking first steps into ***the sectors*** *we're addressing (Accountancy, Insurance and Legal) for UKRI as a whole and so having research specifically into the barriers and opportunities for the sectors was important.*
- Anonymous Challenge Director A, in response to the question "What were the specific reasons/needs regarding why you felt you wanted to work with ESRC?"

I knew social aspects for cybersecurity would be important to understand and be part of any discussion regards the challenge when I spoke about "changing the world" – it raised questions around both the economics of security what security meant to various groups of society.
- Anonymous Challenge Director B, in response to the question "What were the specific reasons/needs regarding why you felt you wanted to work with ESRC?"

Working with the ESRC brought ***an existing research community to the problems*** *we faced.*
- Anonymous Challenge Director B, in response to the question "What were the key benefits of working with ESRC?"

This latter led to a detailed pro-bono piece of work laying out ***the full range of social considerations which really opened up our minds****.*
- Anonymous Challenge Director C, commenting on ESRC-hosted events and an early roundtable, in response to the question "What were the specific reasons/needs regarding why you felt you wanted to work with ESRC?"

[…] the initial report on potential scope within ESRC and the active engagement in team events gave us ***a much wider scope of potential topics and research approaches****. We absolutely would not have generated the potential work packages we are now considering ourselves. The key to me was* ***early, full and two-way engagement****.*
- Anonymous Challenge Director C, in response to the question "How did your involvement with ESRC change your approach to the Challenge more widely?"

"*It's early days, but I think the engagement will help us create the* ***social argument*** *for [the Challenge], which is important for policy areas within government, especially beyond BEIS".*
- Anonymous Challenge Director C, in response to the question "What were the key benefits of working with ESRC?"

For mission implementation, social science plays a crucial role in ensuring that challenges are effectively addressed and lead to meaningful impacts. Social science helps connect the objectives to project performance; it also allows UKRI to improve how it gathers and uses data to assess performance. Social science supports the monitoring of projects, contributes to learning and adapting to keep the missions on track and responsive to change, informs broader evaluation efforts, and helps build up the connections across stakeholders and ensure the stakeholders are heard and engaged in decision-making, which benefits mission implementation.

Table 5 Social-science keywords in relation to the mission formation, design and implementation of the ISCF

Step/translation process of Fraunhofer ISI's MOIP toolbox	Aspect noted in the reports	Social-Science Keyword	Addressed (Y)/To be improved (N)	Detail
Mission Formation				
Analysis of the socio-technical system & Clarification of transformative understanding	Expression of interest	*business and academia, societal and industrial 'challenges'*	Y	A2
	Identification/selection of Challenges	*needs of industry and academia*	Y	A5, C2.2
		global markets, scientific and business capability	Y	B1
Mission Design				
	Fund's aims	*economic and social outcomes*	Y	A1
	Objectives	*multi- and inter-disciplinary research*	Y	A3
		regional balance	N	A7
		fund level impact, social and economic impact	Y/N	A11
	Selection/distribution	*bias towards large firms, difficulties in engaging newer, smaller businesses and those not previously engaged in UKRI and Innovate UK networks*	Y/N	A6, C2.14
		bias towards certain geographical areas	Y/N	A7, C2.15
		portfolio management	-	B2
	Selections and approval	*lengthy processes, delayed impact, deterred applicants*	N	A8
	Selection	*evolvement, targeted stakeholder engagement, administrative burden, trade-off between comprehensiveness and timeliness*	Y/N	C2.1, C.2.3
Developing impact pathways & Crafting an instrument mix	Fund administration /staff	*mix of science and industry experience, recruitment challenges*	Y/N	A9, C2.6
		diversity	N	A9
		administrative burden, timelines	N	C2.1
		autonomy	Y/N	C2.6, C2.7
		cultural frictions	N	C2.6
	Fund and Challenge level governance	*central support*	N	C2.7
		flexibility, agility	Y/N	C2.8
	Budgets	*delays in new challenge approval*	N	A10
	Strategy	*strategic governance and oversight*	-	B2
	Funding instruments	*market needs, collaboration, staged approach*	N	C2.4
	Overall	*policy alignment, changing policy landscape*	Y	A4, B3, C1
		EDI	N	B2, C2.13
		narrative of failure acceptance, high risk and high reward	Y/N	C2.5
		pollination, synergies, coherence and coordination within and across Challenges	N	C2.12
		dissemination	N	C2.17
		process evolvement	Y	C1
Mission Implementation				
Monitoring mission progress along impact pathways	Performance against objectives	*fund-level impact, social and economic impact*	Y/N	A11
	Assessment criteria	*scope, cost, time exploitation, risk management and project management*	Y	A12
	Monitor processes and systems	*completeness and timeliness of management information*	N	A13
	Fund-level monitoring	*duplication*	N	C2.10
	Challenge-level monitoring	*bespoke requirements, centralization, coordination, relationship-building*	N	C2.11

Source: authors' synthesis. Detailed descriptions of the keywords can be found in the Appendix using the letter-number combinations in the rightmost column. A, B and C respectively, refer to: National Audit Office. 2021. UK Research and Innovation's management of the Industrial Strategy Challenge Fund. https://www.nao.org.uk/wp-content/uploads/2021/02/UK-Research-and-Innovations-management-of-the-Industrial-Strategy-Challenge-Fund.pdf; RAND Europe and Frontier Economics. 2021. Evaluation of the Industrial Strategy Challenge Fund: evaluation framework report. https://www.ukri.org/wp-content/uploads/2022/10/IUK-011122-ISCFEvaluationFrameworkReport.pdf; and RAND Europe and Frontier Economics. 2023. Evaluation of the Industrial Strategy Challenge Fund: process evaluation report. https://www.ukri.org/wp-content/uploads/2023/09/UKRI-041023-ISCF-ProcessEvaluationReport.pdf. See the appendix for a further explanation of Table 5

b. Word Cloud Analysis: The role of social sciences in the ISCF mission stages.

The UKRI Industrial Strategy Challenge Fund (ISCF) is strategically oriented to address significant societal and economic challenges through innovation, research and cross-sector collaboration. This section, using word clouds, provides a deeper understanding of the fund's alignment with key industrial policies such as clean growth, future mobility, smart manufacturing or health innovation. It highlights the fund's connection to initiatives such as net-zero, energy revolution efforts, circular economy or digital transformation. The section emphasises the role of social science in shaping UKRI's strategic priorities, contributing to research, funding decisions and innovation-driven policymaking.

ISCF Strategic Orientation Dimension

Figure 3. ISCF Strategic Orientation Dimension Description

Figure 3 visually encapsulates the strategic orientation of the **UKRI Industrial Strategy Challenge Fund**, showcasing its commitment to tackling **major societal and economic challenges** through **innovation, research, and cross-sector collaboration**. The fund is strategically aligned with **key industrial priorities**, emphasising themes such as **clean**

growth, decarbonisation, future mobility, AI and data, smart manufacturing, and healthcare innovation.

Its orientation is deeply tied to **net-zero initiatives, energy revolution efforts, circular economy principles, and digital transformation**, reflecting a forward-thinking approach aimed at ensuring **global leadership in emerging technologies**. The presence of terms such as **stakeholders, advisory boards, public-private partnerships, and funding calls** further illustrates its structure of **engagement with businesses, academia, and government bodies**.

In essence, the fund's strategic orientation is designed to **drive productivity growth, foster market opportunities, and support skills development**, ensuring the UK remains **competitive on the global stage**.

The figure, associated with the keywords in the mission formulation dimension of the ISCF Fund, underscores the crucial role of **social science** in shaping UK Research and Innovation (UKRI)'s strategic priorities related to the ISCF Fund. Several key terms—including **stakeholders, economic impact, public-private collaboration, policy, regulation, coordination,** and **grand challenges**—highlight how social science contributes to research, funding decisions, and innovation-driven policymaking.

Social science plays a foundational role in understanding **economic growth, societal well-being, and behavioural insights** that inform mission-oriented policy initiatives such as **net-zero strategies, healthcare innovation, clean growth, and future mobility**. Concepts such as **deep dives, review panels, advisory boards, funding calls, and business cases** demonstrate that social science provides **critical analysis, evidence-based frameworks, and governance structures** to drive impactful decision-making.

Additionally, the focus on **market opportunities, expressions of interest, entrepreneurship, and digital transformation** reflects how **social science helps assess trends, risks, and the broader implications** of technological advancements. The emphasis on **wave funding, workshops, and consortia** indicates that **collaboration and interdisciplinary dialogue**—core social science methodologies—are essential for UKRI's success.

Overall, the image highlights **the indispensable role of social science in shaping policies, informing investment strategies, strengthening institutions, and ensuring inclusive and sustainable innovation** across sectors.

ISCF Policy Coordination Dimension

Figure 4. ISCF Policy Coordination Dimension

Figure 4 highlights key concepts and mechanisms involved in **policy coordination** for the **UKRI Industrial Strategy Challenge Fund**. It emphasises governance structures, funding frameworks, and strategic oversight, all of which are crucial for ensuring the effective deployment of resources. The key themes in policy design in the ISCF description are:

- **Governance and Decision-Making:** Words like *Programme Board, Steering Board,* and *Advisory Group* suggest a structured approach to leadership and accountability.
- **Funding Mechanisms:** Terms such as *Decentralised Budget, Centralised Budget,* and *Earmarked Funds* indicate the diverse financial strategies used to allocate resources efficiently.
- **Risk Management:** The inclusion of *Risk-sharing, Risk Tolerance,* and *High-risk Projects* highlights the necessity of balancing innovation with sustainable financial planning.

- **Sectoral and Technological Focus:** The fund supports **cutting-edge advancements** in *Artificial Intelligence, Advanced Materials, Quantum Technologies,* and *Digital Health*, reflecting its commitment to fostering breakthroughs across industries.
- **Cross-sector Collaboration:** Words like *Horizontal Coordination, Co-investment,* and *Strategic Oversight* indicate a multi-stakeholder approach that ensures alignment between government priorities, industry needs, and academic expertise.

In essence, this visualisation presents a **holistic framework** for policy coordination, showcasing how the **UKRI Industrial Strategy Challenge Fund** balances **"Governance," "Challenge Fund," "Horizontal Coordination," "Risk-sharing," "Programme Board," "Decentralised Budget,"** and **"Strategic Oversight"** as central themes.

This visualisation emphasises the role of **social science** and highlights its vital contributions to **policy-making, financial structuring, collaborative governance, and institutional design**. Social science provides the analytical frameworks needed to assess the effectiveness of **budgeting models, risk tolerance, co-investment strategies, and funding decisions**. It also plays a pivotal role in **stakeholder engagement**, ensuring that governance structures promote **inclusivity, transparency, and equity**.

Furthermore, terms like **"Performance Reviews," "Advisory Group," "Portfolio Management,"** and **"Funding Decisions"** demonstrate how social science enables **evidence-based decision-making**. It helps institutions evaluate the **social and economic implications** of projects, ensuring that investments in **technological and non-technological solutions** align with broader societal needs. The presence of concepts such as **"Cross-sector," "Hybrid Model,"** and **"Strategic Oversight"** reflects the multidisciplinary nature of social science in shaping adaptable and responsive governance mechanisms.

Overall, this image underscores the indispensable role of **social science in guiding governance structures, optimising funding strategies, fostering innovation, and ensuring accountable decision-making** in complex, interconnected systems.

ISCF Policy Implementation Dimension

Figure 5. ISCF Policy Implementation Dimension Description

Finally, Figure 5 visually represents the **policy implementation** dimension of the Industrial Strategy Challenge Fund (ISCF), emphasising how policies are structured, monitored, and evaluated.

Among the key policy implementation areas, the figure emphasises the role of social sciences shaping them:

- **Evaluation & Impact Assessment:** Terms like "Process Evaluation," "Close-out Assessment," and "Impact Assessment" highlight the mechanisms used to measure the fund's effectiveness. Social sciences contribute to *process evaluation, impact assessment,* and *close-out assessment*, ensuring that policies are **data-driven, equitable, and effective**. **Stakeholder Engagement & Governance: Economic & Social Impact Analysis: Innovation & Knowledge Transfer:** *Demonstrator Programs, Knowledge-Sharing,* and *Multi-disciplinary* underscore the **social sciences' role in bridging academia, industry, and policy**, ensuring that innovations are **accessible and beneficial to society**.

- **Monitoring & Data Infrastructure:** Words such as "Baseline," "Fund-level," "Challenge-level," "Project-level," and "Researchfish" indicate a multi-tiered monitoring system that ensures transparency and accountability.
- **Funding & Risk Management:** The inclusion of "Matching Funds," "Grants," "Risk Management," and "Revenue Generated" suggests strategic financial oversight to optimise investment outcomes. Words such as *Revenue Generated, Risk Management,* and *Matching Funds* highlight the role of **economic and behavioural sciences** in assessing **funding efficiency and long-term sustainability**.
- **Stakeholder Involvement:** Mentions of "Challenge Directors," "Steering Board," and "Peer Groups" highlight a collaborative governance framework that ensures effective coordination across sectors. Terms like *Challenge Directors, Steering Board,* and *Peer Groups* reflect the **importance of social science methodologies** in fostering **collaborative decision-making** and **multi-sector coordination**.
- **Cross-sector and Multi-disciplinary Innovation:** Terms like "demonstrator programs," "knowledge-sharing," "business-academia," and "multi-disciplinary" reflect a commitment to fostering partnerships and alignment between different sectors.

The National Audit Office (2021) ISCF evaluation report highlights the role of social science in the Industrial Strategy Challenge Fund (ISCF) in relation to **interdisciplinary research**. One of the Fund's objectives, as set by the Department for Business, Energy & Industrial Strategy, is to increase multi- and inter-disciplinary research, including integrating social sciences into innovation projects. This is particularly relevant for addressing societal challenges such as ageing and clean growth, where understanding human behaviour, societal trends, and policy implications can be critical.

For example, social science contributes to projects aimed at enhancing technology adoption by understanding the barriers businesses and consumers face. It is also important to design policies that support economic growth while addressing disparities in social outcomes, aligning with the government's "levelling up" agenda.

However, the report notes that monitoring and evaluating the broader social and economic impacts of the Fund's projects is an evolving process that includes contributions from disciplines such as social science.

c. Case study analysis: Healthy Ageing Challenge.

This project, **Industrial Strategy and Missions**, aims to capture key learnings from the UK Research and Innovation (UKRI) Industrial Strategy Challenge Fund (ISCF). Drawing on a broad literature and evaluative evidence, the project examines how ISCF addressed major societal challenges faced by UK businesses through 23 challenge areas aligned with the four themes of the 2017 Industrial Strategy: Clean Growth, Ageing Society, Future of Mobility, and Artificial Intelligence and the Data Economy.

Within this project, particular focus is placed on the **Ageing Society** theme. The Ageing Society Challenge seeks to ensure that people can enjoy at least five additional healthy, independent years of life by 2035 while reducing inequalities in health outcomes. Several major programmes contribute to this goal: the **Healthy Ageing Challenge**, the **Data to Early Diagnosis and Precision Medicine Challenge**, and the **Accelerating Detection of Disease Challenge**. While all three programmes align broadly with the goals of the Ageing Society, the **Healthy Ageing Challenge** is the primary focus of this study, given its direct alignment with promoting active and independent ageing across the UK population.

Data Collection

Data collection began by consulting the UKRI Healthy Ageing Challenge webpage (https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/healthy-ageing/), which directs users to the Healthy Ageing Challenge Community of Practice projects directory. This directory lists 152 projects, of which 127 were funded directly through the ISCF. All 127 ISCF-funded projects were reviewed in detail as the core dataset for this analysis.

To provide a broader overview of relevant activities under the ISCF, the full set of ISCF projects (2,473 in total) was downloaded from the Gateway to Research database. Keyword filters such as "ageing," "elder," "older," "old," and "care" were applied to identify potentially relevant projects. Manual review of project titles and abstracts from this filtered subset led to the identification of an additional 34 projects related to ageing society themes. Although these additional projects are not the primary focus, they provide useful contextual insights into the broader landscape of ISCF-funded activities related to ageing. The main analysis will specifically focus on the 127 Healthy Ageing Challenge projects.

Project Categorisation

Each of the 127 Healthy Ageing Challenge projects was further categorised into one or more of the following seven thematic areas:

1. **Creating Healthy Active Places**
2. **Design for Age-Friendly Homes**
3. **Living Well with Cognitive Impairment**
4. **Maintaining Health at Work**
5. **Managing Complaints of Ageing**
6. **Social Support Connections**
7. **Sustaining Physical Activity**

It's important to note that a single project could align with multiple themes, reflecting the multifaceted nature of healthy ageing initiatives. For instance, a project focusing on home modifications to support physical activity and social engagement would be categorised under both "Design for Age-Friendly Homes" and "Sustaining Physical Activity."

A chart was created to visualise the distribution of projects across these themes, illustrating the number of projects associated with each thematic area. As shown, Managing Complaints of Ageing had the highest number of associated projects (63), followed by Social Support Connections (53) and Sustaining Physical Activity (36). Maintaining Health at Work had the fewest, with 16 projects. On average, each project is associated with two different themes, highlighting the cross-cutting nature of challenges and solutions in the healthy ageing space.

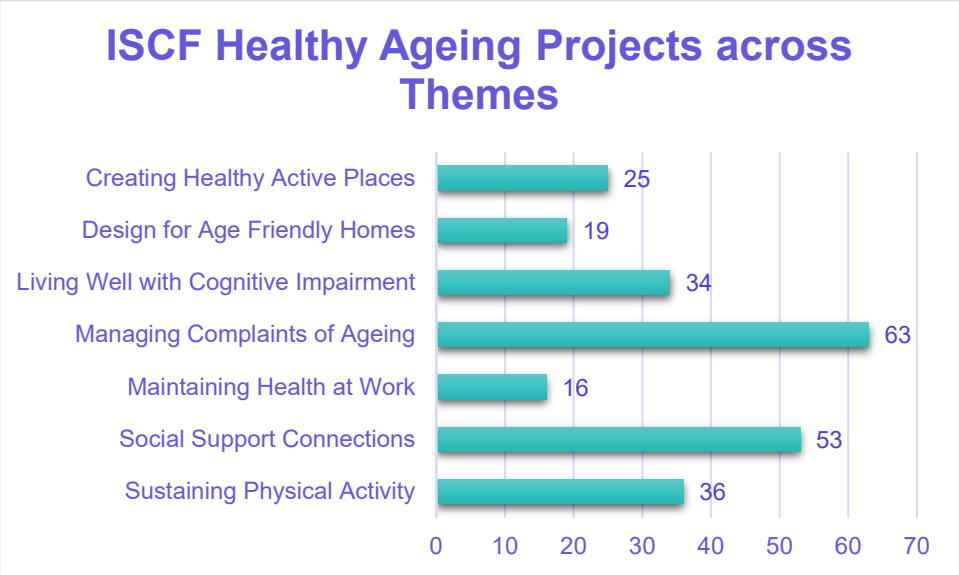


Figure 6. ISCF Healthy Ageing Projects Themes

Grant Category Overview: Number of Projects and Funding Allocation

The 127 projects funded under the **Healthy Ageing Challenge** were supported through five distinct grant categories, reflecting a range of funding mechanisms tailored to different types of research and innovation. These categories differ significantly not only in the number of projects funded but also in the **total investment allocated**.

- **Research Grants** made up the largest share of projects (**56 projects**, or **44.09%**), yet accounted for only **£13.56 million**, or **23.06%** of total funding. This suggests these projects were generally smaller in scale and more focused on early-stage or academic research.
- In contrast, **Collaborative R&D** supported fewer projects (**33 projects**, or **25.98%**) but received the **largest share of funding—£36.81 million**, or **62.58%** of the total. This indicates that collaborative projects, typically involving partnerships between academia, industry, and other stakeholders, were both fewer in number but more capital-intensive.
- The **Small Business Research Initiative (SBRI)** also funded **33 projects (25.98%)**, but with a significantly lower total investment of **£5.53 million (9.40%)**, highlighting its role in supporting innovation from small businesses through relatively modest awards.
- **CR&D Bilateral** and **Investment Accelerator** grants supported just **3** and **2 projects**, respectively, representing **5.2%** of the total project count and around **£2.9 million**

(4.96%) of total funding. These categories appear to play more targeted, niche roles, such as fostering international collaboration or attracting private investment alongside public funding.

This combined view underscores the strategic distribution of funding: while research grants dominate in quantity, funding is concentrated in collaborative, cross-sector initiatives, reflecting the Healthy Ageing Challenge's mission-oriented and impact-driven goals.

Table 6. ISCF Healthy Aging Grant Category, Project Detail

Grant Category	Projects	Percent	Cum.
Research Grant	56	44.09	44.09
Collaborative R&D	33	25.98	70.08
Small Business Research Initiative	33	25.98	96.06
CR&D Bilateral	3	2.36	98.43
Investment Accelerator	2	1.57	100
Total	127	100	

Table 7. ISCF Healthy Aging Grant Category, Funds Detail

Grant Category	Funds	Percent	Cum.
Research Grant	13,560,405	23.06	23.06
Collaborative R&D	36,808,188	62.58	85.64
Small Business Research Initiative	5,531,174	9.40	95.05
CR&D Bilateral	1,244,936	2.12	97.16
Investment Accelerator	1,669,259	2.84	100
Total	58,813,962	100.00	

4. Conclusions

The UKRI Industrial Strategy Challenge Fund (ISCF) has demonstrated a robust strategic orientation towards addressing significant societal and economic challenges through innovation, research, and cross-sector collaboration. By aligning with key industrial priorities such as clean growth, decarbonisation, future mobility, AI and data, smart manufacturing, and healthcare innovation, the ISCF has positioned itself as a pivotal driver of sustainable and inclusive growth. The integration of social science into the fund's strategic framework has been instrumental in shaping policies, informing investment strategies, and ensuring that innovation efforts are data-driven, equitable, and effective. Overall, the ISCF's approach underscores the importance of interdisciplinary collaboration and evidence-based policymaking in achieving long-term economic and societal benefits.

The role of social sciences in the UKRI Industrial Strategy Challenge Fund (ISCF) is pivotal in shaping the fund's strategic orientation and ensuring its effectiveness. Social sciences contribute significantly to the understanding of economic growth, societal well-being, and behavioral insights, which are essential for mission-oriented policy initiatives such as net-zero strategies, healthcare innovation, clean growth, and future mobility. By providing critical analysis, evidence-based frameworks, and governance structures, social sciences ensure that policies are data-driven, equitable, and effective.

Moreover, social sciences play a foundational role in stakeholder engagement, ensuring that governance structures promote inclusivity, transparency, and equity. They help assess trends, risks, and the broader implications of technological advancements, which is crucial for informed decision-making and strategic planning. The emphasis on market opportunities, entrepreneurship, and digital transformation reflects how social sciences help bridge the gap between academia, industry, and policy, ensuring that innovations are accessible and beneficial to society.

Overall, the integration of social sciences into the ISCF's strategic framework underscores their indispensable role in shaping policies, informing investment strategies, and fostering interdisciplinary collaboration. This holistic approach ensures that the ISCF can effectively address complex societal and economic challenges, driving sustainable and inclusive growth across sectors.

Now you have read our report we would love to know if our research has provided you with new insights, improved your processes, or inspired innovative solutions.

Please let us know how our research is making a difference by completing our short feedback form via this QR code.

Thank you

The Innovation & Research Caucus

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Appendix: Social Science Keyword Analysis Methodology – table appendix

Details of the social-science keywords concerning the mission formation, design and implementation of the ISCF (which are slightly paraphrased versions of the original texts in the reports; the page numbers in brackets can be used to locate the original texts in the corresponding reports):

A1 (p.5). Fund's social and economic aims: support the aims set out in the government's Industrial Strategy to raise long-term productivity and living standards. e.g. net zero carbon emissions, levelling-up – create opportunities for everyone in all regions and address disparities in **economic and social outcomes**

A2 (p.5). UKRI's approach to distribute the fund: expression of interest: invited potential bidders from business and academia to identify important societal and industrial 'challenges' faced by the UK

A3 (p.6). BEIS set UKRI 5 objectives for the fund, one of which is to increase **multi- and inter-disciplinary research**.

A4 (p.6). BEIS advises ministers on **policy alignment** between Fund challenges and Departmental objectives, such as the Industrial Strategy.

A5 (p.8). Over time, UKRI has refined its approach to identifying challenges, focusing more on the **needs of industry and academia**.

A6 (p.9). UKRI has found no evidence of in-built **bias towards larger companies** during the selection process. However, an increased proportion of projects were awarded to larger firms in the third funding wave. Factors impacting the number of applications from smaller companies are likely to include their awareness of the Fund, the time and effort required to apply and the increased requirement for the third funding Wave (to bring co-investment).

A7 (p.9). The audit report released in early 2021 suggested that the geographical distribution of funding was not explained by the distribution of businesses undertaking R&D activities in the economy; till then, UKRI had not had an explicit objective to consider the **regional balance** in its awards.

A8 (p.9-10). A balance is needed between ensuring that proposals for challenges and bids from prospective grant recipients are of sufficient quality and are approved quickly. The **lengthy processes** at both key stages of the Fund – selecting and approving challenges and then selecting and approving projects- might **delay the impact** of projects and might **deter applicants**. The factors contributing to the time taken to award funding include capacity constraints within UKRI and the need to improve the quality of business cases submitted by UKRI in the early stages of the Fund to support ideas for new challenges. However, the lengthy approval processes at both official and ministerial levels in BEIS and HM Treasury, carried out in sequence, have added to the time taken.

A9 (p.10). UKRI has faced difficulty recruiting staff to help administrate the Fund. The appointment of Challenge Directors for the duration of the challenge is critical to setting the direction for and then successfully implementing each challenge. The delays in appointments were partly due to the difficulty of finding and hiring staff at an appropriate level who have a **mix of science and industry experience**. The recruitment is not delivering **diversity** at the Challenge Director level, which is important given that diversity of thinking is likely to be important to the success of a Fund seeking to encourage innovative ideas. Out of 20 Challenge Directors at the end of August 2020, three were female.

A10 (p.10). **Delays in getting new challenges approved** and up and running have had a knock-on impact on UKRI's ability to start spending on newly approved challenges. The pressure that the delays are likely to push spending into the following years, as commitments build up, may increase the risk of UKRI having to reprofile it's future spending to fit within its annual budgets.

A11 (p.11). There was no clear link between the objectives set for the Fund and the performance of the Fund's projects. No expectations or baselines were set at the start, and reporting at the Fund level does not focus on **impact**. When this report was compiled, UKRI was looking to enhance its evaluation of the Fund level performance against its objectives and to consider its broader **social and economic impact**.

A12 (p.11). Projects are assessed quarterly against six criteria (scope, cost, time, exploitation, risk management and project management). Performance assessment varied considerably in cost, highlighting an area of concern. The assessments fluctuated due to the impact of COVID-19 on individual challenges.

A13 (p.12). The **incomplete and untimely management information** placed constraints on UKRI's ability to monitor project performance efficiently and in a consistent manner.

B1 (p.i). The selection of Challenges considered industries and technologies with potentially large global markets, and areas where the UK has both the scientific and business capability to become a world leader.

B2 (p.i-ii)). UKRI commissioned RAND Europe and Frontier Economics to conduct a Fund-level evaluation of the ISCF. The evaluation covers process and impact. The former examines the implementation of the ISCF in terms of 1) strategy – how the Fund is structured and designed, and the strategic governance and oversight processes in place; 2) delivery – how the Fund is delivered in terms of funding and managing the portfolio of research and innovation; 3)wider engagement – the outward-looking aspects, especially how the ISCF engages with wider stakeholders and the wider landscape to ensure its ongoing relevance and effective operation; 4)cross cutting – the cross-cutting issues important for the ISCF processes, including diversity and equal opportunities, barriers and facilitators, and lessons learnt. The latter assesses the extent of ISCF's contribution to 1) creating knowledge and innovation pathways; 2) increasing capacity and investment in research and innovation in the UK; 3) foster connected innovation ecosystem (multidisciplinary, interdisciplinary, multi-sectoral and multi-stakeholder collaboration and networks around the Challenges); 4) social impact; 5) economic impact; 6) value for money.

B3 (p.4). Since its establishment in 2016, the ISCF has adapted to a changing policy landscape.

C1 (p.iii-iv). The policies and processes underpinning ISCF **evolve** throughout its duration. The processes evolve in an external context, for example, to effectively support the demand in the markets of the sectors where the Challenges operate. They also evolve internally, such as improved autonomy at Challenge level, the potential of Challenge directors as catalysts for both internal and external change, and the forging of academic, government and industry engagement to support holistic innovation.

C2 The process evaluation of the ISCF undertaken by RAND Europe and Frontier Economics has the following findings, drawing on which recommendations were made for the design and implementation of future Challenge-led research and innovation programmes.

In relation to strategy:

C2.1 (p.iv). The **burdensome** and **time-consuming** processes highlight the need for a **trade-off between comprehensiveness and timeliness**, which warrants a change in stakeholder interactions to make them more **targeted**.

C2.2 (p.iv). The broad remit of ISCF Challenges across multiple sectors and industries makes them highly relevant. It continues to have relevance to broader **government agendas** beyond the Industrial Strategy for which the ISCF was established.

C2.3 (p.iv). The stakeholder engagement to support Challenge design across ISCF was broadly considered effective in addressing sectoral needs. However, improvement is needed to ensure time for robust **engagement and outreach** to all relevant stakeholder groups, and to seek to address **long-term** issues.

C2.4 (p.iv-v). The variety of instruments deployed (partly informed by stakeholder input) was well-aligned to market needs and supported cross-sector research and innovation collaboration. It is suggested that a trade-off is potentially needed between the simultaneous implementation of funding instruments and a **staged** approach over time to help provide the opportunity for interaction and building up products and activity across a translational pipeline.

C2.5 (p.v). ISCF promoted a **narrative of failure acceptance** when investing in high-risk areas of technology or high-risk sectors. However, there was no consensus or consistency in what was meant by high-risk. It is suggested to define high-risk and create a more explicit **narrative and mechanism** to work in a high-risk and high-reward approach.

C2.6 (p.v). Challenge Directors were widely considered to have a positive addition to the ISCF, to the effective performance of which limitations on **autonomy**, **cultural frictions** and **recruitment challenges** caused obstacles.

In relation to delivery:

C2.7 (p.v). The governance structures have evolved over time to give more autonomy to the Challenge level hence adapt to Challenge needs. At Fund level, greater **central support** was needed to navigate change in processes. At Challenge level, more engagement of relevant **stakeholders in boards and advisory groups** was needed.

C2.8 (p.v). The governance structures at the Fund and Challenge level had been flexible in response to the COVID-19 pandemic. However, some challenges were still limited in their **agility**.

C2.9 (p.vi). Challenge call and application processes had been appropriate, leading to high-quality and relevant applications. However, there are limitations in the **reach and accessibility** of call and application processes to wider stakeholders.

C2.10 (p.vi). The Fund-level performance monitoring evolved considerably over time, but also created issues for Challenges, especially the requirement to establish Challenge benefit realisation plans, which created additional confusion and was perceived as a potential **duplication** of evaluation activities.

C2.11 (p.vi). The Challenge-level monitoring was generally fit for purpose but is suggested to strengthen **bespoke** programme monitoring requirements, have greater **centralisation and coordination** of monitoring processes within Challenges, and emphasise on active **relationship-building** with projects.

C2.12 (p.vi). There was lack of concerted mechanisms to support **pollination and synergies** across projects. Efforts are needed to improve **coherence and coordination** both within and across Challenges to glean further learning.

C2.13 (p.vi). There were no formal processes or mechanisms to actively promote or consider **gender and ethnicity** at the outset of the ISCF.

C2.14 (p.vi). Wave 3 might have provided some advantages to larger organisations and contributed to the dropping rates of **SME** engagement and funding.

C2.15 (p.vi). Although **regional diversity** was not a focus of the Fund, regionality was not found to be linked to the success of an application; and the variation across regions was driven by Challenge specific areas of focus and existing spread of expertise.

In relation to stakeholder engagement:

C2.16 (p.vii). External stakeholders were engaged in Challenge selection, Challenge design, Challenge governance structures and participation in Challenge-funded competitions and strands

C2.17(p.vii). There were limited efforts to disseminate and raise awareness of Challenge and fund outcomes. Engagement with relevant stakeholders could be enhanced in leveraging board and advisory panel member networks and connections, supporting the development of sectoral networks, and establishing Challenge closure plans linked to **dissemination**.

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