EVALUATION FRAMEWORK FOR THE STRENGTH IN PLACES FUND

A report for UK Research and Innovation (UKRI)

September 2021

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EXECUTIVE SUMMARY

The Strength in Places Fund (SIPF) is a UK Research and Innovation (UKRI) competitive funding scheme that takes a '**place-based**' approach to research and innovation (R&I) funding. SIPF has awarded 12 projects funding ranging from £18 million to £42 million for R&I programmes lasting around five years. The programme forms part of the wider National Productivity Investment Fund (NPIF) that will be contributing to the Government's target to reach 2.4% of GDP investment in research and development (R&D) by 2027.

The place-based nature of the fund is a key distinction between SIPF and other R&I funding programmes. Location, and a commitment to build on existing regional strengths, are primary considerations in the allocation of funding, alongside the usual requirements for research excellence and high-quality innovation. The projects must be focused on a specific (self-defined) economic geography with a plan to achieve demonstrable impact on local economic growth.

Funding was awarded in two Waves. In the first Wave, 23 projects were awarded up to £50,000 of seedcorn funding to develop their proposals, with seven selected for full funding in 2020. Total funding for Wave 1 was £187 million. In the second wave, 17 projects were awarded seedcorn funding, and a further five selected for full funding in 2021. Total funding for Wave 2 was £127 million.

In January 2021, a consortium led by Frontier Economics and comprising RAND Europe and know.consulting was appointed as the Fund-level evaluators for SIPF.

This report sets out the evaluation framework for SIPF, including both a **process evaluation**, seeking to understand what has worked well and less well in the design and delivery of the Fund and making recommendations for changes to delivery process; and an **impact evaluation** to understand what SIPF has achieved and provide early evidence on Value for Money (VfM).

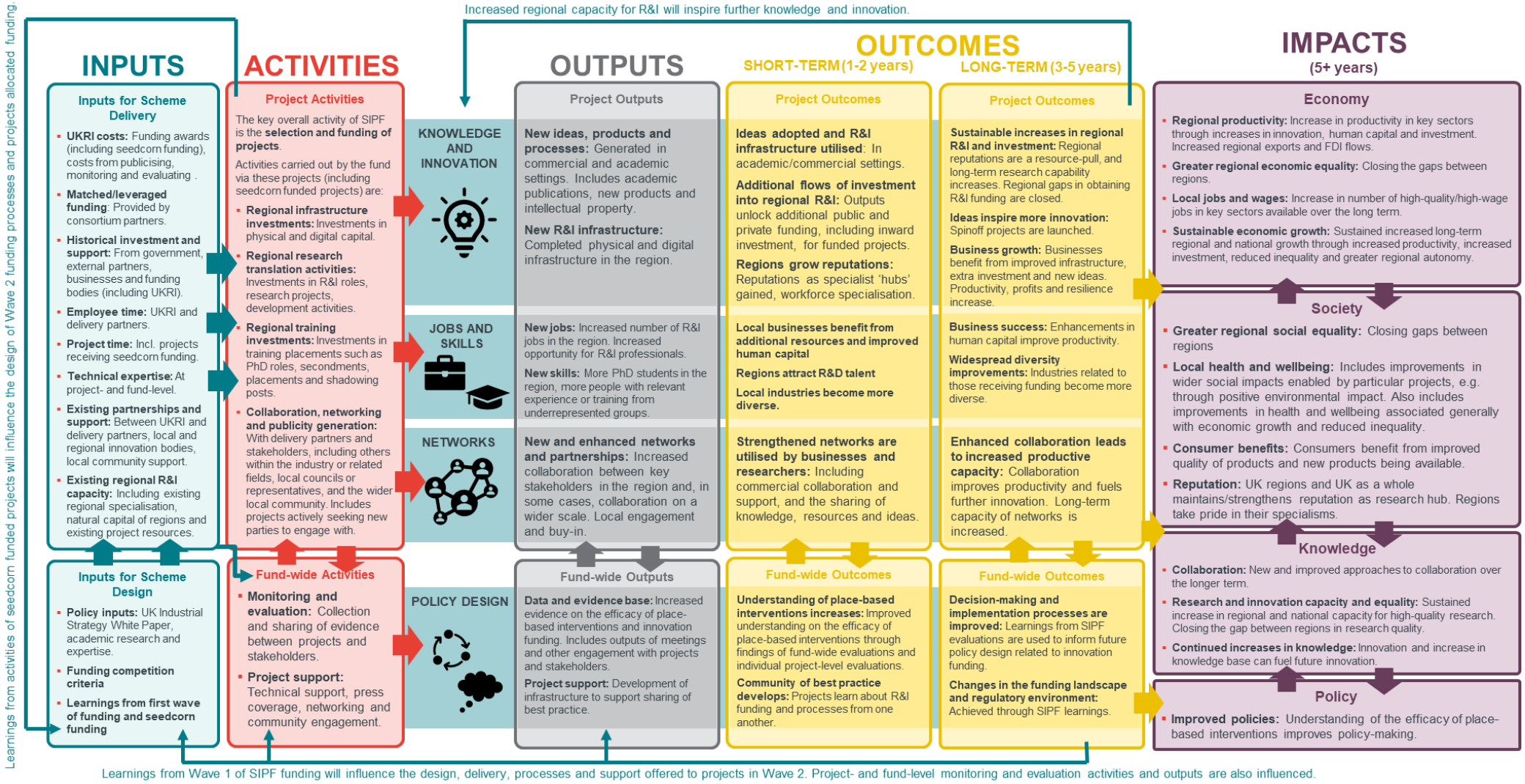
The framework was developed based on:

- Meetings with the SIPF Delivery Team and key governance bodies for SIPF (the Evaluation Working Group, NPIF Evaluation Oversight Board, SIPF Programme Board and the SIPF External Evaluation Advisory Group).
- Semi-structured interviews and two workshops involving all seven Wave 1 funded projects.
- A document review of strategic and other documents relating to SIPF and the funded projects.
- A Rapid Evidence Assessment comprising review and synthesis of more than 50 studies relating to placed-based R&D drawing out insights for the evaluation.

Impact evaluation

Theory of change

Underpinning the impact evaluation framework is the **SIPF logic model** and associated theory of change. The model is summarised below.


Learnings from activities of seedcorn funded projects will influence the design of Wave 2 funding processes and projects allocated funding.
Increased regional capacity for R&I will inspire further knowledge and innovation.
INPUTS
ACTIVITIES
OUTPUTS
OUTCOMES
SHORT-TERM (1-2 years)
LONG-TERM (3-5 years)
IMPACTS
(5+ years)
Inputs for Scheme Delivery
UKRI costs: Funding awards (including seedcorn funding), costs from publicising, monitoring and evaluating .
Matched/leveraged funding: Provided by consortium partners.
Historical investment and support: From government, external partners, businesses and funding bodies (including UKRI).
Employee time: UKRI and delivery partners.
Project time: Incl. projects receiving seedcorn funding.
Technical expertise: At project- and fund-level.
Existing partnerships and support: Between UKRI and delivery partners, local and regional innovation bodies, local community support.
Existing regional R&I capacity: Including existing regional specialisation, natural capital of regions and existing project resources.
Project Activities
The key overall activity of SIPF is the selection and funding of projects.
Activities carried out by the fund via these projects (including seedcorn funded projects) are:
Regional infrastructure investments: Investments in physical and digital capital.
Regional research translation activities: Investments in R&I roles, research projects, development activities.
Regional training investments: Investments in training placements such as PhD roles, secondments, placements and shadowing posts.
Collaboration, networking and publicity generation: With delivery partners and stakeholders, including others within the industry or related fields, local councils or representatives, and the wider local community. Includes projects actively seeking new parties to engage with.
KNOWLEDGE AND INNOVATION
JOBS AND SKILLS
NETWORKS
POLICY DESIGN
Project Outputs
New ideas, products and processes: Generated in commercial and academic settings. Includes academic publications, new products and intellectual property.
New R&I infrastructure: Completed physical and digital infrastructure in the region.
New jobs: Increased number of R&I jobs in the region. Increased opportunity for R&I professionals.
New skills: More PhD students in the region, more people with relevant experience or training from underrepresented groups.
New and enhanced networks and partnerships: Increased collaboration between key stakeholders in the region and, in some cases, collaboration on a wider scale. Local engagement and buy-in.
Project Outcomes
Ideas adopted and R&I infrastructure utilised: In academic/commercial settings.
Additional flows of investment into regional R&I: Outputs unlock additional public and private funding, including inward investment, for funded projects.
Regions grow reputations: Reputations as specialist 'hubs' gained, workforce specialisation.
Local businesses benefit from additional resources and improved human capital
Regions attract R&D talent
Local industries become more diverse.
Strengthened networks are utilised by businesses and researchers: Including commercial collaboration and support, and the sharing of knowledge, resources and ideas.
Project Outcomes
Sustainable increases in regional R&I and investment: Regional reputations are a resource-pull, and long-term research capability increases. Regional gaps in obtaining R&I funding are closed.
Ideas inspire more innovation: Spinoff projects are launched.
Business growth: Businesses benefit from improved infrastructure, extra investment and new ideas. Productivity, profits and resilience increase.
Business success: Enhancements in human capital improve productivity.
Widespread diversity improvements: Industries related to those receiving funding become more diverse.
Enhanced collaboration leads to increased productive capacity: Collaboration improves productivity and fuels further innovation. Long-term capacity of networks is increased.
Economy
Regional productivity: Increase in productivity in key sectors through increases in innovation, human capital and investment. Increased regional exports and FDI flows.
Greater regional economic equality: Closing the gaps between regions.
Local jobs and wages: Increase in number of high-quality/high-wage jobs in key sectors available over the long term.
Sustainable economic growth: Sustained increased long-term regional and national growth through increased productivity, increased investment, reduced inequality and greater regional autonomy.
Society
Greater regional social equality: Closing gaps between regions
Local health and wellbeing: Includes improvements in wider social impacts enabled by particular projects, e.g. through positive environmental impact. Also includes improvements in health and wellbeing associated generally with economic growth and reduced inequality.
Consumer benefits: Consumers benefit from improved quality of products and new products being available.
Reputation: UK regions and UK as a whole maintains/strengthens reputation as research hub. Regions take pride in their specialisms.
Knowledge
Collaboration: New and improved approaches to collaboration over the longer term.
Research and innovation capacity and equality: Sustained increase in regional and national capacity for high-quality research. Closing the gap between regions in research quality.
Continued increases in knowledge: Innovation and increase in knowledge base can fuel future innovation.
Policy
Improved policies: Understanding of the efficacy of place-based interventions improves policy-making.
Inputs for Scheme Design
Policy inputs: UK Industrial Strategy White Paper, academic research and expertise.
Funding competition criteria
Learnings from first wave of funding and seedcorn funding
Fund-wide Activities
Monitoring and evaluation: Collection and sharing of evidence between projects and stakeholders.
Project support: Technical support, press coverage, networking and community engagement.
Fund-wide Outputs
Data and evidence base: Increased evidence on the efficacy of place-based interventions and innovation funding. Includes outputs of meetings and other engagement with projects and stakeholders.
Project support: Development of infrastructure to support sharing of best practice.
Fund-wide Outcomes
Understanding of place-based interventions increases: Improved understanding on the efficacy of place-based interventions through findings of fund-wide evaluations and individual project-level evaluations.
Community of best practice develops: Projects learn about R&I funding and processes from one another.
Fund-wide Outcomes
Decision-making and implementation processes are improved: Learnings from SIPF evaluations are used to inform future policy design related to innovation funding.
Changes in the funding landscape and regulatory environment: Achieved through SIPF learnings.
Learnings from Wave 1 of SIPF funding will influence the design, delivery, processes and support offered to projects in Wave 2. Project- and fund-level monitoring and evaluation activities and outputs are also influenced.

The model identifies two distinct 'strands': **project-level** elements and **Fund-wide** elements. The project-level elements are those which are delivered by funded projects. Fund-wide elements relate to two key activities of SIPF: supporting the projects in achieving their aims, and building an understanding around place-based policy and its effectiveness. The model also highlights four cross-cutting **themes**:

Theme	Detail
Knowledge and innovation	This includes new **ideas** – generated in both academic and commercial settings – and new **infrastructure** built in the region. It includes regions building on existing **specialisations** to develop reputations as regional 'hubs', sustainable improvements to regions' **R&I capabilities** and success in **pulling in further investment**.
Jobs and skills	This includes increased local R&I **jobs** and **research activities**, and increased opportunities for **training** in both academic and industry settings. This will enhance **business success** and **productivity** supporting broader job creation. It also includes increased **diversity** in the individuals filling the jobs and training posts, with increased numbers from under-represented groups.
Networks	This includes **collaboration**, **networking** and **partnerships** between consortium partners (research organisations, businesses and local government) and with stakeholders in the **wider local community**. It also includes publicity-generation activities and activities to support local engagement and buy-in. These relationships ultimately improve **productivity** and fuel further **innovation**.
Policy Design	This theme sits across the fund-wide elements of the logic model and relates to the ways in which SIPF will **increase the evidence base on place-based policy** and its effectiveness in encouraging innovation and growth. **Learnings from the SIPF** evaluation activities are used to inform future policy design, as well as changes to the funding landscape and regulatory environment.

Complementing the visual logic model, we developed a **narrative Theory of Change** for SIPF (see details in Section 3.2) which explored:

- Expected timescales between activities and impacts;
- External enablers and barriers to achieving intended impacts; and
- Underlying assumptions relevant to the logic of SIPF being realised.

Evaluation themes and questions

The logic model was used to develop a set of **seven evaluation themes and 15 evaluation questions** (EQs) which will structure the Impact Evaluation for SIPF. These are summarised below. Underneath these EQs are 37 proposed indicators. Figure 8 of the report provides details of the indicators for each EQ, together with a summary of the data and evidence sources anticipated to be available for each indicator. These sources are a mix of data from projects (both through ResearchFish returns and project-level evaluations, including Key Performance Indicators developed by each of the Wave 1 projects as part of initial evaluation plans to demonstrate their impact); and from secondary data sources.

Theme	Associated impact evaluation questions
Knowledge and innovation	EQ1: Did SIPF increase the regional quality and quantity of academic research in key research fields? To what extent was long-term capacity for such research increased? To what extent did this leverage existing local strengths?
	EQ2: Did SIPF increase the quantity and quality of regional commercial R&I in key industries? To what extent was long-term capacity for such R&I increased? To what extent did this leverage existing local strengths?
	EQ3: Have the technologies and new knowledge supported by SIPF progressed innovations and helped create new businesses? If not, why not?
	EQ4: Have the innovations, technologies and new knowledge supported by SIPF been adopted more widely? If so, how are they being used? If not, why not?
Jobs and skills	EQ5: Did SIPF improve the job prospects, in terms of the number, variety and profile of jobs available within the targeted regions? If not, why not?
	EQ6: Did SIPF increase the skills base and/or alter the profile of skills in targeted regions? If not, why not?
Economic impact	EQ7: Did SIPF funded-activities contribute to improved economic performance, particularly within targeted industries and regions? If so, was the improvement sustained? If not, why not?
	EQ8: Did SIPF contribute to closing gaps in economic performance across UK regions? If not, why not?
	EQ9: Did SIPF enhance and sustain the nature of collaboration and the collaboration infrastructure within targeted industries, research fields and regions? If not, why not?
Social impact	EQ10: Was the reputation for R&I of targeted regions and sectors enhanced as a result of the SIPF funding and outputs? If not, why not?
	EQ11: To what extent (and how) have SIPF projects fostered an equal, diverse and inclusive research and business environments, and how well do SIPF projects align with UKRI ED&I aims?
	EQ12: Did the outputs of SIPF improve the health, wellbeing and environment of individuals in targeted regions?
Policy design	EQ13: To what extent has the evidence base around the impact of locally targeted R&I spending in the UK been improved?
	EQ14: Did the learnings from SIPF influence and improve the design of R&I policy?
Value for money	EQ15: To what extent does the SIPF represent value for money given the overall impact on knowledge, economy and society relative to the size of the investment?

We note two particular challenges:

- The impact of SIPF is likely to be small relative to macro trends and factors affecting particular indicators of success, which affects how some of the top-down indicators (e.g. local gross value added, GVA) should be interpreted, and explaining the importance of mixed methods for this evaluation;

- The indicators are a mix of quantitative *and* qualitative metrics of success, with qualitative evidence gathered from project-level evaluations and case studies planned as part of the SIPF-wide evaluation a key part of the evidence base.

Evaluation methods

The evaluation of SIPF will be conducted using a **theory-based** methodology, namely **Contribution Analysis** (CA). We recommend a CA for several reasons:

- CA provides a framework to synthesise across different types of data and evidence gathered at different points in time from different stakeholders, domains and jurisdictions (Mayne, 2008). This characterises SIPF, which funds projects covering a range of fields, technology areas, academic disciplines and geographies; and where data will be collected at different points in time.
- CA allows for assessment of early indicators of longer-term success, testing whether an expected 'contribution narrative' is on track even when ultimate outcomes are not fully delivered based on the programme logic. This again is true of SIPF where final impacts are unlikely to materialise for some time after the programme's conclusion.
- CA is well-suited to interventions such as SIPF delivered in complex environments with multiple factors influencing success, allowing the presence and influence of these factors to be assessed as part of the overall narrative.

Recognising the complexity of SIPF, we propose combining a range of methods in order to make a **counterfactual assessment** of how key outcomes and impacts would have differed in the absence of SIPF:

- **Analysis of project-level evaluation evidence** and ResearchFish returns, validating the strength of counterfactual assessments made in project-level evaluations (where relevant) and holding *workshops* with projects to validate our interpretation of their findings;
- **Trend analysis** (before/after SIPF) of secondary data sources relating to the various evaluation questions which cut across the range of technologies, sectors and geographies supported by SIPF-funded projects;
- **Difference-in-difference analysis** comparing changes in outcomes relating to the evaluation questions in sectors and/or local areas supported by SIPF with comparators, drawing largely on secondary data sources;
- **Self-reported counterfactuals** drawing on evidence gathered from: *six case studies* of SIPF-funded projects and qualitative *stakeholder interviews* targeted on specific EQs where qualitative evidence represents the main evidence base;
- **Three 'near-miss' case studies** of projects that were not ultimately funded by SIPF, but which met or were close to quality criteria for support, to establish whether intended outputs, outcomes or impacts were nevertheless able to be realised without SIPF support; and
- **Expert review** drawing on the views of experts and the advisory group to provide context and comment on emerging evaluation findings.

The mix of these approaches will vary across the evaluation themes and questions. Section 6.4 of the report gives more detail on each method and how they will be implemented in practice. Case studies will be deployed only for the final evaluation.

The Fund-level evaluation will draw heavily on project-level evaluations as sources of evidence, seeking to avoid duplication of evaluation effort and synthesise across project-level evaluations to understand Fund-wide impact. We provide a detailed account of how we plan to engage projects to gather and analyse project-level evaluation evidence in Section 6.4.2. We also provide, in Annex A, guidelines for projects to support evidence gathering as part of their own evaluations which will be helpful for the Fund-wide evaluation based on the EQs and indicators.

In designing our approach we place considerable emphasis on views around how the *place-based nature* of SIPF has affected impact, given this critical feature of programme design. Reflecting this, we include specific evaluation questions on the theme of policy understanding around innovation and place and how SIPF has influenced this (EQ13 and EQ14).

The overall CA will rely on **triangulation** across all evidence gathered, though:

- Mapping all of the evidence available against each EQ and indicator.
- Judging the quality of the evidence, both qualitative and quantitative, using recognised frameworks.
- Reading across all of the evidence to assess the consistency and strength of findings. Where we have conflicting evidence we will both weigh up the relative strength of the evidence and, where needed, consult further with projects and members of the advisory group to help understand contextual or other factors that might explain the conflicts.
- Prepare a narrative summary of our conclusions about the contribution of SIPF against each impact EQ with the supporting evidence as the basis for the Interim and Final Evaluation Reports.

Baseline measurement

Baselining provides a starting point against which future trends in key indicators can be assessed. The baselining phase of the SIPF evaluation will run between September 2021 and early 2022.

As SIPF has been delivered across two funding waves, the baseline period will depend on the wave:

Wave	Calendar year baseline	Financial year baseline
Wave 1	2020	2020/21
Wave 2	2021	2021/22

The baselining phase will comprise three main tasks:

Interviews with all seven Wave 1 projects to understand project-level baselines relevant for their evaluations and gather evidence relevant to quantitative baselining. Interviews will seek to understand:

- What, if any, baseline data and evidence projects have collected or are collecting in future relating to their own project-level evaluation;
- The best definition of region, sector and knowledge areas that each project is situated in and seeking to influence;
- The potential definition of counterfactual regions, sectors and knowledge areas that could be explored within the SIPF-wide evaluation;

- Any past or aligned investment that could affect the baseline (and interpretation of evidence gathered for the impact evaluation); and
- Any views from projects that could inform the qualitative baseline.

Quantitative baselining based on detailed exploration and interrogation of secondary sources identified as relevant for the SIPF evaluation. This will involve:

- a detailed audit of the datasets, identifying the precise variables most relevant to the indicators, the time periods available, the quality of the data, costs or barriers to access and the value-added to the evaluation;
- an agreed final list of secondary datasets to use for the evaluation and updated evaluation framework; and
- extracting baseline and pre-baseline values from these sources.

This aspect of the baseline phase will be critical in moving from the long list of potential data sources identified as relevant to the impact EQs and indicators (see Figure 9 in the main report) to a final set of sources. In particular, we will assess where we can use secondary data to interrogate evidence at local, sectoral and knowledge area levels, mapped against SIPF-funded projects, to provide both time series and counterfactual evidence for the Fund-wide evaluation.

Qualitative baselining based on 10 to 12 key stakeholder interviews to inform baseline positions against evaluation indicators which are largely qualitative.

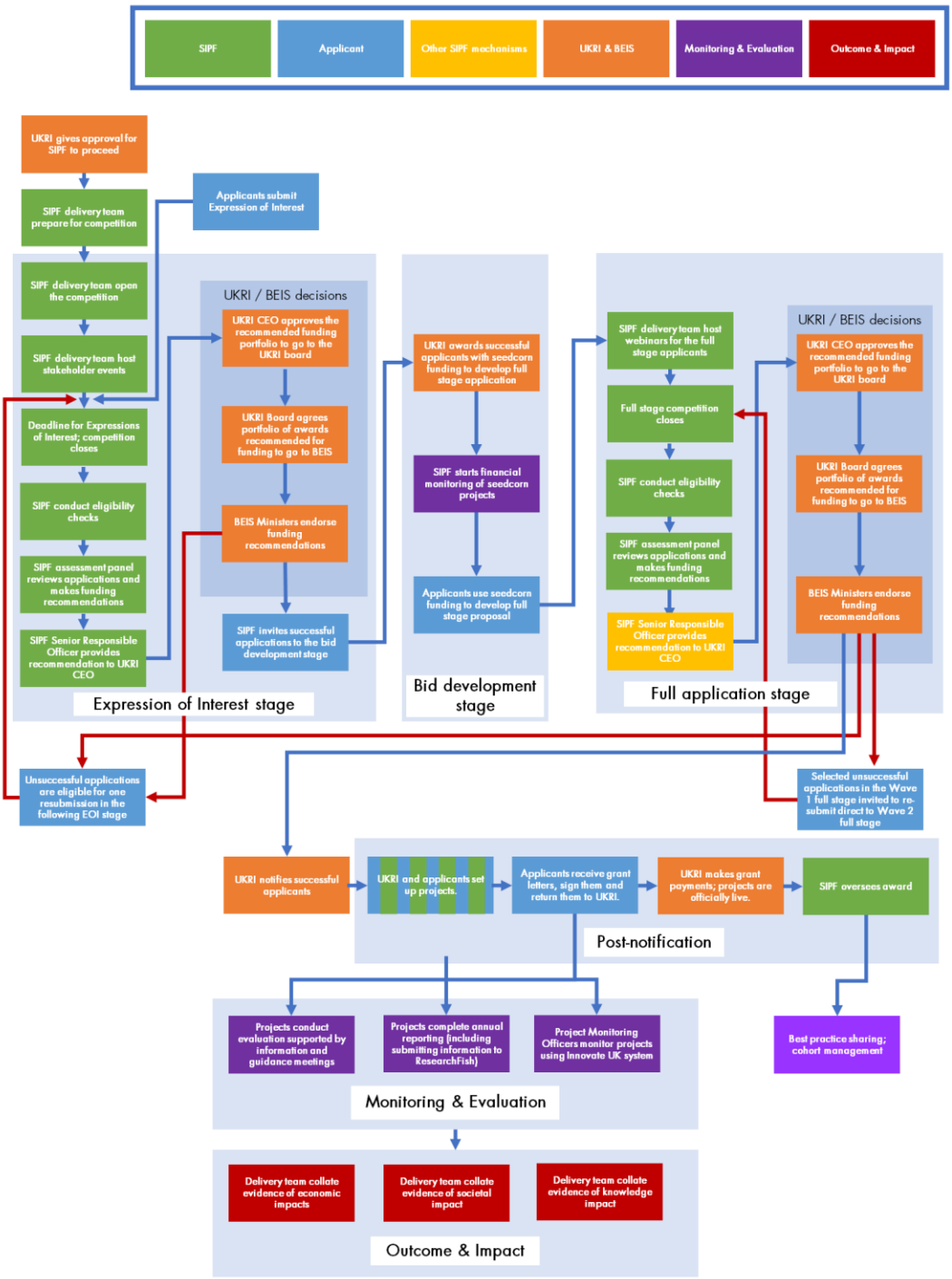
Process evaluation

The process evaluation will explore how SIPF processes work in practice and the extent to which the design and implementation of the Fund has been appropriate and effective. In combination with the impact evaluation, this will also allow us to explore how, and to what extent, place-based funding, as implemented through SIPF, is able to deliver on the Fund's intended outcomes.

Process map

The process map (below) provides context for the process evaluation and a clear understanding of relevant processes to be evaluated. The focus is on Fund-level processes, rather than processes put in place by individually-funded projects.

The process map divides processes into a set of stages – from expression of interest, through bid development and full application stage, to post-award and monitoring and evaluation. These are explained in more detail in Section 5.1.



Process evaluation questions

Drawing on the process map, we identified 12 process evaluation questions:

1. How effective has the Fund design been in delivering on the SIPF objectives including supporting R&I in a range of different geographies?
2. How effective was the governance structure between UKRI and BEIS as the Fund was set up, designed, and operationalised?
3. How was the portfolio of SIPF decided with a view to meeting the Fund objectives? How effective was the decision-making process in meeting the Fund objectives? What were the trade-offs?

4. To what extent have the processes worked well in the places funded so far as SIPF has been implemented?
5. What has not worked well, or could have been handled differently, in the places funded by SIPF?
6. What were the enablers to implementing SIPF at the Fund-level? Which of the enablers are specific to place-based funding and/or the places selected?
7. What were the key challenges in implementing SIPF at the Fund-level? Which of the challenges are specific to place-based funding?
8. What was the role of timing in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio?
9. What was the role of the level of funds allocated in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio?
10. What M&E processes are in place at the Fund level and how are these tailored for a place-based funding scheme?
11. What has been learned about the process of place-based funding – and what has changed in the approach and the places funded – over the course of implementing SIPF to date?
12. What was the awardees' overall perspectives on the process of delivering SIPF-funded programmes and projects?

More detail of process evaluation indicators and possible sources of evidence for each of these questions is given in Figure 12 of the report.

Process evaluation methods

The process evaluation will be delivered in two phases. For each Wave of SIPF-funded projects, an **interim** process evaluation will comprise three tasks: document review; interviews and a survey. For the **final** evaluation, covering both Waves, additional evidence will be extracted on process-related issues from the case studies conducted as part of the impact evaluation.

- The **document review** will analyse any relevant process-related evidence captured by project-level evaluations, mapping findings against the process evaluation framework. The aim will be to synthesise observations and insights from individual projects to draw out themes, points of commonality and difference, and examples of good practice.
- We will hold **30 to 40 interviews with stakeholders**, spread across stages of the evaluation (see table below). The aim of these interviews is to capture stakeholders' experiences and views of Fund-level processes, their perspectives on challenges, barriers and facilitators, and to identify areas for potential improvement, in line with the process evaluation framework.

Stakeholder group	# of potential interviewees
UKRI board	2-4
SIPF board	3-5
SIPF Delivery Team	1-3
Policy stakeholders	2-4
Members of the SIPF assessment panels	2-4
Unsuccessful applicants	2-4
Successful applicants (seedcorn stage)	3-5
Awardees (applicants who received the full funding)	8-12

- To bring in wider perspectives on Fund processes and management, we will **survey** researchers and innovators applying to and funded through SIPF, structured around the process map to aid recall of respondents. The intended survey population covers all applicants submitting EOIs for Waves 1 and 2, with questions routed based on the application outcome.

Annexes to this report contain information on the proposed topic guide for process-related stakeholder interviews and the process evaluation survey questions.

Timescales

High-level timelines for the evaluation are set in Figure 18 in the report. Key milestones are:

- A **baseline report** in early 2022;
- **Interim process evaluation reports** at the end of 2022 (Wave 1 projects) and 2023 (Wave 2 projects);
- **Interim impact evaluation reports** in mid-2024 (Wave 1 projects) and mid-2025 (Wave 2 projects); and
- A **final evaluation report** at the end of 2026, covering both Waves.

1 INTRODUCTION

1.1 Summary of the Strength in Places Fund

The Strength in Places Fund (SIPF) is a UK Research and Innovation (UKRI) competitive funding scheme that takes a 'place-based' approach to research and innovation (R&I) funding. SIPF was announced by the UK Government in the 2017 Industrial Strategy White Paper as part of an ambition to address large regional disparities in productivity and economic growth across the country. The programme forms part of the wider National Productivity Investment Fund (NPIF) that will be contributing to the Government's target to reach 2.4% of GDP investment in research and development (R&D) by 2027 (UKRI, 2020).

Through SIPF, funding awards of between £10 million and £50 million are available for R&I programmes lasting between three and five years. Applicants from any sector are invited to apply but they are required to be consortia comprising both business and publicly-funded research organisations. The projects must be focused on a specific (self-defined) economic geography with a plan to achieve demonstrable impact on local economic growth.[1]

The place-based nature of the fund is a key distinction between SIPF and other R&I funding programmes. Location and a commitment to build on existing regional strengths are primary considerations in the allocation of funding (alongside the usual requirements for research excellence and high-quality innovation), and the success of SIPF will be assessed in terms of its impact on the distribution of economic outcomes, not just the impact on the 'national average'.

The high-level aims of SIPF (UKRI, 2020) are:

- To support innovation-led relative regional growth, in particular helping clusters of businesses become more nationally and internationally competitive. These clusters represent areas of particular R&D strengths and contain businesses of all sizes that have the potential to innovate or adopt new technologies.
- To build on the underpinning regional economic impact role of universities, research institutes, Catapults and other R&D facilities.
- To engage businesses at the forefront of delivering economic growth through innovation within the identified economic geography.

SIPF funding is being awarded in two Waves. In Wave 1, 23 projects were awarded up to £50,000 of seedcorn funding to develop their proposals. In 2020, seven of these were selected for full funding (see Figure 1). Total funding for Wave 1 was £187 million.

In Wave 2, 17 projects were awarded up to £50,000 in seedcorn funding. In May 2021, a further five projects were selected for full funding. Total funding for Wave 2 was £127 million. Figure 1 provides details of the 12 funded projects across two Waves.

[1] https://www.ukri.org/our-work/our-main-funds/strength-in-places-fund/

Figure 1 Projects receiving full SIPF funding

#	Project name	Field	Economic geography	Leading organisation	Key partner organisations	Expected completion date	UKRI award amount (£m)
Wave 1 projects (announced 2020)							
1	CS Connected	Semiconductor materials	South Wales	Cardiff University	Swansea University Compound Semiconductor Applications Catapult Compound Semiconductor Centre Ltd	May 2025	25.4
2	Decarbonisation of maritime transportation – a return to commercial sailing	Zero emissions sailing	Belfast	Artemis Technologies	Bombardier Aerospace Queens University Ulster University	April 2024	33.1
3	Global Open Finance Centre of Excellence	Financial technology	Central Scotland	University of Edinburgh	Fintech Scotland Financial Data & Technology Association Royal Bank of Scotland	July 2025	22.5
4	The Living Laboratory	Precision medicine	Glasgow	University of Glasgow	NHS Greater Glasgow and Clyde Bioclavis MR Coiltech Ltd	September 2025	38.1
5	Infection Innovation Consortium	Infectious disease therapeutics	Liverpool and Cheshire	Liverpool School of Tropical Medicine	AMR Centre Ltd University of Liverpool Royal Liverpool and Broadgreen Hospital Trust	August 2025	18.7
6	MyWorld	Creative media	Bristol and Bath	University of Bristol	University of Bath University of the West of England Digital Catapult3	March 2026	30.0

#	Project name	Field	Economic geography	Leading organisation	Key partner organisations	Expected completion date	UKRI award amount (£m)
7	Growing Kent and Medway	Climate-smart food production and processing	Kent and Medway	National Institute for Agricultural Botany EMR	University of Kent NRI-University of Greenwich Locate in Kent Ltd	September 2025	17.9
Wave 2 projects (announced 2021)							
8	Advanced Machinery & Productivity Initiative	Advanced manufacturing	Yorkshire & the Humber / North West	NPL Management Ltd	[●TBC]	[●TBC]	22.6
9	Midlands Advanced Ceramics for Industry 4.0	Chemical industries and materials	West Midlands / East Midlands	Lucideon Group Limited	[●TBC]	[●TBC]	18.3
10	Digital Dairy Value-Chain for South-West Scotland and Cumbria	Agri-Tech, Food and drink	Scotland / North West	Scotland's Rural College (SRUC)	[●TBC]	[●TBC]	21.3
11	media.cymru	Creative economy	Wales	Cardiff University	[●TBC]	[●TBC]	22.2
12	Smart Nano-Manufacturing Corridor	Electronics and photonics	Northern Ireland	Seagate Technology Ireland	[●TBC]	[●TBC]	42.4

Source: UKRI, Frontier Economics, RAND Europe and know.consulting

Note: Key partner organisations defined as the three organisations other than the lead receiving the largest share of total funding from UKRI.

In January 2021, the Evaluation Consortium (Frontier Economics, RAND Europe and know.consulting) were appointed as the Fund-level evaluators for SIPF, with Frontier Economics as the lead partner. The evaluation of SIPF will continue for the duration of the funding, aiming to complete at the end of 2026.

1.2 Aims of the evaluation

The Fund-level evaluation aims to build an evidence base to judge the success and overall impact of SIPF. It includes both **process evaluation**, seeking to understand what has worked well and less well in the design and delivery of the Fund and making recommendations for changes to delivery process; and an **impact evaluation** to understand what SIPF has achieved and provide early evidence on Value for Money (VfM).

The SIPF-wide evaluation will be completed in parallel with project-level impact evaluations. Each of the 12 funded projects have developed or will be developing individual evaluation frameworks including project-specific logic models, evaluation questions, success metrics and key performance indicators (KPIs). The SIPF-wide evaluation will draw on data and evidence gathered by project-level evaluations, as well as analysis of Fund-wide monitoring data, secondary data and primary qualitative data. The Evaluation Consortium will work closely with project-level evaluation teams to ensure synergies are identified and that the evidence gathered in project-level evaluations will be useful for the Fund-level evaluation.

SIPF represents a pathfinder for place-based funding policy within UKRI. As such, the evaluation also aims to provide evidence on the effectiveness of place-based R&I funding for future-policy-making.

1.3 Aims of the evaluation framework

This report sets out the evaluation framework, which is the first the phase of the evaluation and underpins all future stages of the work. The evaluation framework aims to provide a clear basis for the evaluation and includes:

- The theory of change (ToC), linking what SIPF is doing (inputs and activities) to what it will deliver (the outputs) and the benefits that will be realised in the shorter- and longer-terms (outcomes and impacts).
- The logic model, which is a visual representation of the ToC.
- The process map, setting out a detailed pathway of processes involved in the design, administration, running and monitoring of SIPF across both waves and the different stages of funding.
- The evaluation questions (covering both process and impact evaluations), with specific metrics and data sources identified to track and measure success.
- The evaluation methodology (covering both process and impact evaluations), setting out how evidence to answer the questions will be obtained and analysed.

The framework also sets out key timelines for the expected future phases of the evaluation (Baseline, Process Evaluation, Interim and Final Impact Evaluations) and potential risks and mitigation strategies.

This framework is for the Fund-wide evaluation. We provide guidance for the design of the project-level evaluations, in particular how the project-level evaluations can ideally support the Fund-wide evaluation (see Annex A).

1.4 Approach to developing the evaluation framework

The evaluation framework was developed through a series of activities and consultations, summarised below:

- **Meetings with the SIPF Delivery Team.** From January 2021, the Evaluation Consortium had fortnightly meetings with the SIPF Delivery Team. These provided opportunities for the SIPF team to provide documents and insights relating to the planning, delivery, evaluation and governance of SIPF and the relevant policy literature to inform framework development; and to deliver updates and obtain feedback and guidance on draft versions of elements of the framework. The Consortium also met internally on a weekly basis to discuss and develop ideas.
- **Document review.** The Consortium reviewed the documents provided by the SIPF Delivery Team. These included a programme overview, a first draft of the Fund-wide logic model, evaluation and monitoring frameworks, the evaluation specification, and documents relating to the individual funded projects.
- **Rapid evidence assessment (REA).** The Consortium conducted an assessment of the existing literature relating to placed-based R&I, in particular to help inform aspects of the SIPF evaluation framework. An overview of the key results can be found in Section 2, and the full review in Annex B.
- **Consultation with funded (Wave 1) projects.** The EC held hour-long, semi-structured calls with each of the seven funded projects. These covered the following topics:
  - Details of the projects, e.g. objectives, activities and timescales for delivery.
  - Theory of change elements, e.g. key stakeholders, additional sources of project funding and key barriers and enablers for success.
  - Early, high-level views of SIPF processes and the role of place in the design/delivery of projects.
  - Project-level evaluation plans, e.g. stage of planning and involvement of external evaluators.

  We also sought views from Wave 1 projects on early versions of the evaluation questions and indicators, in particular to understand the data and evidence that projects felt they would be able to provide to help evidence the indicators.
- **Consultation with SIPF governance bodies and advisory panels.** At two points in the development of the evaluation framework, the Consortium consulted with the SIPF Evaluation Working Group (EWG) and the NPIF

Evaluation Oversight Board (NEOB).[2] These consultations provided views on the emerging ToC/logic model, the evaluation questions and indicators, and draft versions of this report. We also received views on the ToC/logic model from the SIPF Programme Board,[3] and from the SIPF External Evaluation Advisory Group (SEEAG) on the evaluation questions and indicators.[4]

1.5 Structure of this report

The remainder of this report is organised as follows:

- Section 2 gives an overview of the key insights of the **Rapid Evidence Assessment** (REA)
- Section 3 outlines the SIPF **theory of change** and logic model
- Section 4 describes the **impact evaluation framework**, including the key evaluation themes and the evaluation questions, indicators and data sources
- Section 5 describes the **process evaluation framework**, including the process map and the evaluation questions, indicators and data sources
- Section 6 explains the evaluation **methods** across the baselining phase and the impact and process evaluations
- Section 7 describes the evaluation **deliverables**, including information on overall timelines, stakeholder engagement and dissemination
- Section 8 outlines the evaluation **risks** and mitigation activities.

The report also contains a series of annexes that give further detail on the information in the main text:

- Annex A provides **evaluation guidance for projects**, explaining how projects can ideally support the Fund-wide evaluation
- Annex B contains further detail on the **REA**
- Annex C contains the **interview topic guide** for the process evaluation
- Annex D provides the draft **survey questions** for the process evaluation
- Annex E provides further detail on the **evidence sources** that will be used for the impact evaluation, across each evaluation theme.

1.6 Glossary of key terms and acronyms

Figure 2 provides a glossary of key terms, acronyms and other relevant jargon relating to SIPF to help with the interpretation of this Evaluation Framework report.

[2] The EWG is chaired by the SIPF Evaluation Lead and comprises the SIPF Delivery Team, Senior UKRI leadership, UKRI Policy teams and UKRI Evaluation and Analysis teams. NEOB comprises evaluation experts and senior leads across major investments supported by the NPIF.

[3] The Programme Board is chaired by the SIPF SRO and comprises of Senior UKRI leadership, UKRI Policy teams, the BEIS Policy team, devolved HE funding bodies and the Office for Students

[4] The purpose of SEEAG is to provide insight and advice to the SIPF Evaluation function on matters of evaluation and analysis, and to highlight relevant best practice and novel approaches to evaluation.

Figure 2 Glossary

Term	Explanation
BEIS	Department for Business, Energy and Industrial Strategy
CA	Contribution Analysis
EC	Evaluation Consortium
EoI	Expression of Interest
EQ	Evaluation Question
EWG	Evaluation Working Group for the Strength in Places Fund
GVA	Gross value added, used to measure the output of a particular sector
IFS	Innovation Funding Service
KEF	Knowledge Exchange Framework
KPI	Key Performance Indicator
Logic model	A visual representation of the theory of change (ToC)
NEOB	NPIF Evaluation Oversight Board
NPIF	National Productivity Investment Fund
QALY	Quality Adjusted Life Year, an outcome measure for health impact
RE	Research England
REA	Rapid Evidence Assessment, a form of desk review designed to provide quick insights on a topic from existing research
REF	Research Excellence Framework
ResearchFish	An online reporting system used by funders to collect information on the outcomes and the impact of their research. All SIPF projects are required to complete ResearchFish returns.
R&D	Research and Development
R&I	Research and Innovation
SEEAG	SIPF External Evaluation Advisory Group
Seedcorn funding	Funds to initiate and develop ideas for projects before receiving the full investment award.
SIC	Standard Industrial Classification (sectoral coding)
SIPF	Strength in Places Fund
SRO	Senior Responsible Officer
SRS	Secure Research Service (ONS secure data environment)
ToC	Theory of Change
UKRI	UK Research and Innovation
VfM	Value for Money
Wave 1 / Wave 2	SIPF projects were awarded in two Waves: seven projects funded in Wave 1 (announced in 2020) and five in Wave 2 (announced in 2021)

Source: Frontier Economics, RAND Europe and know.consulting

2 RAPID EVIDENCE ASSESSMENT

2.1 Aims and approach of the REA

We conducted a Rapid Evidence Assessment seeking to:

- Summarise the existing evidence base relating to 'place-based' research and innovation (R&I), and the effectiveness of place-based approaches relative to place-agnostic approaches to public support of R&I; and
- Provide insights to support the development of this evaluation framework.

In particular, in terms of the evaluation we wanted to extract evidence which would inform **outcomes and impacts** relevant to SIPF, **data sources** that could be used to measure the success of SIPF, **methodologies** for evaluating place-based R&I policies, and **barriers and enablers** (both internal and external) of success that may need to be considered in designing the evaluation.

We used a three-step search protocol:

13. Reviewing literature known to the evaluation team and UKRI;
14. Applying search criteria used in Google Scholar and Google;
15. Snowballing based on scanning bibliographies of papers identified.

In total, we identified and reviewed 51 papers that were relevant to at least one of the aims of the REA. Insights were extracted and coded into a matrix for analysis.

The full REA and the studies identified are in Annex B. Here, we provide a brief summary of some of the key insights from the review particularly pertinent to the design of the SIPF Fund-level evaluation. These are grouped into three themes: insights relating to the **theory of change** for SIPF, insights relating to the **evaluation indicators and data sources**, and insights relating to the **evaluation methodology**. These have been considered in developing the elements of the evaluation framework set out in the rest of this report.

2.2 Key insights for the evaluation

2.2.1 Theory of change

The REA highlights three groups of **outcomes** common to place-based R&I policy:

- Those relating to **businesses and products** focused on the activities of commercial organisations. Outcomes identified include patents/IP, technology management capability, sales from new products or markets, R&D investment, and staff training.
- Those relating to **universities and academics** focused on the knowledge and research impacts. Outcomes identified include academic engagement in the places targeted, technology spinouts and licensing, new graduates, highly-cited publications, increased research investment, enhanced educational infrastructure, and increased income for academics and universities.
- Those relating to **networks and ecosystems** which focus on the impact of policies on the innovation ecosystem in the areas targeted for support.

Outcomes identified include: inter-firm collaborations, establishment of local leadership in certain fields and domains, establishment of research bases and clusters, increased technology take-up, increased strength of interactions between local agents, improved community leadership and engagement, knowledge transfers, and capacity to manage collaboration and R&D.

The REA also highlighted two broad groups of **impacts**:

- **Economic impacts** including impacts such as Gross Value Added, local wages and skills, jobs and employment, new businesses and start-ups, exports, and foreign direct investment.
- **Knowledge and capacity impacts** including impacts such as local capacity for regional development, and regional capacity to adapt to changes, shocks and opportunities for innovation (speaking to the idea of place-based initiatives leading to *sustained* benefits at local level).

In general, few of the studies we reviewed proposed specific 'place-based' outcomes or impacts; rather, outcomes and impacts were tailored to specific geographies of interest targeted by interventions. Some of the more particular place-based outcomes and impact identified in the review included:

- Concentration of highly-cited researchers in the local geographic area;[5]
- Increased regional competitiveness;[6]
- Regional parity between areas in terms of research bases and concentration of funding;[7]
- Creation of new opportunities for local specialisation;[8] and
- Integration of separate areas of technological activity in the region.[9]

2.2.2 Evaluation indicators and data sources

The REA provided several insights relating to potential indicators of success and data sources that could be used to evidence the impact of SIPF. These include:

- Indicators relating to **patents and IP** may be preferred as measures of success to indicators relating to R&D as they represent the *outcome* of innovation rather than in *input* to innovation. However, many patents have little value or economic impact, and some innovations are not patented, leading to measurement issues.[10] The use of patents as an outcome metric may therefore bias findings to sectors that are heavier users of patents (for example, patents are less well-used in service industries or for innovations that are not about new technology).
- Broadly, data sources that have been used to evaluate similar policies can be grouped into six types:
  - Nationally collected **economic data**, at national and sub-national levels, gathered by official statistical agencies. These generally cover measures of

5 What Works Centre for Local Economic Growth (2015)
6 OECD (2007), Brenner (2013)
7 Zuckerman (2014), Pringle et. al. (2011)
8 Best and Bradley (2019)
9 Lester (2007)
10 Carlino et. al. (2015)

business production, employment, skills and trade, and combine administrative and survey-based sources.

- **Company-level commercial datasets**, measuring firm-specific outcomes such as patent numbers (drawing on sources such as Patstat, LexisNexis, Univentio and WIPO), and specific financial variables such as profitability, R&D and assets (from sources such as FAME and Experian).
- **Research datasets**, measuring outcomes like publications and citations, from sources such as Web of Knowledge, Mendeley, Scopus, and Newsflo.
- **Network datasets**, measuring communication flows and datasets documenting collaboration between agents in the innovation ecosystem. These datasets include monitoring data (e.g. participants in specific innovation projects, active members of web-based platforms, etc.), R&D collaboration or commercial relations between firms, and communication flows measured by email traffic.[11]
- **Management information** (MI) for both programmes and universities, measuring innovation funding awards, courses and outreach activities. In terms of awards, data can cover both inputs and outputs/outcomes of awards (for example, Gateway to Research as a source of information on some UKRI-funded research projects). University-level MI relates to the number of academic courses and activities related to a certain topic and the number of new PhD students in a particular field. For example, HESA data in the UK gives research funding breakdown at an institution level.
- **Survey datasets** measuring ad-hoc information such as new product development, new process improvements or interactions/engagement with the wider local community. This covers existing national surveys (for example, the HE-BCI (Higher Education Business and Community Interaction) Survey, and the UK Innovation Survey) and bespoke surveys tailored to and rolled out within the evaluations of particular programmes.

2.2.3 Evaluation methodologies

Evaluation challenges

A key observation of the REA was that methods we identified to evaluate the impact of place-based R&I policies were limited in their ability to identify the causal effects robustly. At most, the evidence generated was at level 3 of the Maryland Scientific Methods Scale.[12] Papers using quasi-experimental methods were not always convincingly able to demonstrate they could identify causal effects. None of the studies used strictly experimental evaluation approaches. Similarly, although some studies were able to demonstrate that particular policies were associated with positive outcomes in targeted areas, we did not find strong evidence from existing literature on whether the *place-based nature* of these interventions had

[11] Kamburow (2012)

[12] See e.g. https://whatworksgrowth.org/resources/the-scientific-maryland-scale/.The scale ranks the ability of quantitative methods to ascertain causal effects going from 1 (the lowest) to 5 (the highest). Level 5 is a double-blind Randomised Control Trial while Level 1 evidence is a simple comparison of before and after or cross-sectional comparison. Level 3 represents studies which compares changes in outcomes for a treatment and control group (e.g. difference-in-difference approaches) with some consideration of the validity of the control demonstrated.

made them more effective than they otherwise would have been. By including this issue specifically within our evaluation framework (see Section 4.2) the evaluation of SIPF could therefore make an important wider contribution.

The key evaluation challenges for place-based R&I programmed identified in our review were:

- Lack of a clear counterfactual or control group;
- Long-term nature of impacts meaning attribution is difficult given the influence of external factors over longer time horizons;
- Complexity of local innovation ecosystems and networks mean it is hard to demonstrate the causal pathway through which interventions operate;
- Lack of clarity in defining spatial units of analysis relevant to an intervention (e.g. administrative geographies may not line up with areas being targeted by a particular intervention, making it challenging to use area-based controls);[13]
- Difficulties in accessing data or data only be available with considerable lags.

Approaches used to evaluate place-based R&I policies

The review highlighted different approaches and methods used to evaluate place-based R&I policies, mindful of the challenges outlined above.

Several papers use **surveys or interviews** to estimate the outcomes and impact of innovation programmes.[14] Primary surveys can help fill in gaps where data is not available from existing sources, and established surveys can provide important pre-intervention data against which post-intervention outcomes can be compared.

Econometric analysis is used by several papers to estimate the causal effect of innovation programmes. The most popular approach is DiD (**difference-in-differences**), which compares outcomes for groups affected by the programme (treatment group) against a control group which did not benefit from the programme.[15] Groups can be comprised of companies, projects, groups or even places. For DiD to be valid, trends in outcomes for both groups must be the same before the programme is implemented. Control groups can be constructed based on the design of the programme or through data-driven methods such as **Propensity Score Matching** which aims to identify observably-similar controls in datasets.

The most intractable problem in methods that have used external counterfactuals is selection bias: regions or projects not chosen for support may differ from those supported which therefore makes them imperfect as counterfactuals for how supported regions or projects would otherwise have performed. At the very least, attempts to use regional or project-level counterfactuals in the SIPF evaluation will need to confirm that the observable features of the chosen counterfactuals are comparable to the treatment projects or places (e.g. in terms of economic geography, socio-demographic characteristics, trends in economic performance, size of funding, sectors of focus, quality of bid, types of intended activities, etc).

[13] See Carlino and Kerr (2015),

[14] For example, Eicklepash (2002), Abramovsky (2008), Zuckerman (2014) and Lester (2005)

[15] Falck (2019), What Works Centre for Local Growth (2015), Vanino (2017)

A further limitation of using project-level counterfactuals is sample size: large numbers of projects are needed to identify any 'treatment effect'. For example, Howell et al. (2021) use a sample of more than 7,000 project applications to compare outcomes for 'just successful' and 'just unsuccessful' applicants either side of a quality threshold. For SIPF, where the number of funded projects in total is only 12, such an approach will not be robust, at least for quantitative / econometric methods. [16] However the approach can still be considered for qualitative methods, selecting a small number of 'just unsuccessful' projects for case studies or other qualitative research approaches to provide some assessment of the counterfactual alongside other evaluation evidence.

Other methods identified in the review include:

- **Modelling approaches** based on a priori information about possible returns to funding, comparing expected and realised impacts as a way to estimate the impacts attributable to the programme;[17] and
- **Social network analyses** to quantify outcomes relating to the network-structure of innovation ecosystems, though in general it is hard for such methods to attribute causal impacts.[18]

Enablers of and barriers to success

The review highlighted key **external factors** that were seen to create favourable environments for R&I programme to succeed. These include:

- **Existing regional specialisation** (e.g. some concentration and reputation in a specific industry);
- **Existing human capital** (e.g. highly specialised workers);
- **Favourable market dynamics** (e.g. competition between businesses, entrepreneurial activity, labour mobility);
- **Existing networks** (notably with universities); and
- **Existing infrastructure** (including factors such as broadband, housing, energy systems, etc.)

Studies also identified **internal factors** particularly in the governance and design of R&I programmes which appear to be important for their success:

- The use and exploitation of **smooth multi-level governance** (including local and national organisations in the governance to help ensure locally-tailored interventions are co-ordinated with 'big picture' policy objectives);
- Having a **holistic and stable policy approach**;
- Having a **robust monitoring and evaluation framework**;
- Responding to **regional priorities and needs**;

[16] SIPF will fund 12 projects in total. Within each project, there will of course be a larger number of stakeholders and activities supported by the SIPF investment. However the ability to implement a quantitative, qausi-experimental methodology relies on being able to observe (and gather data from) both treatment *and* control groups in sufficient numbers to make robust comparisons. For SIPF, we cannot stakeholders or activities that might have been supported had an unsuccessful project been funded as the funded projects evolve over time and the full scope of delivery is not known at the time of application.

[17] Dotti et al (2021)

[18] Ter Wal (2019), Muscio et al. (2012), Casper (2013), and Giuliani (2007)

- **Establishing safeguards** (e.g. clear commercial terms and conditions, strong cost sharing requirements, mediation mechanisms);
- **Building on regional capabilities**; and
- Setting up **long-term success** by fostering high quality networks, knowledge and technology transfers, private sector investment, and developing human capital.

Specifically on programme targeting, an interesting factor to explore in the evaluation will be the apparent contradiction between literature showing that place-based programmes may be effective (relative to their aims) in regions that are developed below the national average,[19] and the evidence suggesting that existing local/regional networks, infrastructure, skills, and industry presence are factors associated with successful R&I interventions (see e.g. the Science and Innovation Audits).

In terms of the evaluation, other factors to consider highlighted in the review included:

- The potential for **crowding-in** or **crowding-out** effects from public investment in local R&I ecosystems;
- Whether place-based approaches could inhibit the development of extra-regional networks; and
- The potential for regional or local-level displacement effects.

[19] Zymek and Jones (2020)

3 SIPF THEORY OF CHANGE

The UK Government's *Magenta Book* recommends that a key first step of an evaluation is developing a theory of change (ToC).[20] The ToC captures the theory of how the intervention is expected to work, setting out the steps expected to be involved in achieving the desired outcomes, the assumptions made and wider contextual factors. The *Magenta Book* states that developing a ToC typically involves considering the proposed inputs (the investment/regulation/actions that will take place) and the causal chain that leads from these inputs through to the expected outputs and outcomes. It considers the causal mechanisms by which an intervention is expected to achieve its outcomes, basing this theory on the gathering and synthesis of evidence. A **logic model** can be used as a visual representation of the ToC that can be rapidly understood and disseminated.

A comprehensive, well-articulated ToC is particularly important for a theory-based evaluation, the approach proposed for the Fund-wide SIPF evaluation (see Section 4). This approach seeks to confirm the ToC using a wide range of data and evidence (qualitative and quantitative) to assess the impact of an intervention. This method is recommended in the *Magenta Book* where experimental methods of determining impact are of limited applicability.

3.1 Approach to developing the theory of change

The theory of change and logic model were developed based on:

- A **desk review** of SIPF programme documents, including the draft logic model prepared by UKRI and logic models for the individual SIPF projects.
- Findings from the **REA** aimed at uncovering the existing evidence on place-based innovation policy (see Section 2).
- Semi-structured discussions with representatives from each of the the individual Wave 1 SIPF projects.[21] These discussions covered the following:
  - Key objectives and activities of the projects and relevant timescales.
  - Key stakeholders for the projects and additional public sources of funding.
  - External factors that will influence success.
  - How the place-based nature of SIPF may have influenced the design or delivery of the projects.
  - Early reflections on SIPF processes and engagement.
  - Details of the projects' own evaluation plans.
- Feedback from the SIPF Delivery Team, NEOB and the SIPF EWG.

[20] HM Treasury (2020), *Magenta Book: Central Government guidance on evaluation* (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879438/HMT_Magenta_Book.pdf)

[21] Wave 2 projects had not been confirmed at the time these discussions took place.

3.2 Logic model overview

The final version of the SIPF Fund-wide logic model is shown in Figure 4. The logic model contains inputs (for both programme *design* and programme *delivery*), activities, outputs, outcomes (both *short-term* and *long-term*) and impacts (across the areas of *Economy, Society, Knowledge* and *Policy*).

From activities onwards, the model is split into two distinct strands: **project-level** elements and **Fund-wide** elements.

The project-level elements are those which flow through the projects and are therefore dependent on the specific projects that are funded.

The fund-wide elements relate to two key activities of SIPF: supporting the projects in achieving their aims, and building an understanding around place-based policy and its effectiveness.

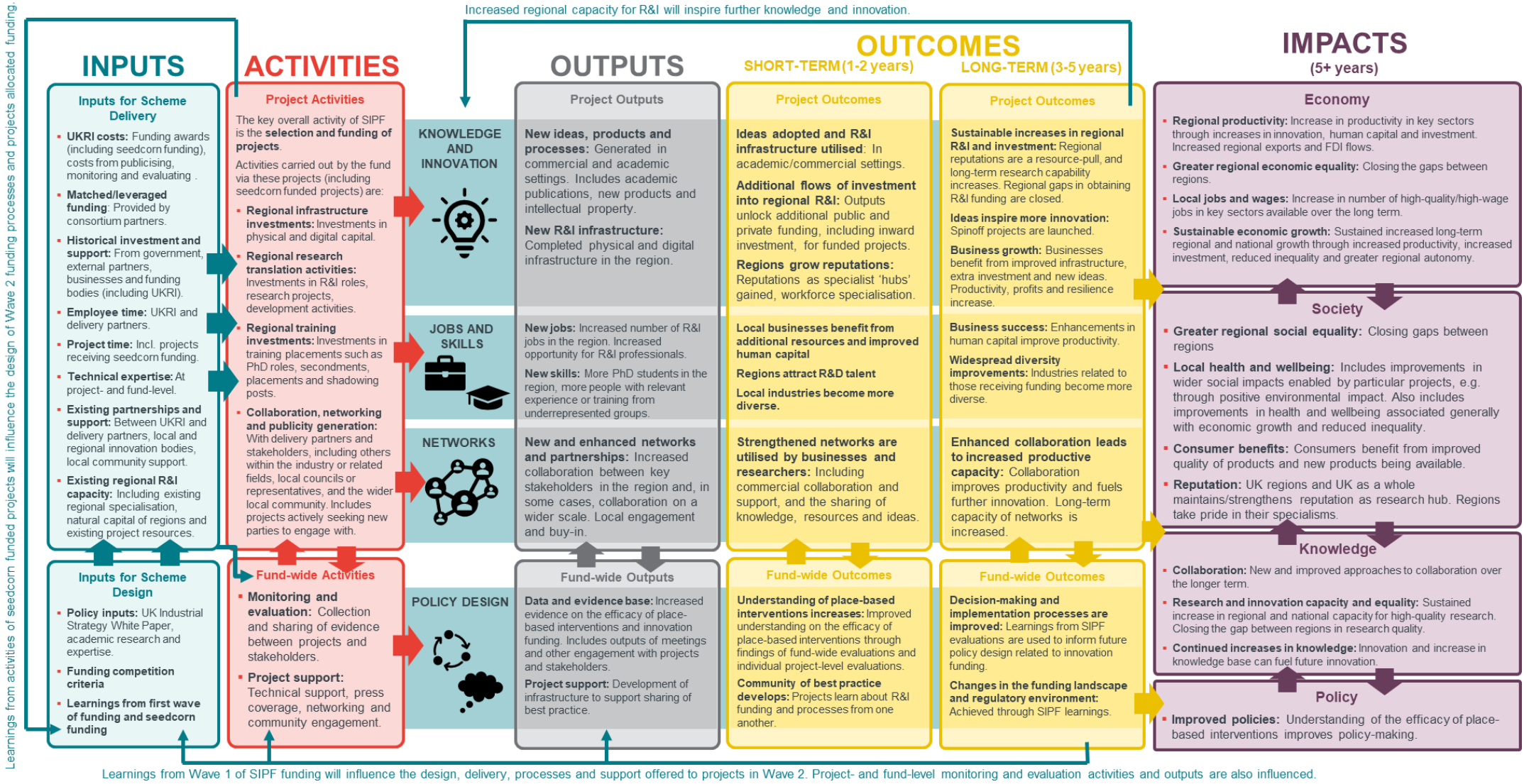
There are four **themes** that sit across the logic model (see Figure 3).

Figure 3 SIPF logic model cross-cutting themes

	Theme	Detail
	Knowledge and innovation	This includes new **ideas** – generated in both academic and commercial settings – and new **infrastructure** built in the region. It includes regions building on existing **specialisations** to develop reputations as regional 'hubs', sustainable improvements to regions' **R&I capabilities** and success in **pulling in further investment**.
	Jobs and skills	This includes increased local R&I **jobs** and **research activities**, and increased opportunities for **training** in both academic and industry settings. This will enhance **business success** and **productivity** supporting broader job creation. It also includes increased **diversity** in the individuals filling the jobs and training posts, with increased numbers from under-represented groups.
	Networks	This includes **collaboration**, **networking** and **partnerships** between consortium partners (research organisations, businesses and local government) and with stakeholders in the **wider local community**. It also includes publicity-generation activities and activities to support local engagement and buy-in. These relationships ultimately improve **productivity** and fuel further **innovation**.
	Policy Design	This theme sits across the fund-wide elements of the logic model and relates to the ways in which SIPF will **increase the evidence base on place-based policy** and its effectiveness in encouraging innovation and growth. **Learnings from the SIPF** evaluation activities are used to inform future policy design, as well as changes to the funding landscape and regulatory environment.

We now describe in more narrative detail some of the key aspects of the logic model in order to fully articulate the Theory of Change for the SIPF.

Figure 4 Logic model



3.2.1 Interactions and feedback loops

There are clear *interactions between the project-level and Fund-wide elements* of the logic model, represented by the vertical arrows in Figure 4.

The ability of projects to carry out their **activities** depends in part on support from UKRI, such as providing technical support and generating press coverage, and establishing networks and partnerships. Data collected by the individual projects will also feed into UKRI's monitoring and evaluation processes. All activities, both project-wide and Fund-level, will draw on the inputs for scheme delivery. These relationships will be explored as part of the process evaluation (see Section 5).

In relation to **outputs**, the establishment of a data and evidence base on the efficacy of place-based investment will involve collaboration and data-sharing between UKRI and the funded projects. For **outcomes**, the overall understanding of the effectiveness of place-based interventions and the learnings used to inform future policy design will be drawn from the short- and long-term outcomes emerging from the projects. For **impacts**, economic impacts will improve local living conditions, which will improve local health and wellbeing and reduce inequality; there may also be reverse relationships between local social benefits and economic conditions.[22] Continued increases in knowledge will increase long-term productivity, which will lead to sustainable economic growth. All of these interactions are dependent on the assumptions detailed below.

In addition to these interactions, there are three key *feedback loops*

1. **Learning from the first Wave of SIPF funding.** As SIPF funding is awarded in two Waves, there are opportunities for learnings from the first Wave of funding to influence the design, delivery, processes and support offered to projects awarded funding in the second Wave. Learnings from Wave 1 projects will also influence monitoring and evaluation activities for Wave 2, as well as the data and evidence outputs that are developed.
2. **Increased regional capacity for R&I.** As SIPF projects increase ideas and innovation, spinoff projects are launched and regional specialisation is enhanced, this, in turn, will inspire increased knowledge and innovation that will lead to further outputs, outcomes and impacts.
3. **Learnings from seedcorn-funded projects.** A key feature of SIPF is that it allocates seedcorn funding to projects that do not necessarily go on to receive further funding from the programme. Learnings from seedcorn-funded projects can therefore influence the design of SIPF and the projects that are chosen, and evidence to inform the understanding of the impacts of place-based funding (Fund-wide outcomes).

3.2.2 Timescales

As shown in Figure 4, discussions with the SIPF Delivery Team and representatives from the funded projects suggest that relevant timescales for the

[22] See for example Diener, E., and Biswas-Diener, R. (2002). Will Money Increase Subjective Well-being?. Social Indicators Research, 57, 119-169. Available at: https://www.researchgate.net/publication/227598662_Will_Money_Increase_Subjective_Well-Being

elements of the logic model may be 1-2 years for the realisation of short-term outcomes, 3-5 years for long-term outcomes and 5+ years for impacts. This suggests that we will not observe the full impacts within the timeframe of the Fund-wide evaluation, though we should expect to observe partial impacts and key leading indicators of success.

Although the impact evaluation will include a preliminary VfM assessment, it should be recognised that this will be based only on partial evidence. Where possible, this means we may need to gather evidence on *expected* or *anticipated* outcomes and impacts beyond the current timeline for SIPF, though these will by design likely be more speculative and uncertain than evidence we can gather on realised outcomes and impacts, and even harder to attribute to SIPF. These projections can include future impacts anticipated based on outcomes achieved (drawing on both existing literature linking outcomes and impacts and self-reported views from projects and SIPF beneficiaries) as well as perceptions of future outcomes and impacts as yet not begun to be realised.

3.2.3 External enablers and barriers

The key enablers and barriers to the success of SIPF in moving across the elements in the logic model are described in Figure 5. These are *external* to the Fund in that they are beyond the control of the SIPF programme and projects.

Figure 5 Key enablers and barriers

Stage	Enablers and barriers
Inputs to activities	▪ Factors related to the quality of inputs that are external to UKRI: existing R&I resources and regional specialisms, technical expertise, availability of complementary and matched funding.
Activities to outputs	▪ Mobility of resources, such as the ability of workers, researchers, businesses, capital and ideas to move to the region. ▪ Public and community support, legislation and policy. ▪ Absence of external shocks that would hinder the ability of each project to deliver the outputs outlined in their plans.
Outputs to outcomes	▪ As above, dependent on the mobility of resources and community, legislation and policy. ▪ Availability of additional funding sources. ▪ Policy outcomes are dependent on the availability of appropriate external data sources for monitoring and evaluation.
Outcomes to impacts	▪ Favourable economic, social and political conditions and the absence of shocks. ▪ Foreign investment relies on international economic conditions and effective marketing strategies. ▪ Long-term policy change relies on political buy-in and support, and appropriate changes to legalisation.

3.2.4 Assumptions

The key assumptions relating to each stage of the logic model are explored in Figure 6. These are directly linked to SIPF's design and implementation, and help to inform the process and impact evaluation questions.

Figure 6 Key assumptions

Stage	Assumptions
Inputs to activities	▪ A sufficient number of high-quality projects are aware of SIPF and apply for funding. ▪ Applications are received from a diverse mix of applicants in terms of industry and geographic location. ▪ Project plans are accurate and in line with the aims of SIPF. ▪ There is sufficient engagement with the local community and other stakeholders (see below).
Activities to outputs	▪ Increased investment in R&I is successful in generating new ideas and knowledge. ▪ A diverse group of individuals apply for jobs and training places, and a sufficient proportion of applicants are local. ▪ Job vacancies and training places generated by SIPF are filled in sufficient time. ▪ Consortium partners are able and willing to work together across disciplinary boundaries. ▪ Project and programme management is effective, enabling projects to achieve their outputs. ▪ Data is of sufficient quality and depth to produce reliable and informative evidence on the effectiveness of the Fund. There are suitable counterfactual projects or places to compare with funded projects.
Outputs to outcomes	▪ New ideas and knowledge inspire further new ideas, and funding and resources are sufficient to catalyse this new activity. ▪ Knowledge sharing processes enable effective diffusion of ideas. ▪ Consortium partners have the resources and motivation to seek further funding for their projects and expand the scope of their work. ▪ SIPF increases regional specialisation in a way that is recognised and valued by potential funders and investors. ▪ Projects have broad scalability and potential for follow-ons or spinoffs. ▪ Outputs of funded projects would not have been achieved (or achieved more slowly, or to a lower quality or volume) in the absence of the SIPF funding.
Outcomes to impacts	▪ New products and services created by the projects work effectively in practice to deliver economic and wider benefits. ▪ Insights from the evaluation processes are clear and therefore help to inform future policy design.

In addition, for outputs to flow through to impacts, a number of assumptions need to be made about external conditions outside of SIPF's control. Specifically:

- Economic conditions enable projects to grow and new spinoffs to be created.
- Wider social, political and economic factors – including unexpected shocks – do not have sufficient impact to negate the effects of SIPF on regional economies.
- Reduced regional inequality relies on the absence of significant positive shocks to local economies not targeted by SIPF, e.g. London and the South East.
- There is sufficient political will to act on the evidence developed by SIPF in the policy-making process.

4 IMPACT EVALUATION FRAMEWORK

4.1 Impact evaluation themes

The logic model and theory of change set out in Section 3 form the basis of the impact evaluation framework. We began by distilling the elements of the logic model into seven broad **themes** for the impact evaluation summarised in Figure 7 below, which form the organising structure of the impact evaluation questions and indicators set out in Section 4.2.

Figure 7 Impact evaluation themes

	Theme	Detail
	Knowledge and innovation	This theme considers the extent to which SIPF has contributed to creating new ideas, products, processes, as well as infrastructure for R&I.
	Jobs and skills	This theme relates to the Fund's objectives to increase the number of R&I jobs in the SIPF regions and the number individuals developing R&I skills.
	Economic impact	This theme considers the extent to which SIPF has delivered substantive long-term benefits for the economy, including regional productivity and economic equality.
	Networks and collaboration	This theme relates to the Fund's objectives to create new and enhanced networks and partnerships between key stakeholders in the regions where funded projects are located.
	Societal impact	This theme considers the extent to which SIPF has delivered long-term benefits for society, including local health and wellbeing, and equality diversity and inclusion (EDI).
	Policy design	This covers the Fund-wide objective to increase the data and evidence base around place-based funding and therefore improve future policy-making.
	Value for money	This theme considers the extent to which the benefits that can be attributed to SIPF constitute value when compared to the costs of the Fund.

Source: Frontier Economics, RAND Europe and know.consulting

4.2 Impact evaluation framework

Having identified the evaluation themes, we developed a set of evaluation questions (EQs) and associated indicators under each theme. These EQs and indicators were identified based on the preliminary list included with the evaluation invitation to tender, the document review, logic model/theory of change and extensive engagement with projects, the SIPF Delivery Team, Evaluation Working Group and the SIPF External Evaluation Advisory Group.

Figure 8 provides a summary of the framework, setting out, for each theme, the relevant EQs and indicators, and a summary of the data and evidence sources we expect to use for each indicator. This includes data and evidence from projects

(both through ResearchFish[23] returns and project-level evaluations, including KPIs), and secondary data sources. Figure 9 is then a more detailed summary of the secondary data sources identified that could be used in the fund-wide evaluation of SIPF.

The indicators bring together a mix of qualitative and quantitative information which will be used to inform a rounded evaluation conclusion. We recognise that the impact of SIPF is likely to be small relative to the macro-level economic trends and events, which affects how some of the top-down indicators (e.g. local gross value added, GVA) should be interpreted. Supplementing this with bottom-up project-level information is key. See Section 6.1 for a more detailed discussion of the evaluation challenges.

The use of qualitative evidence

In Figure 8 we emphasise the quantitative evidence we expect to be available from a range of sources to provide information relevant to the EQs and indicators. We recognise that *qualitative* evidence (gathered in individual project-level evaluations, and directly as part of this Fund-wide evaluation from case studies and interviews) will also form a critical part of the evidence base across many of the EQs. In the Figure we highlight where we anticipate qualitative evidence being particularly important, but it should be taken that qualitative views will inform thinking across the EQs.

Figure 8 and Figure 9 are summary tables for ease of reference. In Annex E, we provide a thorough account of these sources including more detail of the external sources, project-level information and ResearchFish fields that we expect to support each indicator.

[23] ResearchFish is an online reporting system used by funders to collect information on the outcomes and the impact of their research. All SIPF projects are required to complete ResearchFish returns.

Figure 8 SIPF: Impact Evaluation Questions and Indicators

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
		Knowledge and Innovation		
EQ1: Did SIPF increase the regional quality and quantity of academic research in key research fields? **To what extent was long-term capacity for such research increased? To what extent did this leverage existing local strengths?**	Quantity and impact of academic research outputs related to SIPF support (e.g. papers, events, conferences)	Dimensions.AI (see notes) contains data on publication citations and policy document citations for a given academic publication. This may incur additional costs. KEF/REF returns will also provide information on quality and impact of outputs	Projects are asked to provide detail on associated academic publications including type of publication, and the name, author, year and journal in which it was published.	Most projects also have KPIs related to academic outputs, and "number of publications" is generally the intended metric. Quality and impact of publications assessed on the basis of qualitative and quantitative project-level evaluation evidence outside specific KPIs, and qualitative insights from case studies and expert interviews
	Regional trends in academic R&I spending in targeted fields supported by SIPF	The Higher Education Statistics Agency (HESA) publishes data on the finances for individual higher education institutes in the UK. We intend to use HESA data to explore the total research funding for universities in the relevant regions. We note, however, that academic research funding is not the same as research spending. HESA also publishes data on expenditure, but it is unclear whether it is possible to separate out research expenditure.	Given the focus on aggregate regional trends, project data is less relevant.	Given the focus on aggregate regional trends, project data less relevant.
	Additional research funding leveraged for the region as a result of SIPF in targeted field	Dimensions.AI appears to have data on supporting grants for a given publication. This may incur additional costs.	Detail on further funding generated, including the organisation providing the funding, value, and type (e.g.	Four projects also have KPIs related to the value of research grants received. The other

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
		Gateway to Research allows a search of publicly funded research and innovation.	research grant, studentship, capital).	three projects have no specific KPIs with academic focus.
EQ2: Did SIPF increase the quantity and quality of regional commercial R&I in key industries? **To what extent was long-term capacity for such R&I increased? To what extent did this leverage existing local strengths?**	IP: Number and quality / impact of patent, trademark and design applications in targeted regions and sectors	HE-BCI: Includes patents associated with academic institutions in the UK. It looks unlikely that examining this by sector will be possible. Orbis IP: Includes a cumulative measure of the number of patents filed, together with a valuation of each patent. It includes location data, financial data (where this is available), and a high-level indicator of sector. Available at an additional cost. CrunchBase contains data on trademarks and patents for firms covered by their sample. Available at an additional cost. EPO's PATSTAT database contains bibliographical data related to over 100 million patent documents. There is a fee for access to this data, and it needs to be analysed using SQL.	Detail on trademarks, patent applications published and granted. A brief description is provided for each new piece of IP reported to ResearchFish which may help gather insights relating to quality / impact.	Two projects have KPIs specifically mentioning IP. Quality and impact of IP assessed on the basis of qualitative and quantitative project-level evaluation evidence outside specific KPIs, and qualitative insights from case studies and expert interviews
	Regional trends in commercial R&I spending in targeted sectors	Business enterprise research and development (BERD) time series: Publicly available up to 2019, with the next release due in November 2021. This contains total value of business spending on R&D. It is possible	Given the focus on aggregate regional trends, project data less relevant.	Given the focus on aggregate regional trends, project data less relevant

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
		to split by broad industry categories and wider regional splits. However, it does not seem possible to split by both simultaneously. The UK sample size is approximately 5,400 businesses. UK Innovation Survey (UKIS): Headline findings and statistical annexes available. Latest data covers 2016-2019. Only some high-level R&D statistics appear available publicly. This has high-level regional and sectoral splits (though not simultaneously). Importantly, the publicly available data does not appear to contain any information on 'value'. Instead, fields are those such as 'Innovation expenditure by area in 2018, proportion of total innovation expenditure'.		
	Additional business R&D and other innovation-related investments leveraged as follow-on investments as a result of SIPF, including inward investment from outside the region and outside the UK	Crunchbase contains information on investment, funding rounds and total equity for firms covered by their sample. Available at an additional cost. Beauhurst (also available at an additional cost) may also be useful.	No relevant fields.	Few projects have KPIs specifically related to additional commercial investment.
	Private sector R&I jobs created	See EQ5	See EQ5	See EQ5

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
	Perceived view on regional long-term R&I capacity	Limited scope for secondary analysis	No relevant fields	Qualitative and quantitative project-level evaluation evidence outside specific KPIs, and qualitative insights from case studies and expert interviews
EQ3: Have the technologies and new knowledge supported by SIPF progressed innovations and helped create new businesses? If not, why not?	Number of new products and commercial success, as measured by take-up, profitability, expected revenues	Limited scope for secondary analysis.	A set of questions on outputs in the following categories: ▪ Medical products and interventions ▪ Artistic and creative products ▪ Software and technical products. Little focus on 'commercial success'	5 projects have KPIs that are somewhat relevant. Again, little focus on commercial success.
	Spinoff/spinout commercial projects, products and businesses directly related to SIPF funding and evidence on their performance	Publicly available ONS data from the Inter-Departmental Business Register (IDBR) provides numbers of businesses by SIC code and region (not local authority), with the latest figures from 2020. The Business Structure Database (BSD) runs to 2020 and contains employment data. This is only for secure access. FAME contains data on companies based in the UK and Ireland. Available at an additional cost. HE-BCI contains data on spinoffs/spinouts by HE provider. It includes estimated	Details of spinouts associated with the project, and the number of people employed by these spinouts.	Two of the seven projects also have KPIs focusing on the number of spinouts/spinoffs Qualitative and quantitative project-level evaluation evidence outside specific KPIs, and qualitative insights from case studies and expert interviews to understand performance of spinout companies

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
		external investment received and the number of firms surviving more than three years. Evidence on the economic performance of spinouts associated with SIPF funding could come from identifying these organisations in secondary data and published accounts		
	Progress of supported technologies along commercial readiness scales (e.g. TRL/MRL/SRL)	Limited scope for secondary analysis	No relevant fields	One project has a KPI related to this. Further qualitative and quantitative project-level evaluation evidence outside specific KPIs, and qualitative insights from case studies and expert interviews.
EQ4: Have the innovations, technologies and new knowledge supported by SIPF been adopted more widely? **If so, how are they being used? If not, why not?**	Adoption of SIPF-supported innovations, technologies and knowledge by organisations within region/sector targeted by projects	It is possible to use commercial sources (e.g. Glass.AI) to track evidence of 'adoption' based on keyword searches of company, academic and government websites. However, this is likely significant additional cost	Limited relevance	We recognise that 'adoption' will look different across sectors. Four projects are tracking KPIs that may be relevant to adoption. Project-specific qualitative and quantitative insights may come from project-level evaluations as well as further qualitative insights from case studies and expert interviews.
	Adoption by organisations outside region/sector targeted by projects	See above	See above	See above
Jobs and Skills				

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
EQ5: Did SIPF improve the job prospects, in terms of the number, variety and profile of jobs available within the targeted regions? If not, why not?	Number and profile of jobs supported by SIPF funding	Annual Survey of Hours and Earnings (ASHE): This is a survey of 300,000 employees. It is possible to split data by local authority and sector. Full data is only for secure access, but some high-level statistics derived from this dataset are published by the ONS. BSD: As noted above under EQ3, the BSD appears to include employment statistics.	No relevant fields	Six of seven projects are tracking relevant metrics, including number of jobs created and employment in cluster firms. It is unclear whether, and how consistently, projects are tracking the profile of these jobs. Specific examples may be available from project-level evaluations alongside qualitative evidence gathered from case studies and expert interviews.
	Number and profile of job openings and opportunities supported by SIPF funding.	Limited scope for secondary analysis	No relevant fields	Qualitative and quantitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence on quality / profile of jobs and openings associated with SIPF support gathered through the case studies and expert interviews.
	Profile of follow-on jobs for those supported by SIPF funding	Limited scope for secondary analysis	Includes the 'next destinations' of those supported by the award. This includes location, sector and discipline.	No projects have KPIs specifically related to this indicator.
EQ6: Did SIPF increase the skills base and/or alter the profile of skills in targeted regions? If not, why not?	Volume and quality of skills-focused training, course and qualifications supported by SIPF	HESA: Publicly available data on student numbers by region and subject. UK government publishes data on apprenticeship numbers up to 2020. It is possible to split by discipline and region, however volumes are rounded to the nearest 10.	No relevant fields	Five projects are collecting metrics related to this indicator. Qualitative and quantitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence on quality gathered through the case studies and expert interviews.

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
	Increased understanding of skills profile and gaps of targeted sectors and regions	Limited scope for secondary analysis	No relevant fields	No specific KPIs Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews.
		Economic Impact		
EQ7: Did SIPF funded-activities contribute to improved economic performance, particularly within targeted industries and regions? If so, was the improvement sustained? If not, why not?	Impact of SIPF on regional and sectoral GVA.	The Office for National Statistics (ONS) publishes GVA estimates by industry, city and enterprise region. It may be possible to use secure-access versions of ONS Annual Business Survey (ABS) data to construct regional/sectoral splits aligned with SIPF projects, if published data lack granularity.	No relevant fields	Five projects have KPIs related to GVA
	Impact of SIPF on regional and sectoral productivity	ONS data: Experimental statistics published on firm level productivity from the Annual Business Survey. It may be possible to use secure-access versions of ABS and BSD to construct regional/sectoral splits aligned with SIPF projects, if published data lack granularity	No relevant fields	No projects have KPIs specifically related to productivity
	Impact of SIPF on regional and sectoral exports	We will explore using HMRC export data. However, our experience is that it is not possible to access HMRC	No relevant fields	Two projects have KPIs specifically related to exports

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
		microdata for bespoke analysis for wider evaluation projects.		
	Sustainability of economic impacts within targeted sectors and regions	Limited scope for quantitative analysis	No relevant fields	Limited scope for quantitative analysis. Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews.
EQ8: Did SIPF contribute to closing gaps in economic performance across UK regions? If not, why not?	Improvements in economic performance over and above those seen outside of SIPF-supported projects and regions	As above: potential counterfactual analysis using sectoral and regional differences in trends	As above: potential counterfactual analysis using sectoral and regional differences in trends	As above: potential counterfactual analysis using sectoral and regional differences in trends
		Networks and Collaboration		
EQ9: Did SIPF enhance and sustain the nature of collaboration and the collaboration infrastructure within targeted industries, research fields and regions? If not, why not?	New and sustained collaborations between businesses, academics and local decision-makers within SIPF-funded industries and regions.	HE-BCI contains data on engagement and collaboration for UK HE institutions.	Detail on collaboration and partnerships associated with the projects, including name and location of collaborators. ResearchFish also asks the projects to specify the year in which the partnership commenced.	Five projects also have KPIs related to research and collaboration.
	Enhanced and more effective collaborations supported by SIPF-enabled investments/improvements in collaboration infrastructure.	Limited scope for quantitative analysis	No relevant fields	Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews.
	Impact of place-based nature of SIPF on nature / quality of supported collaboration relative to other funding mechanisms.	We will aim to benchmark against other UKRI evaluations	No relevant fields	Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
				through the case studies and expert interviews.
		Societal Impact		
EQ10: Was the reputation for R&I of targeted regions and sectors enhanced as a result of the SIPF funding and outputs? If not, why not?	Academic standing of universities in the regions in the fields supported by SIPF funding.	Research Excellence Framework (REF)/Knowledge Exchange Framework (KEF) returns University rankings by field (requires caution)	No relevant fields	No relevant KPIs Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews
	National and international reputation of local areas targeted by SIPF as centres of innovation in relevant sectors.	Limited scope for quantitative analysis	Asks for detail on awards and recognition.	Four projects have KPIs related to 'engagement'. Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews
EQ11: To what extent (and how) have SIPF projects fostered an equal, diverse and inclusive research and business environments, and how well do SIPF projects align with UKRI ED&I aims?	ED&I measures for funded projects, project partners and key industries in targeted regions	The ONS publishes gender pay gap statistics by region and industry. The JRF Inclusive Growth Monitor scores LEPs on different aspects of inclusive growth (only available for two years). Analysis of UKRI Je-S/IFS systems.	No relevant fields	Two projects have KPIs related to ED&I Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews. Particular focus on how projects have considered ED&I in delivery of their activities and leveraged their value-add to support local/sectoral ED&I.
EQ12: Did the outputs of SIPF improve the health, wellbeing and environment	Examples of social impacts relating to health, wellbeing, environment or other wider	Regional health and wellbeing statistics	For some projects, ResearchFish data may be relevant. For example, the	Three projects have relevant KPIs

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
of individuals in targeted regions?	benefits from SIPF-supported projects and activities.		common question set contains a group of questions on medical products and interventions including the 'achievements' that apply to this such as improved diagnosis and decreased mortality.	Qualitative evidence from project-level evaluations sitting outside KPIs. Additional qualitative evidence gathered through the case studies and expert interviews. Focus may be on longer-term social impacts expected from achieved outputs and outcomes.
		Policy Design		
EQ13: To what extent has the evidence base around the impact of locally targeted R&I spending in the UK been improved?	Improved evidence on and understanding of the efficacy of place-based R&I funding	Limited scope for quantitative analysis	Limited scope for quantitative analysis	Limited scope for quantitative analysis. Qualitative evidence gathered from within case studies and expert interviews.
EQ14: Did the learnings from SIPF influence and improve the design of R&I policy?	Evidence on how SIPF and projects have influenced and engaged policymakers (local, regional, national)	It is possible to use Glass.AI to search for keywords, e.g. 'SIPF', 'place', in policy documents. This is likely to incur additional costs. Dimensions.AI contains data on policy document citations for a given academic publication. This may incur additional costs. Internal UKRI data may be able to provide an indication of 'policy reach'.	ResearchFish contains details of examples of policy influence - categories include citations in policy papers, guidelines, reviews, committees. The questionnaire also includes geographic reach of influence, area of policy influence and judgement of additional impacts. Fields related to 'engagement' including category, audience, geographic reach, number of individuals reached, judgement of the main impact of the activity (categories) and a short description.	Some projects have signalled they expect to gather evidence on this directly but not typically as part of routine KPIs Qualitative evidence gathered from within case studies and expert interviews.
	Use of place-based policies following SIPF, and an overall	It is possible to use Glass.AI to search for keywords, e.g.	No relevant fields	No relevant KPIs

Evaluation Question	Indicator(s)	Secondary Data Sources	ResearchFish Data	Other Project-Level Evidence
	judgement of the influence of SIPF in the design of these policies	'SIPF', 'place', in policy documents. This is likely to incur additional costs.		Qualitative evidence gathered from within case studies and expert interviews.
		Value for Money		
EQ15: To what extent does the SIPF represent value for money given the overall impact on knowledge, economy and society relative to the size of the investment?	Total administration and investment costs associated with SIPF	UKRI central data	N/A	N/A
	Measurement and valuation of economic and social impacts of SIPF, including qualitative assessment where quantification or valuation is not possible.	Draws across evidence gathered from all sources to support the impact evaluation		
	Assessment of place-based aspects of SIPF value for money (e.g. local multipliers, displacement of activity across regions)	N/A	N/A	N/A

Notes: *Dimensions.AI is a searchable database of measures of academic impact including grants, patents, clinical trials, publications and citations. UKRI has a subscription.*
UKRI is still in the process of finalising which ResearchFish questions the projects can provide answers for.

Source: *RAND Europe, Frontier Economics and know.consulting*

Figure 9 Potential secondary data sources

Dataset	Description	Relevant EQs and Indicators
Dimensions.AI	Dimensions.AI is a searchable database of measures of academic impact including grants, patents, clinical trials, publications and citation. We note that UKRI has a subscription, which allows searches of more types of publication, as well as export of data.	▪ EQ1, Indicator 1, Indicator 3 ▪ EQ9, Indicator 1 ▪ EQ13, Indicator 1 ▪ EQ14, Indicator 1
HE Finance Data (HESA)	The Higher Education Statistics Agency (HESA) publishes data on the finances for individual higher education institutes in the UK. This covers the income and expenditure of higher education providers in the UK, as well as other financial	▪ EQ1, Indicator 2

Dataset	Description	Relevant EQs and Indicators
	statements covering balance sheets, cash flow and capital expenditure. Data is published annually, and recent data is published as open data.	
HE-BCI (HESA)	HESA also publishes data on the *Business and Community Interaction* of higher education providers in the UK. This covers a broad range of topics, is published annually, and is made openly available to download. Examples of the range of topics covered by this data include: income from collaborative research involving public funding, CPD courses for business and the community, IP licence numbers and disclosures, IP income, IP spin-off activities and community engagement.	▪ EQ2, Indicator 1 ▪ EQ3, Indicator 2 ▪ EQ9, Indicator 1
Gateway to Research	Gateway to Research is a openly available search portal developed by UKRI. It allows a search of publicly funded research and innovation with specific terms.	▪ EQ1, Indicator 3
Orbis IP	Database provided by Bureau van Dijk (BVD). Combines BVD's FAME database, which covers private company information for UK and Ireland and global patent data. Includes a cumulative measure of the number of patents filed, together with a valuation of each patent. It includes location data, financial data (where this is available), and a high-level indicator of sector. It is available at an additional cost of around £12,000 per year.	▪ EQ2, Indicator 1
CrunchBase	CrunchBase contains information on companies. It is a crowdsources platform, with other 675,000 firms in the database. Crunchbase organises companies into 700+ Industries and 40+ Industry Groups. Company profiles can belong to multiple industries and industry groups. Data on trademarks and patents is also available for firms within their database. It also contains data on private investment, including funding status, number of funding rounds, and total funding. Access to CrunchBase is available for around £588 per year.	▪ EQ2, Indicator 1 ▪ EQ2, Indicator 3
PATSTAT	EPO's PATSTAT database contains bibliographical data related to over 100 million patent documents. There is a fee for access to this data, and it needs to be analysed using SQL.	▪ EQ2, Indicator 1
Beauhurst	Beauhurst is a commercial database which covers all UK incorporated companies. There is an additional level of data for companies which meet one of Beauhurst's triggers to be identified as 'high-growth'. Includes information on SIC codes, location, investment and the associated investors, grants, IP and employees. It is also possible to complete a keyword search to identify businesses in certain sectors. It is available at a significant additional cost (around £750 per month).	▪ EQ2, Indicator 1 ▪ EQ2, Indicator 3

Dataset	Description	Relevant EQs and Indicators
BERD	The Business Enterprise Research and Development (BERD) time series is published by the ONS and is publicly available up to 2019, with the next release due in November 2021. The BERD contains total value of business spending on R&D. It is possible to split by broad industry categories and wider regional splits. The UK sample size is approximately 5,400 businesses.	▪ EQ2, Indicator 2
UKIS	The UK Innovation Survey (UKIS) is administered by the ONS and collects data on the innovation activities of businesses. The headline findings and some statistical annexes covering high-level R&D statistics are made publicly available. The latest data covers the period 2016-2019. It is biennial, and has a sample size of approximately 32,000.	▪ EQ2, Indicator 2
BSD	The Business Structure Database (BSD) contains a handful of variables for almost all business organisations in the UK. It is a snapshot of the Inter-Departmental Business Register. Data begins in 1997 and currently runs through to 2020. For each company, information available includes employment, turnover, foreign ownership, and industrial activity based on SIC codes, year of birth, year of death, and postcode.	▪ EQ3, Indicator 2 ▪ EQ5, Indicator 1 ▪ EQ7, Indicator 2
ONS: Business – Activity, Size and Location	Publicly available ONS data also taken as a snapshot of the the Inter-Departmental Business Register (IDBR) provides high-level statistics numbers of businesses by SIC code and region (but not local authority), with the latest figures from 2020.	▪ EQ3, Indicator 2
Glass.AI	Glass.AI is a commercial source that enables keyword searches of business websites, news, social media and official sources. Use of this will likely incur significant additional cost.	▪ EQ4, Indicator 1, Indicator 2
ASHE	The Annual Survey of Hours and Earnings (ASHE) is a survey of employees in the UK, covering approximately 140,000 to 185,000 individuals per year. It tracks the same individuals per year, and therefore it is possible to construct a panel dataset back to 1997. Data on the wages, paid hours of work, pensions arrangements, age, occupation and industrial classification are available. Full data is only for secure access, but some high-level statistics derived from this dataset are published by the ONS.	▪ EQ5, Indicator 1
HE Student Data (HESA)	The Higher Education Statistics Agency (HESA) publishes data on student enrolments for higher education providers in the UK. This is open data that is published annually, and contains high-level breakdowns of area of study and some personal characteristics.	▪ EQ6, Indicator 1

Dataset	Description	Relevant EQs and Indicators
Apprenticeships and Traineeships data – UK government	UK government publishes data on apprenticeship numbers up to 2020. It is possible to split by discipline and region, however volumes are rounded to the nearest 10.	▪ EQ6, Indicator 1
ONS	The Office for National Statistics (ONS) publishes GVA estimates by industry, city and enterprise region. These high-level statistics are publicly available as a time series on the ONS website.	▪ EQ7, Indicator 1
ABS	The Annual Business Survey (ABS) is a structural business survey conducted by the ONS. It collects financial data from businesses' end-of-year accounts which include turnover, wages, salaries and capital expenditure. The sample size is approximately 62,000, it is collected annually, and it covers most sectors of the economy. Versions of the ABS are available under secure access.	▪ EQ7, Indicator 1, Indicator 2

Source: *RAND Europe, Frontier Economics and know.consulting*

Note: *This table contains the key potential secondary sources identified to date, however other sources may be available.*

5 PROCESS EVALUATION FRAMEWORK

The process evaluation will explore how SIPF processes work in practice and the extent to which the design and implementation of the Fund has been appropriate and effective. In combination with the impact evaluation, this will also allow us to explore how, and to what extent, place-based funding, as implemented through SIPF, is able to deliver on the Fund's intended outcomes.

In this Section, we first set out an initial mapping of SIPF processes to provide context to the process evaluation framework. This process map was developed through document review and consultation with key stakeholders including the SIPF Delivery Team and project leads. Following the overview of SIPF processes, we set out the process evaluation framework, comprising our process evaluation questions (EQs), related indicators, and the sources we will draw on to address these questions during the evaluation. Process evaluation methods are expanded on in Section 6.3.

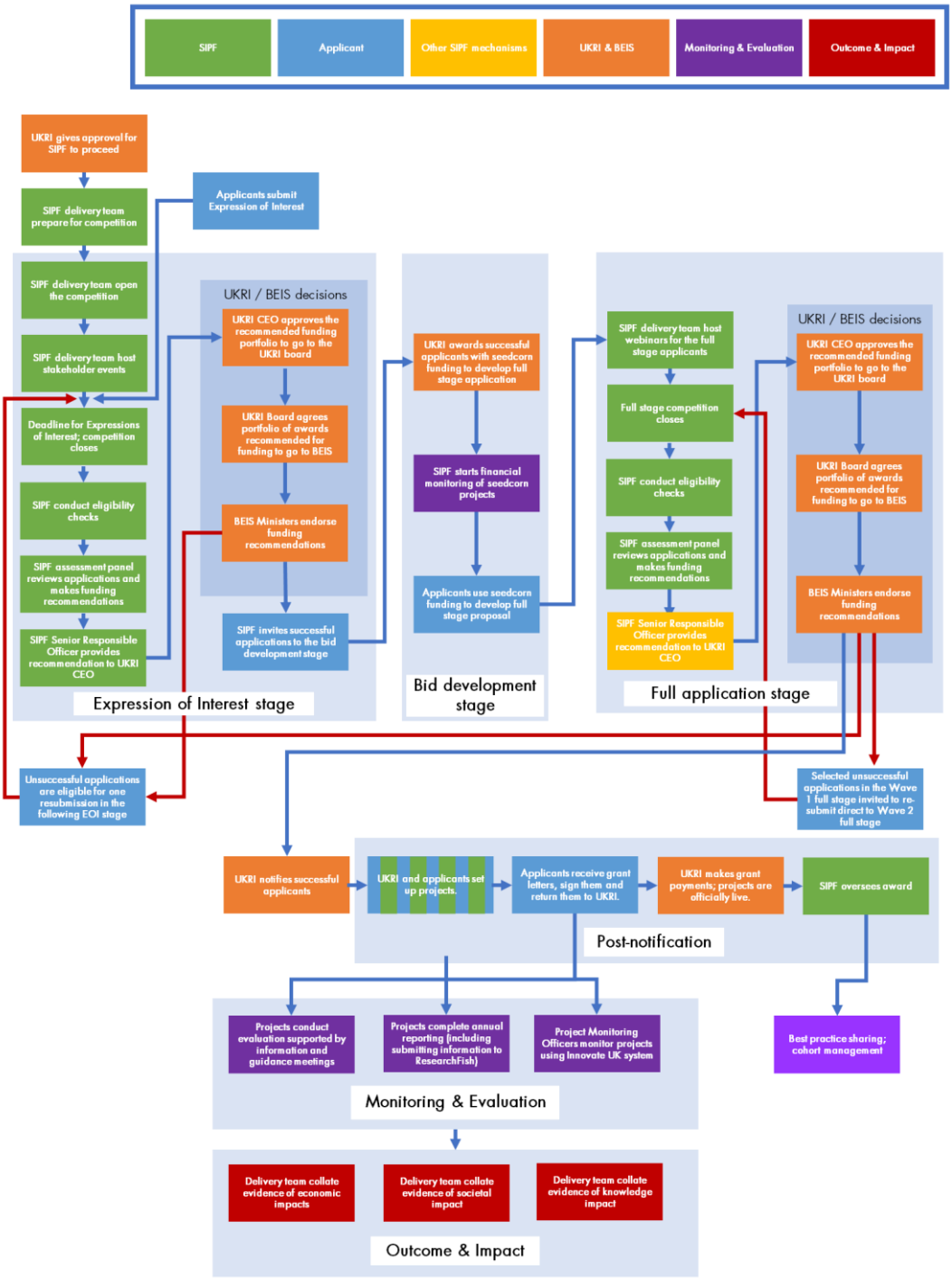
5.1 Process mapping

To provide context for the process evaluation framework, and to ensure a clear understanding of SIPF processes to inform that framework, we have conducted a process mapping exercise, illustrated below for SIPF as a whole. This focuses on Fund-level processes and does not capture the details of processes in place within each individual project – which will vary by project and is beyond the scope of this Fund-level evaluation.

The process map divides processes into a set of stages – from expression of interest, through bid development and full application stage, to post-award and monitoring and evaluation. Each of these is explained in turn below. We also highlight outcomes and impacts on the process map to emphasise the aims of the Fund. However, these are not explored in detail in the text below since they are discussed within the Theory of Change in Section 3.

Following establishment and approval by UKRI, SIPF has been implemented in two Waves (1 and 2) launched in 2019 and 2020 respectively (with final awards made in 2020 and 2021 respectively). The processes through which the Fund has been implemented were common to both Waves of funding.

Figure 10 Process Map for the Strength in Places Fund



Source: RAND Europe, Frontier Economics and know.consulting

Expression of Interest stage

The competitive process for the Fund begins with the Expression of Interest Stage. The first step in this stage consists of preparation by the SIPF Delivery Team including preparation of documents, timelines, communications and systems for the launch of the funding call.

Following the opening of the competition, the Delivery Team hosts stakeholder events that provide practical information about how to apply. At this point, applicants get involved in the process for the first time and are required to submit an Expression of Interest. The Wave 1 Expression of Interest opened on 28 May 2018 and closed on 25 July 2018; the Wave 2 Expression of Interest opened on 3 June 2019 and closed on 9 October 2019. The deadline for Expressions of Interest marks the end of this part of the process for applicants.

The SIPF Delivery Team conduct eligibility checks for those Expressions of Interest. The process of conducting eligibility checks was streamlined between Wave 1 and Wave 2, however the core eligibility criteria have remained the same. The initial eligibility check looks at funding sought, collaboration, project duration, and economic geography. The questions that form the initial eligibility check are provided in the table below. The final row on economic geography marks specific criteria for SIPF relative to other funding programmes.

Figure 11 Initial eligibility check for Expressions of Interest

Criterion	Questions
Funding	What is the total cost of the project? What is the amount of SIPF funding sought? What is the match funding cash and in-kind contributions?
Lead organisation	Is the organisation eligible to receive funding? (companies house registration type)
Grant claiming consortium partners	What is the total number of consortium partners? What is the number of HEIs/RTOs? What is the number of businesses? What is the number and type of other partners?
Project duration	What is the project duration? What is the project start date? What is the project end date?
Economic geography	Does the application focus on a specific defined economic geography? Are all the consortium and collaboration partners in the economic geography? Is there a map that covers a continuous area and includes all partners?

Source: RAND Europe, Frontier Economics and know.consulting

Once it has been confirmed that Expressions of Interest are eligible, the SIPF assessment panel reviews applications based on the assessment criteria. These call for ambitious, coherent and well-evidenced applications to drive significant, relative local growth and productivity, by aiming to achieve, through research and innovation activities:

1. A significant, relative, uplift in growth and/or productivity;
2. In a defined geographical target area / economic geography;
3. That increases private sector R&D intensity in the region in support of the government's 2.4% R&D commitment.

The assessment panel makes funding recommendations to the SIPF Senior Responsible Officer (SRO), who provides these recommendations to the UKRI

CEO. The UKRI CEO approves the recommended funding portfolio to go to the UKRI board, and the board agrees the portfolio of awards recommended for funding to go to the Department for Business, Energy and Industrial Strategy (BEIS).

BEIS Ministers endorse funding recommendations, and successful applications are invited to the bid development stage. In Wave 1, 96 proposals were submitted at EOI stage, of which 85 proposals were eligible, and 23 projects were successful. In Wave 2, 89 proposals were submitted at EOI stage, of which 80 were eligible, and 17 projects were successful. Unsuccessful applicants in one Wave are eligible for one resubmission in the subsequent Expression of Interest stage. In Wave 2, two proposals were invited for resubmission from the full stage of Wave 1, bringing the number of successful applications in Wave 2 to 19. The SIPF Delivery Team notify applicants of decisions made.

Bid development stage

UKRI awards successful applicants from the Expression of Interest stage with seedcorn funding of £50,000 to develop a full stage application. In this part of the bid development stage, SIPF starts financial monitoring of seedcorn projects. The development of full stage proposals takes place over a period of up to 24 weeks. Applicants use the seedcorn funding to develop a full stage proposal.

Full application stage

In order to issue a call for full applications, the SIPF Delivery Team determines the competition window, updates the programme overview, handles communications, and drafts the competition brief. The competition brief is sent to the Innovation Funding Service (IFS) content team, and the competition is created on IFS. IFS is an online document-based file transfer protocol application process used by Innovate UK that enables business-led consortia to apply for public sector funding. Only those in receipt of seedcorn funding are eligible to apply at this stage.

The SIPF Delivery Team hosts webinars for full stage applicants. Before the competition closes, the SIPF Delivery Team conducts process confirmation, coordinates membership of the Office Review Panel, confirms the date for the Office Review Panel, books venue/hold diaries, writes an eligibility memo for the SRO, identifies resource for office checks, assigns applications to checkers (two per application), and plans finance checks for applications.

After the full stage competition closes, the SIPF Delivery Team conducts further checks. These include an eligibility check covering administrative and scope checks, collating requests for additional information, compiling information collated into a spreadsheet for the Scope Review Panel, and working with the Scope Review Panel to assess the relevance and eligibility of the applications. The Scope Review Panel consists of the Programme Director, Associate Programme Director, Deputy Programme Lead, and Innovation Lead of the SIPF Delivery Team. The SRO Office checks sign off, ineligible applicants are notified, and the SIPF Delivery Team may request additional information from applicants.

At this point, the SIPF assessment panel reviews the application. This step consists of the SIPF Delivery Team confirming the expert reviewer allocation and

sending this to IFS. The IFS applications are sent to expert reviewers, there are expert reviewer webinars, and the expert reviewers accept allocation and confirm any conflicts of interest. The expert reviewers come from academia and industry, and five expert reviewers score and comment on each proposal. These scores and comments do not directly determine the outcome of proposals, but are taken into consideration by the independent Assessment Panel, chaired by Dame Kate Barker. The Assessment Panel had 10 members in Wave 1, and 12 members in Wave 2. The Assessment Panel applies the published assessment criteria to make an appropriate judgement on the relative strengths of applications taking into account expert reviews, and analysis provided by UKRI, to establish the relative impact of proposals. UKRI provides analysis or information to the panel to help inform its recommendations: this can include information provided to UKRI by another organisation, or a relevant UK government department. The BEIS Policy Team is an observer on the assessment panel.

The SRO provides a recommendation to the UKRI CEO, who approves the recommended funding portfolio to go to the UKRI board. The UKRI board agrees the portfolio of awards recommended for funding to go to BEIS. At this step in the full stage process, BEIS ministers endorse the funding recommendations.

Following the Full Stage part of the process, there are three possible outcomes:

1. Application is unsuccessful. Unsuccessful applications may return to the Expression of Interest stage for one resubmission.
2. Selected unsuccessful applications may be invited to re-submit directly to the full stage in the subsequent wave.
3. Application is successful. Successful applicants are awarded the full award (between £10 million and £50 million) by UKRI. In Wave 1, seven of the 23 projects that were awarded up to £50,000 in seedcorn funding were selected for full funding. In Wave 2, five of the 17 projects which were awarded seedcorn funding were selected for full funding.

Post-notification

In the post-notification stage, UKRI and applicants work together to set up the projects, which involves financial and due diligence checks. Conversations with Wave 1 projects conducted as part of the process of setting up this evaluation framework identified that this process can take a significant amount of time. Successful applications receive grant letters, which must be signed and returned to UKRI. UKRI makes grant payments to successful applicants, which are now officially live. The SIPF Delivery Team oversees the award by holding bi-annual meetings to share best practice.

Monitoring and Evaluation

Projects funded under SIPF are required to evaluate their work. This evaluation may be conducted internally by the project team or commissioned to an external evaluator, and should be based on an evaluation plan and set out Key Performance Indicators (KPIs) developed by each project. The nature of the evaluation depends on the specific aims and remit of the project. Support is provided from the SIPF Delivery Team through information and guidance meetings. Projects also complete

annual reporting, which involves submitting information to ResearchFish, and Project Monitoring Officers monitor projects using the Innovate UK system. Informal monitoring and evaluation also occur through best practice sharing.

5.2 Process evaluation framework

In this section, we present the process evaluation framework for SIPF.

The framework builds upon the different stages of SIPF implementation and delivery as identified in the process map, and the initial set of process evaluation questions identified in the original tender specifications. In conjunction with the overall theory of change (see Section 3), we identify evaluation questions, indicators and data sources for each question. This includes, where possible and relevant, primary data collected through key informant interviews and a Fund-wide survey, which we anticipate will provide insights across the evaluation themes and questions. In addition, further insights will be provided through the case studies conducted in the final stage of the evaluation (see Section 6.4). Our approach to collecting primary data against the process evaluation framework is explained further in Annexes C and D.

Figure 12 Process evaluation questions, indicators and data sources

Proposed evaluation question(s)	Proposed indicators	Proposed data sources
How effective has the Fund design been in delivering on the SIPF objectives including supporting R&I in a range of different geographies?	Perspectives on Fund design from key stakeholders (programme management, award holders); Geographical mix of applicants and award holders; Perceived alignment of Fund design to purpose and rationale for design (rated against SIPF objectives)	Interviews with award holders UKRI programme management; UKRI data on applicants and award holders for a portfolio fund; Interviews with UKRI programme management and government stakeholders
How effective was the governance structure between UKRI and BEIS as the Fund was set up, designed, and operationalised?	Perspectives from BEIS and UKRI on the governance structure and relationship	Interviews with UKRI programme management and government stakeholders
How was the portfolio of SIPF decided with a view to meeting the Fund objectives? How effective was the decision-making process in meeting the Fund objectives? What were the trade-offs?[24]	Perspectives on proposal evaluation and selection processes from key stakeholders (panel members, UKRI, applicants and award holders); Perceived alignment of decision-making processes to Fund aims (rated against SIPF objectives)	Interviews with review panel members, UKRI programme management, applicants and award holders; Interviews with UKRI programme management and government stakeholders
To what extent have the processes worked well in the places funded so far as SIPF has been implemented? 1. What worked for UKRI (including their support for SIPF)? What did the government learn from it?	Perspectives of applicants and award holders; Perspectives of UKRI programme management; Perspectives of government stakeholders	Interviews with applicants and award holders; Fund-level survey; Interviews with UKRI programme management; Interviews with government stakeholders; Case studies

[24] Potential trade-offs to consider include whether the proposed project is fit-for-purpose given SIPF objectives, overall geographic/regional distribution of funding, consideration to specific places in conjunction with quality of the proposed research.

Proposed evaluation question(s)	Proposed indicators	Proposed data sources
2. What is the perspective of the applicants and the awardees? 3. What are the reasons for these views?		
What has not worked well, or could have been handled differently, in the places funded by SIPF? 1. What did not work for UKRI (including their support for SIPF)? What did the government learn from it? 2. What is the perspective of the applicants and the awardees? 3. What are the reasons for these views?	Perspectives of applicants and award holders; Perspectives of UKRI programme management; Perspectives of government stakeholders	Interviews with applicants and award holders; Fund-level survey; Interviews with UKRI programme management; Interviews with government stakeholders; Case studies
What were the enablers to implementing SIPF at the Fund-level? Which of the enablers are specific to place-based funding and/or the places selected?	Perspectives of applicants and award holders; Perspectives of UKRI programme management; Perspectives of government stakeholders	Interviews with applicants and award holders; Fund-level survey; Interviews with UKRI programme management; Interviews with government stakeholders
What were the key challenges in implementing SIPF at the Fund-level? Which of the challenges are specific to place-based funding?	Perspectives of applicants and award holders; Perspectives of UKRI programme management; Perspectives of government stakeholders	Interviews with applicants and award holders; Fund-level survey; Interviews with UKRI programme management; Interviews with government stakeholders
What was the role of timing in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio?	Perspectives of UKRI programme management; Perspectives of government stakeholders; Quantitative indicators for timing (month/year of announcement and specific stages of decision-making process)	Interviews with UKRI programme management; Interviews with government stakeholders; UKRI data on funding announcements, declaration of results

Proposed evaluation question(s)	Proposed indicators	Proposed data sources
What was the role of the level of funds allocated in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio?	Perspectives of UKRI programme management; Perspectives of government stakeholders; Perspective of successful and unsuccessful applicants; Level of funds allocated per place and per project; Evaluation scores per place and project / funding prioritisation data	Interviews with UKRI programme management; Interviews with government stakeholders; UKRI data on projects and placed funded at different stages of delivery and implementation of SIPF; Case studies
What M&E processes are in place at the Fund level and how are these tailored for a place-based funding scheme?	Perspectives of UKRI programme management	Interviews with UKRI stakeholders; Case studies
What has been learned about the process of place-based funding – and what has changed in the approach and the places funded – over the course of implementing SIPF to date? 1. What, if any, are the specific lessons in supporting place-based innovation involving businesses, researchers, and local enterprise partnerships, local/regional political leaders, and local/regional councils? 2. What, if anything, should be done differently when providing place-based funding based on SIPF experiences so far?	Perspectives of applicants and award holders; Perspectives of UKRI programme management; Perspectives of government stakeholders	Interviews with applicants and award holders; Fund-level survey; Interviews with UKRI programme management; Interviews with regional/local government stakeholders; Case studies
What was the awardees' overall perspectives on the process of delivering SIPF-funded programmes and projects?	Perspectives of applicants and award holders	Interviews with applicants and award holders; Fund-level survey; Case studies

Source: RAND Europe

6 EVALUATION METHODS

6.1 Overall approach

The evaluation of SIPF will be conducted using a **theory-based** methodology, namely **Contribution Analysis** (CA). Theory-based approaches are particularly well-suited to an intervention like SIPF. They rely on a well-defined theory of change (as set out in Section 3) and seek to assemble evidence to test and verify the logic. Theory-based methods are particularly useful for interventions operating in complex environments, with multiple intended objectives or impacts where experimental approaches to evaluation are unlikely to be possible.

As noted in the current *Magenta Book*, a CA: "*… refers to methods which are used to understand the likelihood the intervention has contributed to an outcome observed, or not … through a step-by-step process which explores how the contribution would have come about and uses a broad range of evidence to test this. Contribution Analysis can ... be used for all types of interventions no matter how complex the theory of change is.*"[25]

Our approach is grounded in the theory of change for SIPF and the evaluation questions and indicators which were established on the basis of the programme logic (see Section 4 for impact questions and Section 5 for process questions). Through the evaluation we will assemble evidence and data to develop a 'contribution narrative' for each of the evaluation questions, which we then assess to understand the strength of the evidence, evidence that the programme logic is or is not being realised and the assumptions underpinning it are being met (see Section 3.2.4), and the influence of external factors.

There are several reasons why a CA is particularly well-suited to evaluate SIPF:

- CA provides a framework to synthesise across different types of data and evidence gathered at different points in time from different stakeholders, domains and jurisdictions (Mayne, 2008). This characterises SIPF, which funds projects covering a range of fields, technology areas, academic disciplines and geographies; and where data will be collected at different points in time.
- CA allows for assessment of early indicators of longer-term success, testing whether an expected 'contribution narrative' is on track even when ultimate outcomes are not fully delivered based on the programme logic. This again is true of SIPF where final impacts are unlikely to materialise for some time after the programme's conclusion (see Section 3.2.2).
- CA is well-suited to interventions delivered in complex environments with multiple factors influencing success, allowing the presence and influence of these factors to be assessed as part of the overall contribution narrative. A range of external influences was highlighted in Section 3.2.3, and SIPF is seeking to promote innovation, regional development and a range of other outcomes that are part of complex, dynamic systems.

[25] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879418/Magenta_Book_Annex_A_Analytical_methods_for_use_within_an_evaluation.pdf, Section A1.4.

Approach to counterfactual development

Robust impact evaluation requires a **counterfactual assessment** of how key outcomes and impacts would have differed in the absence of SIPF.

In line with the overall CA, the approach is essentially an **attribution problem** – how confident can we be that outcomes and impacts observed would not have occurred regardless of SIPF? By setting a clear context for SIPF within the theory of change and providing a baseline assessment (see Section 6.2), identifying the assumptions and external influences which will affect success, and gathering data to test and evidence the contribution of SIPF across each of the evaluation questions identified, we are able to reach a set of evidence-based conclusions about how confident we can be in attributing change to the presence of SIPF.

There is no single counterfactual which can apply across the range of evaluation questions being asked. Rather, we apply different approaches across each question; our specific approach is discussed systematically for each impact evaluation question in Section 6.4.[26] At a high level, the mix of counterfactual approaches deployed consists of:

- **Analysis of project-level evidence**, validating the strength of counterfactual assessments made in project-level evaluations (where relevant);
- **Trend analysis** (before/after SIPF) of secondary data sources relating to the various evaluation questions which cut across the range of technologies, sectors and geographies supported by SIPF-funded projects;
- **Difference-in-difference analysis** comparing changes in outcomes relating to the evaluation questions in sectors and/or local areas supported by SIPF with comparators, drawing largely on secondary data sources;
- **Self-reported counterfactuals** drawing on evidence gathered from case studies of SIPF-funded projects and qualitative stakeholder interviews;
- **'Near-miss' case studies** of projects that were not ultimately funded by SIPF, but which met or were close to quality criteria for support, to establish whether intended outputs, outcomes or impacts were nevertheless able to be realised without SIPF support; and
- **Expert review** drawing on the views of experts and an SEEAG to provide context and comment on emerging evaluation findings.

One of the specific features of SIPF is its explicit 'place-based' focus. One of the impact evaluation questions (EQ13) specifically explores the extent to which SIPF has helped improve understanding of the importance of place in innovation, and many of the process evaluation questions also explore whether the place-based nature of SIPF has impacted on the delivery process.

In designing our evidence gathering, particularly case studies and interviews, we will therefore place considerable emphasis on views around how this feature of SIPF has affected impact. Where possible, we will invite stakeholders to reflect on this feature of SIPF relative to other innovation funding programmes they have experienced, forming another point of comparison for the evaluation.

[26] We note that the process evaluation is concerned with the effectiveness of processes involved in the delivery of SIPF, and so is not subject to a counterfactual or attribution analysis *per se*.

Addressing key evaluation challenges

Based on insights from the Rapid Evidence Assessment, stakeholder consultations and workshops held in the course of developing this evaluation framework, and past experience of similar evaluations, we have identified several challenges (in addition to the counterfactual challenge identified above) we expect to face in evaluating SIPF. Figure 13 sets these out and summarises how the evaluation approach we outline below addresses them.

Figure 13 Evaluation challenges

Challenge	Summary of approach
Evaluation impacts will not be fully realised before the current evaluation concludes	Evaluation questions and indicators draw on theory of change to highlight critical leading indicators of success which will be the focus of evaluation evidence-gathering. We also propose preliminary approaches to longer-term evaluation (see Section 7.1.2). Expectations of future impact, where available, will be used in the evaluation but subject to particular scrutiny e.g. for possible optimism bias.
Some benefits from SIPF may spillover outside the regions and sectors targeted for support	Some projects likely to gather evidence on the extent to which technologies or knowledge progressed through SIPF funding are adopted outside targeted sector and region. Qualitative evidence gathered through case studies and targeted stakeholder interviews will also be used.
Place-based focus of SIPF means consideration of displacement in evaluation is nuanced	In general, activity displaced from one region to another is not considered a net benefit for evaluation. However, in describing the impact of SIPF, evidence that research or economic activity is displaced from outside targeted areas into those supported could be considered a benefit to the extent that SIPF is explicitly seeking to close regional gaps. We will be mindful of this both in reviewing project-level evidence of impact, and in considering the potential for using area- or sectoral-counterfactuals in additional analysis. Ideally, we would seek evidence both of impacts created entirely within targeted areas and the extent to which these displace activity elsewhere in order to consider both.
SIPF-funded projects can build on other investments meaning attribution to SIPF is unclear	In considering impact evidence provided by each project, we will need to provide narrative accounts of how each project (if at all) builds on public and other investments. This can include past investment from before the SIPF award, as well as aligned investment from other public bodies. If existing evaluation evidence on those investments is available, we will interrogate those reports to assess how far impacts claimed for SIPF may need to be part-attributed to other programmes. We will use qualitative interviews where needed to explore these issues in more detail.
Regional, sectoral or project comparators may not be valid counterfactuals given selection processes for chosen SIPF projects	SIPF projects are chosen on the basis of quality criteria. The validity of counterfactual sectors, regions or projects that may be used will need to be assessed on the basis of (a) quantitative evidence that sectors or areas chosen as counterfactuals are comparable to those supported by SIPF (including e.g. similar trends in key metrics relating to the evaluation questions of interest) and / or (b) qualitative evidence from document review and stakeholder consultation that the counterfactuals are valid.
Definitions of regions and sectors supported by SIPF may not align to data sources	Where we plan to use secondary data mapped to areas and sectors funded by SIPF (and potential counterfactual areas) we will need to consider whether data are available at sufficient levels of granularity to align with definitions of place or sector within each SIPF project. We anticipate this means only administrative or very large-scale data sources can be used, and that secure-access versions of data may be needed where suitably fine geographic or sectoral identifiers are available. Further exploration of these issues to be undertaken as part of the baseline phase, in particular the feasibility of a robust mapping of project-level sectors, geographies and research areas to secondary sources.
Difficulty in observing impacts of SIPF in secondary data sources	Although SIPF provides a significant amount of investment to each funded project, it may be difficult to observe the effects of this investment in macro-level economic or trend data (top-down evidence). The CA approach we set out above should ensure that our conclusions are based on a range of evidence, including both bottom-up (project-level) and top-down evidence.

6.2 Baseline measurement

Baselining provides a starting point against which future trends in key indicators associated with our EQs can be assessed in later phases of the evaluation. Phase 2 of the evaluation of SIPF will comprise the baselining phase, expected to run between September 2021 and early 2022 (see Section 7), leading to a Baseline Report.

6.2.1 Defining the baseline period

SIPF Wave 1 projects were announced in 2020 and began activities in 2021. SIPF Wave 2 projects were announced in 2021 and are expected to begin activities in 2022.

We suggest the baseline (pre-SIPF) period should be the 2020 calendar year or 2020/21 financial year for Wave 1 projects (and SIPF as a whole intervention), and the 2021 calendar year or 2021/22 financial year for Wave 2 projects.

The use of both calendar and financial years reflects the fact that data sources that may be used to support the SIPF-wide evaluation could be defined on either basis.

Baselining is an exercise relevant to understanding how SIPF has influenced key indicators of success, providing a qualitative or quantitative position for indicators at the point at which SIPF began. Where possible, pre-baseline trends in these indicators are also useful to provide a longer-term basis for comparison. This is particularly true given the **Covid-19 pandemic** is likely to have significantly affected baseline values for 2020 and 2021 for many data sources, meaning pre-baseline data will be helpful in making meaningful comparisons.

Where we expect to make use of trend analysis to support the impact evaluation the baseline level or trend of relevant data sources for these indicators (see Section 6.4.3) may provide a natural 'counterfactual' against which post-SIPF values can be compared, though we recognise the considerable limits of a simple before/after counterfactual and the need to triangulate with other evidence on which might have affected key indicators besides the impact of SIPF.

To the extent that some of our indicators reference direct outputs and outcomes of SIPF-funded projects, the 'baseline' value for such indicators is, by definition, zero. This is typically the case where indicators rely largely on evidence from within SIPF-funded projects rather than secondary sources.

6.2.2 Elements of the baselining process

The baselining phase will comprise three main tasks:

1. **Engaging with projects** to understand project-level baselines relevant for their evaluations and gather evidence relevant to quantitative baselining;
2. **Quantitative baselining** based on detailed exploration and interrogation of secondary sources identified as relevant for the SIPF evaluation; and
3. **Qualitative baselining** based on key stakeholder interviews.

Project engagement

Early in the baseline phase, we will hold discussions with each funded project (ideally including the Wave 2 projects if possible) seeking to understand:[27]

- What, if any, baseline data and evidence (both quantitative and qualitative) projects have collected or are collecting in future relating to their own project-level evaluation;
- The best definition of region, sector and knowledge areas that each project is situated in and seeking to influence;
- The potential definition of counterfactual regions, sectors and knowledge areas that could be explored within the SIPF-wide evaluation;
- Any past or aligned investment that could affect the baseline (and interpretation of evidence gathered for the impact evaluation); and
- Any views from projects that could inform the qualitative baseline.

The first point will provide evidence directly to inform the SIPF-wide baseline. Where evidence is already available, we will capture this and map it into the EQs and associated indicators. Where projects have not yet captured baseline evidence, these discussions will help explore options for baselining with projects.

The second point will be important to help provide definitions for each project that can be taken to quantitative data sources. Many of the sources we identified use standard geographic, sectoral (e.g. SIC) and academic discipline categories. As a result, in order to define 'SIPF-supported regions and sectors' we will need to agree with each project the best interpretation of these datasets for their projects.

We will use project-level application forms to prepare an initial definition for each project (where these are not already specified by projects as part of the application process), and use project-level discussions to validate and refine this.

The third point is relevant to considering whether geographic or sectoral counterfactuals can be used, mapped to secondary data sources, to support the SIPF-wide evaluation. Where projects have already developed these counterfactuals for their own evaluations, we will capture this. Where projects have not developed these counterfactuals, we will discuss possible options as part of the discussions with each project.

The fourth point is to address the challenge of attributing changes in particular impacts to SIPF funding, as opposed to other funding sources.

The final point will allow us to capture qualitative views from projects that support the qualitative baseline evidence (see below).

Outcomes of these discussions will be fully documented in the Baseline Report.

Quantitative baselining

In Figure 8, we identified a large number of secondary quantitative datasets that potentially could be relevant to the indicators for each EQ, based on an initial audit of the content and quality of the sources (see also Annex E). In the scope of this

[27] If it is not possible to engage Wave 2 projects at this point, we suggest that this engagement could take place in 2022 alongside the Wave 1 process evaluations, with the Baseline Report refreshed at this point.

framework-setting phase, it has not been possible to do a detailed examination of each dataset. We will conduct this analysis as part of the baseline phase, and extract baseline (and pre-baseline) data from the final agreed set of sources.

- We will conduct a detailed audit of the datasets, identifying the precise variables most relevant to the indicators, the time periods available, the quality of the data, costs or barriers to access and the value-added to the evaluation.
  - Where there are financial costs to accessing datasets, we will discuss options for funding access with UKRI based on a well-evidenced assessment of the likely benefits to the evaluation.
  - Where there are access barriers (e.g. needing secure-access versions of datasets), we will put processes in place early in the phase to overcome them, including making an application for 'exploratory analysis' access to datasets held in the ONS (Office for National Statistics) Secure Research Service (SRS).[28]
- We will agree the final list of secondary datasets to use for the evaluation with the SIPF Delivery Team and SEEAG on the basis of this audit process, and update the evaluation framework accordingly.
- We will access and extract baseline and pre-baseline values from these sources and document the results of this process in the Baseline Report.

Where we propose mapping data sources to regions, sectors or academic disciplines aligned to SIPF projects and possible counterfactuals (as agreed in the project-level engagement in the baseline phase), enabling the use of before/after and difference-in-difference analysis to assess the impact of SIPF (see Section 6.4.3), we will carry out this mapping to provide baseline assessments in this phase of the evaluation. This will also act as 'proof of concept' for the proposed mapping and counterfactual analyses.

Outputs from this process will be discussed with the SIPF Delivery Team, projects and members of SEEAG for validation. Any recommended changes will be implemented for the Interim Impact Evaluation. We will fully document the outputs and any recommendations for future phases of the evaluation in the Baseline Report.

Qualitative baselining

Some of the indicators supporting each EQ are largely qualitative in nature.

In addition to qualitative evidence captured from the projects, we will conduct **additional key stakeholder interviews** to provide qualitative viewpoints to support a baseline assessment for these indicators. Insights will also be sought from remembers of SEEAG.

The table below outlines the indicators we suggest are most likely to require qualitative baseline evidence and sets out the sorts of stakeholders we suggest will help to provide evidence. We envisage these to be short, focused interviews

[28] https://uksa.statisticsauthority.gov.uk/wp-content/uploads/2019/10/DEA_Research_Project_Application_v1.2.docx

lasting 20 to 30 minutes on average, allowing us to draw on a relatively wide range of viewpoints. In total we envisage conducting 10 to 12 such interviews.

Insights from qualitative discussions will be coded against the evaluation questions to arrive at summary 'qualitative baseline' views for each. These will be documented in the Baseline Report.

Figure 14 Suggested indicators as focus for qualitative baseline

Indicator	Examples interviewees
EQ6: Increased understanding of skills profile and gaps of targeted sectors and regions	▪ National public skills bodies e.g. Education and Skills Funding Agency who may have wider perspectives on skills issues in key sectors ▪ Skills bodies in funded regions/sectors
EQ9: Has the place-based nature of SIPF affected the nature of collaborations compared with other funding mechanisms that are not explicitly place-based?	▪ UKRI leads for other significant R&I programmes
EQ10: Was the reputation for R&I of targeted regions and sectors enhanced as a result of the SIPF funding and outputs?	▪ Sector experts for SIPF-funded sectors
EQ13: Improved evidence on and understanding of the efficacy of place-based R&I funding	▪ R&I and place policy leads within BEIS, UKRI and other relevant departments (e.g. Cabinet Office, Treasury) ▪ R&I and place policy leads in devolved administrations

Source: Frontier Economics, RAND Europe and know.consulting
Note: Interviewees will also include projects and members of the EEAG where relevant

6.3 Process evaluation methods

The aim of the process evaluation is to establish the extent to which SIPF is working as intended, how this is occurring, and lessons learned to inform ongoing implementation.

The process evaluation will be delivered in two phases. For each Wave, an **interim** process evaluation will comprise three tasks: document review; interviews and a survey. For the **final** evaluation, covering both Waves, these will be supplemented by evidence on process from the case studies conducted as part of the impact evaluation (see Section 6.4).

Each of these methods is set out below in turn.

6.3.1 Document review

The document review will consist of two parts.

The first part (already completed to support the development of this evaluation framework) was a review of strategy and policy documents related to SIPF, to provide an overview of Fund management and processes, and context for the

analysis. We will revisit documents as needed and review any additional or revised documents produced after the document review was completed.

The documents reviewed were identified on the basis of following search strategy:

Figure 15 Search strategy

#	List of search strings employed
#1	(“Strength in Places Fund” OR “SIPF”) AND (“strategy”)
#2	(“Strength in Places Fund” OR “SIPF”) AND (“policy”)
#3	(“Strength in Places Fund” OR “SIPF”) AND (“application”)
#4	(“Strength in Places Fund” OR “SIPF”) AND (“Expression of Interest” OR “EoI”)
#5	(“Strength in Places Fund” OR “SIPF”) AND (“monitoring” OR “evaluation”)
#6	(“Strength in Places Fund” OR “SIPF”) AND (“seedcorn”)
#7	(“Strength in Places Fund” OR “SIPF”) AND (“Wave 1” OR “Wave 2”)

Source: RAND Europe

The above searches were conducted on Google and Google Scholar. Additional documents were identified through ‘snowballing’. The list of documents and resources reviewed were as follows:

- Strength in Places Fund programme page[29]
- Wave 1 seedcorn-funded proposals[30]
- UK Research and Innovation strength in places fund: Wave 2 EoI[31]
- UKRI Strength in Places (SIPF) Programme Overview[32]
- UK Research and Innovation, Question for Department for Business, Energy and Industrial Strategy[33]
- SIPF Process Mapping for evaluators[34]
- UKRI Strength in Places (SIPF) Logic Model[35]
- SIPF Programme Governance and Reporting Diagram[36]
- Principles of SIPF Evaluation[37]

In addition to these documents, a number of documents internally developed by UKRI (but not publicly available) to identify the process and different aspects of interaction between the stakeholders and the funds were also analysed. This analysis contributed to the development of process map (see Figure 10).

The second part will be an analysis of any relevant process-related evidence captured by project-level evaluations, mapping findings against the process evaluation framework. The aim will be to synthesise observations and insights from individual projects to draw out themes, points of commonality and difference, and examples of good practice. We will contrast processes, and how they are

[29] UKRI (n d a)
[30] UKRI (n d b)
[31] UKRI (n d c)
[32] UKRI (2018)
[33] UK Parliament (2021)
[34] UKRI (n d d)
[35] UKRI (n d e)
[36] UKRI (n d f)
[37] UKRI (n d g)

understood and implemented at the project-level, with what we see at the Fund-wide level. Our understanding is that projects are not systematically conducting their own process evaluations, so we anticipate there may be limited evidence from projects. However, we will ensure that any evidence available from the project-level evaluations is captured and analysed at the point it becomes available to support the Fund-wide evaluation.

6.3.2 Interviews

We will hold 30 to 40 interviews with stakeholders, spread across stages of the evaluation. These will include key UKRI stakeholders (e.g. members of UKRI board, SIPF board, SIPF Delivery Team, SEEAG, NEOB); policy stakeholders within BEIS and HM Treasury (HMT); and members of the SIPF assessment panels. Figure 16 provides an indicative list of number of potential interviewees per stakeholder group.

Figure 16 Indicative number of potential interviewees per stakeholder group

Stakeholder group	Number of potential interviewees
UKRI board	2-4
SIPF board	3-5
SIPF Delivery Team	1-3
Policy stakeholders	2-4
Members of the SIPF assessment panels	2-4
Unsuccessful applicants	2-4
Successful applicants (seedcorn stage)	3-5
Awardees (applicants who received the full funding)	8-12[38]

Source: RAND Europe

The aim of these interviews is to capture stakeholders' experiences and views of Fund-level processes, their perspectives on challenges, barriers and facilitators, and to identify areas for potential improvement, in line with the process evaluation framework. A draft interview protocol tailored for central UKRI/SIPF respondents is provided in Annex C. If necessary, additional interviews with applicants and award-holders will be conducted to follow up on survey findings, and as such will cover similar topics to those included in the survey in more depth. The final interview protocol for these stakeholders will therefore be developed based on the evidence collected from the process evaluation survey (see Section 6.3.3).

We will use semi-structured interviews conducted remotely or in person, lasting around one hour. Insights will be mapped and coded against the process evaluation framework. We will work closely with the SIPF Delivery Team to ensure our interviews do not simply replicate those conducted as part of any project-level evaluations.

[38] The aim will be to cover all 12 awardees from both waves (subject to scheduling constraints and availability of the PIs from the lead organisations).

6.3.3 Fund-wide survey

To bring in wider perspectives on Fund processes and management, we will survey researchers and innovators applying to and funded through SIPF, structured around the process map to aid recall of respondents. The aim will be to understand respondents' experiences of their engagement with SIPF, what has worked well and what has not, the challenges, barriers and facilitators, and what could be improved in future. We anticipate a mix of quantitative and qualitative questions in the survey. The survey will build on the interviews to capture broad perspectives on experiences of SIPF, including unsuccessful applicants and those only progressing to the seedcorn stage. We will analyse responses on aggregate, and for subgroups (e.g. by level of progression, by region, by sector, by wave) to understand differential experiences. The survey will be implemented online using RAND's in-house survey software, SmartSurvey, with descriptive and statistical analysis of findings in R. A draft set of survey questions based on the process EQs and the process mapping exercise is presented in Annex D. However, we plan to revise and finalise the survey questions based on the interviews.

The intended survey population covers all applicants submitting EOIs for Waves 1 and 2, with questions routed based on the application outcome. The size of the likely sample frame will depend on the number of respondents from Wave 1 (85 applications at the EOI stage) and Wave 2 (80 applications at the EOI stage). Our prior experience is that the sample will comprise applicants from business, academia, and the third and public sectors. This should enable us to achieve sufficiently large samples of respondents for robust analysis.

The survey will be conducted once per wave of SIPF funding to support the interim process evaluation reports. This will therefore be around two years after project funding is awarded. We do not suggest re-running the survey to support the final evaluation, which will be five to six years post-award, as we think additional insights will be limited and the recall period too long.

Draft survey instruments will be shared with the SIPF Delivery Team for comment. We anticipate a short (15-minute) survey, with contacts provided by UKRI. To maximise response, particularly from unsuccessful applicants, we will develop an engagement strategy with the Delivery Team and Evaluation Working Group setting out the importance of responding – for example, improving processes could benefit even unsuccessful applicants if lessons learned can be adopted for future SIPF or other similar competitions.

The 'invitation to participate' email sent to the potential respondents will highlight the rationale for the survey along with the aforementioned benefits of participation. We suggest the invitation email include a statement from UKRI along with its logo to underscore the importance of participation to the potential respondents. The survey will include a privacy notice and a consent form for participation to ensure the survey respondents are fully informed of how the survey data will be collected, stored, processed, and analysed. Between the launch and the close of the survey, we will send three follow-up emails to survey respondents who have not yet completed the survey, in order to encourage participation. The follow-up emails will emphasise the benefits of participation (in particular to the unsuccessful applicants) to ensure optimal response rates across different respondent groups.

Subject to discussion with the SIPF team, the distribution of the survey can be done directly by RAND Europe or through UKRI.

6.3.4 Insights from the case study analysis

For the final evaluation phase, we will also draw on any process-related insights from the case studies (see Section 6.4), which offer the potential to give more detailed and nuanced insights into the processes involved and how they have helped, or hindered, delivery of intended outcomes. We will build process-related questions into the guides used to conduct case study interviews and focus this part of the evidence base on the links between process and impact.

6.3.5 Analysis and synthesis

Evidence collected from different sources will be analysed and synthesised to identify key findings triangulating across the different data sources. The data collected from the interviews and the survey will be classified using a framework synthesis approach to group the findings against the process evaluation framework, capturing in particular:

- what has worked well;
- what has not worked well;
- specific facilitators and barriers identified; and
- lessons learnt and potential improvements for the future for UKRI's consideration.

We will use qualitative coding in software such as MaxQDA to enable qualitative information from different sources to be integrated and analysed against a common framework. This will be supplemented with quantitative data – for the survey, we will conduct analysis in R, generating descriptive statistics and performing appropriate statistical tests where comparisons between groups (e.g. successful and unsuccessful applicants) will be made.

We will prepare drafts of the Interim Process Evaluation Reports for Waves 1 and 2 for presentation and comment from SIPF stakeholders. Suggestions will be taken on board and Final Interim Process Evaluation Reports presented to the SIPF Board for sign-off. Interim Reports will be updated in the light of new evidence from the case studies and project-level evaluations to produce a Final Process Evaluation Report.

6.4 Impact evaluation methods

6.4.1 Overall approach to the impact evaluation

The impact evaluation will be conducted in two phases: **interim** and **final**.

The interim phases will be staggered across the two Waves of SIPF funding, taking place approximately three years after the projects funded under each Wave launch (for Wave 1 projects, the interim impact evaluation will begin in 2023; for Wave 2, the interim evaluation will begin in 2024). The final phase will cover both waves of

funding and be conducted in 2026. More detailed timelines for the phasing of the impact evaluation can be found in Section 7.

As described in Section 6.1, the overall approach to the impact evaluation will be a **contribution analysis** (CA) drawing on a range of methodologies to identify, as far as possible, credible estimates of the contribution that SIPF has made to the impact evaluation questions (EQs) set out in Section 4.2. In this Section, we provide more detail on how these methodologies will be deployed across the phases and the EQs.

6.4.2 Methodologies common to multiple evaluation questions

Some methods we deploy will be used to provide evidence across most or all of the impact EQs. We therefore provide an upfront summary of these.

Interrogation of project-level evaluation evidence and ResearchFish returns (both phases)

Each SIPF-funded project will be conducting their own impact evaluation, based on an evaluation plan and set of Key Performance Indicators (KPIs) tailored to the individual project.

Based on an initial review of those plans and interviews with each of the seven projects funded in Wave 1, we anticipate that Wave 1 project evaluations will largely comprise collection and collation of KPIs, submission of information via the ResearchFish platform[39], and bespoke evidence gathering and analysis specific to each project (combining evidence gathered from case studies, modelling work and other project-specific methodologies). Wave 1 project evaluation plans may be updated and revised in the course of the next 6 to 12 months; we provide some suggestions in Annex A on ways in which projects may be able to provide additional insights to support the SIPF-wide evaluation. Further planned conversations with Wave 1 projects as part of the baseline phase (see Section 6.2.2) will provide further understanding of any anticipated changes to the evaluation plan.

Wave 2 projects have been asked to set aside a share of their overall funding allocation to procure an externally-led evaluation, details of which are as yet unclear.

In Figure 8 above, we outline a summary of the KPIs and ResearchFish returns we expect to be available from projects against each EQ, with more specific detail provided in Annex E. We recognise that the different KPIs and very different sectors, regions and technologies that the projects are operating in or with mean that attempts to ‘add up’ project level evidence are unlikely to be fruitful. Rather, the goal of this exercise is to synthesise and summarise evidence from across the projects to help arrive at overall conclusions about the contribution of SIPF to the various EQs. We also stress that the objective of this synthesis is not to ‘rank’ project impacts against one another, simply to ensure we have captured the totality of evidence available from projects to support conclusions about the impact of SIPF as a whole.

[39] We note that UKRI is still in the process of finalising which ResearchFish questions the projects can provide answers for.

KPI and ResearchFish reporting will take place periodically through project delivery, with projects also preparing evaluation reports. Not all projects are planning a systematic counterfactual analysis as part of their evaluation.

Our approach to analysis of project-level evaluation evidence will involve:

- At the start of the interim and final impact evaluation phases, we will contact relevant projects and **hold initial meetings** with each to assess what evidence they will be able to provide. This could include, but is not limited to:
  - Time series data for the evaluation KPIs collected to that point;
  - Underlying evidence supporting KPI development (where available);
  - ResearchFish returns;
  - Summaries of key stakeholder interviews, case studies or other qualitative evidence gathered from within the projects and their evaluations;
  - Summaries of any relevant survey data that have been gathered (where possible, anonymised raw survey data could also be shared);
  - Outputs of any modelling or analytical work done to support project-level evaluation, including underlying data, where available;
  - Annual, interim or final evaluation reports prepared by individual projects.
- Ask projects to **share this evidence** via secure transfer platforms such as SharePoint as early as possible during the evaluation phase.
- Conduct a **mapping of evaluation findings** to the EQs using framework analysis methodology.[40]
- Conduct an **assessment of the robustness** of the evaluation findings, including (where available) any counterfactual assessments made by projects to arrive at initial views on the additionality of claimed benefits. For quantitative evaluation evidence we will use the Maryland Scientific Methods Scale as the basis of this assessment.[41] For qualitative evidence, we will attempt to assess the relevance of findings to our EQs, whether views on additionality have been sought and the quality of the findings drawing on best practice guidelines.[42]
- Where needed, hold **further meetings or discussions** with projects to clarify our understanding and interpretation of particular pieces of evidence or data.
- Read across evidence from each project against each EQ to provide a **synthesis and summary** of evidence of the contribution from projects to the SIPF-wide evaluation questions.

In Annex A we provide some guidelines to projects on additional evidence gathering that may support the SIPF-wide evaluation based on our initial review of the evaluation plans of the seven Wage 1 projects.

[40] See e.g. Ritchie and Spencer (1994)

[41] See https://whatworksgrowth.org/resources/the-scientific-maryland-scale/

[42] In particular, we suggest applying the framework for assessing qualitative evidence set out as supplementary guidance to the *Magenta Book*, available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/190986/Magenta_Book_quality_in_qualitative_evaluation__QQE_.pdf. The framework provides a 'checklist' of 18 questions; while systematically covering these for any qualitative findings provided by individual projects is unlikely to be proportionate, application of the four **central principles** outlined in the framework (whether the findings are contributory, defensible, rigorous in conduct and credible in claim) may be a useful guide.

We also note that projects may be asked to share qualitative and quantitative data from their own evaluations with the SIPF-wide evaluation team. **Projects should therefore ensure there are GDPR-compliant processes in place which would enable them to share the information with us** – for example, making it clear to stakeholders engaged that data may be shared with us for evaluation purposes.

Project workshops (both phases)

In addition the synthesis of project-level evidence, we will also hold a **workshop** with projects towards the end of each evaluation phase. For the interim impact evaluation, these will be the Wave 1 or Wave 2 projects individually. For the final evaluation, all projects will be in scope, though we may seek to run two separate workshops to manage the number of attendees in a single session.

Workshops will be facilitated by members of the evaluation team with at least one representative from each project invited to attend. We suggest that project leads, and any project-level evaluation leads would be the most relevant participants. Given the geographic dispersion of projects, we recommend online platforms to run the workshop (such as Teams or Zoom) which have proven effective during the Covid-19 pandemic, though we recognise the value of in-person connection and interaction in such sessions and could therefore host workshops at Frontier's central London offices if preferred. Indicatively a session would last 2 – 3 hours.

The purpose of the workshops will be to **validate and review** our synthesis of project-level findings, allowing project representatives to discuss with us and each other the interpretation of the findings, identify any omissions or shortcomings in our assessment and (if necessary) suggest additional evidence that may be provided from projects. We will present the synthesised evidence from projects for each question in turn and invite feedback and discussion, captured by the facilitators. Facilitators will also attempt to ensure all participants can contribute. Depending on the number of participants, we may opt to use breakouts for smaller group discussion, particularly on EQs where projects provide the balance of evidence and where, therefore, ensuring accurate interpretation of the findings is particularly critical to the quality of the evaluation.

Expert review and feedback (both phases)

We will seek **input from relevant experts in the SIPF External Evaluation Advisory Group** to help clarify or validate pieces of evidence captured in different phases of the evaluation. We expect this to involve a combination of:

- Informal / *ad hoc* discussions with individual experts as needed to validate or interpret particular pieces of evidence or data captured through the evaluation process; and
- More structured dissemination of draft findings to the (expected) biannual meetings of SEEAG, where we present provisional conclusions and seek feedback.

Case studies (final evaluation only)

A key source of evidence in the final evaluation will be **case studies** of 6 funded projects (*project case studies*) and 3 'near-miss' projects which met relevant quality thresholds for SIPF funding but were not ultimately successful in securing full project awards (*counterfactual case studies*). Given the time lags inherent in R&I-focused interventions, the case studies will be valuable in terms of in-depth exploration of realised and expected impacts, how and why they have (or have not) emerged, pathways to impact and key barriers and facilitators. They will also provide evidence on unexpected impacts and spillovers.

We will conduct case studies only in the final evaluation phase. This is to allow as much time as possible for outcomes and impacts relating to the projects to materialise and ensure we have as rich as possible an evidence base to explore within the case studies. The case studies will help test emerging observations on 'what works' in terms of place-based R&I funding with projects at or near the end of their funding period, drawing on lessons learned over the full SIPF period.

Selection of cases

Project case studies will be selected purposively from across the twelve funded projects, seeking to achieve a balance of geographies (i.e. different parts of the UK), sectors, technology readiness, Wave 1 and 2 projects, and funding amounts. We will also take into account the volume of qualitative insights generated by individual project-level evaluations and focus project case studies on those where less qualitative or case study work has been conducted already within the scope of the project's own evaluation. We will propose a choice of project case studies at the start of the final phase of impact evaluation and validate this with the SIPF Delivery Team, Evaluation Working Group and the projects themselves.

Counterfactual case studies will be selected from a list provided by the SIPF Delivery Team of projects which met funding quality criteria, but which were ultimately not selected for support, or which were narrowly below the quality criteria if there are no counterfactual projects of the former type. We will not attempt to 'match' counterfactual case studies to project case studies on the basis of e.g. geography or sector The relevance of the counterfactual case studies is to understand in broad (and largely qualitative) terms whether and how benefits of SIPF support may nevertheless have been realised through other means, rather than attempting to provide counterfactuals for specific projects. Where there are multiple candidates for counterfactual case studies, we will consider whether there is any scope to do some informal matching of this type.

Content of case studies

The coverage of issues explored in the case studies will vary from case to case depending on the specifics of the project or counterfactual. We will also be guided by evidence gathered against each EQ at the interim evaluation stage and where evidence from other sources appears to be light, or low quality, and therefore where case studies add most value to the overall evaluation evidence base.

While we expect case study findings to contribute to all EQs to some degree, based on an initial assessment of the external evidence available (see Figure 8) and the details of each EQ, we anticipate particular importance of case studies for:

- EQ1 and EQ2: whether academic research and commercial R&I impacts have *increased long-term capacity in funded areas*, and *leveraged local strengths*.
- EQ5 and EQ6: whether SIPF has helped generate *high quality* jobs in local areas and *improved the skills base*.
- EQ7: whether economic improvements associated with SIPF appear *sustainable* in terms of their longevity post-SIPF.
- EQ10: whether the local *reputation of regions* as centres for R&I in the relevant sectors or technologies has been enhanced by SIPF.
- EQ11: whether SIPF has helped foster more *diverse and inclusive research and business environments*.
- EQ12: realised or expected benefits of SIPF in terms of health, wellbeing, environment or *wider social impacts*.
- EQ13 and 14: whether SIPF has *influenced and improved the design of R&I policy* at local and national levels.

As discussed in Section 6.3, the case studies will also seek to capture evidence on process-related aspects of SIPF to support the Final Process Evaluation Report.

Approach to case studies

We expect the approach taken to be tailored to the specifics of the case. However, typically, we anticipate the following broad structure.

Figure 17 Suggested approach to case studies

	Project case studies	Counterfactual cases
Number of interviews	8 to 10 (c. 45 mins each), semi-structured	4 to 6 (c. 45 mins each), semi-structured
Types of interviewees	▪ Project leads / partners ▪ Project beneficiaries ▪ Stakeholders in funded areas ▪ Relevant experts in industry or academic subject areas	▪ Proposed project leads / partners ▪ Stakeholders in areas where funding was sought ▪ Relevant experts in industry or academic subject areas
Desk review	Key project outputs and reports Internal strategic project documents Project evaluation reports	Project funding proposal Follow-on funding proposals
Approach to synthesis	Framework review mapped to EQs	Framework review mapped to EQs

Source: Frontier Economics, RAND Europe, know.consulting

The counterfactual case studies will allow us to explore 'what happened next' with near-miss projects, including whether some or all of the intended benefits were realised through some other means, and the extent to which (if counterfactual cases did secure funding elsewhere) the projects evolved or changed as a result, in particular if comparisons can be drawn with the place-based focus of SIPF and other funding routes. Conversations with local stakeholders in areas where funding was sought but not received, and academic or sector experts in the relevant fields for the counterfactual case studies, will also help reveal whether in those 'near miss' areas there is evidence that outcomes and impacts relevant to SIPF have also been evolving in ways that suggest SIPF is making a difference above and beyond what might otherwise have happened.

Case studies will be supported by a case study protocol, including privacy notices, approaches to contacting stakeholders to participate, suggested topic guides and notes for interviewers. While at this stage it is too early to develop this protocol in full, indicatively we expect it to include:

- An agreed process to select the project and counterfactual case studies;
- An agreed process for contacting participants (including pre-contact from UKRI and/or projects, and contact from the evaluators), including privacy notice, text around confidentiality, etc.;
- A process for briefing interviewers, capturing notes and sharing interview notes with interviewees for review and sign-off;
- A draft topic guide, recognising that the guide will be used flexibly depending on the interviewee and case;
- A framework template used to capture and interrogate insights from across the case studies mapped to the EQs (process and impact); and
- Proposed detailed timelines for case studies.

The protocol will be drafted early in the final phase of the evaluation and agreed with the SIPF Delivery Team and Evaluation Working Group.

Insights from the case studies will be used throughout the Final Evaluation Report to provide evidence relating to the EQs. Summary narrative write-ups of individual case studies will also be included as an annex to the main report.

6.4.3 Additional methodologies specific to individual EQs

In addition to the four main evaluation methods outlined above, for some EQs we have identified particular approaches relating to the use of secondary data and targeted stakeholder interviews. We summarise those here by individual EQ.

We expected there to be a total of 40-50 interviews, where this total spans both the interim and final evaluations. This will include approximately 25-30 across EQ2, EQ3, EQ4, EQ7 and EQ9; 10-15 for EQ11; and 5 for EQ13 and EQ14. Further detail is available in the table below.

Stakeholder interviews will be semi-structured, lasting typically 30 to 60 minutes each. Topic guides will be drafted to support interviews. We will work with the SIPF Delivery Team, Evaluation Working Group and SIPF External Evaluation Advisory Group to identify possible interviewees based on networks within SIPF, the funded projects and wider contact groups. Where required, we will work with the Delivery Team on an engagement strategy for interviewees, and ensure that all approaches are fully GDPR compliant.

EQ1: Did SIPF increase the regional quality and quantity of academic research in key research fields?

Indicator	Secondary data	Interviews
Quantity and impact of academic research outputs related to SIPF support	Dimensions.AI data linked to SIPF publications Keyword searches of REF/KEF	N/A though likely to be captured in case study interviews
Regional trends in academic R&I spending in targeted fields supported by SIPF	Analysis of HESA data for HEIs in funded areas (pre- and post-SIPF for funded areas/sectors, potential counterfactual difference-in-differences analysis using other areas/sectors)	
Additional research funding leveraged for the region as a result of SIPF in targeted field	Dimensions.AI and Gateway to Research linked to SIPF projects	

EQ2: Did SIPF increase the quantity and quality of regional commercial R&I in key industries? To what extent was long-term capacity for such R&I increased? To what extent did this leverage existing local strengths?

Indicator	Secondary data	Interviews
IP: Number of patent, trademark and design applications in targeted regions and sectors	Interrogation of HE-BCI, Orbis, Crunchbase and Patstat to explore before/after trends in IP and possible counterfactual difference-in-differences analysis using other areas/sectors	Exploring in particular impact on local innovation capacity, combined with other business and innovation-related impacts. A mix of businesses, local business organisations, LEPs and equivalents in other devolved administrations, national sector bodies and investors.
Regional trends in commercial R&I spending in targeted sectors	Interrogation of BERD and UKIS datasets to explore before/after trends in R&D	
Additional business R&D and other innovation-related investments leveraged as follow-on investments as a result of SIPF, including inward investment from outside the region and outside the UK	Interrogation of Crunchbase / Beauhurst to explore before/after trends in investment and possible counterfactual difference-in-differences analysis using other areas/sectors	
Private sector R&I jobs created	Interrogation of ASHE at local authority (and secure access) level to explore R&I employment in SIPF-targeted regions and sectors, and possible counterfactual analysis of other areas/sectors	

EQ3: Have the technologies and new knowledge supported by SIPF progressed innovations and helped create new businesses? If not, why not?

Indicator	Secondary data	Interviews
Number of new products and commercial success, as measured by take-up, profitability, expected revenues		Exploring in particular expected future commercial successes associated with SIPF, combined with other business and innovation-related impacts. A mix of businesses, local business organisations, LEPs and equivalents in other devolved administrations, national sector bodies and investors.
Spinoff/spinout commercial projects, products and businesses directly related to SIPF funding	Interrogation of ONS Business Population Estimates, secure-access BSD, FAME and HE-BCI, comprising before/after analysis for targeted regions and sectors, and counterfactual analysis using other areas/sectors	
Progress of supported technologies along commercial readiness scales (e.g. TRL/MRL/SRL)		

EQ4: Have the innovations, technologies and new knowledge supported by SIPF been adopted more widely?

Indicator	Secondary data	Interviews
Adoption within region/sector targeted by projects		Exploring in particular adoption within targeted areas and spillovers. A mix of project leads, businesses, local business organisations, LEPs and equivalents in other devolved administrations, and national sector bodies.
Adoption outside region/sector targeted by projects		

EQ5: Did SIPF improve the job prospects, in terms of the number, variety and profile of jobs available within the targeted regions? If not, why not?

Indicator	Secondary data	Interviews
Number and profile of jobs supported by SIPF funding	Interrogation of ASHE at local authority (and secure access) level to explore employment in SIPF-targeted regions and sectors, and possible counterfactual analysis of other areas/sectors	N/A though likely to be captured in case study interviews
Profile of follow-on jobs for those supported by SIPF funding		

EQ6: Did SIPF increase the skills base and the alter the profile of skills in targeted regions? If not, why not?

Indicator	Secondary data	Interviews
Volume and quality of skills-focused training, course and qualifications supported by SIPF	Interrogation of HESA data to explore trends in student numbers by research area and area (before/after SIPF). Interrogation of apprenticeship data by discipline and region (before/after SIPF).	N/A though likely to be captured in case study interviews
Increased understanding of skills profile and gaps of targeted sectors and regions		

EQ7: Did SIPF funded-activities contribute to improved economic performance, particularly within targeted industries and regions? If so, was the improvement sustained? If not, why not?

Indicator	Secondary data	Interviews
Impact of SIPF on regional and sectoral GVA.	Interrogation of ONS published local GVA and secure-access ABS data to explore before/after SIPF trends in targeted sectors/areas and counterfactual difference-in-difference analysis of other sectors/areas	Exploring in particular perceptions of sustainability of economic impacts, and evidence of impacts on exports. A mix of project leads, businesses, local business organisations, LEPs and equivalents in other devolved administrations, and national sector bodies.
Impact of SIPF on regional and sectoral productivity	Interrogation of ONS experimental statistics on local productivity and secure-access ABS/BSD data to explore before/after SIPF trends in targeted sectors/areas and counterfactual difference-in-difference analysis of other sectors/areas	
Impact of SIPF on regional and sectoral exports		
Sustainability of economic impacts within targeted sectors and regions		

Note that any counterfactual analysis or interrogation of regional/sectoral trends in these key economic variables drawing on secondary data will also support EQ8 on whether SIPF has closed gaps in economic performance.

EQ9: Did SIPF enhance and sustain the nature of collaboration and the collaboration infrastructure within targeted industries, research fields and regions? If not, why not?

Indicator	Secondary data	Interviews
New and sustained collaborations between businesses, academics and local decision-makers within SIPF-funded industries and regions.	Interrogation of HE-BCI before and after SIPF at HEI level.	Focused specifically on collaboration impacts, sustainability and strength of collaborations and the role of place-based focus of SIPF compared with other funding. Comprising a mix of project leads, supported businesses, academics and third-sector organisations, and LEPs and equivalents in other devolved administrations.
Enhanced and more effective collaborations supported by SIPF-enabled investments/improvements in collaboration infrastructure.		
Has the place-based nature of SIPF affected the nature of collaborations compared with other funding mechanisms that are not explicitly place-based?	Benchmarking against evidence of collaboration impact evaluations of other significant UKRI R&I investments.	

EQ10: Was the reputation for R&I of targeted regions and sectors enhanced as a result of the SIPF funding and outputs?

Indicator	Secondary data	Interviews
Academic standing of universities in the regions in the fields supported by SIPF funding.	Keyword searches of REF/KEF University rankings by field (pre-and post SIPF)	N/A though likely to be captured in case study interviews
National and international reputation of local areas targeted by SIPF as centres of innovation in relevant sectors.		N/A though likely to be captured in case study interviews

Comparing pre- and post-SIPF rankings for universities in SIPF-targeted areas (in particular those who are part of SIPF project teams) in the academic disciplines most relevant to the SIPF project could be a signal of whether SIPF has improved academic standing and reputation, though we note likely limits of this measure both in terms of the quality of the underlying data and confounding factors that influence these rankings. As a result, this indicator will be carefully triangulated with other evidence, including targeted searches of REF/KEF returns from those institutions, evidence gathered from the project-level evaluations, and case studies.

EQ11: To what extent (and how) have SIPF projects fostered an equal, diverse and inclusive research and business environments, and how well do SIPF projects align with UKRI ED&I aims?

Indicator	Secondary data	Interviews
ED&I measures for funded projects, project partners and key industries in targeted regions	Analysis of ONS gender pay gap data by region/industry (before and after SIPF). Analysis of JRF inclusive growth monitor by LEPs (England only). Analysis of UKRI Je-S/IFS systems.	With assessment panel members and funded project leads

We will conduct an ED&I review, aligned to the wider review being conducted by UKRI. As well as interviews as outlined above, which will seek to evaluate award-holder approaches to ED&I in the design and implementation of their project, and their experiences of ED&I in their engagement with SIPF, we will:

- Assess success rates for different applicant groups at each stage of the process. This will take into consideration UKRI data on the applicants and awardees at different stages of the SIPF application process (including EOI, seedcorn, and full award stage) in conjunction with information from the fund-level survey; and
- Review the composition of the applicant pool benchmarked against the UK R&I workforce and population as a whole. This will take into consideration the geographical distribution of the applicants, in conjunction with broader demographic information on UKRI and the UK. Additionally, data on age, gender, and institutional information on the applicants and awardees at different stages of the process (where available), will inform the benchmarking process.

EQ12: Did the outputs of SIPF improve the health, wellbeing and environment of individuals in targeted regions?

Indicator	Secondary data	Interviews
Examples gathered from within SIPF projects	Local level analysis (pre- and post SIPF) of national statistics health, wellbeing and environmental data mapped to SIPF regions where possible. Possible counterfactual analysis of non-funded regions.	N/A though likely to be captured in case study interviews

There are ONS datasets which allow mapping of health, environment and wellbeing data to local levels. Examples of data available as part of the Health Index published by the ONS, which could be used as part of the analysis, include (but are not limited to) mortality data (life expectancy, avoidable deaths), unemployment data, local environment data (air pollution, transport noise,

neighbourhood noise, road safety, road traffic volume), and personal well-being data (life satisfaction, life worthwhileness, happiness, and anxiety-levels).

In principle, this could allow for both trend and difference-in-difference analysis of changes in these variables before and after SIPF, using control regions. However, in practice, we note that the impact of SIPF-funded projects on these variables, even at local levels, is likely to be small within the timescales of SIPF. We therefore do not recommend significant investment in this approach, at least across all projects and possible wider social impacts, but highlight the potential for this kind of analysis both for future evaluation and for targeted examples of social impacts that appear particularly large and relevant for specific projects as the evaluation emerges.

EQ13/EQ14: To what extent has the evidence base around the impact of locally targeted R&I spending in the UK been improved? Did the learnings from SIPF influence and improve the design of R&I policy?

Indicator	Secondary data	Interviews
Improved evidence on and understanding of the efficacy of place-based R&I funding		Focused on the final evaluation with policy leads in key departments (BEIS, UKRI, HMT) to explore changes in understanding of role of place in R&I and influence of SIPF.
Evidence on how SIPF and projects have influenced and engaged policymakers (local, regional, national)	Interrogation of Dimensons.AI and KEF databases linked to SIPF projects.	
Use of place-based policies following SIPF, and an overall judgement of the influence of SIPF in the design of these policies		

6.4.4 Value for money analysis

The final impact EQ15 focuses on the value for money (VfM) of the SIPF programme. The purpose of an economic VfM assessment is to understand how the economic value of the benefits that can be attributed to the SIPF compare with the costs of the programme. This analysis will be undertaken consistent with the principles outlined in the latest *Green Book* appraisal and evaluation guidance.[43]

Identifying relevant costs

Cost data for SIPF is expected to be provided by the central SIPF Delivery Team. Relevant costs for the VfM analysis include:

- **SIPF-wide administration costs** of running and operating SIPF, incurred largely by UKRI.

[43] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf

- **Project-level administration costs** of operating individual projects (e.g. staffing, overheads and resource costs) incurred by projects.
- **Public investment spend** by SIPF and projects in e.g. capital, training, R&D.
- **Private investment spend** by businesses, academics and third sector organisations working with SIPF-funded projects.

Identifying and valuing relevant benefits

Measuring and valuing the benefits of SIPF will draw on all of the evidence gathered through both phases of the impact evaluation. Given the explicitly place-based nature of SIPF, and recent updates to the *Green Book* focused on accounting for place-based impacts, we consider the following to be key issues for the VfM assessment of benefits:

- **Productivity benefits** through the development, adoption and use of new technologies and ideas generated or supported by SIPF, movement of labour into more productive jobs, and agglomeration benefits from local economic clusters supported by SIPF. These could be measured and valued through e.g. credible estimates of wage increases or measured productivity increases from individual projects aggregated SIPF-wide. We note that:
  - There needs to be clear evidence from the evaluation that these benefits are additional.
  - These may need to be adjusted for 'disbenefits' if new technologies displace old technologies which lead to job losses or reduced economic activity that may take time to be fully re-absorbed into the economy.
- **Local expansion** for supported organisations could generate additional economic activity, sales and employment which can be valued in terms of additional GVA.[44] However, as discussed above, we need to be mindful of:
  - Evidence that this is attributable to SIPF, largely from project-level evaluation evidence and in-depth case studies.
  - The potential for *substitution* (firms in supported areas switching staff or economic activity within organisations but not increasing overall activity), *leakage* (benefits felt outside the intended area), and *displacement* (additional jobs or activity within SIPF-supported areas being 'won' from elsewhere). Evidence on these should come from within project-level evaluations, project-level and counterfactual case studies, and targeted stakeholder interviews, and used to adjust the size of these effects.
- **Multipliers** of direct benefits within the local area, which assume the value of any local expansion of economic activity are larger owing to indirect and induced local economic activity. Multipliers should be applied to estimates of additional local economic benefit adjusted for substation, leakage and

[44] Where estimates of benefits are only available in terms of e.g. additional turnover or jobs, we can approximate GVA impacts using turnover or employment:GVA ratios derived at sector level (matched as closely as possible to the sectors where turnover benefits are realised and / or to the sector supported by the relevant SIPF project) from ONS published data. Updated Green Book guidance is explicit that employment effects within targeted local areas can be considered (whereas for national interventions employment effects are normally assumed to net out where economies are at full employment or full capacity).

displacement. Suggested multiplier values, which vary by sector and local economic conditions, are available in Annex A2 of the *Green Book*.

- **Social benefits** such as (per the SIPF logic model) improvements in local area health, wellbeing and environment that can be credibly attributed to SIPF. These are often hard to measure and value, though approaches such as valuing Quality Adjusted Life Years (QALYs) or carbon savings are well-established, and some projects are gathering data in their own evaluations on these types of social impacts. Where it is hard to measure and monetise benefits, we will provide a qualitative, narrative account to accompany a quantitative VfM assessment.

Time and discounting

The treatment of time is important for economic valuation in two key respects:

1. Policy choices have impacts for a number of years. It is important to consider the full lifetime of economic costs and benefits to provide a complete assessment of these impacts.
2. When costs and benefits occur matters, with the general principle that people prefer value now rather than later. These time preferences need to be accounted for, using standard discounting methods to provide a 'net social present value' of the time-adjusted benefits relative to the costs.[45]

These considerations are important for SIPF due to the length of the programme and long-term nature of the economic and social benefits.

We anticipate that the majority of the direct public sector costs of the programme will have occurred within the evaluation period. However, some private sector costs may be incurred later through leveraged investment.

The benefits from SIPF may start within the evaluation period but in most cases are likely to be longer-term in nature; our logic model, for example, suggests many long-term impacts will take at least 5 years to materialise, and many benefits could be more distant still. The VfM assessment will need to consider the potential lifetime of these benefits as far as they can be attributed to SIPF.

To the extent that evidence about future anticipated impacts is collected within any project-level evaluations or can credibly be demonstrated through case studies, we may be able to produce scenario estimates, or 'what if' modelling based on the available evidence, about longer-term impacts.

Given that there are likely to be considerable uncertainties about the scale of additionality and variation in evidence that we anticipate from individual projects, sensitivity analysis will be critical to our VfM modelling, setting out, for example, what we might need to believe about certain values or parameters in order for particular cost-benefit ratios to be reached.

[45] A 3.5% annual discount factor (based on real-terms values for costs and benefits) is the standard assumption in the *Green Book*.

6.4.5 Triangulating evidence to develop the contribution story

As we assemble the range of evidence to support the impact evaluation, we will triangulate sources to arrive at our overall Contribution Analysis.

This will involve:

- Mapping all of the evidence available at that phase of the evaluation against each EQ and indicator.
- Judging the quality of the evidence, both qualitative and quantitative. As described in Section 6.4.2, this will combine both the Maryland Scientific Methods Scale and established frameworks for reviewing the quality of qualitative evidence.
- Reading across all of the evidence to assess the consistency of the findings and strength of findings. Where we have conflicting evidence (for example, project-level evaluation findings may suggest a strong positive impact for a particular EQ that is not reflected in case study or secondary evidence), we will both weigh up the relative strength of the evidence and, where needed, consult further with projects and members of SEEAG to help understand contextual or other factors that might explain the conflicts.
- Prepare a narrative summary of our conclusions about the contribution of SIPF against each impact EQ with the supporting evidence as the basis for the Interim and Final Evaluation Reports.

7 EVALUATION DELIVERABLES

7.1 Phases of evaluation

7.1.1 Timelines

Figure 18 provides an indication of the timelines associated with the subsequent phases of evaluation. We will begin the baselining phase immediately after the Evaluation Framework report is finalised and will aim for it to be complete by the end of Q1 2022.

In Q2 2022, we will begin the interim process evaluation for Wave 1 projects, delivering our report in the later part of the year. In Q2 2023, we will begin the interim process evaluation for Wave 2 projects.

In Q4 2023 and Q4 2024, we will begin the interim impact evaluations for Wave 1 and Wave 2 projects, respectively.

The final evaluation will begin in 2026, to allow a significant amount of time for additional data collection to inform our conclusions. As described above, it will involve many of the same activities as the interim evaluations but will also include a series of case studies (funded and unfunded 'near-miss' projects).

7.1.2 Ongoing evaluation

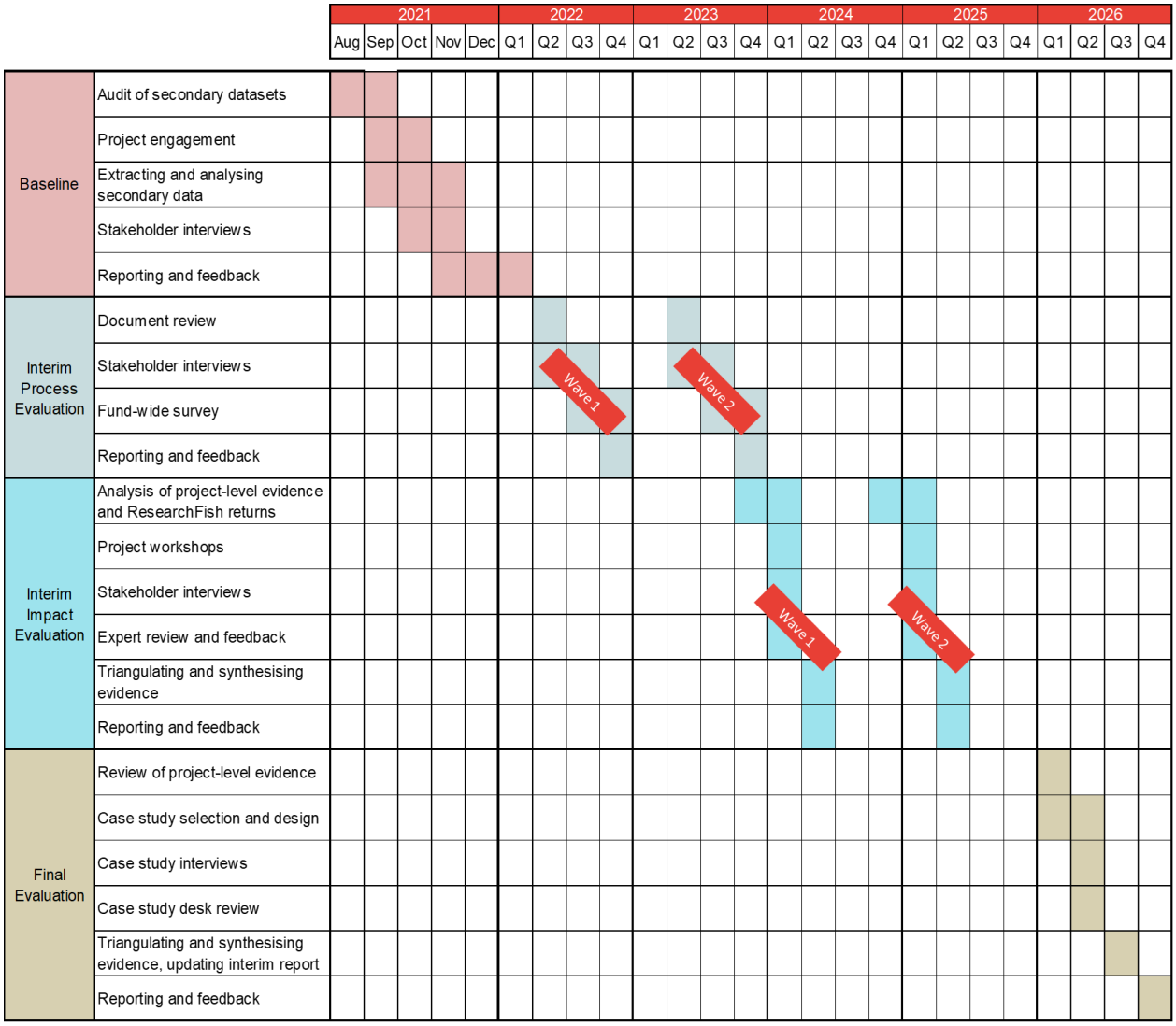
As specified in the theory of change, impacts of SIPF are expected to be felt long after the conclusion of this evaluation.

A key aspect of our approach to assessing the longer term evaluation needs will be assessing the gaps in available evidence as part of our overall Contribution Analysis, in particular at the Final Impact Evaluation stage. We anticipate that gaps will particularly be around the longer term or more indirect impacts of SIPF as captured in EQs relating to wider social impacts, policy impacts and long-term economic impacts (e.g. sustainability of economic benefits).

Identifying such gaps will help us develop a plan for future evaluation, in particular proposing how gaps could be filled, methods for attributing longer-term impacts to SIPF and considerations relating to future waves of SIPF (if any) and the potential for Wave 1 and Wave 2 projects to input into longer-term evaluation. For example, we are aware that SIPF projects will be required to provide ResearchFish returns for a further 5 years post-award, and will be encouraged to provide returns for the period 6-10 years post-award as well.

Our proposed strategy for longer-term evaluation of SIPF will be written up as part of the draft Final Evaluation Report, and will be discussed and agreed with the SIPF Evaluation Working Group and SIPF External Evaluation Advisory Group.

Figure 18 Evaluation timelines



Source: Frontier Economics, RAND Europe and know.consulting and RAND Europe

7.2 Stakeholder engagement

7.2.1 Summary of key stakeholders

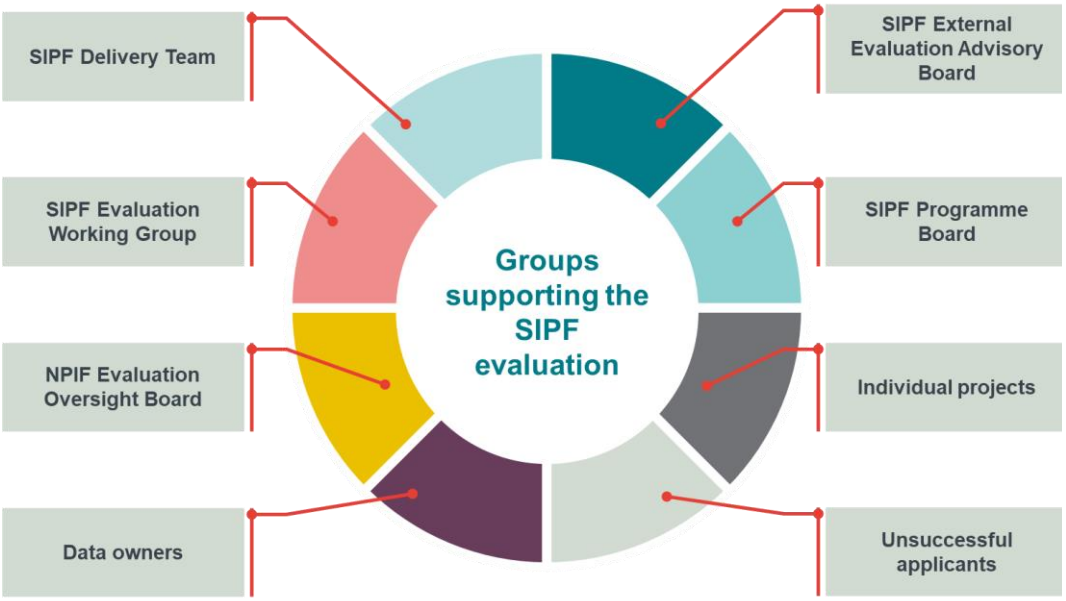
Fund-level stakeholders

In developing the subsequent phases of the evaluation, we will consult and engage a number of key stakeholder groups. These are summarised in Figure 19. We envisage that many of these groups (e.g. the SIPF Delivery Team and the individual projects) will provide direct input into the SIPF-wide evaluation through data and evidence collected at the project level, and through interviews and workshops held to gather additional qualitative evidence to support case studies, interviews and the process evaluation. We also expect these groups, along with

key governance groups (EWG, NEOB and the Programme Board), to help validate and challenge draft outputs and reports through the evaluation.

Data owners with whom we may make contact as part of subsequent phases of the evaluation (baseline and impact evaluation) include UKRI, ONS and HMRC as well as holders of commercial data sources identified in Section 4.2 that we expect to draw on for the evaluation.

Figure 19 Key groups supporting the evaluation



Source: Frontier Economics, RAND Europe and know.consulting

In addition to the key stakeholders listed above, where appropriate, we will also engage with SIPF funding and delivery partners, including the higher education funding bodies of Wales, Scotland and Northern Ireland and the Office for Students. Stakeholders from other government departments may also be consulted for aspects of the process and impact evaluation.

Project-level stakeholders

In addition to the stakeholders who will support the Fund-wide evaluation, the projects will engage with a number of groups who may influence the theory of change and are therefore relevant to the evaluation as a whole. These include:

- **Institutions that support businesses in local areas.** This includes networks such as Chambers of Commerce, and the LEP Network (in England).
- **Business/research organisations working in similar fields.** The theory of change in Section 3 demonstrates that we expect SIPF to provide sustainable increases in regional R&I beyond the original investment in the funded projects. This means that project consortia are likely to engage with businesses or researchers in similar industries or fields both in their local areas and outside.
- **External funding bodies and investors.** Several of the Wave 1 funded projects have already obtained sources of funding beyond SIPF or build on previous funding. In addition, obtaining additional flows of public and private

investment for funded projects is a specific objective for the Fund (as explored in the theory of change).

- **Local communities.** All projects involve collaboration with local government and intend to engage with local communities in their areas. The intended outputs, outcomes and impacts of SIPF depend on successful local engagement and buy-in with local public, private and third sector organisations.

7.2.2 Stakeholder engagement and dissemination

Figure 20 summarises how the Evaluation Consortium will engage and communicate with the key Fund-level stakeholders described above.

We will work closely with the SIPF Delivery Team and UKRI to disseminate evaluation findings beyond the engagement summarised in Figure 20, for example more widely within UKRI or to BEIS or other interested government stakeholders. We will also discuss opportunities to present interim findings at external policy conferences, webinars or other forums identified by the Evaluation Consortium or the SIPF Delivery Team.

During the drafting of the Final Evaluation Report, we will explore options for dissemination of the final conclusions and findings. Given the emphasis and interest on ‘place’ and ‘levelling up’ as themes of policy and the goals of SIPF, we envisage a considerable level of policy interest in the devolved administrations, regional and local government as well as in Whitehall.

Figure 20 Engagement with key fund-level stakeholders

Stakeholder	Engagement/communication methods
SIPF Delivery Team	▪ Fortnightly meetings/calls, adapting to weekly during periods of intense activity. ▪ Formal stakeholder interviews as part of process and impact evaluation activities. ▪ *Ad hoc* calls and emails as required.
SIPF External Evaluation Advisory Group	▪ Updates once or twice a year on evaluation progress at convened meetings of the group, seeking input and advice. ▪ Meetings/calls to provide insight and advice on matters of evaluation and analysis on an *ad hoc* basis.
SIPF Evaluation Working Group	▪ Engagement at key points for input, guidance and feedback, at least once (likely more) per evaluation phase. ▪ Initial review of all deliverables.
SIPF Programme Board	▪ Presentation and discussion at key milestones, at least once per evaluation phase. ▪ Sign-off on all deliverables.
NIPF Evaluation Oversight Board	▪ Presentation and discussion at key milestones, at least once per evaluation phase. ▪ Sign-off on all deliverables.
Individual funded projects	▪ Individual meetings/calls with each project around time of inception (Waves 1 and 2) to explain purpose of Fund-wide evaluation and understand project-level evaluation plans. ▪ Workshops to validate findings once per evaluation phase with relevant projects. ▪ Formal stakeholder interviews as part of process and impact evaluation activities at all phases. ▪ In the Interim Evaluation, invited to respond to process evaluation survey. ▪ In the Final Evaluation, case studies of 6 funded projects involving semi-structured interviews and document review.
Unsuccessful projects	▪ In the Interim Evaluation, invited to respond to process evaluation survey. ▪ In the Final Evaluation, case studies of 3 ‘near-miss’ projects involving semi-structured interviews and document review. ▪ Formal stakeholder interviews as part of process and impact evaluation activities at all phases.
Data owners	▪ Calls/emails as required to facilitate access to data.

8 EVALUATION RISKS AND MITIGATION ACTIVITIES

This Section sets out key risks for the evaluation, an initial assessment of the likelihood and potential impact of each risk, as well as the actions we will take (or have already taken) to protect against them. This is set out in Figure 21 overleaf.

Risks are split into two groups: planning and management, and evaluation methods. More discussion of evaluation challenges can be found in section 6.1.

The risk register will be maintained and updated throughout the course of the evaluation delivered across phases in the coming years.

Any changes in terms of new risks will be communicated as part of regular project catch-ups with the SIPF Delivery Team, with mitigation actions agreed. Where we propose removing risks, we will explain the rationale and agree this with the Delivery Team. Changes in the status (likelihood or impact) will be reviewed and agreed with the Delivery Team based on a clear rationale.

Figure 21 Evaluation risk register

	Likelihood	Impact	Mitigation
Planning and management			
Disruption to project timelines and delivery due to Covid-19	High	Low	We have been working remotely since March 2020 and have technical solutions in place to ensure that the project can continue regardless of whether the Evaluation Consortium and/or other project stakeholders are working in offices or remotely.
Delays to evaluation due to project-level delays	Medium	Medium	We will maintain regular contact with the SIPF Delivery Team and projects regarding project progress. The evaluation methods are such that we can make progress with other parts of the work, e.g. using secondary data sources, while project-level data becomes available.
Staff turnover at consortium partners	Medium	Medium	As the evaluation will take place over the course of five years, it may be that the evaluation team changes over time. Frontier has a team of more than 30 dedicated consulting staff focused on public policy work and a wider team of almost 300 consulting staff, so staff resilience is high. It operates a project-based model meaning staff can be moved onto project as needed. At RAND Europe, there is a three-month notice period for researchers, which allows project teams to bring in new team members and get them up to speed before handing over a project. The senior team across the consortium are expected to remain in post throughout the project, with scope for junior staff to grow into more senior positions over time. There are handover processes in place if new team members are introduced and if staff changes are required, we will discuss and agree these with you as early as possible.
Staff turnover in SIPF Delivery Team, governance bodies or within projects	Medium	Low	We will hold regular (fortnightly) meetings with the SIPF Delivery Team during which we will provide progress updates and present findings from the evaluation to ensure all members are up-to-date. Where needed we can brief new members on the evaluation plan and progress.
Evaluation methods			
Poor availability of project-level data or secondary data sources	Medium	High	The evaluation will use a variety of methods to ensure that results are not reliant on data from any one source. It will draw on insights from secondary data sources, case studies, interviews and surveys. Our initial review of project-level data

	Likelihood	Impact	Mitigation
			suggests good coverage of key evaluation questions and indicators though we are as yet unclear in practice what the data provided will look like.
Absence of suitable counterfactuals for impact analysis	High	Medium	As above, we will use a mixed-methods approach to evaluating SIPF, meaning that we are not reliant on any one type of counterfactual. Counterfactual approaches include a comparison of before vs after, self-reported counterfactuals and comparison with control groups ('near miss' projects and controls identified in data). Baseline data from 2020 and 2021 may be contaminated by Covid-19 and Brexit factors for specific projects. We will work closely with project teams to assess the magnitude of this. Where possible, we will obtain an earlier time series of data to make comparisons and work with external experts and published evidence to assess relative impact of these factors.
Delays to access to secure administrative data	Low	Medium	We will apply to access the data as quickly as possible. Code used to perform the baselining and interim evaluation will be stored and used for the final evaluation and future updates.
Low participation in stakeholder interviews / surveys	Medium	High	We intend to use a combination of approaches to secure a sufficient number of participants in the stakeholder interviews and Fund-level survey. For the interviews, we will draw on an initial list of stakeholders from UKRI (including UKRI programme management, government stakeholders such as BEIS and HMT, and applicants). Where necessary, we will employ referrals from those already interviewed to ensure a balanced representation of the stakeholder groups. The Fund-level survey is intended to include unsuccessful and successful applicants (including at different stages of the process). In order to ensure optimal participation, we will liaise with UKRI to identify the long-list of respondents and send the survey invitations with an official UKRI message on the importance of participation. In particular, we will highlight to unsuccessful applicants the importance of their participation the ensuring a balanced perspective on SIPF as part of the findings. In addition, the survey respondents will be sent three reminders at specified intervals to maximise response rates to the extent possible.

REFERENCES

Ritchie, J. and L. Spencer (1994), 'Qualitative Data Analysis for Applied Policy Research' in A. Bryman and R.G. Burgess (eds.), *Analysing Qualitative Data*, (pp.173-194). London: Routledge.

UK Parliament (2021). UK Research and Innovation: Finance: Question for Department for Business, Energy and Industrial Strategy. UK Parliament. Available at: https://questions-statements.parliament.uk/written-questions/detail/2021-04-13/180571

UKRI. (n.d.a). Strength in Places Fund. *UK Research and Innovation.* Available at: https://www.ukri.org/our-work/our-main-funds/strength-in-places-fund/

UKRI. (n.d.b). Wave one seedcorn-funded proposals. *UK Research and Innovation*. Available at: https://www.ukri.org/our-work/our-main-funds/strength-in-places-fund/wave-1-seedcorn-funded-proposals/

UKRI. (n.d.c). UK Research and Innovation strength in places fund: wave 2 EoI. *UK Research and Innovation*. Available at: https://apply-for-innovation-funding.service.gov.uk/competition/370/overview

UKRI. (n.d.d). Process Mapping for Evaluators. *UK Research and Innovation*.

UKRI. (n.d.e). UKRI Strength in Places Fund (SIPF) Logic Model. *UK Research and Innovation*.

UKRI. (n.d.f). SIPF Programme Governance and Reporting Diagram. *UK Research and Innovation.*

UKRI. (n.d.g). Principles of SIPF Evaluation. *UK Research and Innovation.*

UKRI (2018). UKRI Strength in Places (SIPF) Programme Overview. *UK Research and Innovation*. Available at: http://www.uedu.ac.uk/wp-content/uploads/2019/09/2018-05-UKRI-Strength-in-Places-Fund-Programme-Overview.pdf

ANNEX A EVALUATION GUIDANCE FOR PROJECTS

The purpose of this Annex is to provide some high-level guidance and prompts for projects to consider as part of their own evaluations. We understand that all projects have begun planning their evaluations, and we are not looking to impose a structure or restrictions on these existing plans.

Instead, this Annex hopes to identify areas where project-level evidence is likely to be helpful for the Fund-wide evaluation, but we do not currently understand projects to be collecting this evidence systematically as part of their KPIs or ResearchFish reports. To the extent that projects are able to provide additional evidence in these areas, input of this into the Fund-wide evaluation would be of use.

Follow-on funding and inward investment leveraged

As part of impact evaluation questions EQ1 and EQ2, we are looking to consider the follow-on research funding and commercial inward investment leveraged by SIPF projects (from outside the region and outside the UK). It is our understanding that evidence on additional research funding leveraged is captured as part of the projects' ResearchFish returns. However, we do not anticipate follow-on *commercial* investment to the projects to be captured as systematically. In addition to the value of any follow-on commercial investment leveraged, it would also be useful to understand the nature of this investment and its source. Where projects are able to provide this evidence, this would be a valuable input into the fund-wide evaluation.

We are aware that some projects are planning to capture additional inward investment as part of their KPIs. For example, MyWorld has the following KPI: "Additional inward investment to West of England region". In their evaluation plan summary document, they suggest that this will be measured by "Number of items, link to MW support, partners/parties involved, type and scale of business investment…".

In addition, a particular challenge will be to identify and isolate the role of SIPF funding in attracting this funding/investment. To the extent that projects are able to provide an indication of the specific importance of SIPF in attracting any of their follow on funding or investment, this will help us gain a greater understanding of the causal impact of SIPF funding. It may be difficult to isolate and analyse the role of SIPF funding quantitatively, therefore qualitative evidence such as case studies and interviews is likely to be the most suitable form here.

Commercial success

Impact evaluation question EQ3 includes "Number of new products and commercial success, as measured by take-up, profitability, expected revenues" as an associated indicator. We note that it may not be possible to analyse commercial success systematically across the funded projects. Not all projects appear to be explicitly collecting data on commercial success as part of their KPIs and this

information is not collected systematically within ResearchFish returns. However, we recognise that 'commercial success' will look different across different sectors and will take a varying degree of priority across each project, especially given differing timescales.

As such, we do not anticipate collecting consistent evidence on commercial success in a way that would allow aggregation across projects. Where projects are able to provide data on commercial success, this would be beneficial. For SIPF-supported innovations that reach the market, this may take the form of trends in the value and number of sales or profitability, as examples. In addition, insight from projects into what commercial success looks like in their individual sectors may provide useful context.

Adoption of R&I outputs

Impact evaluation question EQ4 is specifically focused on adoption of SIPF-supported technologies, both within the relevant region and sector and outside of these. As with commercial success, we recognise that measures of 'adoption' will look different across sectors and for different products and industries, and that time scales vary across projects.

Therefore, we are unlikely to be able to identify any consistent metrics of adoption across projects, though some projects do have specific KPIs related to this. For example, for Living Laboratory, the KPI "Number of PM innovations or services adopted into healthcare" will provide an indication of adoption. For Artemis, the relevant measure of adoption can fall under KPI "% of commuters (Bangor NI – Belfast) using zero emissions water transport".

To the extent that projects can provide additional evidence on 'adoption' of their R&I outputs this will be useful for the Fund-wide evaluation. Where quantitative measures such as those mentioned above are not suitable or measurable, interviews, case studies or informal evidence captured through project leads may be a way to establish adoption. Any case studies, in addition to evidence surrounding the 'adoption' of innovations, may also wish to provide context on the enablers and barriers to adoption within the individual sector, for example regulatory processes.

Progress along commercial readiness scales (e.g. MRL/TRL)

Impact evaluation EQ3 has associated indicator "Progress of supported technologies along commercial readiness scales (e.g. TRL/MRL)". These scales are intended to provide a common framework and set of terminology with which to assess the progress of innovations and products from initial concept through to maturity. More information on Technology Readiness Levels (TRLs) can be found here.[46] Similarly, additional information on Manufacturing Readiness Levels (MRLs) is available here.[47] For some projects, concepts such as Service

[46] https://www.nasa.gov/directorates/heo/scan/engineering/technology/technology_readiness_level

[47] https://www.twi-global.com/technical-knowledge/faqs/manufacturing-readiness-levels

Readiness Levels (SRLs) may be appropriate. For an example of how these have been applied within the ESA, see here.[48]

Based on our understanding of the project-level KPIs and ResearchFish reports, we do not expect to collect data on the progress of project R&I outputs along commercial readiness scales systematically. However, we do understand that this information may be contained in projects' exploitation plans. Input from projects, where relevant, on the progress of their R&I outputs across these scales would be beneficial.

Jobs and skills

The impact evaluation has a set of questions (EQ5 and EQ6) under the theme of 'Jobs and Skills'. Most projects have signalled they are collecting data on the number of jobs associated with the project and, where relevant, similar 'number of' metrics on skills support and training.

In addition to these 'number of' metrics, it would be useful to understand measures of 'quality' related to jobs and skills. Contextual information on the profile of jobs supported by SIPF funding (e.g. wage level, qualification level, type of job) should provide a richer picture of the impact of SIPF support. Similarly, measures of quality related to the skills training generated by projects will provide broader context. Measures of 'quality' may be drawn from qualitative or 'subjective' evidence (e.g. from responses to surveys, case studies) or quantitative (e.g. wage premia associated with courses). In assessing the 'quality' of training courses, some examples of aspects it may be useful to consider are participants' views on the overall utility of the training, the extent to which the training targeted the specific needs of the sector or the individual, and the impact of completing the training on participant outcomes.

Finally, some projects have indicated that they have carried out research into the skills profile and related skills gaps in their sectors and regions as part of their activities. Where relevant, it would be useful to understand where projects have been carrying out this research and its outcomes.

Collaborations

Impact evaluation question EQ9 looks to establish the impact of SIPF on networks and collaboration. We understand that ResearchFish contains questions on collaborations and partnerships associated with the projects. Therefore, this should provide some indication of the 'scale' of collaborations related to SIPF support.

In addition to understanding scale, we also hope to understand the nature of the collaborations related to the projects. In particular, how new collaborations have been generated, and whether they have been made more effective or enhanced.

As previously, where projects can provide evidence or context on the extent to which SIPF support was pivotal in generating or enhancing these collaborations, this would be beneficial for the Fund-wide evaluation. As these aspects may be difficult to capture quantitatively, case studies providing specific examples of how collaborations have changed, including new collaboration methods that have been

[48] https://business.esa.int/sites/default/files/ARTES_Applications_Terminology_Rev.2.3.pdf

put in place following SIPF, may be an appropriate method for collecting evidence here.

Social impacts (e.g. health, environment and wellbeing)

Under the evaluation theme 'Societal Impact', EQ12 looks to evaluate the impact of SIPF on health, wellbeing and the environment. We recognise that contribution towards these impacts will be highly dependent on the specifics of each individual project, including their focus on these aspects, the sectors they operate in, and project timelines. In addition, an evaluation of this theme will depend on the extent to which individual projects' influence on these factors can be identified.

As above, we do not expect to be able to systematically collect consistent evidence on this across projects. Where projects can evaluate and provide evidence on their realised or potential future impact on health, wellbeing and the environment, this would be helpful. In addition, evidence on the sector or project specific barriers and enablers in achieving these social impacts would provide useful context.

The impact of economy-wide shocks such as Covid-19 and Brexit

Where possible, individual project evaluations should consider providing narrative or quantitative evidence on how significant shocks such as Brexit or the Covid-19 pandemic have affected the delivery of the project and their scope for potential impacts.

Although, to some extent, we can consider the impact of these events at the level of the Fund-wide evaluation (e.g. through case studies and interviews), the projects themselves will be closer to the detail of how exactly they have been impacted. Given that these events have the potential to significantly influence the impact of SIPF and the individual projects in a number of ways, evidence on their influence provided through project evaluations will be a valuable input into the Fund-wide evaluation.

ANNEX B FULL RAPID EVIDENCE ASSESSMENT

B.1 Aims and objectives of the REA

The REA has two main objectives. First, to provide a summary of the existing evidence base relating to 'place-based' research and innovation (R&I) investments, providing contextual baseline evidence for Evaluation Question 13 (*to what extent has the evidence base around the impact of locally targeted R&I spending in the UK been improved?)* Second, to provide insights and information which supported our thinking about the evaluation framework for SIPF.

Working with UKRI, we identified six specific aims of the REA:

- **Inform outcomes and impacts.** Summarise key outcomes and impacts used in the evaluation of similar policies. This will include long-term economic benefits associated with increases in innovation, specifically in a place-based context.
- **Inform data and evidence collection.** Find key datasets and other evidence used to measure innovation or other important outcomes or impacts in the theory of change. It will also look to find measures and metrics that have been used to evaluate local, regional and national impacts of similar policies.
- **Inform evaluation method.** Find approaches to estimating the impacts of similar programmes/policies aimed at boosting innovation, including the challenges associated with using estimation methods.
- **Describe external barriers and enablers.** Understand the factors outside the immediate control of policy makers which are associated with successful place-based R&I policy.
- **Describe internal barriers and enablers.** Understand the aspects of programme design and governance that are associated with successful place-based R&I policy.
- **Understand the role of place in innovation policy.** Understand the specific place-based factors that influence innovation policy and summarise the evidence on the effectiveness of a place-based approach relative to a traditional excellence-led approach.

For the purposes of this review, we define place-based policies as *those targeting particular regions or subregions within countries*. In selecting papers for inclusion based on our search criteria (see below) we ensured that the studies identified clearly-referenced regional or local factors.

B.2 Methods used to find relevant literature

To find relevant literature, we used the following three-step search protocol. At each step, the aims above were used as inclusion criteria: documents were included (based on a sift of the abstract and/or the conclusions section) if they appeared able to inform one or more of the aims.

Papers were included only if they were published by a reputable source, e.g. peer-reviewed academic journals, national or international research organisations (such as the OECD) and government departments or arms-length bodies. This acted as a broad quality control for the studies included in this REA.

B.2.1 Earlier work known to the evaluation team and UKRI

We started from a list of reports on SIPF and wider innovation policy known to the evaluation team, external experts and UKRI through their experience in place-based policy and innovation. This included reports on the effectiveness of place-based R&D policy, reviews of policy instruments, and international case studies of sub-national innovation policy.

This yielded 38 papers.

B.2.2 Search terms

We then developed a set of search terms to find literature using Google Scholar (for academic literature) and Google (for grey literature):

["innovation" OR "R&D" OR "R&I" OR "research" OR "science"]

AND

["Place" OR "place-based" OR "local" OR "regional" OR "spatial" OR "geographic" OR "geography" OR "cluster"]

AND

["policy" OR "intervention" OR "programme" / "program" OR "fund"]

AND

["evaluation" OR "impact" OR "effect" OR "assessment"]

We used the documents found in step 1 to cross-check the search terms to ensure they were finding relevant papers. Having removed duplicates from step 1, the search yielded a further 22 papers of which 10 were deemed relevant on the basis of the abstract and conclusion sift.

B.2.3 Snowballing

In reviewing the papers found in steps 1 and 2, we identified papers in the bibliographies which appeared to relate to one or more of the objectives of the REA but had not been previously captured. This yielded a further 5 papers.

In total, our review comprised 51 papers. These are listed in the references section.

Each of these papers was reviewed in full. Relevant evidence for each of the six questions of interest was extracted and coded into a matrix for summarisation and analysis.

Within these studies, we identified two international 'case study' examples of previous place-based R&I interventions which have been evaluated: Innoregio in Germany, and the Experimental Programme to Stimulate Competitive Research (EPSCoR) in the US. We provide summaries of these case studies as examples of past work closely related to the objectives of the SIPF evaluation.

B.3 Summary of available evidence

B.3.1 Outcomes and impacts relating to place-based R&I policy

KEY MESSAGES

Three main outcomes were found in our review:

- **Business-related outcomes**, which focus on new products, patents and investment;
- **University-related outcomes**, which focus on academic engagement, infrastructure and publications; and
- **Network/ecosystem-related outcomes**, which focus on local leadership, network enhancement, "know-how" transfer and community engagement.

Few outcomes are place-specific although all outcomes found can be tailored to a specific geographical area. The main place-based outcomes focused on **concentration of activity, specialisation of an area and relative regional competitiveness.**

Key **impacts** were either **economic** related (e.g., jobs, productivity, skills) or **creativity/capacity** related (e.g., regional creativity and capacity for development).

Outcomes

The papers we have reviewed summarise the outcomes of interventions to drive innovation in three groups, reflecting the actors involved in the innovation ecosystem and the links between them:

- **Business/product-based outcomes**
- **University-based outcomes**
- **Network/ecosystem-based outcomes**

Business- and product-based outcomes are those which relate specifically to companies and commercial entities and which stem directly from activities undertaken within the organisation as part of the activities supported by the innovation policy.

These outcomes include:

- Increased patent stock held by companies [49]
- Increased technology management capabilities [50]
- Sales devoted to new products or new markets, measured either as the share of sales dedicated to new products or sales of new products per employee [51]
- Increased investment in R&D [52]
- Patent Cooperation Treaty (PCT) patent, trademark and design applications [53]

[49] Kaiser, U., & Kuhn, J. M. (2012)
[50] Best & Bradley (2019)
[51] McCann, P., & Ortega-Argilés, R. (2013), OECD (2011), Kamburow (2012), Best & Bradley (2019), European Commission (2019)
[52] Economic Insight (2015), European Commission (2019), Jonkers (2018), Falck et. al. (2019)
[53] European Commission (2019)

- Increased training to develop or upgrade skills of their personnel [54]

Measures such as R&D investment have been used to measure innovation in early papers. However, R&D investment has significant shortfalls as an innovation metric as it is an input measure rather than a measure of innovation outcomes.

The literature suggests that patents are preferrable to R&D metrics as they are the *outcome* of the innovation process. However, not every patent is created equal. The value of a patent varies widely and it has been shown that many patents have little value or economic impact.[55] Furthermore, there are innovations which occur but are not patented, leading to measurement issues.[56] The use of patents as an outcome metric may therefore bias findings to sectors that are heavier users of patents.

University-based outcomes are those related specifically to universities and higher education institutions (HEIs) directly involved with innovation policy activities. These include:

- Proportion of academics who engage with others in the region/outside of the region [57]
- New technology spinouts and technology licensing [58]
- New doctorate graduates [59]
- Highly cited publications [60]
- Increased investment in the university [61]
- Increased and enhanced educational infrastructure [62]
- Income from and availability of business and community services by HE providers, which include HEIs delivering consultancy, research, or facilities and equipment related services to local stakeholders [63]

Finally, **network/ecosystem-based outcomes** are those which relate to and act on the network between actors in the area where the innovation policy intervention occurs.

These include:

- Inter-firm collaborations on new products[64]
- Establishment of leadership in a certain field/domain [65]
- Establishment of research bases and clusters [66]

54 European Commission (2019)
55 There are cases where companies file for patents in order to ensure they can use their existing technology or very similar technologies without the risk of a competitor patenting something similar. In this case, known as defensive patenting, the number of patents doesn't reflect either the value of the innovation or its impact.
56 Carlino et. al. (2015)
57 Hughes & Ulrichsen (2019)
58 Hughes & Ulrichsen (2019)
59 European Commission (2019)
60 European Commission (2019)
61 Lester (2007)
62 Pringle et. al. (2011)
63 HESA (2020)
64 McCann, P., & Ortega-Argilés, R. (2013), Economic Insight (2015)
65 Jonkers (2018)
66 Zuckerman (2014), Best & Bradley (2019)

- Increased take-up of technology[67]
- Increased "thickness" of interactions between agents, measured as the strength, frequency and detail of interactions [68]
- Level of community/local leadership and engagement [69]
- Transfer of “know-how” between actors in the innovation ecosystem [70]
- Enhanced capacity to manage collaboration and develop R&D projects [71]

Impacts

There are two groups of ultimate impacts of the innovation policy interventions in the papers we reviewed: economic impacts and knowledge- and capacity-based impacts.

Economic impacts include:

- Increased gross value added (GVA) [72]
- Increased local wages [73]
- Increases in local skills [74]
- Increases in the number of jobs and employment [75]
- New businesses/start-ups [76]
- Exports [77]
- International linkages and foreign direct investment [78]

Knowledge/capacity-based impacts include:

- Increased capacity for regional development, meaning the region is able to grow from its internal inputs and stakeholders [79]
- Increased regional creativity, meaning a region has more chance of creating useful and impactful innovation spontaneously and adapt to shocks. [80]

Place-based focus

Few of the studies we reviewed had specific place-based outcomes or impacts associated with them. In fact, most outcomes and impacts can be tailored to a specific geography of interest, for example, training to develop skills to work in an innovation ecosystem *in the local area of intervention*.

However, outcomes and impacts with a specific place-based element include:

- Concentration of highly-cited researchers in the local geographic area [81]

67 Lester (2007)
68 Hughes & Ulrichsen (2019), Jonkers (2018), OECD (2007), Eickelpasch (2002)
69 Hughes & Ulrichsen (2019), Jonkers (2018), Lester (2007)
70 Jonkers (2018), Abramovsky (2008)
71 Kamburow (2012), Best & Bradley (2019), Eickelpasch (2002)
72 Jonkers (2018), Brenner (2013)
73 What Works Centre for Local Economic Growth (2015), Hausman (2012)
74 OECD (2007), Best & Bradley (2019), Pringle et. al. (2011)
75 Jonkers (2018), OECD (2007), Eickelpasch (2002)
76 Jonkers (2018), Hausman (2012)
77 Kamburow (2012)
78 Kamburow (2012)
79 Jonkers (2018)
80 Jonkers (2018)
81 What Works Centre for Local Economic Growth (2015)

- Increased regional competitiveness [82]
- Regional parity between areas in terms of research bases and funding [83]
- Creation of new opportunities for local specialisation [84]
- Integration of separate areas of technological activity in the region [85]

B.3.2 Data and evidence collection

KEY MESSAGES

Our review of the literature found six sources of data used to evaluate similar policies to SIPF, each with their own specific metrics:

- Nationally collected **economic data**, measuring outcomes and impacts like employment, local skills and inter-regional trade and supply chains
- **Commercial datasets**, measuring firm-specific outcomes such as patent numbers and specific financial variables such as profitability
- **Research datasets**, measuring outcomes such as publications and citations
- **Network datasets**, measuring communication flows and datasets documenting collaboration between agents in the innovation ecosystem
- **Management information (MI)** for both programmes and universities, measuring innovation funding awards and courses and outreach activities
- **Survey datasets** measuring ad-hoc information such as new product development, new process improvements or interactions/engagement with the wider local community.

The papers we reviewed use six dataset types to measures outcomes and impacts. Certain outcomes overlap between datasets due to differences in research access to data and differences in required granularity, as shown Figure 22.

Figure 22 Data source use across outcomes and impacts

	Business outcomes	University outcomes	Network outcomes	Economic Impacts	Knowledge impacts
National Statistics	✔			✔	
Commercial data	✔	✔		✔	
Research data		✔	✔		
Surveys	✔	✔	✔		✔
MI		✔	✔		✔
Network data			✔		✔

Source: Frontier Economics, RAND Europe and know.consulting

National Statistics from government statistical agencies

This group of datasets includes indicators collected at the national and sub-national level by the government's statistics authority (e.g., the Office for National

[82] OECD (2007), Brenner (2013)
[83] Zuckerman (2014), Pringle et. al. (2011)
[84] Best and Bradley (2019)
[85] Lester (2007)

Statistics (ONS) in the UK's case). There are four specific data sources and indicators which are relevant:

- **Business production** data, including datasets such as input/output tables for each sector/region and company turnover (e.g. ONS's Business Structure Database) [86]
- **Employment** – regional level employment by sector (e.g. ONS's Labour Force Survey)
- **Skills** – local population qualifications (e.g. ONS's Annual Population Survey)
- **Trade** – trade outflows and inflows (e.g. DIT's core investment and trade statistics)

Company-level commercial datasets

Several papers use data from commercial organisations to cover key metrics:

- **Financial** information such as company profits, R&D expenditure and assets from FAME/Experian datasets
- **Patent** information on type, citations, university/business affiliation and names of those filing from Patstat, LexisNexis Univentio, and WIPO

Financial information from these datasets is much broader than business data accessible by national statistical agencies in terms of the information captured. For example, company-level assets data is not collected by national agencies.

Patent information covers metrics such as the companies and inventors present on patent applications, as well as their residence and affiliation.[87] Patent information, while used across the papers we have reviewed, does not cover service industries or non-technological innovations. Other papers measure similar outcomes using business surveys, which we explain below.[88]

Research datasets

Papers use author-level references and citation counts of academic papers as well as wider impact metrics such as media references taken from dataset such as Web of Knowledge, Mendeley, Scopus, and Newsflo.

Surveys

Several papers use surveys or interviews to measure commercial innovation. As explained above, patent data does not capture important forms of product or process innovation within companies. They ask qualitative questions to a random sample of stakeholders and the results are aggregated up to particular geography to quantify place-based innovation indicators.

Survey data includes both existing national surveys, such as the HE-BCI (Higher Education Business and Community Interaction) survey, the Community Innovation Survey and the UK innovation survey [89] as well as tailored surveys

[86] Abramovsky (2008), Economic Insight (2015)
[87] Casper (2013)
[88] McCann, P., & Ortega-Argilés, R. (2013)
[89] Giuliani (2007)

collected in specific innovation consortia made solely for the purpose of programme evaluation. [90]

Existing national surveys include general innovation questions such as whether businesses "introduced new or significantly improved products or processes". [91]

Bespoke surveys tend to ask stakeholders involved in an innovation ecosystem about their relations with other stakeholders. For example, questions include the scope and extent of their interactions with the wider community both within and outside of a particular region.

Management information (MI)

Certain papers use management information at the programme and university level to measure outcomes.

Programme-level management information includes data on funding awards to universities and companies in the region (e.g., Gateway to Research for some UKRI programmes excluding Research England). Importantly, MI is useful when it covers all investments, including those that are not part of the innovation policy programme in question. This helps to capture whether a programme has generated additional funding to the region in question.

University-level management information relates to the number of academic courses and activities related to a certain topic and the number of new PhD students in a particular field. For example, HESA data in the UK gives research funding breakdown at an institution level.

Network information

Several papers analyse data on interactions between actors in an innovation ecosystem. These datasets include monitoring data (e.g. participants in specific innovation projects, active members of web-based platforms, etc.), R&D collaboration or commercial relations between firms, and communication flows measured by email traffic.[92] These datasets measure the connections between parts of the innovation ecosystem and their thickness and expansion over time.

B.3.3 Evaluation methods

Evaluation methods identified in the review

Overall, the evaluation methods we have reviewed were limited in their ability to identify the causal effects of place-based policy robustly. At most, the evidence generated was at Level 3 of the Scientific Maryland Scale. Papers using quasi-experimental methods such as difference-in-differences and PSM were not always convincingly able to demonstrate they could identify causal effects. None of the studies used strictly experimental evaluation approaches.

[90] Giuliani (2007)

[91] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/536491/UKIS_2015_Main__report_Final_v.pdf

[92] Kamburow (2012)

KEY MESSAGES

Our literature review found that there are four methods used to estimate the impact of similar policies to SIPF:

- **Survey or interview** methods for programme participants (e.g. companies, universities and stakeholders involved in the innovation programme)
- **Econometric analysis** using difference-in-difference and matching methods to approximate a counterfactual
- Estimating the likely impact using **modelling** approaches and **prior evidence**
- **Social network analysis** to understand the linkages between actors in the innovation ecosystem

The main challenges to these approaches are:

- Difficulty in identifying causal effects due to challenges with identifying counterfactuals
- Problems in attributing impacts to the programmes, especially long-term impacts, due to external factors
- Complex interactions between agents meaning a linear causal framework may be less effective at capturing impact
- Displacement effects and difficulty of identifying the correct geographical unit of impact
- Challenges in getting useful data to measure outcomes and impacts

Several papers use **surveys or interviews** to estimate the outcomes and impact of innovation programmes.[93] Their use of survey data is mainly driven by two reasons. First, bespoke survey data collected for individual evaluations can capture innovation outcomes for which there is no data available. Second, existing innovation surveys undertaken by government or public sector stakeholders are the best publicly available data on innovation which precedes the programme. Surveys and interviews ask a common set of questions which are aggregated across respondents and over time to quantify outcomes across a group or geography.

Estimating causal inference using survey data requires some policy variation which can be exploited over time or place. For example, Zuckerman (2014) exploits the difference in when US states were eligible for innovation funding to estimate the impact of EPSCoR on the ability of HEIs in "underfunded" US states to obtain research funding, going back to the 1980s (see Case Study 2). Survey data was useful in this context due to its existence over an extended period. The paper compares different cohorts of the programme, depending on when they became eligible, to find comparable groups.

Other studies use tailored surveys to measure outcomes and impacts of the programme. Survey data on outcomes is collected at inception (e.g. at baseline) and throughout the programme across two groups: a treatment and a control group. The treatment group includes companies and stakeholders which are

[93] For example, Eicklepash (2002), Abramovsky (2008), Zuckerman (2014) and Lester (2005)

directly affected by the programme. The control group includes similar companies and stakeholders which are not impacted. [94]

Defining a control group which accurately depicts the treatment group had it not been impacted is challenging. Generally, these studies use the specifics (or "quirks") of rules used to allocate funding to define the control group. For example, Eickelpasch (2012) defines the control group as programmes in the region that were not impacted or selected to be part of the innovation programme.

Econometric analysis is used by several papers to estimate the causal effect of innovation programmes. The most popular approach is DiD (difference-in-differences), which compares outcomes for groups affected by the programme (treatment group) against a control group which did not benefit from the programme.[95] Groups can be comprised of companies, project, groups or even places. The analysis compares these two groups over time, before and after the programme is introduced.

In theory, any two groups could be chosen for a difference in difference model. However, for it to be a valid approach to estimating the impact of a programme, trends in outcomes for both groups must be the same before the programme is implemented. This allows any observed difference between the treatment and the control group once the programme is implemented to be attributable to the programme.

This relies on the assumption that the control and treatment group are similar, which can be tested by observing the data on the outcome in question for both the treatment and control group before the programme is implemented.

Several studies use a data-driven approach to choose the control group. This method, known as **PSM (Propensity Score Matching)**, quantifies "similarity" based on factors that can be observed between the groups in the data. For example, companies in a control group can be "matched" to those in the treatment group based on having similar financial information. This approach is useful when it is challenging to use elements of the programme design to define control and treatment groups.

Other studies try to quantify the "de-minimis" effect of the programme, that is the expected monetary impacts that would have materialised solely based on money being transferred to stakeholders in a particular area.[96] This consists of a **modelling approach** with a-priori information on the likely return to funding in a particular area. This approach then can be used to compare the realised outcome to the 'de-minimis' case to estimate impact. Dotti et al (2021) use estimates of how much the local economy benefits in monetary terms from an additional euro of local consumption to estimate the economic impact attributable to the programme.

Finally, studies have used **social network analysis** to quantify outcomes related to the network-structure of the ecosystem and any changes to it.[97] For example, studies have determined whether certain stakeholders in the network are completely isolated from others and whether there are "gatekeepers" of knowledge

[94] Eickelpash (2002)

[95] Falck (2019), What Works Centre for Local Growth (2015), Vanino (2017)

[96] Dotti et al (2021)

[97] Ter Wal (2019), Muscio et al. (2012), Casper (2013), and Giuliani (2007)

which act as a conduit for information outside the ecosystem. However, network analysis has rarely been done over time, meaning few studies have sought to seek how networks have changed because of a programme. As explained below, this is challenging because of attribution problems. In other words, it is difficult to know whether changes to the networks are due to factors outside the programme and whether they would have emerged in absence of the programme.[98]

In principle, one could define treatment and control areas and use a difference-in-difference approach to estimate changes to a network due to the programme. However, this has not been undertaken in the literature we reviewed, likely for two reasons. Firstly, networks are likely to be very different across place. As stakeholders in a network ecosystem grow, the combinations with which they could be connected to each other grow. Furthermore, there are no metrics referenced in our literature review which summarise the shape, composition and structure of a network in its entirety. Therefore, it would be challenging to determine whether two networks were "similar" over time.

Evaluation insights

One important challenge emerging from the literature is the **lack of a clear counterfactual** in estimating programme impact, in particular a control group that acts as a good comparator for those impacted by an R&I programme.

Exploiting differences in the timing or selection of projects, or using data-driven methods such as PSM have both been proposed as solutions. However, these approaches are limited for two reasons. First, they rely on the existence of programme quirks or sufficiently large, granular datasets to identify 'similar' counterfactuals. Second, there may be reasons why even observably-similar groups are not good counterfactuals. For example, groups included as part of a programme may have been more proactive and more engaged with local ecosystems, meaning they stand a better chance of delivering positive outcomes to the innovation system in which they reside. Therefore, less proactive firms that were not selected as part of the innovation system would not be a good comparison group. This is the problem of 'selection on unobservables'. With respect to the SIPF evaluation, methods could be used to attempt to account for selection, for example by using programmes which are similar in terms of when and how they applied. For example, exploiting the selection criteria and using "near miss" applications to SIPF as a comparison group could remove some differences in the "proactive" differences between applicants and non-applicants. However given the very different and particular nature of projects applied for and funded under SIPF, the question of whether 'near miss' applicants are a valid counterfactual for funded projects would remain uncertain and would need to be further validated (for example, based on the nature of economic geographies affected, the sectors of interest and the maturity of relevant technologies being developed).

Another issue raised by several papers was the **attribution problem of long-term impacts**.[99] Attributing long-term impacts to the programme requires stripping out the effects of external factors across several years. This is challenging and requires monitoring of all relevant external factors across each programme year.

[98] Ter Wal (2019)
[99] Zuckerman (2014)

Even if these factors can be reliably measured, it may not be possible to assess whether they affect treatment and control groups differently over time, meaning a control group identified at the start of an intervention may not represent a good control many years later. In this case, measuring the external factor is not enough for disentangling the effect of the external factor from the programme effect.

Complex interactions between stakeholders within the innovation network make evaluating place-based network impacts particularly challenging.[100] More specifically, the link between any intervention and the impact of the network may not be easily attributable. In fact, changes to a network may be self-reinforcing, which makes the identification of a programme as the cause of the change challenging. For example, an initial conversation between a business and a university due to an innovation programme may lead to future frequent communication. This could then lead to the university being connected to other businesses as a result of their communication. Therefore, it is not clear to what extent the expansion of the network, in this case the university liaising with other businesses, is due solely to the programme.

Furthermore, changes to network structure complicates the counterfactual analysis, i.e. what the network would have looked like in the absence of the policy.

The issue of **identifying a spatial unit of analysis is challenging**, particularly in the context of geographic spill-overs.[101] Studies have used administrative boundaries to segment stakeholders into treatment and control groups (e.g. control and treatment regions).[102] This presents two challenges to evaluating impact due to **spill-overs** and the **arbitrary nature of administrative boundaries**.

- First, innovation benefits spill over to stakeholders that are geographically close to those affected. This means defining control groups as stakeholders that applied for funding but did not receive it may be invalid. Given stakeholders tend to cluster together, a control group may receive some benefit from other stakeholders in its cluster being either treated or affected by other policies.
- Second, innovation ecosystems may cross administrative boundaries. Therefore, using outcomes in a region as a control group to another region may be invalid if the specific ecosystem which is being acted upon spans multiple regions. Outcomes for a place will change depending on the boundaries used to define, aggregate and summarise them. This is known in the geography literature as the 'modifiable area unit' problem. [103]

Data accessibility is also an evaluation challenge mentioned by numerous papers.[104] The lack of available data or the difficulty in accessing it means specific and geographically precise outcomes and impacts cannot be included in evaluations. When data is accessible it is sometimes **released** with a **significant time lag**. This implies that measuring long-term outcomes will only be possible

[100] Kamburow, T., Reid, A., & Simmonds, P. (2012).
[101] Carlino and Kerr (2015)
[102] For example, Falck (2019)
[103] See Carlino and Kerr (2015),
[104] Vanino (2017), N.A of Sciences (2013)

numerous years after a programme is completed and long-term outcomes are both materialised and captured in the available data.[105]

B.3.4 External barriers and enablers

KEY MESSAGES

Several external factors were identified as creating a favourable environment for research and innovation programmes. These include:

- **Existing regional specialisation** (e.g. some concentration and reputation in a specific industry);
- **Existing human capital** (e.g. highly specialised workers);
- **Favourable market dynamics** (e.g. competition between businesses, entrepreneurial activity, labour mobility);
- **Existing networks** (notably with universities);
- **Supportive governance** (e.g. multi-level governance, ensuring big picture coordination with regional flexibility and tailoring); and
- **Existing infrastructure**.

The lack of the above enablers may prove to be a barrier to the success of place-based programmes. This emphasises the importance of SIPF selection criteria, which currently require some baseline capacity in the local geographic area to ensure the success of the selected projects.

Many factors outside the direct control of the programme were identified as providing a favourable environment for research and innovation in the various publications we examined. While the evidence was often not strong enough to establish causal effects, the following factors were cited as enabling both the **creation** of opportunities from research and innovation and the ability of stakeholders (especially local) to fully **capture** the associated benefits. SIPF accounts for the influence of these external enablers and barriers by requiring some baseline capacity (which the project can then build on, as outlined in section 6) in projects' local geographic areas, as part of its selection criteria.

Existing regional specialisation

Research and innovation programmes were generally found to be successful, i.e. meeting their social and economic aims, when they involved **regions that already exhibited some pre-existing knowledge in a specific, relevant industry**[106]. This often results in a **concentration in that industry**, which can notably be identified through the presence of clusters and regionally-integrated supply chains (not necessarily fully developed or integrated). In turn, this promotes **networking and knowledge and technology transfers**, which are important factors for boosting innovation and driving growth. This expertise in a specific industry can lead to a defined reputation for the region (nationally or internationally), which may **attract private research and innovation** expenditure.

Overall, some existing industry expertise, concentration, and reputation were seen in the literature as contributing to forming a favourable environment for research

[105] Economic Insight (2015)

[106] Brenner, Emmrich and Schlump (2013); Clar & Sauter (2014)

and innovation and, thus, can be seen as enablers for the effectiveness of place-based policies.

Existing human capital

Many studies[107] found that the presence of **human capital** in an area is an enabler for the success of R&I programmes. Specifically, individuals who have completed vocational or higher education and workers accessing training become **highly specialised** in specific roles and acquire considerable industry expertise. This allows them to **better absorb knowledge and think critically and creatively**, fostering innovation.

Favourable market dynamics

Hausman (2012) highlighted that the **presence of competition between firms at a regional level** is an important driver for research and innovation, as it incentivises businesses to keep up with their competitors and retain and grow their revenue and market share. Similarly, Ulrichsen and O'Sullivan (2020) found that high regional **entrepreneurial dynamism** indicates significant innovative activity. Hausman (2012) also highlighted that **high regional labour mobility** may result in companies having access to qualified, trained, and skilled workers, which can both support innovation *per se* and facilitate the introduction of innovative products and services onto the market.

Existing networks

There is a relatively broad consensus in the literature[108] that the **existence of networks** (both personal or professional, formal or informal) fosters innovation and facilitates the capture of the associated benefits.

Networks promote the collaboration of actors with complementary skills and capabilities working towards a common objective, **building synergies**, and ultimately achieving better results than an individual venture. Additionally, the significant interactions between actors resulting from the existence of developed networks may lead to **knowledge and technology spill-overs**. This can result in stakeholders across the board enjoying the benefits of such interactions, whether directly or indirectly.

The positive effects of developed networks are especially emphasised when they involve actors who are sources of knowledge, such as universities and other research organisations. These are naturally important producers and transmitters of new ideas, concepts, and technologies, and thus a connection to them may prove to be particularly valuable in research and innovation projects. Additionally, such organisations educate and train individuals, often providing them with the opportunity to work on practical projects with local stakeholders, thus facilitating the recruitment of talent for neighbouring businesses and organisations.

Overall, science parks, which geographically regroup actors operating in the same or complementary industries, are seen as facilitating the creation or expansion of networks and knowledge and technology transfers. This points towards a logical conclusion that the **presence of institutions,** both formal (e.g. local enterprise

[107] In particular: Centre for Cities & McKinsey Co. (2014), Sorvik, et al. (2019), and Hughes & Ulrichsen (2019)

[108] In particular: Centre for Cities & McKinsey Co. (2014), Economic Insight (2015), Sorvik, et al. (2019), Foray, Morgan & Radosevic (2018), and Zymek & Jones (2020)

partnerships, inter-firm partnerships, contractual agreements, government forums etc.) and informal (e.g. existing personal/professional networks and relationships)**, which facilitate dialogue and negotiations between stakeholders,** is essential in the development of networks.

Therefore, existing networks can be seen as making a region more responsive and receptive to engaging and capturing the opportunities and benefits from place-based programmes.

Supportive governance

Many papers[109] cite engagement from national, regional and local institutions in **multi-level governance** as enabling the success of R&I funding. This is noted as allowing for **big-picture thinking while accounting for regional differences**, resulting in policies that tend to be more tailored and flexible to the specific needs, priorities, and evolving socioeconomic environment of different areas. However, a common theme among other studies[110] we examined was that multi-level governance is challenging, and thus, must exhibit a **high degree of co-ordination and clearly defined roles and authorities** to avoid bureaucracy, policy ineffectiveness and a lack of accountability. One example of the consequences of poor co-ordination between regional and national R&D policies is the increase of the research funding deficit. Public R&D funding typically does not match the full economic cost of research (public funding only covers an average of 71% of the actual cost of research, leaving the remaining 29% to be covered by research institutions), which leads to a risk of "putting more financial pressure on those parts of the country the Government is trying to help"[111].

Aside from the governance structure, many studies[112] linked certain established policies, approaches, and priorities to the success of research and innovation funding programmes. Notably, policy tools **promoting access to finance and R&D investment** (public, private, higher education, FDI) are seen to be particularly useful in creating an environment where such programmes can be fully exploited. Zymek and Jones (2020) emphasised the importance of the **stability and continuity of institutions, policies, and governance priorities** in creating and maintaining a supportive governance environment for research and innovation.

Overall, as these governance dynamics support research and innovation, they can be understood as enabling the success of place-based policies.

Existing infrastructure

Several studies, especially the *Science & Innovation Audits* (2016, 2017, 2019) highlighted the benefits of **quality of and ease of access to existing infrastructure**, such as broadband, transportation, housing, and energy, in supporting innovation. The main mechanisms identified were based on increasing connectivity to help the innovation ecosystem communicate both within itself but also with actors outside of it.

[109] Including OECD (2011), Best & Bradley (2019), Zymek & Jones (2020), Chaytor, et al (2021)

[110] Such as OECD (2007) and Centre for Cities & McKinsey Co (2014)

[111] Chaytor, et al. (2021), p.42

[112] Notably Hausman (2012), DBEIS (2014), and Zymek & Jones (2020)

B.3.5 Internal barriers and enablers

KEY MESSAGES

Specific factors in the governance and design of research and innovation programmes have been identified as important for success. These include:

- The use and exploitation of **smooth multi-level governance**;
- Having a **holistic and stable policy approach**;
- Having a **robust monitoring and evaluation framework**;
- **Responding to regional priorities and needs**;
- **Establishing safeguards** (e.g. clear commercial terms and conditions, strong cost sharing requirements, mediation mechanisms);
- **Building on regional capabilities**; and
- Setting up **long-term success** by fostering networks, knowledge and technology transfers, private sector expenditure, and developing human capital.

Certain internal programme governance and design factors were cited by several papers as enabling innovation and its associated benefits. There are similarities to the previous section here, as the external factors that enable research and innovation ought to be developed and/or built upon through various instruments in the design and governance of place-based policies. It is important to note that establishing causality between specific factors internal to the governance and design of place-based programmes and the success of these programmes is difficult. This is emphasised by WWCLEG (2015) in its review of evaluations of innovation support programmes.

Policy and programme approach

Many studies[113] stressed the importance of avoiding a one-size-fits-all approach by **leveraging multi-level governance**, i.e. emphasising the need to involve regional institutions in design, running and governance of R&I programmes. Indeed, this can provide **flexibility**, enabling research and innovation interventions to be more **tailored to the regional recipient** and, thus, better achieve their objectives, though need to not be over-complex in their design and operation.

Furthermore, many studies[114] highlighted that **long-term and continuous policy design** is essential for effective engagement with relevant regional and local stakeholders and the full delivery of wide-ranging benefits, as it allows for **better awareness of funding programmes, and longer-term projects and collaborations to develop.** The importance of **evidence-based decision-making** and evidence feedback loops was also flagged as being critical to ensure that policies effectively respond to regional and local needs and priorities. The EPSCoR papers (2013, 2014 – see Case Study 2) emphasised that **strong monitoring and evaluation frameworks** are necessary in delivering this.

[113] Notably DBEIS (2014) and Zymek & Jones (2020), Chaytor, et al (2021)

[114] Notably OECD (2011; 2012), DBEIS (2014), Best & Bradley (2019), Zymek & Jones (2020), Chaytor, et al. (2021)

Barriers to success that could be embedded in the design and governance of place-based programmes identified in the literature included **excessive breadth, vagueness, and complexity of a policy** (EPSCoR 2013, 2014) which can add bureaucracy, hinder stakeholder engagement and be a barrier to effective monitoring and evaluation**.**

Additionally, the existence of similar place-based programmes from other regional and national agencies can lead to **competing objectives and policy directives**, which can jeopardise their overall effectiveness (EPSCoR, 2013). Again, this emphasises the importance of multi-level governance, where place-based programmes are coordinated at a national level to ensure complementarity, but implemented at the regional level to respond to regional priorities.

Economic Insight (2015) highlighted that **blurry commercial terms and conditions**, especially around intellectual property ownership and use, can significantly undermine partnerships, hindering the delivery of direct and indirect benefits of research and innovation funding programmes. Wu (2009) argued that **lacking or flawed cost sharing requirements can lead to crowd-out effects**, where regional governments decrease their research and innovation funding because of the additional support provided by place-based policies. This not only limits the benefits of the programme but also undermines trust between parties, ultimately hindering the development of regional research and innovation.

Finally, the EPSCOR study (2013) highlighted that place-based programmes could lead to concerns from some stakeholders that excellence risks being neglected. This can result in opposition to schemes, including from policy-makers representing areas that may see funding reduced or that are not deemed eligible for targeted place-based interventions, undermining support and thus risking the overall success of the policy. SIPF seeks to circumvent this barrier through considering excellence as a baseline for selection, i.e. as a necessary criterion for selection, though not sufficient by itself.

Programme targeting

Zymek and Jones (2020) argue that in order for place-based programmes to have the highest effects on relative local performance, they need to **focus on places that exhibit productivity levels and growth rates well below the national average**, as these are the areas lacking the support and resources that can catalyse the full exploitation of their innovation potential. These are also regions where benefits will have the highest relative effects. It will be interesting to further explore this in the evaluation, in light of the evidence on the need for a baseline of resources in the local geographical areas targeted by PB programmes (c.f. section 4), should sufficient quality data be available.

Wu (2009) emphasised the necessity for interventions to **serve regional priorities**, such as inclusive economic development. He explains that it is critical to **maintain and develop regions' interest and support for research and innovation**. Indeed, their experience participating in place-based programmes and the results of this involvement have significant influence on determining the approach to regional industrial development they will undertake in the future. **Meaningful regional socioeconomic benefits from such policies can ensure a stronger focus on research and innovation going forward**. Chaytor, et al.

(2021) emphasise that these benefits need to be spread throughout the region rather than be strictly concentrated around research centres to reduce the existing intra-regional inequalities in the UK. Involving stakeholders across a given region may contribute towards achieving this.

Practically, several studies[115] argued that successful place-based policies target projects and regions that have significant potential for innovation, e.g. in terms of research capability (though we did not find evidence about whether place-based initiatives are better suited for a specific sector). This highlights the **effectiveness of building up existing, even if limited, capabilities, as opposed to starting from scratch**. The **spatial agglomeration of relevant companies and research organisations** is also emphasised as a key enabler in promoting partnerships for innovation, and thus the success of place-based policies. However, some nuance is raised on the latter point in Abramovsky and Simpson (2008), who argue that spatial agglomeration may not be as important if knowledge is codified or if tacit knowledge is transferred through well-established links (e.g. formal collaboration agreements). McCann and Ortega-Argilés (2013) and Hughes and Ulrichsen (2019) also note that innovation can take place without geographical proximity.

Finally, Lester (2005) argues that indirect and spillover effects of targeted R&I programmes can sometimes be larger than direct impacts, suggesting these should be at the core of programme design.

Facilitation

Common themes in the examined studies[116] were that to get strong returns, research and innovation programmes should:

- Facilitate **funding mixes** (i.e. public and private funding) for supported projects. Indeed, **fostering an increase in private sector investment** in research and innovation is often emphasised as critical to ensure that the benefits from place-based projects are **maintained and built upon on the long-term**.
- **Foster technology transfers** to enhance the benefits and result in longer-term changes. OECD (2012) highlighted that **investment in competence development** for low-skilled workers, especially in design and science and technology, is useful to achieve such spill-overs. Indeed, it increases companies' **ability to absorb technology and external knowledge** and boost creativity and innovation.

Network and partnership development

Mirroring the benefits of networks highlighted previously, many of the examined studies[117] emphasised the need for R&I programmes to incorporate **various mechanisms to develop quality networks and partnerships**. This can take the form of requiring collaborative leadership, strong project management capabilities, and a strong motivation to engage in the project when awarding support.

[115] OECD (2011), Centre for Cities & McKinsey Co (2014), Zuckerman, et al. (2014), and O'Sullivan & Ulrichsen (2018)

[116] Such as Pringle, et al. (2011) and Economic Insight (2015)

[117] Notably Ranga & Etzkowitz (2013), Foray, Morgan & Radosevic (2018), and O'Sullivan & Ulrichsen (2018)

O'Sullivan and Ulrichsen (2018) highlighted the importance of thorough **due diligence on the project partners** to ensure compatibility at the selection stage. Additionally, Ranga and Etzkowitz (2013) emphasised the usefulness of **collaboration and conflict moderation mechanisms** to ensure the networks and partnerships grow and remain healthy during the duration of the support.

B.3.6 The role of place in innovation policy

We did not find many studies that directly compared place-based and traditional excellence-led approaches, seeking to establish which approach tends to be 'better'. Those that did were relatively superficial, with no strong examples of rigorous, robust comparisons with directly usable results. Nevertheless, various aspects of the role of place in innovation policy and its benefits were highlighted in the examined publications.

Overall, most studies[118] agreed that place-based policies should aim to **strengthen, replicate, and adapt the success factors that have encouraged the concentration of innovative firms by building capacity in a particular area**. This ensures that the programmes are tailored to the diverse regional environments and priorities, and that the resources developed allow regional stakeholders to create benefits in the future, autonomously from the programme.

[118] Notably OECD (2007; 2012), Pringle, et al. (2011), Best & Bradley (2019), McCann (2019)

KEY MESSAGES

Different aspects were highlighted regarding the role of place in innovation policy. The various publications pointed to a wide range of benefits for stakeholders, including:

- **Boosting regional innovation and research capacity**;
- Enabling regional businesses (particularly SMEs) to better adapt to new markets and respond to technological opportunities, helping them **increase business performance and resilience**;
- **Catalysing a crowding-in effect** of funding for participants (notably from private sector actors); and
- Contributing to a **cultural change** in attitudes regarding science and innovation, increasing wider stakeholder support.

However, the literature was not unanimous on the role of place in innovation policy. Notably, the following **caveats** were highlighted as to the focus on place in innovation policy:

- It can **inhibit the formation of extra-regional networks**, limiting potential and benefits;
- It can **lead to crowd-out effects from regional institutions** (due to lacking or flawed cost sharing requirements);
- It **may not improve regional inequalities in relative terms** (although it can contribute to stabilising these regional differences); and
- It may be **incentivising the relocation of research and innovation activity** to the expense of other regions.

Furthermore, although we believe the evidence is not strong enough to establish causal effects, **wide-ranging benefits** have been linked to the influence of place in innovation policy across the different publications examined[119]. Common themes identified in the studies included that:

- Place-based programmes can **boost targeted innovation and research capacity**, enabling less developed regions to develop or strengthen a specific expertise, which can be leveraged to contribute to national growth. Naturally, this will hinge on the potential for funded activity to lead to new benefits, e.g. through the development of new/improved productivity- or welfare-enhancing products and services.
- Increased innovative dynamism and resource building is **particularly beneficial for regional businesses**, as highlighted in Vanino, Roper and Becker (2017). Indeed, targeted research and innovation programmes foster collaboration and knowledge and technical transfers, resulting in businesses developing innovative products, services, and production processes. This allows **local firms to successfully adapt to new markets and respond to technological opportunities**. Overall, this has positive effects on **business performance**, in terms of employment, growth, revenue, and productivity,

[119] Such as Hausman (2012), Benner, Emmrich & Schlump (2013), DBEIS (2014), Economic Insight (2015), Vanino, Roper & Becker (2017)

which itself makes businesses **more resilient** to economic downturns. However, Falck, Koenen and Lohse (2019) find that the impact of place-based programmes is short-lived and fades away at the end of the programme.

- Public expenditure on R&I in specific regions can bring credibility to their innovation potential, leading to a **crowding-in effect**, where private sector actors are motivated to join in, providing further funding. However, as previously mentioned, Wu (2009) points to a potential crowd-out effect as well.
- Socioeconomic benefits encourage a cultural change in attitudes towards science and engineering, **increasing public and private support for research and innovation**.

However, several nuances to the benefits of place in innovation policy were emphasised in some of the literature.

First, Miorner, et al. (2019) highlight that the regional focus of place-based policies can inhibit the development of extra-regional networks, hindering the full potential of an area's innovation potential. Chaytor, et al. (2021) thus recommend the inclusion of support for inter-regional collaboration to address this issue.

Second, the EPSCoR study (2013) highlighted that the success of place-based programmes in closing the innovation and socioeconomic gaps between regions is not necessarily straightforward. Other, more developed regions may continue to invest in research and innovation, **meaning the benefits of place-based policies may not lead to less developed areas fully catching up with their more developed counterparts**. Nevertheless, place-based innovation fostering and capacity building was seen as still being highly valuable in **ensuring that regional gaps decrease or, at least, do not widen**.

Third, there were suggestions in the literature that place-based policy targeting innovation may reallocate activity from other regions in a "beggar thy neighbour" dynamic.[120] Positive impacts on one place may come at the cost of potential impacts not being realised in another, though the net effect of this resource reallocation will be unique to each case and the magnitude of trade-offs was generally not estimated. Overall, coordination problems, such as sharing of resources and know-how between places which receive an intervention and their neighbours can contribute to policy failures in fostering place-based innovation outcomes.

B.3.7 International case studies of place-based R&I policies

Innoregio, Germany

The InnoRegio programme belongs to a family of policies that were aimed at improving conditions for innovation, increasing employment and increasing competitiveness in East Germany after reunification. The programme was structured as a competition, where prospective participants were invited to apply for funds for the development of innovative regional joint ventures (networks of educational/research institutes and industry). From 2000 to 2006, the German Federal Ministry of Education and Research (BMBF) provided a total of €255m for

[120] Carlino and Kerr (2015) and Miorner, J., Kalpaka, A., Sorvik, J., & Wernberg, J. (2019)

this initiative. From 2006, the regional networks were expected to operate without financial support.

Following several phases of competition, 23 InnoRegios were awarded funds of between €4m and €20m. They also received consultancy services as part of the programme. In some cases, the relationships between organisations in the clusters existed prior to formation of the InnoRegio network, while in others, the InnoRegio network paved the way for new relationships. Similarly to SIPF, there were no requirement for networks to be in any particular sector, and the selected networks operated across many different fields, including health, tourism, biotech, automotive and maritime.

In a review carried out in 2001 that assessed progress to that point, Eickelpasch et al. (2002) found that several factors were related to the early success of particular networks, where success was defined in terms of project implementation and was measured in terms of project applications and amount of promotional funds approved. These factors included:

- Networks composed of a relatively high share of research establishments and producer organisations, as compared to those with a high share of service companies
- Medium-sized and large networks (>30 participating actors), as compared with smaller networks
- Networks composed of a relatively high share of “innovative” companies, as defined by their innovative activities in recent years and their share of R&D employees
- Networks with a relatively high “climate of confidence” – an indicator of the internal cohesion of the networks – and a high degree of organisation (as reported in a survey by the networks themselves).

In a later review, Brenner and Schlump (2013) investigated whether the industries funded by the InnoRegio programme were more economically successful than the same industries in other regions of East Germany. The authors note that it is important to assess this effect at the regional/industry level, and that simply comparing funded and non-funded participating organisations/firms would not pick up key intended (regional) outcomes of the InnoRegio programme.

Using a difference-in-differences regression model, the analysis finds that, on average, industry-region (IR) pairs that were supported by InnoRegio developed more strongly than those that were not funded, in terms of R&D employment, overall employment and innovation activity (as measured by the number of patents). It should be noted that there is evidence that there was above-average development in the funded IR pairs before funding (for R&D employment and innovation activity), suggesting that more successful networks applied to the programme or that the programme was “picking the winners”. However, this does not explain all of the overall effect. In addition, the authors found that the positive effects of the InnoRegio programme did not appear limited to the period of funding but were sustainable for a number of years.

The InnoRegio programme appears to be broadly recognised as a success, not only in terms of impact but in terms of process: describing its legacy, Blümel (2020) states that the *“organisational dynamic through the introduction of new practices*

and procedures, has led to the decision to further employ the design and concepts of cluster policies for further programmes targeting the socio-economic transformation of Eastern Germany".

EPSCoR, USA

In the US in the late 1970s, there was a concern that funding from the National Science Foundation (NSF) was overly concentrated geographically on the east and west coasts, which led to the creation of the NSF Experimental (now Established) Programme to Stimulate Competitive Research (EPSCoR). The key purposes of the programme are a) to increase the competitiveness of "underfunded" states or territories ("jurisdictions") in terms of receiving federal NSF R&D funds; and b) to develop the science and engineering (S&E) research bases of these jurisdictions. As of 2014, the total annual budget of EPSCoR was $150m.

The first funding awards to five jurisdictions were made in 1980. Since then, the programme has expanded significantly due to changes in the eligibility criteria. The current eligibility criterion is that a jurisdiction can receive EPSCoR funds if it receives no more than 0.75% of the total NSF Research and Related Activities (R&RA) budget. At present, 31 jurisdictions (28 states and 3 territories) meet this criterion. For reference, in 2015, California was the state receiving the highest proportion of funds, with 13% of the total.

Zuckerman et al. (2014) reports the results of an evaluation of EPSCoR, which aimed to assess the programme against its objectives using a mixed-methods approach involving interviews, NSF survey/awards data, literature reviews, EPSCoR reports and data sources external to EPSCoR/NSF. Overall, it appears that EPSCoR has been effective in improving the research bases of underfunded jurisdictions but less so in increasing the proportion of NSF funds being awarded to these jurisdictions. Details of the key relevant results are summarised below.

- Earlier EPSCoR cohorts appear to have become more competitive for NSF funding, while the later cohorts (2000 onwards) have not. As of 2008, jurisdictions in the early cohorts had increased the percentage of NSF funds they received, while the proportion of funds received by jurisdictions in later cohorts remained constant at around the 0.75% eligibility threshold. This finding is confirmed by time-series regression analysis comparing "with EPSCoR" and "without EPSCoR" scenarios. The analysis suggests that 20% to 40% of NSF funding since 2000 to the early cohorts can be attributable to EPSCoR.
- Using EPSCoR funds to hire university research staff appears to be associated with success in obtaining NSF funds (again, particularly for the early cohorts). Research staff employed with ESPCoR support have had more than their "per capita" effect on NSF funding.
- EPSCoR funds have been effective in allowing jurisdictions in all cohorts to develop their research bases and increase their S&E research and education programmes. ESPCoR helped to create 66 research centres and create or upgrade 83 laboratory facilities that are still in existence (as of 2014). EPSCoR also supported the creation of more than 100 degree programmes (including 64 PhD programmes). In some cases, these indicators have reached parity with non-EPSCoR jurisdictions.

- The geographic concentration of NSF R&D funding (calculated using Gini coefficients) has decreased slightly since 1980 but attribution of this decrease to EPSCoR could not be established by the authors.

It is important to note both from a programme design and evaluation approach perspective that Wu (2009) found evidence that EPSCoR, while increasing federal support to particular jurisdictions, may have crowded out financial support for academic research from state governments. Specifically, this paper finds that around a third of EPSCoR funds went to "subsidise" state research budgets.

B.4 Conclusions and implications for the evaluation

Overall, there is ample and diverse potential data to measure a wide range of outcomes and impacts relevant to SIPF. However, there are few approaches which convincingly estimate the impact of all aspects of programmes like SIPF.

This REA points to the existence of a wide range of innovation-related outcomes and impacts across place-based policy. Innovation outcomes and impacts are framed both for individual actors in the innovation ecosystem (e.g. businesses and universities) as well as for the innovation ecosystem itself. Whilst few are place-specific outcomes and impacts (e.g. clusters), most are framed as a general outcome in a specific place.

Various commercial, government and purpose-made sources of data have been used to capture key outcomes and impacts. As highlighted in Section 3, the most robust methods we reviewed relied on identifying external counterfactuals, such as comparing similar projects or regions that were not selected as part of an innovation program; comparing projects or regions that were affected later than others; and comparing the programme to a lower bound based on modelled assumptions of impact.

These methods have faced difficulties in identifying a counterfactual, attributing programme effects in an innovation system with complex interactions, and defining place in a way that excludes geographic spill-overs. The most intractable problem in methods that have used external counterfactuals is selection bias: regions or projects not chosen for support may differ from those supported which therefore makes them imperfect as counterfactuals for how supported regions or projects would otherwise have performed.

To the extent that this selection is based on observable features of places or projects, it can be overcome by using matching or similar statistical methods to ensure that the counterfactual is robust. At the very least, attempts to use regional or project-level counterfactuals in the SIPF evaluation will need to confirm that the observable features of the chosen counterfactuals are comparable to the treatment projects or places (e.g. in terms of economic geography, socio-demographic characteristics, trends in economic performance, size of funding, sectors of focus, quality of bid, types of intended activities, etc).

A further limitation of using project-level counterfactuals is sample size: large numbers of projects are needed to identify any 'treatment effect'. For example, Howell et al. (2021) use a sample of more than 7,000 project applications to compare outcomes for 'just successful' and 'just unsuccessful' applicants either side of a quality threshold. However for SIPF where the number of funded projects

in total is likely to be fewer than 20, such an approach is unlikely to be robust, at least for quantitative / econometric methods.

However the approach can still be considered for more qualitative methods, selecting a small number of 'just unsuccessful' projects for case study or others qualitative research approaches. In performing this comparison, it is important to note that in selecting projects for SIPF funding, UKRI employed an overarching strategic portfolio approach, which (in addition to quality) took into account[121]:

- How applications come together across regions and sectors; and
- Alignment with UKRI and other portfolios of national-level investments.

Other methods have used surveys, interviews and social network analysis to demonstrate outcomes, though these methods are less able to demonstrate the additionality of the programme based on an external counterfactual. These methods add value to evaluation where there is limited variation in the delivery of the programme, and therefore limited ability to define external counterfactuals, and where data relevant to the evaluation are missing or incomplete. Therefore, these methods can be used to complement the SIPF evaluation.

In principle, all outcomes, impacts and sources of data are relevant to the SIPF evaluation. In practice, however, the availability of data will determine which can be used. Developing this understanding form part of subsequent phases of the evaluation.

It will also be important to understand the trade-offs associated with each evaluation method and lay out the potential challenges to identifying programme effects. For example, this will require:

- Understanding whether the SIPF applicants who were not funded are similar to those that were funded in the years preceding SIPF funding.
- Determining whether certain areas which did not receive SIPF funding can be used as comparisons to areas which did.
- Accounting for spill-overs from SIPF funded programmes across different regions.
- Accounting for potential displacement effects, e.g. from areas not receiving SIPF funds to those receiving them, including the potential displacement of other funding or support for R&I in funded areas.
- Considering the correct geographical definition of place (in particular for the funded projects), either using administrative definitions which are useful for publicly collected data or ad-hoc definitions which may better reflect local innovation ecosystems but for which data availability may be challenging.
- Assessing the extent to which data on outcomes and impacts was recorded before the implementation of the SIPF. Specifically, this will mean balancing the need for econometric analysis, which requires data preceding SIPF, with the need for a breadth of indicators to measure SIPF success across all relevant domains.

Several internal and external barriers and enablers have been identified for similar programmes to the SIPF. External barriers which will need to be accounted for in

[121] See SIPF Programme Overview (2020).

the evaluation include existing specialisation, market dynamics, human capital, networks, governance and infrastructure. To the extent that projects were selected on the basis of these factors, understanding how these affect project delivery and gathering data and evidence on these at local level may be needed for a successful evaluation to be delivered.

Internal barriers which will need to be monitored and studied include programme approach, targeting, facilitation and the proactive development of networks. Specifically on programme targeting, an interesting factor to explore in the evaluation will be the apparent contradiction between literature showing that place-based programmes may be most effective in regions that are developed below the national average and the evidence suggesting that existing local/regional networks, infrastructure, skills, and industry presence are factors associated with successful R&I interventions.

The interplay between barriers, enablers and geography will be important to understanding whether the place-based focus of the SIPF leads to the desired impacts. SIPF's role of distributing funding to a variety of places, including those where external barriers may be more prevalent, is important. Comparing across places and programmes will need to account for differences in external barriers and enablers of those places. And comparing SIPF with other place-blind innovation programmes must also take these differences into account.

In terms of the role of place in innovation policy, some previous literature has pointed to place-based innovation funding as a catalyst for regional innovation, increased business performance and cultural change in attitudes to innovation.

However, the evidence suggests that there may also be disadvantages to place-based innovation policies. The literature shows that benefits to a place involved with a place-based innovation programme sometimes inhibited extra-regional networks, led to crowd-out, led to displacement of regional and local government funding and did not improve regional equality, partly due to a reallocation of activity from other parts of the country. Understanding the knock-on effects of place-based policy on places without an SIPF intervention will be important.

B.5 References for the REA

Abramovsky, L., & Simpson, H. (2011). Geographic proximity and firm–university innovation linkages: evidence from Great Britain. *Journal of economic geography*, *11*(6), 949-977.

Baier, E., Kroll, H., & Zenker, A. (2013). *Templates of smart specialisation: Experiences of place-based regional development strategies in Germany and Austria* (No. R5/2013). Arbeitspapiere Unternehmen und Region.

BEIS (2016). Science & Innovation Audits: Wave 1 Summary Reports

BEIS (2017). Science & Innovation Audits: Wave 2 Summary Reports

BEIS (2019). Science & Innovation Audits: Wave 3 Summary Reports

Best, M. H., & J. Bradley. (2019). Industrial capabilities, innovation and place: a paper for UK Research and Innovation

Brenner, T., Emmrich, C., & Schlump, C. (2013). *Regional Effects of a Cluster-oriented policy measure. The Case of the InnoRegio program in Germany* (No. 05.13). Working Papers on Innovation and Space.

Carlino, G., & Kerr, W. R. (2015). Agglomeration and innovation. *Handbook of regional and urban economics*, *5*, 349-404.

Casper, S. (2013). The spill-over theory reversed: The impact of regional economies on the commercialization of university science. *Research Policy*, *42*(8), 1313-1324.

Centre for Cities, McKinsey & Company. (2015). *Industrial revolutions: capturing the growth potential*, Centre for Cities, London.

Chaytor, S., Gottlieb, G., & Reid, G. (2021), Regional policy and R&D: evidence, experiments and expectations, *Higher Education Policy Institute*, 137

Clar, G., Sautter, B. (2014). Research Driven Clusters at the Heart of (Trans-) Regional Learning and Priority-Setting Processes, *Journal of the Knowledge Economy, 5,* 156-180.

DBEIS. (2014). *Innovation, skills and performance in the downturn: An analysis of the UK Innovation Survey 2011*, Department for Business Innovation & Skills, London.

Dotti, N. F., Spithoven, A., Wautelet, A., & Ysebaert, W. (2021). The 'certain 'returns from expenditures for 'uncertain' activities: a local multiplier approach to evaluate regional R&I policy. *European Planning Studies*, *29*(2), 389-409.

Economic Insight (2015). What is the relationship between public and private investment in science, research and innovation? *Report commissioned for BEIS*

Eickelpasch, A., Kauffeld, M., & Pfeiffer, I. (2002). The InnoRegio-Program: A new way to promote regional innovation networks-empirical results of the complementary research.

Elsevier (2016). INTERNATIONAL COMPARATIVE PERFORMANCE OF THE UK RESEARCH BASE 2016. Department for Business, Energy and Industrial Strategy

European Commission (2019). Regional Innovation Scorecard

Falck, O., Koenen, J., & Lohse, T. (2019). Evaluating a place-based innovation policy: Evidence from the innovative Regional Growth Cores Program in East Germany. *Regional Science and Urban Economics*, *79*, 103480.

Foray, D., Morgan, K., Radosevic, S. (2018). *The role of smart specialisation in the EU research and innovation policy landscape, Regional and Urban Policy,* European Commission, Brussels.

Giuliani, E. (2007). The selective nature of knowledge networks in clusters: evidence from the wine industry. *Journal of economic geography*, *7*(2), 139-168.

Griffith, R., Redding, S., & Van Reenen, J. (2003). R&D and absorptive capacity: theory and empirical evidence. *Scandinavian journal of Economics*, *105*(1), 99-118.

Hausman, N. (2012). University innovation, local economic growth, and entrepreneurship. *US Census Bureau Centre for Economic Studies Paper No. CES-WP-12-10*.

HESA (2020). How do HE providers engage with business and communities?

Hughes, A., & Ulrichsen, T. (2019). Value Chains, Systems Thinking and Science, Technology and Innovation Policy: Implications for place-based policy development in the UK A Critical Assessment.

HM Government (2020). UK Research and Development Roadmap

Howell, S T, J Rathje, J Van Reenen and Jun Wong (2021), "Opening up Military Innovation: An Evaluation of Reforms to the U.S. Air Force SBIR Program", CEPR Discussion Paper 16063.

Jonkers, K., Tijssen, R., Karvounaraki, A., & Goenaga, X. (2018). A regional innovation impact assessment framework for universities. *JRC Discussion Paper. Joint Research Centre, Brussels*, *44*.

Kaiser, U., & Kuhn, J. M. (2012). Long-run effects of public–private research joint ventures: The case of the Danish Innovation Consortia support scheme. *Research Policy*, *41*(5), 913-927.

Kamburow, T., Reid, A., & Simmonds, P. (2012). Evaluation of Innovation Activities Guidance on methods and practices. *Technopolis group & Mioir*.

Kitson, M. (2019). Innovation policy and place: a critical assessment. *Cambridge Journal of Regions, Economy and Society*, *12*(2), 293-315.

Lester, R. K., & Sotarauta, M. (2007). Universities, innovation, and the competitiveness of local economies: An overview. *Innovation, universities, and the competitiveness of regions*, *214*(2007), 9.

Miorner, J., Kalpaka, A., Sorvik, J., & Wernberg, J. (2019). Exploring heterogeneous Digital Innovation Hubs in their context. *Luxemburg: Publications Office of the European Union*.

McCann, P., & Ortega-Argilés, R. (2013). Modern regional innovation policy. *Cambridge Journal of Regions, Economy and Society*, *6*(2), 187-216.

McCann, P. (2019). *UK Research and Innovation: A Place-Based Shift?,* UK Research and Innovation, Swindon.

Muscio, A., Quaglione, D., & Scarpinato, M. (2012). The effects of universities' proximity to industrial districts on university–industry collaboration. *China Economic Review*, *23*(3), 639-650.

N. A of Sciences, & N. A of Engineering,. (2013). The Experimental Program to Stimulate Competitive Research.

OECD (2007). Competitive Regional Clusters: National Policy Approaches

OECD (2011). Policy instruments for regional innovation, *OECD Reviews of Regional Innovation*

OECD (2011). Regions and Innovation Policy, *OECD Reviews of Regional Innovation*

OECD (2012). Promoting Growth in All Regions, OECD Publishing, Paris.

O'Sullivan, E., Ulrichsen, T. (2018). *International Experiences in Developing Place-Based Research and Innovation Funding Programmes: Emerging Observations*, University of Cambridge.

Pringle, S., White, G., Pates, R., Cook, J., Seth, V., Beaven, R., ... & Green, A. (2011). Rebalancing the economy sectorally and spatially; an evidence review. Volume 1-main report.

Ranga, M., Etzkowitz, H. (2013). Triple Helix Systems: An Analytical Framework for Innovation Policy and Practice in the Knowledge Society*, Industry and Higher Education, 27* (4), 237-262.

Roper, S., & Hart, D. (2018). State of small business Britain report. *Warwick-Aston, ERC: Birmingham, UK*.

Sorvik, J., Zingmark, A., & Ardenfors, M. (2019). *Place-Based Innovation Ecosystems: Volvo companies in Gothenburg (Sweden)* (No. JRC114384). Joint Research Centre (Seville site).

Ter Wal, A. L., & Boschma, R. A. (2009). Applying social network analysis in economic geography: framing some key analytic issues. *The Annals of Regional Science*, *43*(3), 739-756.

Ulrichsen, T. C., & O'Sullivan, E. (2020). *Innovating Places*.

Vanino, E., Roper, S., Becker, B. (2017). Assessing the business performance effects of receiving publicly-funded science, research, and innovation grants. *Enterprise Research Centre Research Paper, 61.*

What Works Centre for Local Economic Growth (2015). Innovation: grants, loans and subsidies. *Evidence Review 9*

Wu, Y. (2009). NSF's Experimental Program to Stimulate Competitive Research (EPSCoR): Subsidizing academic research or state budgets?. *Journal of Policy Analysis and Management*, *28*(3), 479-495.

Zuckerman et. al. (2014) Evaluation of the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR), Science and Technology Policy Institute

Zymek, R., Jones, B. (2020). *UK Regional Productivity Differences: An Evidence Review*, Industrial Strategy Council Research Papers

ANNEX C PROPOSED INTERVIEW TOPIC GUIDE (PROCESS EVALUATION)

As part of the interviews, an initial introduction to the study will be provided where needed. The interviewees will be provided with a privacy notice to ensure that they are fully informed of the terms and conditions under which the data will be collected, stored, and processed in line with GDPR requirements.

Not all questions will be asked to all individuals. The final selection of questions will depend on the knowledge, expertise, experience, and role of the individuals in the context of SIPF delivery and implementation. The extent to which the interview questions have already been covered through document review and previous interviews will also be factors in the interview questions covered. Additional questions may also be added where further gaps are identified in knowledge or where new or interesting issues emerge.

Introductory questions

1. Could you tell us a bit about yourself, your current role, expertise, and experience in the context of SIPF?

Overview of the SIPF

2. What is your understanding of the concept behind place-based innovation and what it is intended to achieve?
    a. From your perspective, how does it differ from the conventional institution/portfolio-based innovation and how it is funded?
3. How effective has been the Fund design been in delivering on the SIPF objectives and supporting R&I in a range of different geographies?

Perspectives on the selection and funding process

4. How did the selection and funding process adapt to consider place-based considerations and deliver on the Fund's objectives?
    a. What were the criteria used by the SIPF assessment panel to identify the places to fund as part of winning consortia-led projects? Were the criteria identified fit-for-purpose and to what extent are they likely to undergo changes?
    b. How were the objectives of SIPF interpreted in deciding which places and individual projects to fund?
    c. What was the rationale behind the overall geographic/regional distribution of funding? What (if any) were specific considerations to the places selected for funding?
    d. What trade-offs (if any) were there between quality of the proposed project and place-based considerations? Would the research and places funded in SIPF be successful in getting funding if place was not a consideration?
5. What were the facilitators to implementing SIPF at the Fund-level?
    a. Which of the facilitators are specific to place-based funding and/or the places selected?

6. What were the key challenges in implementing SIPF at the Fund-level?
   a. Which of the challenges are specific to place-based funding and/or the places selected?

Lessons learnt

7. What has been learned about the process of place-based funding – and what has changed in the approach and the places funded – over the course of implementing SIPF to date? *(Prompt: we contrast place-based funding against conventional funds which were allocated to institutions or consortium of institutions without any specific emphasis on regional or geographical allocation of funds)*
8. What, if any, are the specific lessons in supporting place-based innovation involving businesses, researchers, local enterprise partnerships (or equivalent bodies), local/regional political leaders, and local/regional councils?
9. What, if anything, should be done differently when providing place-based funding based on SIPF experiences so far?

Governance, decision-making, and fund allocation strategies (for UKRI and government stakeholders)

10. How effective was the governance structure between UKRI and BEIS as the fund was set up, designed, and operationalised?
11. What has worked well in the places funded so far as SIPF has been implemented?
    a. What worked for UKRI (including their support for SIPF)? What did the government learn from it?
    b. Why has this been the case i.e. what are the reasons?
12. What has not worked or could have been handled differently in the places funded by SIPF?
    a. What did not work for UKRI (including their support for SIPF)? What did the government learn from it?
    b. Why has this been the case i.e. what are the reasons?
13. What was the role of timing in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio? *(Prompt: By timing we refer to the sequencing of the announcements related to the various SIPF stages, the time allocated for the process at each stage, and the relation of the month of the year in which the different stages of the SIPF Wave 1 and 2 were executed to broader BEIS/HMT decision-making including autumn and spring budget announcements).*
14. What was the role of the level of funds allocated in the ability to deliver the best quantity and quality of programmes and the selection of places for the SIPF portfolio?
15. What M&E processes are in place at the Fund level and how are these tailored for a place-based funding scheme?

Applicant / awardee perspective on the process and SIPF

16. What is your overall perspective on the process of delivering SIPF-funded programmes and projects?

17. What worked well in the way UKRI organised the funding allocation process for SIPF at EOI, seedcorn, and full application stages? What were the reasons?
18. What were the challenges or difficulties experienced (what did not work well) with the way UKRI organised the funding allocation process for SIPF at EOI, seedcorn, and full application stages? What were the reasons? What could have been done differently?
19. What were the main challenges in putting together a bid for a place-based innovation fund? For example, creating a consortium of local/regional partners, finding complementary research interests in a region, or creating a cohesive research theme around specific local/regional innovation strengths?
20. What were the main benefits of a place-based innovation fund? How did your experience of SIPF compare with other programmes you may be familiar with which are not explicitly place-based?
21. What (if any) were the lessons learnt in applying for a place-based innovation find such as SIPF? What (if anything) would you choose to do differently when applying for a place-based innovation fund (regardless of whether you were successful/unsuccessful this time around)?

** Applicable to awardees only.*

Any additional perspectives / views

22. What (if any) are your expectations about place-based innovation funding allocation and a fund such as SIPF in the future? *(Prompt: balanced distribution of research funding across UK regions; increased collaboration between academia and industry, and fostering effective commercialisation and translation of research)*
23. Is there anything else you would like to add vis-à-vis place-based innovation funding or SIPF?

ANNEX D DRAFT SURVEY QUESTIONS (PROCESS EVALUATION)

Figure 23 Draft survey questions for the Fund-wide survey supporting the Process Evaluation

Label	Type	Question	Response options	Notes
Q1	Mandatory	Identify the UK region in which the project is based	Scotland; Northern Ireland; Wales; London; North East England; North West England; Yorkshire and the Humber; East Midlands; West Midlands; South East England; South West England;	Drop-down list
Q2	Mandatory	Identify the sectors which your application covered?	Select from the ONS UK Standard Industrial Classification of Economic Activities (SIC) at Level 1 (single digit)	Multiple selection drop down list
Q3	Mandatory	Identify the stakeholders which were part of your application?	Businesses; Researchers (university); Researchers (industry); Local enterprise partnerships; Local/regional councils	Multiple selection check box list
Q4	Mandatory	In which wave (year) of SIPF was your application submitted?	Wave 1 (2019);	

Label	Type	Question	Response options	Notes
			Wave 2 (2020)	
Q5	Mandatory	Was your expression of interest successful?	Yes No	Only one option can be selected
Q6	Mandatory	How long did the process take (in weeks) from the time you learned of the call to submitting your expression of interest?	Free text box (numerical responses only)	
Q7	Mandatory	How satisfied were you with your experience of the following aspects of the application process at the expression of interest stage? ▪ Clarity of application process and information provided ▪ Ease of use of application form ▪ Timelines for application to be completed ▪ Clarity regarding process of assessment of applications ▪ Timeliness of decision on application ▪ Quality of feedback given on application outcome ▪ Communication with Fund management team at UKRI	Likert scale 1-5	
Q7.1	Optional	Please provide any additional comments or context to your responses.	Free text; OR Multiple choice	
Q8	Mandatory	How well tailored were the following aspects of the expression of interest application process to developing place-based collaborations? ▪ Timeline for application ▪ Eligibility criteria	Likert scale 1-5	

Label	Type	Question	Response options	Notes
		▪ Assessment criteria ▪ Assessment processes ▪ Assessment panel membership and structure ▪ Nature of information shared about the aims and application processes ▪ Routes through which information was shared (e.g. website, webinars, in-person events, direct communication)		
Q8.1	Optional	Please provide any additional comments or context to your responses.	Free text	
Q9	Mandatory	Was your application successful at the seedcorn stage?	Yes or no	
Q10	Optional, IF Q9=no	What were the reasons provided (for not being selected)?	Free text	
Q11	Mandatory, IF Q9=yes	How satisfied were you with the following aspects of the seedcorn stage? ▪ Level of funding provided ▪ Time allowed for seedcorn stage ▪ Guidance and advice provided ▪ Opportunities for networking and ideas sharing provided ▪ Input, oversight and monitoring from UKRI	Likert scale 1-5	
Q12	Optional, IF Q9=yes	Provide some context to your comments. What worked well, and what could have been improved?	Free text	
Q13	Mandatory, IF Q9=yes	What was your level of satisfaction with the following aspects of the full application process: ▪ Clarity of application process and information provided		

Label	Type	Question	Response options	Notes
		▪ Ease of use of application form ▪ Timelines for application to be completed ▪ Clarity regarding process of assessment of applications ▪ Timeliness of decision on application ▪ Quality of feedback given on application outcome ▪ Communication with Fund management team at UKRI		
Q13.1	Optional, IF Q9=yes	Please provide any additional comments or context to your responses.	Free text	
Q14	Mandatory, IF Q9=yes	How well-tailored were the following aspects of the full application process to developing place-based collaborations? ▪ Timeline for application ▪ Eligibility criteria ▪ Assessment criteria ▪ Assessment processes ▪ Assessment panel membership and structure ▪ Nature of information shared about the aims and application processes ▪ Routes through which information was shared (e.g. website, webinars, in-person events, direct communication)	Likert scale 1-5	
Q14.1	Optional, IF Q9=yes	Please provide any additional comments or context to your responses.	Free text	
Q15	Mandatory, IF Q9=yes	Was your full application successful?	Yes or no	

Label	Type	Question	Response options	Notes
Q16	Mandatory if Q15=yes	How satisfied have you been with the following aspects of award management in SIPF? ▪ Timeliness of funding award ▪ Contractual processes ▪ Support and guidance provided ▪ Opportunities for networking and interaction ▪ Level of funding provided ▪ Regular monitoring and award management ▪ Evaluation support and expectations ▪ Administrative and reporting requirements		
Q16.1	Optional, IF Q15=yes	Please provide any additional comments or context to your responses. What works well, and what could be improved?	Free text	
Q17		Overall, what are your impressions of the processes relating to SIPF as a whole?	Likert 1-5	
Q18		How likely would you be to apply to SIPF [or a similar place-based R&I programme?] again or recommend applying to others?	Likert 1-5	
Q19		Overall, what is working well in relation to SIPF and what could be improved? What advice would you give to UKRI and to the Fund?	Free text	

Source: RAND Europe

ANNEX E EVIDENCE SOURCES FOR THE IMPACT EVALUATION

This Annex provides more detail on the likely sources of data and evidence to support the Impact Evaluation of SIPF, building on the summary framework table in Section 4.2. We set out, where relevant:

- Data likely to be contained in each projects' ResearchFish returns;
- Any additional data we expect from each project based on their KPIs;
- Any relevant secondary sources of data and a consideration of their strengths and weaknesses for the evaluation.

We do this for each Evaluation Question and indicator in turn.

E.1 THEME 1: KNOWLEDGE AND INNOVATION

E.1.1 EQ1: Did SIPF increase the regional quality and quantity of academic research in key research fields? To what extent was long-term capacity for such research increased? To what extent did this leverage existing local strengths?

EQ1, Indicator 1: Quantity and impact of academic research outputs related to SIPF support (e.g. papers, events, conferences)

We expect that the key source of evidence for this indicator will be data collected through the projects. As part of their ResearchFish returns, projects are asked to provide detail on associated academic publications. Figure 24 below outlines the questions in the ResearchFish common question set most relevant to this indicator.

Figure 24 Relevant ResearchFish fields – EQ1 Indicator 1

ResearchFish Field	Accepted Values
Type of Publication (r1.2)	Select one from set of options (Book, Book Chapter, Book (Edited), Conference Proceeding / Paper, Consultancy Report, Journal Article, Manual, Monograph, Policy Briefing Report, Scholarly Edition. Systematic Review, Technical Report, Technical Standard, Thesis, Working Paper, Other)
Title (r.1.2.3)	Text input
First Named Author (r1.2.2)	Text input
Other Authors (r1.2.2.1)	Text input
Journal Title (r1.2.4)	Text input
Year of Publication (r1.2.9)	Years 1970-present
Place of Publication (r1.2.2.23)	Text input

Source: ResearchFish common question set

We note that some projects are also tracking academic output as part of their KPIs and may be able to provide a greater level of detail than in the ResearchFish reports. Figure 25 below outlines the project-level KPIs relevant to this indicator.

Figure 25 Relevant Project-Level KPIs – EQ1 Indicator 1

Project	Relevant KPIs

CS Connected - Cardiff	**KPI 9**: "Cumulative Peer reviewed journal publications directly or indirectly arising from the SIPF activity"
	
	Data to be collected:
	▪ **At a minimum:** publications list from partners working on SIPF activities.
	  ◻ Directly attributable to SIPF CRD activities.
	  ◻ Indirectly or partially (>50%) attributable to some activities enabled by SIPF CRD investment (e.g. improved facility/staff capacity/know-how);
	▪ **Potential range of ideal sub-set data to be considered**:
	  ◻ No. co-authored with SIPF partner
	  ◻ No. co-authored with national newspapers
	  ◻ No. co-authored with international partners

Artemis - Belfast	▪ "Number of peer reviewed journal and conference papers produced from the SIPF project, including academic-industrial co-authorship" ▪ "Total number of research outputs (as defined by REF2021 guidance on submissions) to be produced from the SIPF project"
GOFCoE - Edinburgh	▪ Number and value of "research grants awarded" ▪ Number and value of "research contracts secured"
The Living Laboratory - Glasgow	"Intend to augment the scientific KPIs by measuring scientific papers and grant income associated with the Living Laboratory on a quarterly basis"
LSTM - Liverpool	"Publications" and "Reports" are listed under the Communication/Visibility KPIs.
MyWorld - Bristol	KPI: "Academic outputs per year on creative tech R&D" Data to be collected: "Number., venue, title, authors, partners involved, link to impact and MW funding, citations, prizes"

Source: Taken from project-level evaluation plan summaries

Whereas the volume of academic research and publications may be relatively straightforward to establish, the impact of these is harder to quantify. However, secondary sources may allow some understanding of impact. For example:

- Dimensions.AI contains data on patent citations, publication citations and policy document citations for a given academic publication.

We also recognise that the extent to which each project has a focus on 'academic' output varies across projects.

Preliminary views of specific metrics for this indicator include:

- Number of academic papers published by SIPF-supported projects and partners. This will be drawn from ResearchFish returns.

EQ1, Indicator 2: Regional trends in academic R&I spending in targeted fields supported by SIPF

As this indicator focuses on regional trends, the metrics will be largely drawn from secondary data sources. An ideal secondary data source would allow analysis to be undertaken at both the regional and sectoral level.

Possible secondary data sources are:

- HESA publishes data on the finances of individual higher education institutions in the UK, including research grants. Further investigation is needed to understand how easily this could be split by discipline, but it should, in theory, be possible to get a picture of the total research funding for universities in the relevant regions. We note, however, that academic research funding is not the same as research spending, even if the two are likely related.
- HESA also publishes data on expenditure by higher education providers in the UK, but the extent to which one can identify research expenditure from this data requires further investigation. One of the cost categories within the publicly available HESA expenditure data is “Research grants and contracts” and within this it is possible to split by discipline. Therefore, this data should provide some indication of regional trends in academic research spending.

Preliminary views of specific metrics for this indicator include:

- Regional trends in research funding to HE institutions in regions targeted by SIPF. We expect that HESA’s open access data on research funding and expenditure will be the most prominent source for this.

Understanding the context of the academic innovation space in each region and sector will be important, and projects may be a key source of knowledge here.

EQ1, Indicator 3: Additional research funding leveraged for the region as a result of SIPF in targeted fields

This indicator refers to ‘leveraged’ funding, which includes both matched funding (in-cash and in-kind) provided by partners and additional follow-on funding. For both of these types of funding, we expect that data collected via the projects (particularly as part of their ResearchFish returns) will be an important source.

With regard to follow-on funding, ResearchFish returns from projects should contain detail on further funding generated, including the organisation providing the funding, the value and the type (e.g. research grant, studentship, capital).

In addition, ResearchFish asks for information on networks and collaborations related to the projects, which includes information on in-cash and in-kind contributions made by partners. Figure 26 below details the most relevant ResearchFish questions from the common question set.

Figure 26 Relevant ResearchFish fields – EQ1 Indicator 3

ResearchFish Field	Accepted Values
For each Partner - Has this collaboration or partnership brought a direct financial contribution to your research? (r2.1.3)	Yes/No
For each Partner - Please enter the currency of the contribution. This is a predictive lookup, so start typing the name of the currency and select the appropriate currency. (r2.1.4)	Select from list of currencies
For each Partner - Enter the amount of any direct financial contribution made under this collaboration or partnership to the nearest unit. (r2.1.5)	Number
For each Partner - Has this collaboration or partnership brought an in-kind contribution to your research? (r2.1.6)	Yes/No
For each Partner - Please enter the currency of the in-kind contribution. (r2.1.7)	Select from list of currencies
For each Partner - Please give an estimate of the value of the in-kind contributions made by your partners to this collaboration or partnership. (r2.1.8)	Number
Enter the title of the grant or the name of the funding scheme for which you have successfully applied. (r3.4)	Text input
Please enter the organisation name that provided the funding e.g. Wellcome Trust, Rolls Royce plc. (l_parent_text)	Text input
Please select the most appropriate type for this funding. (r3.10)	Text input
Please enter the currency of the funding (e.g. GBP). This is a predictive lookup start typing the name of the currency and select the appropriate currency. (r3.2)	Select from list of currencies
Enter the total value of the funding/grant. (r3.3)	Number

Source: ResearchFish common question set

Some projects have outlined KPIs related to this indicator. Figure 27 outlines the relevant KPIs for each project.

Figure 27 Relevant Project-Level KPIs – EQ1 Indicator 3

Project	Relevant KPIs
CS Connected - Cardiff	▪ KPI 6: "Value of CRD grants including industry and academia" ▪ KPI 7: "Value of research grants in higher education [and RTO] sector"
Artemis - Belfast	"Follow-on or related innovation funding leveraged by the partners following project commencement (Innovate UK, Invest NI, … etc)"
GOFCoE - Edinburgh	▪ Number and value of "research grants awarded" ▪ Number and value of "research contracts secured"
The Living Laboratory - Glasgow	"Living Laboratory associated research grants publications" – measured by award value and citations.

Source: Taken from project-level evaluation plan summaries

Finally, it may be possible to use secondary data sources to gain an understanding of the additional research funding leveraged by SIPF. For example:

- Dimensions.AI appears to have data on supporting grants for a given publication.
- Gateway to Research allows a search of publicly funded research and innovation.

Preliminary views of metrics for this indicator include:

- Value of matched in-cash funding, for example taken from projects' ResearchFish reports.
- Value of matched in-kind funding, for example taken from projects' ResearchFish reports.
- Value of follow-on funding, as reported by the projects.

Though it may be possible to measure the additional research funding received by SIPF funded projects, a challenge here will be in establishing the extent to which this was a result of the SIPF investment.

E.1.2 EQ2: Did SIPF increase the quantity and quality of regional commercial R&I in key industries? To what extent was long-term capacity for such R&I increased? To what extent did this leverage existing local strengths?

EQ2, Indicator 1: IP - Number of patent, trademark and design applications in targeted regions and sectors

Again, evidence for this indicator will likely be drawn from project-level data as opposed to from secondary sources. ResearchFish returns asks projects for detail on trademarks, patent applications published and granted, as detailed in Figure 28.

Figure 28 Relevant ResearchFish fields – EQ2 Indicator 1

ResearchFish Field	Accepted Values
Select the phrase that best describes the protection this discovery/development has received (r8.2)	Patent application published, Patent granted, Trademark
Enter patent application number (e.g. WO03075629). (r8.2.1)	Text input
Provide a short name/title for this discovery/development. (r8.1)	Text input
Select the year in which this protection was received. You can select 'Unknown' if appropriate. (r8.3)	Year selection
Briefly describe the discovery/development. (r8.4)	Text input
Has this intellectual property been formally licensed to others on a commercial or non-commercial basis? (r8.5)	Yes, No, Commercial in Confidence
Briefly describe any notable impact(s) that have arisen from this discovery/development (including via licensing or other development of intellectual property). (r8.6)	Text input

Source: ResearchFish common question set

To the extent that the individual projects are also tracking intellectual property as part of their KPIs, this is outlined in Figure 29 below.

Figure 29 Relevant Project-Level KPIs – EQ2 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	KPI 5: "Number of patents generated by cluster firms and HE sector" Measurement: "No. of newly registered patents by SIPF partners relating to CS"
Artemis - Belfast	▪ "Number of patents filed/pending/awarded to ▪ consortium partners for hydrofoiling zero emissions propulsion" ▪ "Number of formal innovation disclosures recorded as being produced by the SIPF project"
The Living Laboratory - Glasgow	No specific KPI on patents etc. but KPI "New imaging processes and prototypes." measured by projects initiated.
MyWorld - Bristol	No specific KPI on patents etc. but KPI "New production processes, products, commissions, exploitation of R&D outputs from MyWorld"

Source: Taken from project-level evaluation plan summaries

In terms of understanding the regional and sectoral IP context, it may be useful to consider secondary data. Possible sources include:

- CrunchBase contains data on trademarks and patents for those firms covered by their sample. Access to this data is available at an additional cost.

- The “Orbis IP” dataset contains any company that has filed at least one patent in the last 10 years, as well as patent info from Lexis Nexis. It includes a cumulative measure of the number of patents filed, together with a valuation of each patent. It also includes location data, financial data where this is available, and a high-level indicator of sector. The valuation data may be useful in understanding impact.
- EPO’s PATSTAT database contains bibliographical data related to over 100 million patent documents. There is a fee for access to this data, and it needs to be analysed using SQL. On their website, the EPO provides examples of sample queries that can be done using PATSTAT, such as “Which are the 10 most cited applications in Great Britain” and “Get applications which contain both the words “bicycle” and “plastic” in the title of in the abstract.”
- The HESA-BCI is realised as open data, and presents detail on the patents associated with academic institutions in the UK. This is easy to access, but may only contain a subset of the relevant information.

Preliminary views of metrics for this indicator include:

- Number of patent applications from SIPF supported projects and partners. This should be possible to establish from projects’ ResearchFish reports.
- Secondary sources such as those noted above may allow an understanding of the regional and sectoral context.

We note that there are likely to be discrepancies in how focused each individual project is on this as an output or KPI. In addition, pure ‘number of’ metrics may not capture the heterogeneity between projects and will not be a perfect proxy for the amount of commercial R&I taking place, or its impact. These limitations may need to be addressed through qualitative assessment.

EQ2, Indicator 2: Regional trends in commercial R&I spending in targeted sectors

As with regional trends in academic R&I, this will largely be drawn from secondary data sources, which ideally would allow us to break down our analysis by region and sector simultaneously.

Possible secondary data sources include:

- **BERD:** This is published by the ONS and publicly available up to 2019, with the next release due in November 2021. BERD contains the total value of business spending on R&D.
  - It is possible to split by broad industry categories and wider regional splits. However, upon initial investigation it does not seem possible to split by both region and sector simultaneously.
  - The UK sample size is approximately 5,400 businesses. The top 400 businesses are asked to fill in a long-form questionnaire. The remaining businesses are selected from the pre-determined list of R&D performers by stratified random sampling. The strata are defined using employment and industry product group.
  - Response rates are usually around 80%, but this has been reported to have dropped during Covid-19, so future releases may have sampling issues.

- **UKIS:** The headline findings and statistical annexes of the UK Innovation Survey (UKIS) are available publicly.
  - The latest data covers the period 2016-2019. The microdata does not appear to be publicly available, however the statistical annex gives some high-level R&D statistics.
  - This statistical annex has high-level regional and sectoral splits (though not simultaneously).
  - Importantly, the publicly available data does not appear to contain any information on 'value'. Instead, fields are those such as 'Innovation expenditure by area in 2018, proportion of total innovation expenditure'.

Preliminary views of specific metrics for this indicator include:

- Value of regional business R&D spend, taken from the BERD.
- Value of sectoral business R&D spend, taken from the BERD.

EQ2, Indicator 3: Additional business R&D and other innovation-related investments leveraged as follow-on investments as a result of SIPF, including inward investment from outside the region and outside the UK

Data from projects on the additional investment they received will be a key source of information here. Figure 30 details the relevant project-level KPIs.

Figure 30 Relevant Project-Level KPIs – EQ2 Indicator 3

Project	Relevant KPIs
CS Connected - Cardiff	KPI 6: "Value of CRD grants including industry and academia"
Artemis - Belfast	"Follow-on or related innovation funding leveraged by the partners following project commencement (Innovate UK, Invest NI, … etc)"
LSTM - Liverpool	"Investment attracted" – data collected on capital and revenue contracts
MyWorld - Bristol	▪ "Additional inward investment to West of England region" – measured by "Number of items, link to MW support, partners/parties involved, type and scale of business investment, other AR, outcomes" ▪ "Level of 3rd party collaborative grant funding to businesses" – measured by "Number of items, link to MW support, partners involved, funder, type and scale of funding, other AR, outcomes"

Source: Taken from project-level evaluation plan summaries

Potential secondary sources for the level of business investment in sectors and regions include:

- Crunchbase, which contains information on investment, funding rounds and total equity for those firms covered by their sample. It is available at an additional cost.

- As an alternative to Crunchbase, Beauhurst (also available at an additional cost) may be able to provide investment information for high-growth businesses in the UK. The full capability of Beauhurst is yet to be confirmed.

Preliminary views of specific metrics for this indicator include:

- Value of additional investment leveraged by SIPF projects

EQ2, Indicator 4: Private sector R&I jobs created

Potential data sources and metrics for analysing the jobs associated with SIPF are **considered in greater detail as part of EQ5**, alongside likely issues. To measure jobs created directly by SIPF projects, we will use project-level data.

E.1.3 EQ3: Have the technologies and new knowledge supported by SIPF progressed innovations and helped create new businesses? If not, why not?

EQ3, Indicator 1: Number of new products and commercial success, as measured by take-up, profitability, expected revenues

This indicator will be dependent on project-level evidence. ResearchFish returns contain a set of questions on outputs in the following categories:

- Medical products and interventions,
- Artistic and creative products,
- Software and technical products.

For each of these, projects are asked to provide details of the product and a description of the impact of the output. Some individual projects are tracking this information as part of their KPIs. Detail of this is set out in Figure 31 below.

Figure 31 Relevant Project-Level KPIs – EQ3 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	▪ "Number of patents generated by cluster firms and HE sector" ▪ "Exports of cluster firms £M"
Artemis - Belfast	▪ "Number of patents filed, pending and awarded to consortium partners for hydrofoiling zero emissions propulsion" ▪ "% of commuters (Bangor NI – Belfast) using zero emissions water transport"
The Living Laboratory - Glasgow	▪ "New imaging processes and prototypes."
LSTM - Liverpool	"Products to market"
MyWorld - Bristol	▪ "New production processes, products, commissions, exploitation of R&D outputs from MyWorld" ▪ "Commercial income from facilities" (Value)

Source: Taken from project-level evaluation plan summaries

There will be variation in how each project assesses and compiles data on 'commercial success', and so contextual input from projects will be important here. Again, 'number of' metrics may only capture one aspect of the 'progressed new innovations' element of this indicator.

We are likely to have limited data on 'commercial success' that could be consistently analysed across projects. However, as noted, we recognise that commercial success will look inherently different for different projects.

Preliminary views of specific metrics for this indicator include:

- Number of new products created by SIPF projects.

EQ3, Indicator 2: Spinoff/spinout commercial projects, products and businesses directly related to SIPF funding

There will be some project-level data related to this indicator contained in ResearchFish returns. The common question set includes questions on the detail of spinouts associated with the project, and the number of people employed by these spinouts, detailed in Figure 32.

Figure 32 Relevant ResearchFish fields – EQ3 Indicator 2

ResearchFish Field	Accepted Values
Enter name of the company. (r10.1)	Text input
Please enter the registration number of the company. (r10.7)	Text input
In which year was the company established? (r10.3)	Selection from list of years
Enter the number of salaried people employed (r10.4)	0, 1-4, 5-9, 10-19, 20-49, 50-99, 100-249, 250-499, 500+, Commercial in Confidence
Briefly describe the company. (r10.5)	Text input
Briefly describe any notable impacts from this company. (r10.6)	Text input

Source: ResearchFish common question set

Some projects also appear to be tracking spinoffs/spinouts as part of their KPIs and so may be able to provide additional information, and this is set out in Figure 33.

Figure 33 Relevant Project-Level KPIs – EQ3 Indicator 2

Project	Relevant KPIs
CS Connected - Cardiff	KPI 3: "New companies established in the region due to spin out, inward investment, start-up" Measurement (as a minimum): "No. of newly registered companies in SIPF economic geography in CS-related supply chain, with 'active' status"
Artemis - Belfast	"Number of new companies in the supply chain (supplier base to be targeted is drawn from composites, defence, design and stress engineering, logistics, marine, materials supply, metal forming, precision machining, interiors,

	structures, tooling treatment, research and training – circa 100 NI based companies available to be targeted)"
The Living Laboratory - Glasgow	"University/NHS PM spinout companies"
MyWorld - Bristol	"New businesses/spinouts from MyWorld" "Translation projects funded outside creative Industries"

Source: Taken from project-level evaluation plan summaries

In terms of additional secondary sources of data on new businesses, the following may be useful:

- **ONS Data**: There is publicly available ONS data taken from a snapshot of the IDBR, which provides data on numbers of businesses by SIC code and region (not local authority), with the latest figures from 2020.
- For local unit and sectoral splits, the **Business Structure Database** is a promising source, running to 2020 and also containing employment data. However, this is only for secure access.
- **HE-BCI**: Published by HESA and publicly available, this contains data on spinoffs/spinouts by HE provider. It also contains estimated external investment received and the number of firms surviving more than three years.
- **FAME**: This contains data on companies based in UK and Ireland. It is available at an additional cost.

However, we will likely not be able to link businesses in these secondary sources directly to SIPF projects.

Preliminary views of specific metrics for this indicator include:

- Number of new businesses associated with SIPF support

EQ3, Indicator 3: Progress of supported technologies along commercial readiness scales (e.g. TRL/MRL)

We do not expect to collect this data systematically for all projects. However, as seen in Figure 34, one project is explicitly tracking this as part of their KPIs. There is little scope for secondary data analysis related to this indicator.

Figure 34 Relevant Project-Level KPIs – EQ3 Indicator 3

Project	Relevant KPIs
LSTM - Liverpool	"Products moving through TRL stages"

Source: Taken from project-level evaluation plan summaries

8.1.1 EQ4: Have the innovations, technologies and new knowledge supported by SIPF been adopted more widely? If so, how are they being used? If not, why not?

EQ4, Indicator 1: Adoption within region/sector targeted by projects

We recognise that 'adoption' will look different across sectors. Where projects are tracking this as part of their KPIs, as detailed in Figure 35, the data they collect will be useful for our analysis.

Figure 35 Relevant Project-Level KPIs – EQ4 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	▪ "Exports of cluster firms £M"
Artemis - Belfast	"% of commuters (Bangor NI – Belfast) using zero emissions water transport"
GOFCoE - Edinburgh	▪ "Annual corporate memberships" ▪ "Open finance adoption contracts"
The Living Laboratory - Glasgow	"Number of PM innovations or services adopted into healthcare."
MyWorld - Bristol	"Utilisation of MyWorld Facilities" – measured by "Number of items, link to MW support, facilities used, partners / parties involved, type of business, scale, significance, reach, outcomes, Other AR"

Source: Taken from project-level evaluation plan summaries

In addition, though this is only one element of 'adoption', the ResearchFish questions on the IP generated by projects ask whether this IP has been formally licensed to others (Figure 36).

Figure 36 Relevant ResearchFish fields – EQ4 Indicator 1

ResearchFish Field	Accepted Values
Has this intellectual property been formally licensed to others on a commercial or non-commercial basis? (r8.5)	Yes, No, Commercial in Confidence

Source: ResearchFish common question set

In terms of additional data sources, the following could be relevant:

- It may be possible to use commercial sources (e.g. Glass.AI) to track evidence of 'adoption' based on keyword searches of company, academic and government websites, though this will likely incur a significant additional cost.

EQ4, Indicator 2: Adoption outside region/sector targeted by projects

The methods and sources outlined above will apply to this indicator, with focus on adoption outside of the region and sector.

E.2 THEME 2: JOBS AND SKILLS

E.2.1 EQ5: Did SIPF improve the job prospects, in terms of the number, variety and profile of jobs available within the targeted regions? If not, why not?

EQ5, Indicator 1: Number and profile of jobs supported by SIPF funding

Project level KPIs suggest that most projects are tracking data on jobs created by their project, as detailed in Figure 37. It is unclear whether, and how consistently, projects are tracking the profile of these jobs.

Figure 37 Relevant Project-Level KPIs – EQ5 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	"Direct employment in core cluster firms and new inward investors"
Artemis - Belfast	"Number of jobs created and sustained within the consortium" "Number of jobs maintained within supply chain"
The Living Laboratory - Glasgow	"Net jobs created (FTE) in the Glasgow City Region"
LSTM - Liverpool	"Jobs created" ("Direct jobs created in partners", "Direct jobs created in collaborators", "Indirect jobs created")
MyWorld - Bristol	"Employment created" – measured by "No. jobs, business involved, type of job, diversity information, link to MyWorld support. Wider impact."
Growing Kent & Medway	"Business employment data" (includes analysis of secondary sources)

Source: Taken from project-level evaluation plan summaries

It may be useful to compare SIPF data to regional and sectoral profiles of jobs (at a given point in time, and against trends). For this, the potential secondary sources of data we will investigate are:

- **Annual Survey of Hours and Earnings**: This is a survey of 300,000 employees, with splits available by local authority and sector. Full data is only for secure access, but some high level statistics derived from this dataset are published by the ONS.
- **Business Structure Database**: As noted above under EQ3, the BSD appears to include employment statistics.

Preliminary views of metrics for this indicator include:

- Number of jobs created through SIPF supported projects
- Wage profile of jobs created through SIPF supported projects
- Qualification profile of jobs created through SIPF projects

EQ5, Indicator 2: Profile of follow-on jobs for those supported by SIPF funding

Information on follow-on jobs may be difficult to capture, and data may vary in quality and relevance across the individual projects. We note however that projects' ResearchFish returns do ask for 'next destinations' of those supported by the award. This includes location, sector and discipline, as detailed in Figure 38 below. It should be noted that the follow-on destinations of those supported by SIPF is likely a longer-term outcome which applies to timelines beyond those considered in our evaluation.

Figure 38 Relevant ResearchFish fields – EQ5 Indicator 2

ResearchFish Field	Accepted Values
Role of the individual member when they and/or their research was supported by this award (r4.3)	Researcher (No PhD, Research Student, Post-Doctoral Researcher, Research Fellow, Research Project Leader, Management/Admin/Policy, Engineer, Technician
Has the individual moved to a role where they are active in research? (r4.11)	Yes, No, Unknown
Please enter the organisation name e.g. University of Oxford, Rolls Royce plc	Text input
Please enter the country for this location (l_country_id)	Selection from country list
What is the sector that the individual has moved to? (r4.5)	University, Company, Charity, Hospital, Public, Learned Society, Multiple, Unknown
Please select the industry sector/discipline that the individual moved to. (r4.10)	Select from list of sectors. Opportunity to select multiple

Source: ResearchFish common question set

E.2.2 EQ6: Did SIPF increase the skills base and the alter the profile of skills in targeted regions? If not, why not?

EQ6, Indicator 1: Volume and quality of skills-focused training, course and qualifications supported by SIPF

For skills, project-level data will be the key source of evidence, and Figure 39 sets out the relevant project-level KPIs. Few projects are tracking academic student numbers, but our understanding of the scope of SIPF is that the focus is on vocational/work-based skills and training rather than academic/doctoral training. The quality of training courses is more complex to measure than pure volume-based metrics.

Figure 39 Relevant Project-Level KPIs – EQ6 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	KPI 12: "Cumulative CPD reach in cluster as % of headcount" Measurement (as a minimum): "Headcount of individuals attending CPD activities in CS-related skills areas"
Artemis - Belfast	"Number of companies upskilling"
GOFCoE - Edinburgh	"All 'Open Finance' CPD courses" – "# / value of training days; # of trainees; # of courses offered"
The Living Laboratory - Glasgow	"Number of apprenticeships or entry level training" "MSc and PhD Students trained."
LSTM - Liverpool	No specific KPIs
MyWorld - Bristol	"Cumulative number of businesses using facilities, receiving training and business support"
Growing Kent & Medway	No specific KPIs

Source: Taken from project-level evaluation plan summaries

Comparison to regional and national trends may be useful to contextualise the project-level data on education and skills training. Secondary data sources which may enable these comparisons include:

- **HESA Data:** Publicly available data on student numbers by region and subject, and some data on CPD courses by HE provider.
- The government publishes some statistics on apprenticeships. It appears possible to split by discipline and region, noting that volumes are rounded to the nearest 10.

Preliminary views of metrics for this indicator include:

- Number of CPD courses related to SIPF funding
- Number of apprenticeships related to SIPF funding

EQ6, Indicator 2: Increased understanding of skills profile and gaps of targeted sectors and regions

Some projects have undertaken research to identify regional and sectoral skills gaps. Assessing the scale and impact of this likely requires additional evidence collection.

E.3 THEME 3: ECONOMIC IMPACT

E.3.1 EQ7: Did SIPF-funded activities contribute to improved economic performance, particularly within targeted

industries and regions? If so, was the improvement sustained? If not, why not?

EQ7, Indicator 1: Impact of SIPF on regional and sectoral GVA

Based on the project-level KPIs, most projects are aiming to assess their individual GVA impact. This is set out in Figure 40.

Figure 40 Relevant Project-Level KPIs – EQ7 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	KPI 4: "Total GVA supported by cluster activity (direct and indirect) pa"
Artemis - Belfast	"GVA created by the project (£m)"
The Living Laboratory - Glasgow	"Net GVA generated in the Glasgow City Region"
MyWorld - Bristol	"Regional £GVA of creative sector"
Growing Kent & Medway	"GVA (balanced) for Kent & Medway"

Source: Taken from project-level evaluation plan summaries

In addition to project-level data on GVA, potential secondary sources for contextualisation include:

- **ONS Data**: The ONS publishes GVA estimates by industry, city and enterprise region.
- It may also be possible to use secure-access versions of ABS and BSD to construct regional/sectoral splits aligned with SIPF projects if published data lack granularity.

However, it is unclear whether SIPF can reasonably be expected to cause significant changes to these aggregate measures.

In addition, we could supplement this data with case studies and interviews focused on sustainability of economic impacts.

Preliminary views of metrics for this indicator include:

- Project-level GVA
- Regional and sectoral GVA

EQ7, Indicator 2: Impact of SIPF on regional and sectoral productivity

Again, project level data will be a key input here, though wider productivity impacts may be difficult to identify. For these wider impacts, potential secondary data sources include:

- **ONS Data**: Experimental statistics published on firm level productivity from the Annual Business Survey.
- Again, it may be possible to use secure-access versions of ABS and BSD to construct regional/sectoral splits aligned with SIPF projects if published data lack granularity.

As above, it is unclear whether SIPF is expected to cause measurable improvements to these aggregate measures.

Preliminary views of metrics for this indicator include:

- Project-level productivity measures
- Regional and sectoral output per hour, output per worker

EQ7, Indicator 3: Impact of SIPF on regional and sectoral exports

Few projects appear to be tracking exports explicitly, as seen in Figure 41. In terms of secondary sources, HMRC export data could be a relevant source. However, our experience is that it is not possible to access HMRC microdata for bespoke analysis for wider evaluation projects.

Figure 41 Relevant Project-Level KPIs – EQ7 Indicator 3

Project	Relevant KPIs
CS Connected - Cardiff	"Exports of cluster firms £M"
Artemis - Belfast	"Number of international customers"

Source: Taken from project-level evaluation plan summaries

EQ7, Indicator 4: Sustainability of economic impacts within targeted sectors and regions

We anticipate that this indicator will likely be assessed qualitatively.

E.3.2 EQ8: Did SIPF contribute to closing gaps in economic performance across UK regions? If not, why not?

EQ8, Indicator 1: Improvements in economic performance over and above those seen outside of SIPF-supported projects and regions

This will be counterfactual analysis using the primary and secondary evidence identified above, and comparing to relevant regional and sectoral counterfactuals. We note that the counterfactual analysis undertaken by projects themselves is expected to be limited.

E.4 THEME 4: NETWORKS AND COLLABORATION

E.4.1 EQ9: Did SIPF enhance and sustain the nature of collaboration and the collaboration infrastructure within

targeted industries, research fields and regions? If not, why not?

EQ9, Indicator 1: New and sustained collaborations between businesses, academics and local decision-makers within SIPF-funded industries and regions

We will use project-level data for this indicator. ResearchFish returns will provide detail on collaboration and partnerships associated with the projects including name and location of collaborators, with the key relevant fields detailed in Figure 42. This should provide us with an indication of the 'scale' of collaborations associated with SIPF. ResearchFish also asks the projects to specify the year in which the partnership commenced. If interpreted consistently by projects, this should allow us to identify 'new' partnerships and collaborations.

Figure 42 Relevant ResearchFish Fields – EQ9 Indicator 1

ResearchFish Field	Accepted Values
Provide a short name/title for this collaboration or partnership. (r2.1)	Text input
Please provide details of the collaborator(s) and/or partner(s). (sf2)	Text input
For each Partner - Location search (locations_search)	Location search
For each Partner - Please enter the organisation with which you have collaborated or partnered e.g. University of Oxford, Rolls Royce plc (l_parent_text)	Text input
Briefly describe the contributions made by you and/or your research team to this collaboration or partnership. (r2.2)	Text input
Briefly describe the contributions made by your partners to this collaboration or partnership. (r2.3)	Text input
In which year did this collaboration or partnership commence? (r2.4)	Year selection
Is this collaboration or partnership still active? If not, in which year did it cease? (r2.5)	Still Active, Year selections
List any outputs or outcomes that have resulted from this collaboration or partnership. Full details of each should be reported under the relevant sections of the form. Indicate whether this collaboration is multi-disciplinary, if so outline each of the disciplines involved. (r2.6)	Text input
Please categorise the impact of this collaboration or partnership using the check boxes below. (r2.11)	Cultural, Societal, Economic, Policy & Public Services, No impact yet (Possible to select multiple)
Is this collaboration or partnership governed by formal agreements such as material transfer agreements, or confidentiality agreements? (r2.7)	Yes, No

Source: ResearchFish common question set

Figure 43 details the project-level KPIs relevant to this data.

Figure 43 Relevant Project-Level KPIs – EQ9 Indicator 1

Project	Relevant KPIs
CS Connected - Cardiff	KPI 11: "Formal agreements with international institutions/clusters"
The Living Laboratory - Glasgow	"PM companies and organisations on site or engaged with Living Lab."
LSTM - Liverpool	"Network expansion" – measured by MOUs, NDAs and Cas signed
MyWorld - Bristol	▪ "Cumulative number of businesses using facilities, receiving training and business support" ▪ "Repeat business-to-business and business university collaborations" ▪ "Number of new international partnerships"
Growing Kent & Medway	"Cluster membership numbers" "Levels of engagement and interactions between business and Research Organisations"

Source: Taken from project-level evaluation plan summaries

In terms of secondary sources, the HE-BCI contains some data on engagement and collaboration for UK HE institutions.

Preliminary views of metrics for this indicator include:

- Number of new collaborations associated with SIPF projects

EQ9, Indicator 2: Enhanced and more effective collaborations supported by SIPF-enabled investments/improvements in collaboration infrastructure

Assessing the quality and sustainability of partnerships, whether partnerships are 'effective' and 'enhanced', and where there have been effects on the collaboration infrastructure, will require additional evidence collection.

EQ9, Indicator 3: Has the place-based nature of SIPF affected the nature of collaborations compared with other funding mechanisms that are not explicitly place-based?

There is limited scope for quantitative assessment related to this indicator.

E.5 THEME 5: SOCIETAL IMPACT

E.5.1 EQ10: Was the reputation for R&I of targeted regions and sectors enhanced as a result of the SIPF funding and outputs? If not, why not?

EQ10, Indicator 1: Academic standing of universities in the regions and the fields supported by SIPF funding

The relevant secondary sources of data for this indicator are university rankings by subject. However, there are limitations to these rankings and it is unclear how much we would expect SIPF to have an impact on them, particularly within the timeframes for this evaluation. Therefore, expert stakeholder interviews may help establish an understanding of how SIPF has affected this indicator.

EQ10, Indicator 2: National and international reputation of local areas targeted by SIPF as centres of innovation in relevant sectors

Projects do not appear to be tracking 'reputation' as part of their KPIs. In terms of primary data, a potential proxy for reputation comes from engagement activities (though this does not necessarily map perfectly to reputation). ResearchFish contains data on engagement activities undertaken including category, audience, geographic reach, number of individuals reached, judgement of the main impact of the activity (categories) and a short description. In addition, it contains questions on awards and recognition. The set of potentially relevant ResearchFish fields is detailed in Figure 44.

Figure 44 Relevant ResearchFish fields – EQ10 Indicator 2

ResearchFish Field	Accepted Values
What was the engagement activity? We are interested in any activity intended to communicate your research beyond your normal peer group and which involved you or a member of your team, regardless of whether this was presenting to or otherwise engaging directly with an audience (r5.2)	A formal working group, expert panel or dialogue, A talk or presentation or debate, A magazine or newsletter, Event/workshop or similar, Participation in an open day or visit at my research institution/facility, Media interview, press release, press conference or other response to a media enquiry, Engagement focused website, blog or social media channel, A broadcast
Please estimate how many people this activity reached. (r5.9)	1-10, 11-50, 51-100, 101-500, More than 500
What was the geographical 'reach' of this activity (e.g. was the audience from your local institution, drawn from attendees across the region, nation, or international)? (r5.3.3)	Local, Regional, National, International
Who was the primary audience engaged with? (r5.3.4)	Schools, Media, Policymakers/politicians, Professional Practitioners, General public, Industry/Business, Supporters/charitable donors, Undergraduate students, Postgraduate students, Other audiences, Study participants or study members, Patients, carers and/or patient groups, Third sector organisations
What do you consider was the most significant outcome/impact of this activity? (r5.10)	Text input
Select type of award or recognition. (r11.1)	Research prize, Medal, Awarded honorary membership or a fellowship of a learned society, Appointed as the editor/advisor to a journal or book series, Poster/abstract prize, Attracted visiting staff or user to your research group, NIHR Senior Investigator/Clinical Excellence Award, National honour e.g. OBE, Prestigious/honorary/advisory position to an external body, Personal invitation as keynote or other names speaker to a conference, Honorary Degree
Provide a short name/title for this award or recognition. (r11.2)	Text input
Select the level of the award or recognition scheme. (r11.3)	Regional (any country), National (any country), Continental/International
Briefly describe the award or recognition and the reason(s) it was made. Tell us here the role of the staff members who received the recognition. (r11.5)	Text input
Briefly describe any notable impacts that have arisen from this award or recognition. (r11.6)	Text input

Source: ResearchFish common question set

In addition, some projects have KPIs related to engagement, as set out in Figure 45.

Figure 45 Relevant Project-Level KPIs – EQ10 Indicator 2

Project	Relevant KPIs
CS Connected - Cardiff	"Conference / workshop presentation directly related to the project support" "Exports of cluster firms £M"
Artemis - Belfast	"Number of international customers" "Outreach at conferences & events (such as COP26), multimedia and dedicated exhibit showcase in Belfast's Interactive Discovery Centre W5"
The Living Laboratory - Glasgow	"Attendance at precision medicine community and scientific events"
MyWorld - Bristol	"Number of new international partnerships"

Source: Taken from project-level evaluation plan summaries

Potential additional sources of evidence include:

- Glass.AI: this is a commercial source offering exploration of reference to SIPF or 'place' in policy documents. It is likely to incur additional cost.
- UKRI internal evidence may be able to provide 'reach data' – for example, tracking press coverage and social media engagement.

E.5.2 EQ11: To what extent (and how) have SIPF projects fostered an equal, diverse and inclusive research and business environments, and how well do SIPF projects align with UKRI ED&I aims?

EQ11, Indicator 1: ED&I measures for funded projects, project partners and key industries in targeted regions

Few projects seem to be tracking ED&I measures explicitly as part of their KPIs, as detailed below in Figure 46. Case studies and stakeholder interviews may allow for qualitative assessment. In terms of quantitative measures, we anticipate potential issues with disclosure of ED&I related statistics, particularly for consortium partners and wider networks.

Secondary data sources may be useful for comparison. The ONS, for example, publishes gender pay gap statistics by region and industry. In addition, the JRF Inclusive Growth Monitor scores LEPs on different aspects of inclusive growth. However this is only available for two years, and only applies to LEPs (and is therefore not relevant for all projects).

Figure 46 Relevant Project-Level KPIs – EQ11 Indicator 1

Project	Relevant KPIs
MyWorld - Bristol	Collecting "diversity information" under "Employment created" KPI
Growing Kent & Medway	"Metrics to assess our performance of our Social Inclusivity agenda"

Source: Taken from project-level evaluation plan summaries

8.1.2 EQ12: Did the outputs of SIPF improve the health, wellbeing and environment of individuals in targeted regions?

EQ12, Indicator 1: Examples gathered from within SIPF projects

Progress towards this indicator will be highly dependent on the specifics of projects, including their focus on these aspects, project timelines, and the extent to which individual projects' influence on these factors can be identified, established and measured. Where relevant, Figure 47 details the project KPIs which are related to this indicator.

Figure 47 Relevant Project-Level KPIs – EQ12 Indicator 1

Project	Relevant KPIs
Artemis - Belfast	"% of commuters (Bangor NI – Belfast) using zero emissions water transport"
GOFCoE - Edinburgh	"Social and Philanthropic Research"
The Living Laboratory - Glasgow	"Number of patients benefitting from pharmaco-genomics based medication management." "Estimated healthcare value by adoption (QALYS)"

Source: Taken from project-level evaluation plan summaries

For some projects, ResearchFish data may also be relevant. For example, the common question set contains a group of questions on medical products and interventions. This includes the 'achievements' that apply to the products/interventions, such as improved diagnosis, decreased mortality etc.

Given the information above, stakeholder interviews and case studies are likely to be the most fruitful source of information relating to this indicator.

There is potential for secondary data analysis using secondary sources related to regional wellbeing statistics. However, it is unclear whether the impact of SIPF can reasonably be expected to be observed these wider statistics.

E.6 THEME 6: POLICY DESIGN

E.6.1 EQ13: To what extent has the evidence base around the impact of locally targeted R&I spending in the UK been improved?

EQ13, Indicator 1: Improved evidence and understanding of the efficacy of place-based R&I funding

There is limited scope for quantitative assessment here.

E.6.2 EQ14: Did the learnings from SIPF influence and improve the design of R&I policy?

EQ14, Indicator 1: Evidence on how SIPF and projects have influenced and engaged policymakers (local, regional, national)

In terms of project-level data, ResearchFish contains details of examples of policy influence - categories include citations in policy papers, guidelines, reviews, committees. The questionnaire also includes geographic reach of influence, area of policy influence and some judgement of additional impacts.

Figure 48 Relevant ResearchFish fields – EQ14 Indicator 1

ResearchFish Field	Accepted Values
Provide a short title or name for this influence on policy, practice, patients or the public. (e.g. Citation in Cochrane Review) (r6.1)	Text input
Select type/method of influence on policy, practice, patients or the public from this list (r6.2)	Implementation circular/rapid advice/letter, Citation in clinical guidelines, Citation in clinical reviews, Citation in other policy documents, Citation in systematic reviews, Membership of a guidance committee, Participation in a national consultation, Participation in advisory committee, Gave evidence to a government review
Select the option that best geographically represents the extent of this influence on policy, practice, patients or the public. (r6.4)	Local/Municipal/Regional, National, Europe, Asia, North America, Oceania, Africa, South America, Multiple continents/international
Please select the area of influence on policy, practice, patients or the public. You can make multiple selections. (r6.8)	Selection from multiple sectors/fields
Has this influence on policy, practice, patients and or the public led to any of the following impacts? (r6.5)	Improvements in public wellbeing, Changes in efficiency and effectiveness of public service delivery, Improved accessibility of public services, Improved regulatory environment, Economic impacts, Improved educational and skill level of workforce, Changed public attitudes, Effective solutions to societal problems, Improved environmental sustainability, No impacts yet, Not known
Briefly describe the impacts of this influence on policy, practice, patients or the public. This should include (if applicable) the reach and significance of the impact, such as quantitative information regarding the benefits (increases in survival, quality of life, decreases in incidence, improvements in clinical service delivery, economic impacts etc.) (r6.6)	Text input

Source: ResearchFish common question set

For secondary data sources, the following may be relevant:

- Glass.AI: this is a commercial source offering exploration of reference to SIPF or 'place' in policy documents. It is likely to incur additional cost.

- Dimensions.AI contains data on policy document citations for a given academic publication.

EQ14, Indicator 2: Use of place-based policies following SIPF, and an overall judgement of the influence of SIPF in the design of these policies

Assessment here will be largely qualitative, drawing on the evidence collected as part of the other indicators.

For secondary data sources, the following may be relevant:

Glass.AI: this is a commercial source offering exploration of reference to SIPF or 'place' in policy documents. It is likely to incur additional cost.

E.7 THEME 7: VALUE FOR MONEY

E.7.1 EQ15: To what extent does the SIPF represent value for money given the overall impact on knowledge, economy and society relative to the size of the investment?

EQ15, Indicator 1: Total implementation cost for SIPF

The key source for this will be UKRI central data on costs.

EQ15, Indicator 2: Measurement and valuation of economic and social impacts of SIPF, including qualitative assessment where quantification or valuation is not possible

This will involve a synthesis of all evidence collected so far. Secondary evidence will most likely not be available for this indicator, though it may be possible to benchmark against other funding schemes.

EQ15, Indicator 3: Assessment of place-based aspects of SIPF value for money

As above, we expect that this will be largely a qualitative judgement.

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