



Evaluation of the Higher Education Innovation Fund (HEIF) programme: 2008-2020

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1 Glossary of terms

AHRC	Arts and Humanities Research Council
BBSRC	Biotechnology and Biological Sciences Research Council
BEIS	Department for Business, Energy & Industrial Strategy
BIS	Department of Business and Industrial Strategy
CA	Contribution Analysis
CCF	Connecting Capability Fund
DEFRA	Department for Environment, Food & Rural Affairs
DSIT	Department for Science, Innovation & Technology
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
EQ	Evaluation Question
EPSRC	Engineering and Physical Sciences Research Council
ESRC	Economic and Social Research Council
FTE	Full-Time Equivalent
HE	Higher Education
HE-BCI	Higher Education Business & Community Interaction
HEFCW	Higher Education Funding Council for Wales
HEFCE	Higher Education Funding Council England
HEI	Higher Education Institution
HEIF	Higher Education Innovation Fund
HEP	Higher Education Provider
HESA	Higher Education Statistical Agency
HMG	His Majesty's Government
IAA	Impact Acceleration Account
IEF	Innovation and Engagement Fund
IUK	Innovate UK
IP	Intellectual Property
KE	Knowledge Exchange
KEF	Knowledge Exchange Framework
KTP	Knowledge Transfer Partnership
MRC	Medical Research Council
NERC	Natural Environment Research Council
NUTS	Nomenclature of Territorial Units for Statistics
PG	Postgraduate
PGR	Postgraduate Research
QR	Quality Related
R&D	Research and Development
RE	Research England
REF	Research Excellence Framework
RCUK	Research Councils UK
RWIF	Research Wales Innovation Fund
SIPF	Strength in Places Fund
SME	Small and Medium-sized Enterprises
STFC	Science and Technology Facilities Council
TEF	Teaching Excellence Framework
TRP	Technical Review Panel
TT	Technology Transfer
UKRI	UK Research and Innovation

2 Executive summary

Administered by Research England (RE), the Higher Education Innovation Fund (HEIF) programme enables Higher Education Providers (HEPs) in England to develop the capabilities required to engage in a broad range of Knowledge Exchange (KE) activities including contract and collaborative research, research commercialisation, asset sharing, consultancy, skills development, policy engagement, and community programmes. HEIF aims to deliver a range of KE outcomes that contribute to economic and societal impacts, in line with government priorities. In October 2022, RE commissioned PA Consulting and Wellspring to conduct a comprehensive evaluation of HEIF covering the period from 2008 to 2020. The following provides a summary of the purpose of the evaluation, methodologies used to generate findings, as well as key findings and conclusions from the evaluation.

2.1 Purpose of the evaluation

This evaluation provides an in-depth evidence base to support future funding decisions as HEIF enters the next Spending Review (SR) period. It assessed the effectiveness of HEIF in supporting HEPs to deliver KE activities that aligned with evolving government priorities, including: the Department for Education's (DfE) priority outcome goal to drive economic growth by improving skills pipelines,¹ and the Department for Science, Technology and Innovation's (DSIT, formerly BEIS) goals to build stronger, more equitable innovation ecosystems,² reduce regional productivity gaps in R&D intensity,³ improve the commercial skills of KE and HEP staff,⁴ increase KE capacity of businesses, public sector and third-sector partners,⁵ and to create long-term investment opportunities.⁶

To demonstrate how HEIF delivered on these priorities and generated value, the evaluation provided a comprehensive assessment of HEIF's effectiveness by conducting impact and process evaluations. The **impact evaluation** employed a hybrid, realist, and theory-based approach to test the causal pathways within the HEIF programme theory (PT). This measured the scale and nature of the changes HEIF facilitated in the strategic development of KE within English HEPs and evaluated the extent to which these changes could be directly attributed to the programme, considering complex contextual factors such as regional economic environments and local innovation ecosystems. The impact evaluation also explored the external economic and societal effects of HEIF, focusing on monetisable and non-monetisable benefits such as increased R&D investment, partnerships with industry, public sector improvements, as well as broader societal benefits. The evaluation questions addressed whether HEIF led to progress in HEPs' KE development, what contextual factors shaped these outcomes, and what external economic and social impacts HEIF contributed to.

The **process evaluation** assessed the effectiveness of the HEIF programme, using the PT to help determine the extent to which the fund worked as intended. It examined whether the processes and delivery mechanisms used by RE to manage HEIF aligned with programme goals. The process evaluation findings showed which aspects of HEIF worked well and indicated where there were challenges and inefficiencies in delivery. It evaluated how HEIF impacts aligned with national priorities that were relevant at the time of the evaluation, including DSIT's Industrial Strategy (2017), R&D Roadmap (2020), Innovation Strategy (2021), and DfE's 'Skills for Jobs' priority outcomes (2020). It did this by using the same mixed-methods approach as in the impact evaluation. Additionally, the process evaluation explored contextual factors that influenced programme design and management, such as the geographic or institutional context, and assessed how these factors shaped the programme's outcomes and future potential. Through this dual focus, this report provides insights into HEIF's impact, its operational effectiveness, and areas for potential improvement.

¹ UK Government, Department for Education. (2020). *Skills for Jobs – Lifelong Learning for Opportunity and Growth*. Retrieved from: <https://www.gov.uk/government/publications/further-education-skills-for-jobs-lifelong-learning-for-opportunity-and-growth>

² UK Government. (2021). *Innovation Strategy: Leading the Future by Creating it*. Retrieved from: <https://www.gov.uk/government/publications/innovation-strategy-leading-the-future-by-creating-it>

³ UK Government, Department for Business, Energy & Industrial Strategy. (2020). *Research and Development Roadmap*. Retrieved from: <https://www.gov.uk/government/publications/research-and-development-roadmap>

⁴ UK Government. (2017). *Industrial Strategy: Building a Britain fit for the future*. Retrieved from: <https://assets.publishing.service.gov.uk/media/5a8224cbcd915d74e3401f69/industrial-strategy-white-paper-web-ready-version.pdf>

⁵ *Ibid*

⁶ *Ibid*

2.2 Summary of methodology

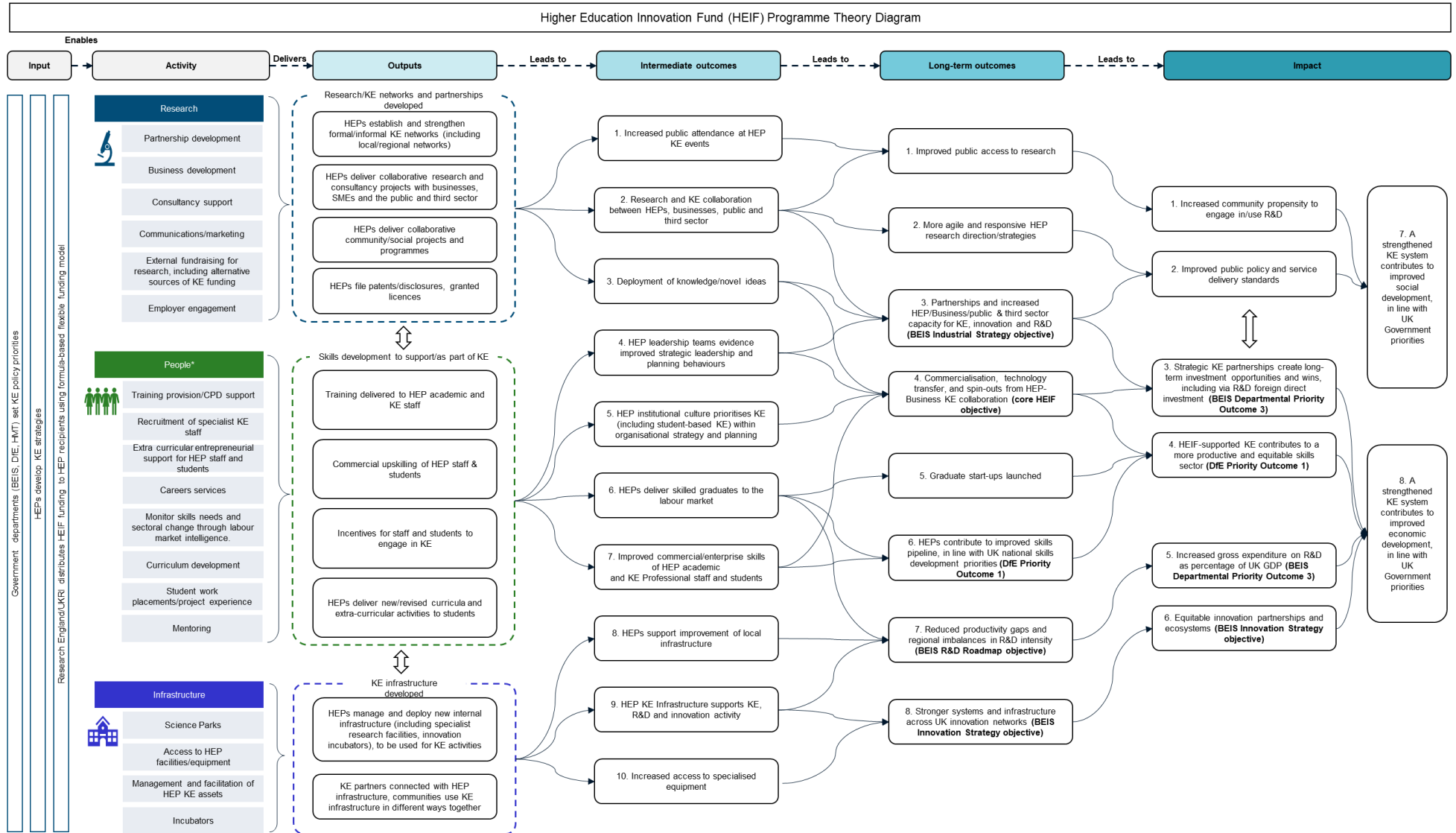
To assess the impact of HEIF, theory-based and realist evaluation methods were used to systematically test and verify the extent to which the original HEIF programme theory, co-created with stakeholders from RE and DfE/DSIT, accurately captured the causal pathways through which the programme contributed to impacts aligned with government priorities. The PT (see 2.2.1) outlined key assumptions and mechanisms expected to deliver outcomes through three main activity areas: research (enhancing collaboration and innovation between business, public, and third-sector partners), people (strengthening the skills and capacity of individuals involved in both supporting KE activities and undertaking/ participating in them), and infrastructure (maintaining the physical and organisational capabilities needed for effective KE). The process of testing this theory was iterative: the PT determined the key causal pathways and was validated and/or amended based on evidence from the representative sample of 18 English case study HEPs. Case studies triangulated primary data from interviews with senior leadership, KE staff, academics such as department heads from selected HEPs, as well as secondary data sources such as data from the Higher Education Business and Community Interaction (HE-BCI) survey, HEIF Annual Monitoring Statements (AMS), and HEIF/KE strategies and accountability statements submitted to RE by HEPs.

As described in 4.1, the PT was then validated and/or amended using the following methods:

- **Theory-based evaluation methods**, specifically contribution analysis, assessed the extent to which observed changes in KE outcomes and impacts could be attributed to HEIF funding, rather than to other influencing factors. Contribution analysis of case studies enabled the identification of plausible causal links between HEIF and the observed outcomes by examining the extent to which the fund was a necessary or significant contributor to KE activities.
- In parallel, **realist evaluation methods** were applied to explore how and why HEIF produced its effects in different institutional and contextual settings. By conducting workshops with groups of HEPs, this approach focused on understanding the underlying mechanisms through which HEIF influenced KE outcomes, considering the specific institutional contexts, regional dynamics, and sectoral differences.
- The evaluation considered **a counterfactual scenario** based on the experience of Welsh Higher Education Institutions (HEIs) following the withdrawal of similar core KE funding in 2014, in the form of the Higher Education Funding Council for Wales' (HEFCW) Innovation and Engagement Fund (IEF).

An Evaluation Technical Review Panel (TRP), made up of academics, evaluation specialists, and KE experts, oversaw the analysis and provided guidance and oversight throughout the evaluation. Their expertise ensured that the methodology, data collected, and emerging findings were relevant, robust and comprehensive. The panel played a key role in reviewing the evaluation framework, including the development of the PT and contribution narratives, to ensure that they presented a reasonable and accurate representation of HEIF's impact. Their expertise enabled them to critically assess whether impacts were specific, measurable, and aligned with the strategic objectives of the HEIF programme.

2.2.1 HEIF programme theory diagram



*within and outside HEPs (includes KE staff, academic staff, students and a range of external beneficiaries)

2.3 Key findings

This section provides extended summaries of key findings from the HEIF evaluation and consolidates impact and process evaluation findings from section 7. The key findings highlight how HEIF, amidst major policy shifts and funding reforms in the English HE sector, catalysed observed institutional and sectoral transformations, which drove societal and economic impacts. The evaluation found that the success of the fund is attributed to three core design principles:

- **Flexibility:** HEIF enabled HEPs to adapt funding to their changing objectives. This ensured that institutions addressed specific challenges and seized emerging opportunities based on their own specialisms and operating contexts. The autonomy that HEPs associated with HEIF contrasted favourably with other, more restrictive forms of KE funding.
- **Stability:** The quasi-guaranteed nature of HEIF funding offered a stable financial base for long-term planning and investment. As a result, institutions committed to multi-year projects and strategic initiatives with confidence which enabled longer-term partnerships with businesses, public and third-sector organisations.
- **Accountability:** RE's approach to HEIF allocation ensured effective oversight while keeping administrative burdens on institutions manageable. Through guidance and strategy documents, including AMS requirements and KE/HEIF strategies and accountability statements, RE effectively communicated key government priorities which informed institutional objective setting. This allowed HEPs to set their own goals and report on them within a clear framework that balanced assurance and accountability.

Analysis showed how these features of the funding influenced the strategies that HEPs employed to maximise the value of HEIF, demonstrating the fundamental contribution of HEIF to KE success. The following key findings synthesise the overall insights from the HEIF evaluation.

1. The stable and predictable nature of HEIF funding helped embed KE within institutional structures, contributing to significant monetisable and non-monetisable benefits.

HEIF provided long-term, strategic investment that developed core KE capabilities within HEPs. By funding permanent KE staff, HEIF enabled institutions to build and sustain partnerships with a range of stakeholders, including public and private sectors, local communities, and industry leads. These staff coordinated collaborations, secured new funding, and supported professional development. As HEIF funding increased, its strategic significance grew, prompting senior leadership to increasingly prioritise KE initiatives and integrate them into broader institutional strategies. Over the evaluation period, this resulted in a shift from ad-hoc, project-based KE initiatives to more strategic, long-term collaborations that aligned with government priorities communicated by RE. Evidence indicated that without HEIF KE activities would be of lower strategic priority, smaller scale and take much longer to execute.

In contrast to the temporary and project-specific nature of other KE funding, HEIF represented a reliable funding source that underpinned the sustained KE income growth (increasing from £2.8 billion in 2008 to £4.1 billion in 2020). However, the evidence across the contribution narratives suggested that the return on investment (ROI) from HEIF likely exceeded the monetary KE income alone. HEIF accelerated diverse non-monetisable benefits, such as enhanced regional innovation ecosystems, improved public sector partnerships, and contributions to societal challenges including public health and climate change. This is in addition to long-term benefits that resulted from attitudinal and behavioural change within HEPs, including increased engagement from senior leadership in KE and the growing prioritisation of KE in institutional culture. While these non-financial outcomes were more difficult to quantify, evidence demonstrated the broader economic and social value generated by HEIF and its impact on long-term institutional resilience in KE activity. This key finding is consistent with previous evaluations of HEIF,

including Tomas Coates Ulrichsen's 2015 and 2020 report, which highlighted significant non-monetisable benefits of HEIF.⁷

2. HEIF's flexibility, unlike other KE funding sources, reduced risk in the innovation stages to KE activities by providing early-stage funding that de-risked follow-on private and public investments.

HEIF underpinned core KE capabilities and provided a discretionary funding mechanism for case study HEPs, particularly those with larger HEIF allocations, to offer early-stage funding that de-risked innovative projects. This risk mitigation made such projects more attractive to investors. The flexibility of HEIF allowed institutions to identify and support translational projects with high potential and long-term returns, which often led to significant follow-on investments from venture capitalists, angel investors, and public grants. By using HEIF to attract external funding and secure larger public grants, case study HEPs were able to complement the initial seed funding for novel KE approaches provided by the fund.

This finding supports the original assumptions of the PT, which posited that HEIF served as a catalyst for innovation and productivity growth, which directly aligned to DSIT's departmental priority outcome 3. The ability of HEIF to draw in external funding reinforced its role as a key enabler of private sector growth and a driver of attention to driving broader economic impacts from the HE sector.

3. Over 12 years of funding, HEIF equipped HEPs with the long-term capacity, capability, and resilience to pivot resources to respond quickly to sudden, unforeseen events.

The flexibility of HEIF funding allowed institutions to direct resources – staff time, expertise, and funding – towards urgent or time-critical initiatives without being constrained by rigid project structures or short-term funding cycles. As originally hypothesised in the PT, this enabled HEPs to proactively develop innovative solutions that responded to real-time challenges, positioning them as important contributors to national and regional responses to crises.

For example, during the COVID-19 pandemic, HEPs adapted core HEIF-funded KE capabilities to address urgent public health challenges. They developed new public health interventions, including diagnostic testing technologies, and mobilised KE networks to produce Personal Protective Equipment for frontline workers. Aided by HEIF investment, HEPs also played roles in vaccine development and associated operations, including testing, and managing the logistical complexities of distribution. This rapid pivot underscored HEIF's role in promoting a flexible, innovation-driven approach within HEPs, enabling them to remain responsive to national crises. Prior to the pandemic, HEPs' ability to deploy this flexibility helped meet business needs during the 2008 financial downturn.

In both instances, HEIF-funded capabilities ensured that institutions were resilient and proactive which allowed them to continue to support business and public-sector needs amid rapidly changing circumstances.

4. HEIF funded entrepreneurship and enterprise support for students, enabling skills development and new graduate start-ups. This contributed to an increase in external investment, from £73 million in 2008 to over £400 million in 2020, and job creation, with the reported number of employees in these start-ups growing from 6,300 to 36,000.

Evidence showed that, particularly after the publication of the government's Industrial Strategy and new AMS reporting guidelines around student benefits in 2016, HEPs used HEIF funding to maintain and increase entrepreneurship and enterprise support for students (as well as staff, ECRs, etc.) through early investment, providing resources and support that grew successful and innovative start-ups. The nature of this support varied by provider: case study HEPs in cluster V and X used HEIF to directly seed fund promising graduate start-ups, in addition to providing bespoke mentoring and incubation resources;

⁷ PACEC (Public and Corporate Economic Consultants). (2015). *Evaluating the Non-Monetised Achievements of the Higher Education Innovation Fund: Report to HEFCE*. Retrieved from: https://dera.ioe.ac.uk/id/eprint/24639/1/2015_heifeval2.pdf;

Coates Ulrichsen, T. (2015). *Assessing the Economic Impacts of the Higher Education Innovation Fund: A Mixed-Method Quantitative Assessment*. Retrieved from: https://www.ifm.eng.cam.ac.uk/uploads/UCl/knowledgehub/documents/2015_Ulrichsen_HEIF_impact_technical_paper.pdf;

Coates Ulrichsen, T. (2020). *Assessing the gross additional impacts of the Higher Education Innovation Fund (HEIF): An update for the period 2015-16 to 2018-19*. Retrieved from: <https://www.ukri.org/publications/assessing-the-gross-additional-impacts-of-the-heif-an-update-for-the-period-2015-16-to-2018-19/>

whereas other clusters, namely E and J, used HEIF to develop their innovations alongside local businesses. Across the sample, HEIF also supported industrial placement schemes for students. Regardless of approach, HEIF being leveraged to support staff and resources addressed the investment gap often left by private investors. This nurtured a culture of innovation and equipping graduates with business skills. This assistance prepared students for entrepreneurial ventures and the job market, contributing to a thriving culture of entrepreneurship at English HEPs during the evaluation period. Ultimately, this support aligned closely with DfE priorities of promoting graduate employability, skills development, and creating pathways to entrepreneurship within the UK economy.

This is a significant finding as it highlighted an impact pathway that exceeded the original expectations of the PT, which underestimated the impact of HEIF on students. Beyond merely benefiting from these resources, evidence showed how students actively engaged in KE activities by contributing to innovation and driving the entrepreneurial culture within their institutions. The finding notably aligns with DfE skills priorities, as well as the Innovation Strategy's ambition to ensure that "early career researchers and innovators are central to government R&D policy," with HEIF explicitly used to support individuals at the start of their careers, who "can be especially effective at bringing new ideas and perspectives, break down paradigms, and may be less scarred by failure."⁸

5. HEIF's flexibility allowed HEPs to tailor projects to place (local to global) challenges according to the HEPs own strategic objectives. This autonomy maximised the impact and relevance of KE initiatives, ensuring that resources were effectively deployed to address specific regional needs and opportunities.

For some institutions, this meant prioritising local issues such as improving urban infrastructure and advancing regional economic development, while others focused on global challenges including climate change or public health. This adaptability ensured that HEIF supported locally relevant and globally significant translational research and enhanced its overall effectiveness and reach. Through funding exploitation from a wider range of interdisciplinary research initiatives, HEIF supported collaborations that aligned with regional and international objectives. Institutions partnered with local stakeholders – including businesses, public sector bodies, and community organisations – or engaged with global partners depending on their institutional focus. This finding closely aligned with the PT, specifically the contribution to Pillar 3 of the UK Government's Innovation Strategy, "Institutions and Places", which advocated for "a flexible and diverse approach to innovation policy, with a rich and complementary ecosystem of institutions."⁹ HEIF's ability to support a variety of approaches demonstrated its alignment with this vision.

6. HEIF investment was effective at upskilling SMEs to address regional and sectoral needs by enabling targeted support that addressed skills gaps and promoted meaningful collaborations between academia and business.

HEIF enabled HEPs to upskill SMEs by offering flexible funding for bespoke training programmes in line with the expectations of the PT, contributing to the dynamic, skills-based economy envisioned in the DfE's "Skills Value Chain" by convening centres of innovation, employers, and HEPs, developing targeted course content, and delivering workforce training.¹⁰

Evidence showed how the fund's flexibility allowed HEPs to allocate resources in ways that aligned with their institutional objectives and regional needs. This flexibility meant funding could be directed towards projects and partnerships with the highest potential for impact to address local, national and global challenges. This targeted approach ensured that SMEs received training directly relevant to their operational challenges and strategic goals, thereby enhancing their capabilities and competitiveness in the marketplace. The funding facilitated a range of training modalities including workshops, seminars, and more in-depth, hands-on courses for SMEs. In addition to upskilling, HEIF enabled partnerships to be built and fostered between academia, business, and public sector partners. It supported collaborative projects, including KTPs, which bridged the gap between research and practical application. By financing these

⁸ UK Government. (2021). *Innovation Strategy: Leading the Future by Creating it*. Retrieved from: <https://www.gov.uk/government/publications/innovation-strategy-leading-the-future-by-creating-it>

⁹ *Ibid*

¹⁰ UK Government, Department for Education. (2020). *Further Education: Skills for Jobs – Lifelong Learning for Opportunity and Growth*. Retrieved from: <https://www.gov.uk/government/publications/further-education-skills-for-jobs-lifelong-learning-for-opportunity-and-growth>

partnerships, HEIF enabled HEPs to work closely with SMEs to develop innovative solutions, new technologies, and processes tailored to industry-specific problems.

7. HEIF enabled HEPs to influence public policy with comprehensive, evidence-based insights by funding intersectoral policy centres and policy engagement activities.

Evidence showed that HEIF supported highly research-intensive HEPs (e.g. cluster V) in establishing policy centres focused on pressing societal challenges relating to health, environmental sustainability, and economic development. These policy centres became nodes of expertise, providing policy-makers with evidence-based research and recommendations that directly informed policy formulation and implementation.

The impact of HEIF on public policy engagement has been underexplored in previous evaluations of HEIF. As with HEIF's impact on student skills development, this finding strongly affirmed the expectations of the PT and validated assumptions about the non-monetisable benefits of HEIF. This evaluation highlighted HEIF's role in promoting impactful, non-commercial collaborations that benefit society at large. These collaborations underscored that the value of HEIF extends beyond traditional ROI metrics, demonstrating its broader impact in shaping public policy and addressing complex societal challenges. HEIF-funded policy centres and policy engagement activities resulted in close, long-term collaborations with government bodies and other stakeholders which supported policy-making by supporting the diffusion and dissemination of high-quality evidence based on academic expertise.

8. HEIF enabled broader access to high-quality research tools and infrastructure by supporting the management of specialist equipment and costly physical resources within HEPs, contributing to an increase in facilities-related equipment services income from SMEs from £373 million to £643 million.

HEIF enabled HEPs to offer access to their state-of-the-art facilities to external partners, including SMEs that may have lacked the resources to independently purchase, manage or maintain such equipment. This included the management and leverage for incubators, detailed in key finding 4. HEIF supported the management of specialist equipment within HEPs which contributed to the dynamic and inclusive regional KE ecosystem hypothesised in the PT. By providing funding for the operational costs associated with maintenance and running advanced facilities, HEIF ensured that high-end resources remained accessible to a wide range of research and industry partners. This enabled HEPs to keep their equipment in optimal condition to facilitate ongoing R&D activities without the financial burden of maintenance and operational expenses falling solely on individual projects or institutions.

Furthermore, by underpinning the management of costly facilities, HEIF promoted more equitable – across the economy and society – access to advanced research tools and infrastructure. This support helped to mitigate disparities in research capabilities across different institutions and businesses, allowing a broader spectrum of partners to engage in high-quality research. As a result, HEIF contributed to a more inclusive and effective innovation ecosystem, where diverse stakeholders had the opportunity to collaborate, explore new ideas, and drive technological and scientific progress.

9. The removal of the Innovation and Engagement Fund (IEF) for Welsh institutions significantly diminished their KE capacity which undermined long-term, strategic partnerships, and the ability to drive innovation, providing counterfactual evidence for HEIF.

A case study of the Welsh equivalent to HEIF was conducted for counterfactual evidence for HEIF. Without dedicated KE funding, evidence from the evaluation showed Welsh higher education institutions (HEIs) were less able to maintain internal expertise, develop strategic partnerships, and pursue innovation. This led to a dependency on more rigid, less adaptable funding streams which constrained their ability to engage in broad, high-impact KE activities that supported regional development. The withdrawal of IEF funding undermined key KE including commercialisation partnerships which reduced Welsh institutions' ability to collaborate effectively with businesses. HE-BCI data showed that following the cessation of IEF, KE income in Wales fell by an average of 2 percent annually, while England saw a 2 percent growth in the same period. Prior to IEF's removal, Welsh institutions were on a similar trajectory to England, with 3 percent annual KE income growth compared to England's 4 percent. Furthermore, evidence from counterfactual interviews showed the absence of flexible funding led Welsh institutions to adopt a more conservative approach, favouring projects with immediate commercial returns over those with broader

societal impacts. The reliance on restrictive European grants further narrowed the scope of their activities, despite increasing income for regional development.

10. HEIF was valued by HEPs for its flexibility and low administrative burden, which enabled them to focus on impactful KE that aligned with national and regional priorities and supported long-term planning and institutional development.

HEIF imposed fewer spending restrictions and reporting requirements compared to similar forms of KE funding (e.g. the European Regional Development Fund - ERDF), which were often short-term, project based and not suitable for funding permanent staff positions. The relatively low level of bureaucracy involved in accountability for HEIF funding enabled institutions to focus their efforts on developing impactful, long-term KE initiatives and partnerships, as well as pivoting strategies and aims in ways that would not have been possible with funds such as the ERDF.

The clear and consistent communication of HEIF's objectives and guidelines further enhanced the fund's effectiveness. RE provided straightforward expectations that helped institutions understand how HEIF aligned with national and regional priorities including those set by government. This clarity supported effective project planning and execution, ensuring that initiatives met institutional objectives and contributed to government priority goals outlined in the PT and discussed in 2.1. Moreover, the consistent nature of HEIF's funding model encouraged stability and continuity. Institutions could rely on a predictable funding stream, which supported long-term planning, the development of institutional knowledge, and the strengthening of networks.

2.4 Conclusion

The HEIF evaluation sought to assess the impact and effectiveness of the fund from 2008 to 2020, specifically focusing on how HEIF delivered value against key government priorities by testing the validity of the PT. This section reflects on the extent to which this framework accurately captured HEIF's contributions and impact, as well as areas where the programme could be further refined to better align with evolving regional and national goals. These conclusions, specifically related to the strengths of the HEIF PT, are explored in further depth in 5.2 and **Error! Reference source not found.**

2.4.1 Research pathway

Evidence from this report supported the PT pathway, presenting clear evidence of how HEIF was used to establish and maintain collaborations with businesses, public and third-sector partners.

HEIF enabled institutions to establish KE offices which helped build collaborative research, consultancy projects, and partnerships with businesses, SMEs, and the public sector. Case studies confirmed that HEIF supported HEPs in engaging in IP activities, such as patent filings and securing licences, which supported the commercialisation of research and knowledge transfer. This evidence corroborated the PT's assumption that HEIF would enhance research collaborations and knowledge transfer activities across industries and regions. Moreover, along with commercial and business impacts, evidence clearly validated the assumptions of the PT associated with the improvement of public policy and service delivery standards. HEPs from KE clusters (V, X, E, and STEM) with more established KE capabilities increasingly invested HEIF into policy facing activities that encompassed significant non-monetisable benefits.

HEIF's impacts from research were well supported; however, evidence on the fund's role in community engagement – **"Increased community propensity to engage in and use R&D" (Impact 1)** – was less conclusive. The evaluation showed some evidence of community projects, but they did not demonstrate the same depth of impact as research collaborations or commercialisation activities. While the lack of conclusive evidence did not warrant a change to the PT, this finding suggested that the fund does not function as originally hypothesised in this specific area.

2.4.2 People pathway

Evidence from this report supported the PT pathway, especially in terms of human capital development. HEIF was used to support people both internal to HEPs and more widely within society and the economy.

HEIF funding enabled institutions to recruit specialist KE staff, supported CPD for academic and KE personnel (i.e. commercial upskilling and training), wider people and communities (i.e. workforce upskilling and professional development), and offered entrepreneurial support and opportunities for students, staff and the wider economy. These initiatives addressed regional skills gaps by providing external training and employer engagement opportunities, aligning with national skills priorities articulated by the DfE.

While the evidence supported HEIF's role in developing graduate start-ups and entrepreneurial skills, its impact on broader curriculum development was less pronounced. Evaluation evidence showed HEIF's investment in innovation hubs, business incubators, and enterprise centres had a clear positive impact on skills development, but there was less evidence of a direct link to curriculum changes. Following feedback from the TRP, the PT was revised to include both curricula and extra-curricular activities, **"HEPs deliver new/revised curricula and extra-curricular activities to students" (People output 4)**, reflecting HEIF's broader influence on student career readiness and engagement with business and other employers. This revision ensured the PT more fully captured HEIF's diverse contributions to skills development.

2.4.3 Infrastructure pathway

Evidence from this report supported the PT pathway, namely in its role in optimising the use of existing assets.

HEIF funding supported the management of established research facilities for wider use and incubators. This allowed institutions to serve external partners, including SMEs and start-ups, by providing access to advanced research resources. As a result, HEIF contributed to regional innovation and economic development, consistent with the original assumptions of the PT.

In response to feedback from the TRP, the impact statement in the PT was revised to reflect HEIF's more specific regional impact. The revised statement, **"Increased local investment in R&D leveraged through HEIF, resulting in enhanced regional infrastructure and support for start-ups and SMEs"**

(Impact 5) more accurately captured the observed impact, focusing on how HEIF supported local economies and innovation ecosystems rather than contributing to broader national R&D measures.

Overall, evidence in this report confirmed that the PT was an effective framework for understanding HEIF's contributions across these three priority pathways. While certain elements of the theory were refined during the evaluation process, the overall structure of the PT remained sound. Adjustments were made to improve the theory's alignment with the programme's actual impact and the evolving priorities of the government, particularly with respect to innovation and regional development.

While some areas, such as community engagement, exhibited weaker evidence, the overall impact of HEIF was positive. Given the importance of engaging communities in research to drive social and regional innovation, the relatively weaker findings in this area may signal the need for alternative approaches or additional mechanisms to achieve these objectives. Nonetheless, the PT served to demonstrate how the programme delivered other significant non-monetised benefits that are not captured by traditional ROI analyses, for example, by improving public services, and addressing societal challenges including public health and environmental sustainability. These non-monetised benefits often manifested through collaborations between HEPs and public sector organisations, community groups, and third-sector partners, helping to create a more inclusive and socially responsive KE ecosystem.

3 Introduction

This section provides a detailed overview of HEIF. It begins by outlining the historical context of HEIF, including the reasons for its establishment and key milestones in its development between 2008-2020. The section then describes the design of HEIF, detailing its structure, the criteria for eligibility, and the types of activities it supported. Finally, it explains the allocation methodology, including how funds were distributed among institutions based on specific criteria and formulas to ensure a fair and transparent process that aligned with HEIF's overall objectives.

3.1 Background and purpose of the fund

Since its introduction, the objective of HEIF was to facilitate the exchange of knowledge, including the development of new technologies, skills, and the strengthening of relationships between HEPs and external organisations, such as businesses, public sector bodies, and third-sector organisations.

KE intended to be supported by HEIF includes STEM and non-STEM disciplines, which allows for an array of collaborative initiatives suited to a variety of different providers. In STEM fields, KE funded through HEIF may focus on research partnerships, technology transfer (TT), and innovation in scientific practices. In contrast, non-STEM forms can encompass areas including arts and humanities festivals, public policy interventions, and community engagement projects, promoting collaboration through creative practices and social impact initiatives. By funding to these varied forms of KE in the evaluation period, HEIF supported the commercialisation of research and contributes to societal outcomes, ensuring that HEP expertise contributed to real-world challenges and community needs. This means that HEIF's programme aims therefore encompassed monetisable benefits, such as increased revenue from commercial partnerships and patent licensing fees, as well as non-monetisable benefits, such as improved community well-being and improved public policy and service delivery standards. Once realised, these non-monetisable benefits can manifest in greater civic engagement, increased cultural participation, and the development of social networks that enhance collaboration between academia and communities.

The fund is specifically designed to benefit a range of HEPs, including research- and teaching-intensive institutions, and diverse internal and external beneficiaries. These beneficiaries include academics, students, HEP professional service staff, small and medium-sized enterprises (SMEs), large corporates, government departments, local authorities, and community organisations.

As articulated in the PT, the purpose of the fund also directly aligned with priorities and priority outcomes set by DSIT and DfE. These are explored in further detail in 3.2.1.

3.1.1 History

Over the evaluation period (2008 to 2020), HEIF grew considerably, reflecting its increasing importance as a mechanism to deliver government economic and social policy priorities. The evolution of HEIF can be understood through three broad phases, each shaped by changing policy priorities, changing government priorities, and the economic environment:

- **Phase 1 (2008 – 2011):** This period saw an uplift of HEIF (from £112m to £150m) which reflected greater attention to KE and the impact of research flowing from the Labour Government's Science and Innovation Investment Framework (SIIF).¹¹ BEIS grant letters over this period showed a strong emphasis on the roles of KE in international competitiveness/collaboration and as a driver of foreign direct investment and attracting multi-national companies to the UK. Intellectual property protection and development was also a recurring KE priority. It was associated with greater knowledge creation, better use of knowledge within industry, and higher transfer rates of knowledge between industry and universities. Skills flexibility was another priority theme in grant letters, and the importance of work placements, skilled workforces and flexible career pathways for researchers were prominently mentioned. The importance of supporting a range of HEPs was also important for BEIS, particularly related to local/SME contribution of more teaching intensive HEPs. There was a greater focus on research outcomes followed priorities from the SIIF, though HEIF continued to be supported from both science/research and HE budgets but with funding increases from the former.

¹¹ UK Government, Department for Business, Innovation & Skills (BIS). (2004). *Science and Innovation Investment Framework 2004–2014*. Retrieved from: <https://dera.ioe.ac.uk/id/eprint/14223/1/file31810.pdf>

- Phase 2 (2011 – 2015):** Despite public sector austerity, HEIF was maintained in cash terms at £160m per annum during this period, reflecting the importance attached to HE’s contribution to the country’s economic growth. HEIF operated over these years in the context of wider government policies focused on reducing the country’s fiscal deficit and achieving economic growth. International competitive advantage and research collaboration with external international partners remained a priority theme in the 2013-2016 phase of HEIF, with Britain’s place in the world index of University-Business Collaboration and Global Innovation index posited as metrics of success. Key policy reports at this time included the Dowling Review of Business-University Research Collaborations (2015) and Encouraging a British Invention Revolution: Sir Andrew Witty’s Review of Universities and Growth (2013). The Witty Review emphasised the role of HEPs’ “third mission” in facilitating economic growth, especially through HEPs pro-actively seeking out innovative SMEs and supporting them with technology, expertise, talent and industry knowledge.
- Phase 3 (2016 – 2020):** Covered the period including introduction of the Industrial Strategy¹², the creation of UKRI with significant NPIF uplift to science/research (and change of HE funding through switch from grant to fees and creation of Office for Students) to the onset of the COVID-19 pandemic in 2020. Additional funding from 2017-18 took HEIF from £160m to £250m, linked to the Industrial Strategy and allocated specifically for research commercialisation and working with business. The major changes between 2016-2021 from previous HEIF phases related to increased focus on research/science reflecting on the source of the uplift to HEIF. While the teaching budget contribution continued it was not increased. HEPs were also expected to play a role in ensuring that more parts of the UK became attractive to private investment (including from overseas), in the context of the science superpower narrative. Local and place related applications gained greater policy emphasis over this period but remained less prominent in practice than STEM related KE.

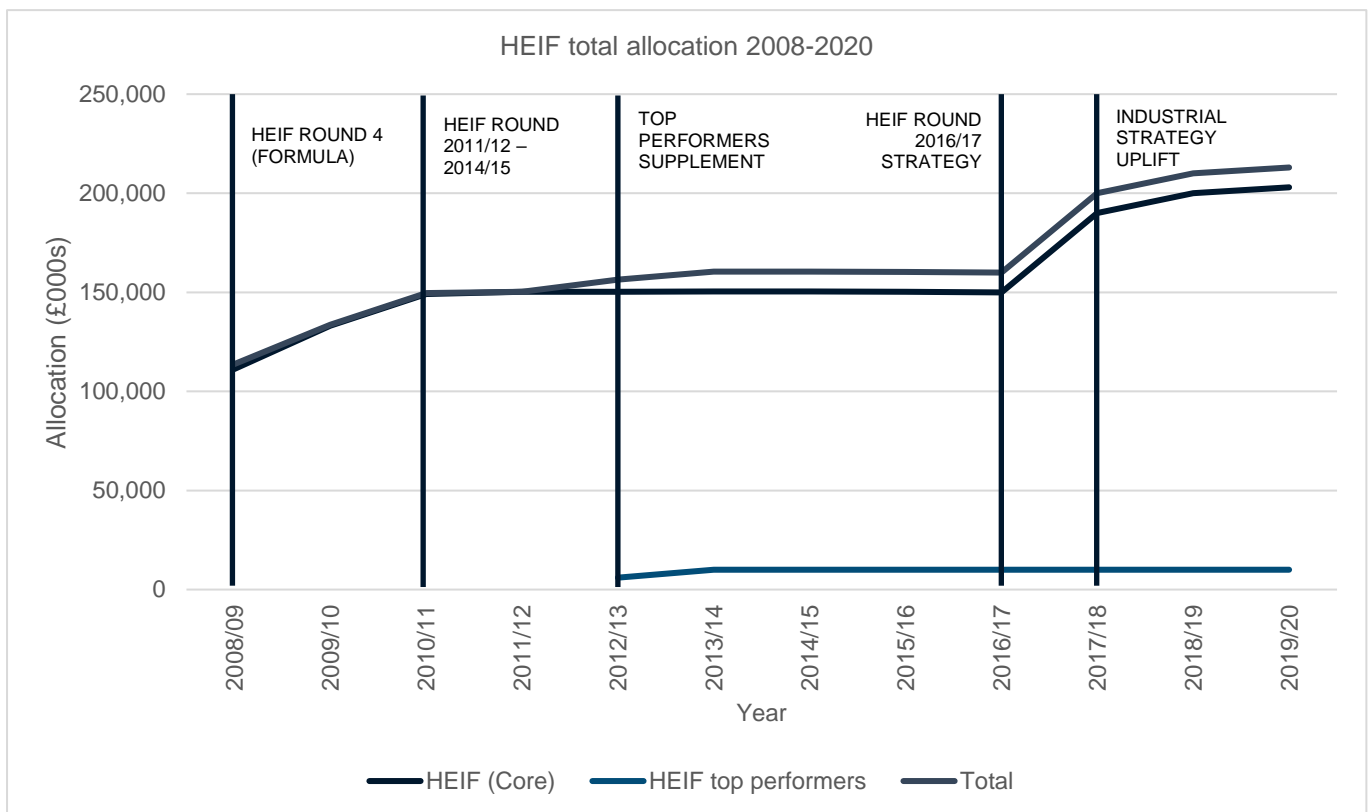


Figure 1: HEIF total allocation 2008-2020

¹² UK Government. (2017). *Industrial Strategy: Building a Britain fit for the future*. Retrieved from: <https://assets.publishing.service.gov.uk/media/5a8224cbcd915d74e3401f69/industrial-strategy-white-paper-web-ready-version.pdf>

3.1.2 Uses of HEIF funding

Reflecting the variety of institutional types, strategies and capabilities, recipient HEPs had wide discretion and flexibility over how they spend their HEIF allocation (subject to alignment with programme guidance and monitoring mechanisms).

HEPs are required to submit HEIF Accountability Statements (previously KE strategies/HEIF plans) for approval by RE, which identify key KE objectives. RE approved that objectives/uses of HEIF are eligible and aligned with government priorities. Unlike previous HEIF KE strategies that included two parts – one outlining the overall KE strategy funded by all sources and another detailing specific plans for the use of HEIF funds against those objectives – the newer Accountability Statements were more streamlined. HEPs no longer needed to provide a full KE strategy but still outlined how HEIF funding supported their identified KE objectives, aligned with government priorities. Additionally, HEPs were required to submit an Annual Monitoring return (AMS), which reports on progress against the objectives outlined in the Accountability Statements, including expenditure outturns.

RE used these reports (the accountability statement and later the annual monitoring return) to ensure HEPs utilised HEIF funds as intended, in line with approved plans/KE objectives and linked to government priorities.

This flexibility allowed institutions to tailor their use of HEIF resources to their specific strengths, capabilities and needs, including whether they are teaching- or research-intensive, their disciplinary mix, and the nature of their partners and contexts. This empowerment enabled institutions to assess their capabilities, seek out appropriate partners (depending on place and sector), and build their objectives around an understanding of what works.

HEIF funds can be deployed across a broad spectrum of activities that extend beyond industry partnerships and commercialisation. These activities included developing new technologies, encouraging spin-out companies, and supporting entrepreneurial ventures, as well as initiatives focused on public policy, community engagement, and student enterprise. For instance, HEIF can support projects that collaborate with businesses or community organisations to cultivate innovation and promote the establishment and growth of new enterprises in various sectors.

While HEPs have a broad remit to use HEIF, there are specific activities that are not eligible for use of HEIF because they are not KE or do not meet other eligibility requirements. These include:

- **Research without external partners:** HEIF could not support research projects that do not involve external partners, such as those conducted solely in collaboration with another HEP.
- **Teaching without external partners:** HEIF could not be used for teaching activities that do not engage with external entities, including efforts including cross-disciplinary curriculum development.
- **Capital expenditure:** HEIF was for revenue use only. Funds could not be allocated for capital expenditures, such as the construction or refurbishment of buildings.
- **Research administration:** Administrative tasks related to research, such as preparing Research Excellence Framework Impact Statements, were not covered by HEIF. However, HEIF could support KE activities that contribute to achieving the impact.
- **Student recruitment and outreach:** Outreach programmes that primarily aimed to recruit students or widen participation did not qualify for HEIF funding.

3.1.3 Allocation formula

HEIF funding was distributed to HEPs through a 'bounded formula' and outcome-based methodology. Funding allocations were based on HEPs' qualifying KE income primarily using HE-BCI data across the range of KE activities. Both lower and upper caps to allocations were applied with different levels with a view to providing a reasonably broad distribution across a range of HEPs, whilst also providing incentives for high performance.

The allocation of HEIF was formula-based. This provided a structured and transparent approach to distributing funds among institutions. This formula considers several key factors, including KE performance. Institutions' previous successes in KE, evidenced by KE income metrics, determined the

level of funding they receive.¹³ This system rewarded institutions with a proven track record in KE activities and encouraged continued high performance. Institutions that demonstrated substantial impact as demonstrated through their income metrics – such as the successful commercialisation of research and significant industry collaborations – received higher allocations. Some elements to the formula reflected specific priorities set by the UK government (such as the use of bespoke metrics in the current business and commercialisation supplement, or RE may require that allocations are spent on specific priorities, e.g. the previous NPIF industrial strategy uplift), thus providing funding that aligned with wider national research and innovation strategies and addresses key societal challenges.

Allocations were determined based on data regarding income from KE activities, collected from the Higher Education Statistics Agency (HESA) Finance Record, the HE-BCI record, and KTPs data from Innovate UK (IUK). This data was averaged over a three-year period, with a weighting towards the most recent year's performance to balance stability and responsiveness.

Allocations were recalculated annually to reflect the latest data and reward recent performance, with moderated adjustments to provide a predictable funding environment. Combined with the process of RE approving multi-year HEIF accountability statements/strategies, this approach enabled institutions to plan their KE activities over a longer period (typically for a spending review period) while ensuring that funding supported both high performance from an institutional capability perspective and broader national priorities.

3.2 Aims and objectives of the evaluation

The evaluation of HEIF aimed to assess the fund's effectiveness and impact over the period from 2008 to 2020. The primary objective was to gain a comprehensive understanding of how HEIF supported KE activities and contributed to broader societal and economic impact, aligning with UK government priorities, by evidencing key impact pathways within the HEIF PT. This methodology included developing contribution narratives to verify these impact pathways, while taking into account other influencing factors.

To achieve this, a range of data analysis techniques were employed to triangulate primary and secondary data, test and evidence the causal pathways identified in the PT. This included thematic analysis of interview transcripts and secondary data to identify key patterns and insights, descriptive analysis of HE-BCI returns, cluster analysis to explore differences and commonalities between various KE clusters, and contribution analysis to assess HEIF's overall contribution to observed outcomes and impacts. Together, these methods provided a robust and comprehensive understanding of HEIF's effectiveness and the mechanisms driving its success. Based on the strength and availability of evidence collected from case study HEPs, priority outcomes and pathways were identified against which HEIF can demonstrate contribution.

This structured approach ensured a nuanced understanding of HEIF's role in driving KE activities and achieving long-term benefits, while acknowledging the broader context within which these impacts occurred. The robust methodology reinforces confidence in the evaluation's findings, particularly regarding the complexities of attribution, as further elaborated in section 4.4 of the report.

3.2.1 HEIF programme theory

Central to executing the aims of the evaluation was the HEIF PT, which depicts the various ways in which HEIF produced impact. The PT diagram provided a detailed framework for mapping out how HEIF resources were allocated and utilised to enhance institutional capabilities, thus contributing to economic and societal impacts. It categorised HEIF investments into three areas or pathways:

- **Research:** Impacts from partnerships and networks built through HEIF funding.
- **People:** Impacts stemming from the development of KE skills and capacity among participants, both those internal to HEPs and those external in the economy and society.
- **Infrastructure:** Impacts originating from access to KE infrastructure, which is facilitated by core internal KE capability funded by HEIF.

¹³ UK Research and Innovation. (n.d.). *Higher Education Innovation Fund (HEIF)*. Retrieved from: <https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/higher-education-innovation-fund/>

By organising the “activity” and “output” sections under these themes, the PT diagram (2.2.1) simplified complex interactions and clarified how different elements contribute to the overall objectives. Accompanied by a narrative that captures the underlying assumptions and contextual factors, the PT offers insights into the mechanisms driving programme success. This framework clarified how HEIF investments led to specific KE outputs, such as successful collaborations with diverse sectors, the commercialisation of research, the growth of student entrepreneurship and enterprise, and the application of academic expertise to public policy and service delivery. It also demonstrated how these outputs contributed to longer-term societal and economic benefits, ensuring alignment with broader government priorities and policy priorities – specifically, DSIT’s Industrial Strategy objectives, Innovation Strategy objectives, R&D roadmap objectives, and broader departmental priority outcomes, as well as DfE’s priority outcomes.

Throughout the evaluation, the PT consistently served as a useful and accurate representation of HEIF and its objectives. The changes required were relatively minor, focusing on syntax and specific language rather than necessitating a complete redesign. These adjustments were discussed with the TRP during contribution analysis workshops and are summarised in the process findings in section **Error! Reference source not found.**

3.2.1.1 Key causal pathways

We have identified several key causal pathways in the logic chain for the HEIF programme. These pathways detail the specific mechanisms through which HEIF achieved impact, drawing from strategic documents and the PT framework. The statements below focus on the most strategically significant pathways related to the core objectives of HEIF.

• Inputs/Activities to Outputs

- **HEIF funding and co-investment from partners led to the development of enhanced KE networks** because HEIF was designed to support high-quality KE activities with strong business cases, leveraging partnerships and addressing gaps in KE infrastructure through strategic funding and collaboration.
- **HEIF funding facilitates the delivery of collaborative research and consultancy projects** because it encouraged HEPs to form alliances with businesses and other sectors, addressing market failures by providing necessary resources and support for joint ventures.
- **Industry and philanthropic co-investment, alongside contributions from the public sector, services, and the third sector, have led to the establishment of KE functions and management/leverage of facilities.** HEIF’s co-investment model ensured that all stakeholders, including entities such as the NHS, schools, and other public service bodies, are invested in the success of the KE infrastructure.
- **HEIF investment in student entrepreneurship programmes supported the development of entrepreneurial skills and the creation of new student-led businesses** because it funds management and provides leverage for investment in incubator spaces, mentorship schemes, and start-up support initiatives. These activities provided students with practical experience, access to networks, and resources, helping to convert entrepreneurial ideas into viable ventures.
- **HEIF funding supports HEPs in influencing public policy and contributing to societal impact by enabling partnerships with government agencies, think tanks, and public bodies.** Through policy engagement activities, such as research dissemination, expert panels, and workshops, HEIF-funded initiatives informed public debates, provide evidence-based recommendations, and contribute to the shaping of policy frameworks.

• Outputs to short- and medium-term outcomes

- **Enhanced KE networks lead to increased public engagement with research** because well-developed networks improved the visibility and accessibility of research outputs, encouraging greater public participation and interest.
- **Collaborative research and consultancy projects resulted in increased knowledge deployment and innovation** because such projects enabled the application of research findings to real-world challenges, driving technological and scientific advancements.

- **Dedicated KE facilities led to increased industry investment** because these facilities provided a proven platform for collaboration, reducing risk and initial investment barriers for industry partners, and attracting further funding and engagement.
 - **Student entrepreneurship programmes led to increased start-up creation and entrepreneurial capacity** because HEIF-funded initiatives such as incubators, accelerators, and mentorship schemes provide students with the skills, resources, and networks needed to launch new ventures. This resulted in a more dynamic local start-up ecosystem, with long-term benefits for the regional economy.
 - **Public policy engagement activities resulted in greater policy influence and evidence-informed decision-making** because HEIF-funded projects and partnerships with policy-makers enable HEPs to provide expertise and research insights to public bodies. This resulted in policies that are better aligned with current evidence, contributing to more effective societal outcomes.
- **Outcomes to Impact**
 - **Increased knowledge deployment and innovation from collaborative projects resulted in higher industry investment** because successful KE activities demonstrated the value of research and innovation, encouraging businesses to invest more in collaborative R&D and related ventures.
 - **Increased industry investment and successful KE collaborations contributed to higher regional and national economic growth** because the resulting innovations and technological advancements boosted productivity, created jobs, and supported economic development, thereby enhancing the overall contribution of HEPs to the economy.
 - **Increased start-up creation and entrepreneurial capacity led to long-term business growth and regional development** because the establishment of new ventures contributed to job creation, diversified the local economy, and nurtured a culture of innovation and enterprise. This growth had compounding effects on the regional economic landscape, supporting wider HEIF goals around economic impact.
 - **Greater policy influence and evidence-informed decision-making contributed to societal benefits and improved public policy outcomes** because the integration of academic research into policy development addressed complex societal challenges, improved public services, and supported the development of policies that are effective and impactful.
 - **Successful KE projects and facilities led to substantial societal and economic benefits** because the integration of high-quality research with practical applications resulted in significant contributions to societal challenges and economic growth, making the case for continued public investment in research and innovation. This in turn led to the prioritisation and establishment of leading UK academic expertise in key strategic areas to society and economy.

These pathways highlight the strategic connections between inputs, activities, outputs, outcomes, and impacts within the HEIF programme, demonstrating how targeted investments and collaborations can drive significant benefits for the UK economy and society.

3.2.1.2 Key assumptions

The HEIF PT was built around a set of underlying hypotheses and overarching assumptions both explicit and implicit. The following groups the key assumptions into three sections: what the programme did and intended to achieve, how the programme was structured and delivered and the quality and availability of programme data. The evaluation tested these assumptions as part of the case study delivery and engagement with HEPs.

- **What the programme did and intended to achieve**
 - There was persistent demand for KE from industry and other innovation and economic/societal growth actors, which remained unmet by market forces alone due to existence of public/social goods in innovation and systems failures such as information asymmetry, cultures and connectivity.
 - To meet this demand, more proactive support and development of the supply-side of the KE landscape was required via the HEIF programme.
 - There is a logical and causal 'line of sight' between the HEIF funds allocated to HEPs, their uses of the funding, and the value generated (with external partners) through the consequential KE activities.

- There was a continuing need for HEIF funding on these grounds, even in the context of the greater maturity of HEP KE capabilities, the substantial growth and diversity of the KE market and the availability of other funding.
 - Conversely, without the injection of HEIF funding, there is a potential that HEPs (either generally or in specific cases) would give less priority to KE developments, focusing instead on their core teaching and research activities and income.¹⁴
- **How the programme was structured and delivered**
 - HEPs were previously constrained from developing their KE capabilities and activities by a range of systemic barriers, which HEIF support helped overcome, for example by building relevant expertise through central or departmental KE professional support.
 - Formula-based allocation of HEIF funding is both transparent and equitable, allowing for the diversity of HEPs across all KEF clusters, KE applications and the delivery of institutional strategies with minimal bureaucracy/burden and operating costs of allocations.
 - HEPs are best positioned to judge their most impactful KE activities and hence the most appropriate and effective uses of HEIF funding in their own situations and can be trusted to take account of current policy guidance and priorities and provide accurate reporting returns on their use of HEIF funding allocations.
 - The flexible nature and long-term allocation of HEIF enabled HEPs to leverage this funding to secure additional support from other sources of KE funds, for example by using HEIF as a source of match funding where required by other KE funding mechanisms. This provided better value for money, enabling HEPs to unlock a wider range of resources/partners.
 - There was sufficient absorptive capacity on the 'demand-side' of the KE system (including within external KE partners/beneficiary groups) to engage meaningfully with HEIF-supported HEPs and create the 'feedback loops' required to continuously improve KE activities and engagements.
 - **Quality and availability of programme data**
 - While acknowledged as incomplete and imperfect (in the area of non-transactional KE which does not have a specific KE partner financial contribution), HE-BCI data on KE income supplemented by HEP self-reporting provides the best available baseline measure of the proxy economic/societal impacts generated from HEIF allocations. The logic behind this assumption is that external organisations' expenditure on KE services represented their belief that the services they acquired due to this investment generated at least as much value as the amount they originally invested.
 - There is a significant data gap around non-transactional KE, which linked back to systems failures and public goods that are not well described yet in available programme literature and wider research on KE.
 - Comparisons of the levels of HEIF input funding and aggregated HE-BCI data on monetised KE outputs allow valid judgements on the economic/societal impacts of the HEIF programme.

¹⁴ It is also important to note that HEIF forms just part of a mix of funds at a HEP's 'disposal', so the impact of the removal of HEIF would vary across HEP depending on the makeup of their KE funding.

3.3 Evaluation questions

Evaluators identified six key questions, focusing on both process and impact evaluations. These questions were crafted to meet the needs of a comprehensive assessment of the complex fund, adhering to best practices and aligning with the Department for Science, Innovation and Technology's (DSIT) Monitoring and Evaluation (M&E) framework to ensure a thorough and effective evaluation. These questions were specifically designed to:

- Clarify the mechanisms and processes through which HEIF operates, including how it influenced the strategic development and operational practices of HEPs.
- Identify the causal pathways and assess the outcomes and impacts directly attributable to HEIF, thereby providing a clear understanding of the programme's effectiveness and efficiency.
- Evaluate the contextual factors that affect HEIF's implementation and impact, including both internal and external influences, to ensure a nuanced understanding of its role and outcomes in different settings.

The details below show how the evaluation questions fit into each component of the evaluation:

Impact evaluation – The impact evaluation drew on realist and theory-based methods, to create a pragmatic hybrid, mixed methods approach to explore causal pathways and test assumptions within the HEIF PT. It provided an objective test of what changes have occurred, the scale of those changes and an assessment of the extent to which they can be attributed to the HEIF programme. It used a combination of established evaluation methods appropriate for the level of complexity of the programme and its operating context. The evaluation questions that fit into this section are:

- **EQ1:** Did HEIF deliver progress in the strategic development of English HEPs in KE?
- **EQ2:** What contextual factors (including place factors) were important to understand/measure how HEPs used HEIF and the impacts they delivered?
- **EQ3:** What external (to the HEP) economic and societal impacts were delivered by HEIF?

Process evaluation – The process evaluation was designed to determine whether HEIF was implemented as intended, including assessing whether the programme design functioned as planned. This involved evaluating the effectiveness of the implementation processes and identifying both successful elements and areas requiring improvement. The evaluation sought to uncover what aspects of the programme worked well, what challenges or shortcomings existed, and the reasons behind these outcomes. The evaluation questions that fit into this section are:

- **EQ4:** How did the programme deliver on government priorities?
- **EQ5:** How were impacts delivered?
- **EQ6:** What contextual factors (including place factors) were important to understand/measure how the programme should be designed and managed?

4 Methodology

This section explains the methodologies employed in evaluating the HEIF programme through 18 detailed case studies. These combine primary data gathered from interviews and workshops, and secondary data derived from HE-BCI data, HEIF AMS and KE strategies, as well as approaches to define the contribution of outcomes to HEIF. This section outlines sampling methods, data collection approaches, and analytical techniques used to assess HEIF's performance and outcomes.

4.1 Description of the evaluation design and approach

The nature of HEIF as a large-scale, flexible, institutional formula funding mechanism means the evaluation draws on a mixed methods (realist and theory-based) approach to evidence programme impact during the period under review. The level of complexity within HEIF makes this approach suitable for the evaluation, particularly regarding aspects related to the assessment of KE in different contexts, observed behaviour change in different stakeholders and the programme's contribution to high-level, long-term economic and societal benefits. The methods used were:

Theory-based evaluation methods: drawing primarily on contribution analysis to test pathways and assumptions in the PT and evaluate the extent to which HEIF funded interventions contributed to any observed change. Figure 2 depicts how the components/tools within the HEIF evaluation fit together. Additional detail is included below on how the combination of each component/tool delivers evaluation findings and recommendations for RE.

Realist evaluation methods: identifying, articulating, testing and refining hypotheses regarding particular combinations of context, mechanism and outcome (CMO) to evaluate stakeholder behaviour change and decision-making in different KE contexts.

Counterfactual analysis (considering observed results against those which would be expected in the absence of HEIF or wider government support for KE): examining the impact of withdrawing similar funding at Welsh institutions during the evaluation period using a combination of these methods.

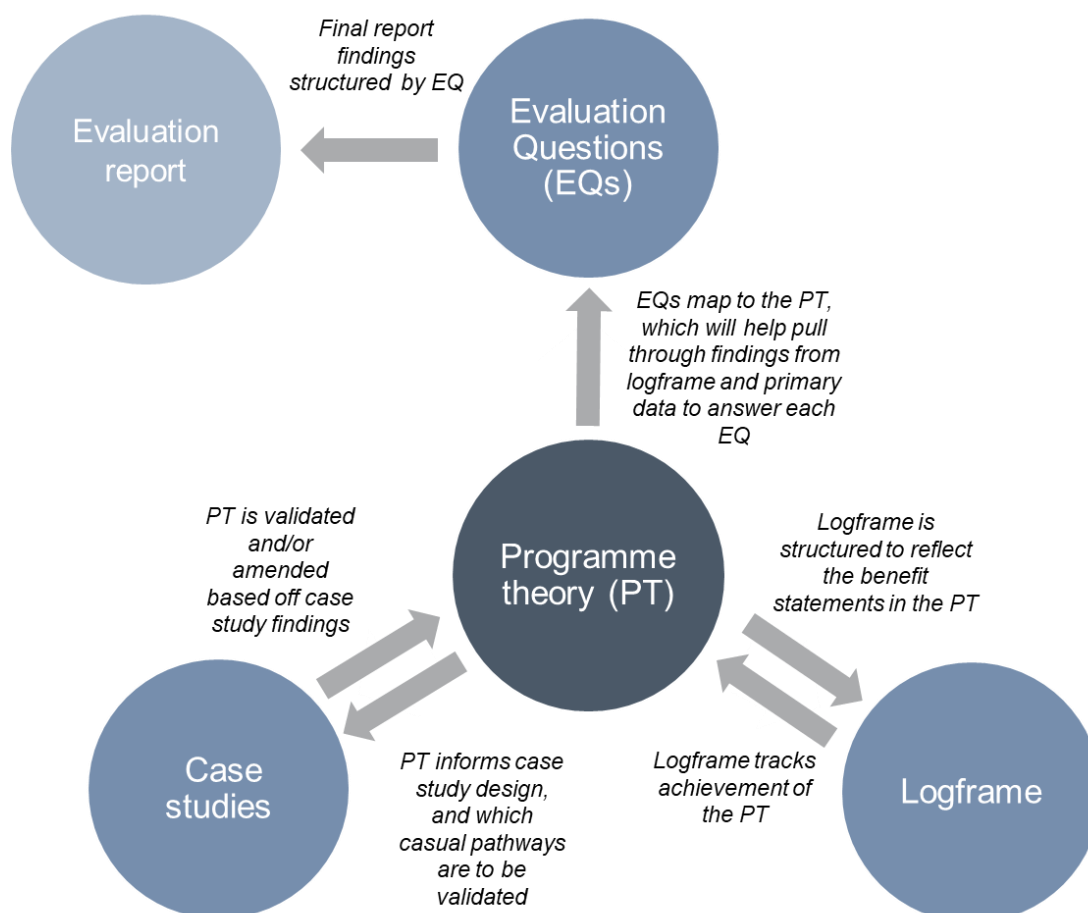


Figure 2: Key components of the evaluation

Each methodological component and tool is described below in more detail:

1. **Programme theory (PT):** As described in 3.2.1, the PT is the key tool which informs the evaluation. It links to other elements in the evaluation in the following ways:
 - **Link between PT and the Evaluation Questions (EQs):** EQs are mapped against the PT to organise data and evidence against each evaluation question and ensure the EQs help evidence the causal pathways in the PT.
 - **Link between PT and the Logframe:** The logframe is a framework of indicators, structured to measure the delivery of results against each benefit statement in the PT. The logframe also maps to the EQs through its link to the PT.
 - **Link between the PT and case studies:** Case studies provide additional evidence to demonstrate causation within the PT. Realist methods, through the context, mechanism and outcome (CMO) heuristic, were applied to establish what works, for whom, under what circumstances and how. They helped to test assumptions and evidence the attribution and contribution of observed results to HEIF funding.
2. **Evaluation questions (EQs):** Six EQs, detailed in 3.3, helped present and organise the findings in this report. They align with UK government Magenta Book best-practice and the approach outlined in DSIT's Departmental M&E Framework.
3. **Case studies and other primary data collection:** 18 case studies were conducted across a stratified sample of HEPs explained in 4.2. They provided robust evidence of how HEPs engage with different beneficiary groups, and the extent to which the delivery of KE activities and outputs contributed to observed change at outcome and impact level of the PT, led to behaviour change and influenced decision-making.
4. **Logframe:** The programme logical framework ('logframe') is a framework of indicators to measure the delivery of benefits in the PT. It provided quantitative evidence to support the qualitative analysis used to answer each EQ. Logframe indicators drew on a range of primary and secondary data sources. Primary indicators drew on data from case study interviews. Secondary data mainly included HE-BCI survey results, as well as qualitative data from institutional KE strategies and AMS statements.

4.2 Sample composition

To address the evaluation questions in 3.3, 18 case studies were developed to evidence the experiences of HEPs of different sizes, core specialisms, and funding allocation levels. To achieve this, the sample was balanced across seven ‘KE clusters’¹⁵. KE clusters were introduced by 2018, when RE grouped HEPs into “clusters” based on similarities in key characteristics such as the research priorities and specialisms, as well as their existing capabilities and the resources to engage in KE. The table below describes each cluster and shows the number of HEPs included in the evaluation from each cluster.

Table 1: KE cluster characteristics and sample size

Cluster	Total no.	Description	No. in sample
E	29	This cluster consists of large HEPs with a wide range of disciplines, including STEM and non-STEM fields. They excel in research across all disciplines, with a significant amount of funding coming from government bodies and hospitals, and a smaller portion from industry. The cluster has a high proportion of part-time undergraduate students and a small postgraduate population, mainly consisting of taught postgraduates.	3
J	17	Mid-sized HEPs with a focus on teaching, although research is still present. They cover a range of STEM and non-STEM disciplines, including health, computer sciences, architecture/planning, social sciences, business, humanities, arts, and design. Research activities are primarily funded by government bodies and hospitals, with a moderate portion from industry.	3
M	18	This cluster includes smaller HEPs, often with a teaching focus. They cover various disciplines, particularly in other health domains and non-STEM fields. Research activities receive more funding from government bodies and hospitals, with a slightly higher percentage from industry compared with cluster J.	1
V	17	These are very large, research-intensive HEPs with a broad range of disciplines. They conduct significant amounts of excellent research funded by UKRI, other government bodies, charities, and industry. Cluster V HEPs have notable activity in clinical medicine and STEM fields, and their student body consists of both taught and research postgraduates.	4
X	20	This cluster comprises large, research-intensive HEPs with a broad range of disciplines. Their research is predominantly funded by UKRI and other government bodies, with a smaller portion from industry. The discipline portfolio is balanced across STEM and non-STEM fields, but with less focus on clinical medicine. The student population has a high proportion of taught postgraduates.	4
ARTS	19	These are specialised institutions that focus on arts, music, and drama. They vary in size, but many are relatively small and specialised, with a high concentration of academic staff in these disciplines.	1
STEM	12	These specialised institutions focus on science, technology, engineering, and mathematics. They have a high concentration of academic staff in these disciplines and often engage in excellent research, particularly in bioscience and veterinary sciences, as well as engineering.	2

The sample of HEPs was identified to represent a fair spread of KE clusters, geographic locations and HEIF funding allocation. The sample includes at least one HEP from each KE cluster to ensure HEPs with

¹⁵ Coates Ulrichsen, T. (2018). *Knowledge Exchange Framework Metrics: A Cluster Analysis of Higher Education Institutions*. A technical report for Research England. Retrieved from: <https://www.ukri.org/wp-content/uploads/2022/07/UKRI-010822-HEIF-UlrichsenClusterAnalysis2018.pdf>

a range of research intensities, capabilities, and specialities were included to provide comprehensive insights to test the PT and evidence impact pathways. Additional HEPs were chosen from KE clusters that received a larger proportion of HEIF to ensure the evaluation represented historical allocation levels depicted in Figure 3 and demonstrated the overall programmatic impact of HEIF, rather than specific impacts on HEPs. While this relatively small sample size may not fully capture the diversity of experiences and outcomes across all HEPs, it allowed a detailed exploration of each institution's impact. This focused approach ensured a thorough understanding of how HEIF delivers value.

Table 2: Sample by NUTS 1 region

NUTS 1 region	No. in sample
North East	1
North West	2
Yorkshire and the Humber	2
East Midlands	2
West Midlands	3
East of England	1
London	3
South East	2
South West	2

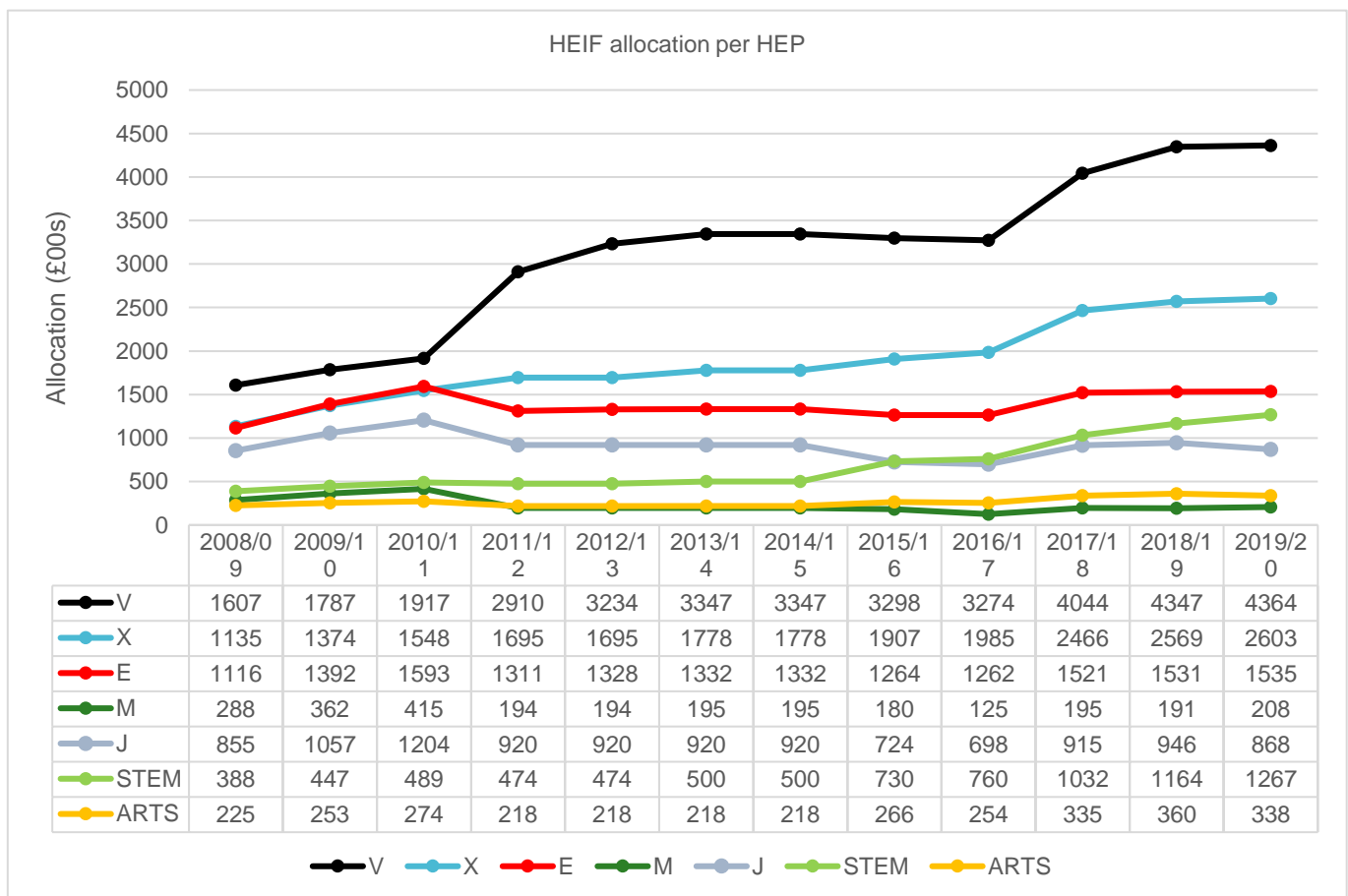


Figure 3: HEIF allocation per HEP (2008-2020)

4.3 Data collection

The evaluation consisted of case studies developed using both primary and secondary data. Primary data were gathered through semi-structured interviews, while secondary data included AMS, KE strategies, and accountability statements provided by RE. The data collection period spanned from May 2023 to June 2024.

During this period, semi-structured interviews were conducted with 18 English HEPs and three Welsh HEIs. The interviews followed a topic guide based on the HEIF PT and evaluation questions, ensuring consistency and reducing bias. This guide was shared with interviewees in advance to standardise the process. Its structured nature helped to minimise interviewer bias by ensuring that all participants were asked the same core questions. While the guide provided a framework for covering all key areas systematically, it also allowed flexibility to explore emergent themes, facilitating the collection of comparable data across institutions and contributing to the robustness of the findings.

In addition to primary data collection, secondary data sources made available by RE were used to corroborate and validate the assertions of interviewees. These sources helped build case studies that offered an objective appraisal of HEIF's contribution to social and economic impacts over the evaluation period. This secondary data included detailed information from AMS, KE strategies, and accountability statements, which were integrated into the case studies to provide a comprehensive view of HEIF's effects.

4.3.1 Primary data collection

1. **Interviews with senior HEP leadership and KE staff:** Interviews were conducted with four to six members of staff from each case study HEP. The interviews covered various topics, including the institutional, societal, and economic benefits associated with HEIF and the contextual factors that influenced its impact. Staff members who were interviewed within each HEP included:

- **The Pro-Vice-Chancellor with the remit for KE or the Vice-Chancellor**
Responsible for the overall strategic direction of KE at the institution and representing the HEP in high-level discussions and collaborations.
- **A staff member who oversees KE activities within the HEP, such as the Head of the KE Office or equivalent**
Responsible for managing KE initiatives, facilitating partnerships, and ensuring the effective use of HEIF funding to support KE goals.
- **A staff member involved with the HEP's KE budget spending**
Tasked with monitoring financial allocations and expenditures related to KE activities, ensuring alignment with institutional objectives and funding guidelines.
- **A Head of Faculty involved in the delivery of KE activities, who is typically an academic staff member**
Oversees the integration of KE into academic programmes and research, coordinating efforts to engage academic staff and students in KE initiatives, such as contract research and outreach activities.

2. **Evaluation workshops:** Staff members from case study HEPs with oversight of KE activities, such as the Head of the KE Office or an equivalent role participated in an evaluation workshop. During the workshop, the group discussed the key drivers of impact associated with HEIF and explored commonalities and differences between different case study HEPs and the contexts in which they were situated, using realist evaluation methods (see below).

4.3.2 Secondary data collection

HE-BCI data provided year-on-year quantitative information on the interactions and collaborations between HEPs and external stakeholders, documenting different types of business collaboration and levels of income generated from these collaborations. This includes metrics on:

- **Collaborative research:** e.g. research projects with at least one public body and an external non-academic collaborator, where contributions may be cash or in-kind, such as staff time, equipment, or data, as specified in the collaboration agreement.

- **Contract research:** e.g. research designed to meet the specific needs of external partners, excluding public funding and basic research council grants, with income categorised into SMEs, other commercial businesses, and non-commercial organisations.
- **Business and community services:** e.g. income from consultancy services requiring high intellectual input, the use of academic resources by external parties, and revenue from Continuing Professional Development (CPD) and Continuing Education (CE) courses, analysed by the type of business or organisation.
- **Regeneration and development programmes:** e.g. funding for projects with economic, physical, or social impacts, sourced from European funds, UK government funds, and local or regional bodies.
- **Intellectual property (IP):** e.g. disclosures, patent applications, and granted patents, with detailed analysis of active and live patents, external patents, and licensing activities, as well as IP income from various sources.
- **Spin-off activity:** e.g. companies established to exploit intellectual property from a HEP, including those with HEP ownership, formal spin-offs, staff start-ups, student start-ups, and social enterprises, with detailed analysis of activity, employment, turnover, and investment.
- **Social, community, and cultural engagement:** e.g. public events, such as lectures, performances, exhibitions, and museum education, measuring impact through attendee numbers and academic staff time, regardless of whether the events are funded by the HEP.

HEIF annual monitoring statements (AMS) provided an overview of the activities, achievements, and outcomes of HEIF-funded projects and initiatives, to verify that the funding has been used in support of eligible KE activities. Qualitative narratives detail how HEPs used their allocation to further their strategic KE objectives and highlight any achievements or progress since previous submissions. Any significant changes to strategic objectives are noted in the AMS to inform continuing assurance and accountability for the use of HEIF. HEPs also estimated the proportion of funding allocated to different types of KE expenditure across predetermined infrastructure categories and confirm whether any previously approved underspend has been resolved. To ensure accurate coverage of the evaluation period from 2008 to 2020, two statements per case study HEP were reviewed as part of the evaluation: the AMS for the academic year 2016/17 and that for 2019/20. AMS data was not available before 2016.

HEIF/ KE strategies and accountability statements outlined the strategic vision and objectives of HEPs regarding KE, innovation, and collaboration with external stakeholders. While timely submission of KE strategies is a condition for HEIF eligibility, these documents do not exclusively delineate HEIF spending. Initially, the format of KE strategies included a specific plan detailing how HEIF funds would be used in conjunction with other funded activities, providing important context for their allocation. These strategies served as a roadmap for institutions to enhance their KE activities, forge partnerships, and drive economic and societal impact. To ensure comprehensive coverage across the entire evaluation period, three KE strategies were reviewed for each case study HEP: the first covering 2008-2011, the second spanning 2011-2015, and the final one from 2016-2020.

By integrating insights from HE-BCI data, HEIF AMS, and KE strategies, it was possible to triangulate findings, validate information across different sources, and develop a comprehensive understanding of the impact and effectiveness of HEIF during the period 2008-2020.

4.4 Data analysis

A range of data analysis techniques were used to triangulate primary and secondary data to test and evidence causal pathways in the PT. This included thematic analysis of interview transcripts and secondary data to identify key patterns and insights, descriptive analysis of HE-BCI returns, cluster analysis to explore differences and commonalities between various KE clusters, and contribution analysis to assess HEIF's overall contribution to observed outcomes and impacts. Together, these methods provided a robust and comprehensive understanding of HEIF's effectiveness and the mechanisms driving its success.

4.4.1 Contribution analysis

Contribution analysis is a theory-based evaluation method that recognises that effects are produced by several causes at the same time, none of which might be necessary or sufficient to deliver impact. In the case of HEIF, this form of analysis helped to identify and understand the specific contributions of HEIF investments to the overall impact, distinguishing them from other concurrent factors (e.g., other KE funding sources, institutional support, external partnerships). Based on the strength and availability of evidence collected from case study HEPs, priority outcomes and pathways were identified, against which HEIF can demonstrate contribution. To do so, schematics were developed that summarised evidence from each cluster against each of the benefit statements in the priority pathways in the PT, and assumptions/mechanisms between each one.

These schematics were presented to the HEIF evaluation TRP in contribution analysis workshops, to interrogate the validity of the narrative. Based on the strength of contribution from the narrative for each pathway, it was decided whether:

- There is a valid narrative to show HEIF contribution to the observed change.
- The narrative is weak in some areas and it is not possible to gather additional evidence or meaning. Uncertainties in the narrative remain and must be tolerated to assume there is some validity.
- More information is needed to increase confidence in the findings.

The figure below shows an example of how contribution analysis is presented in the report.

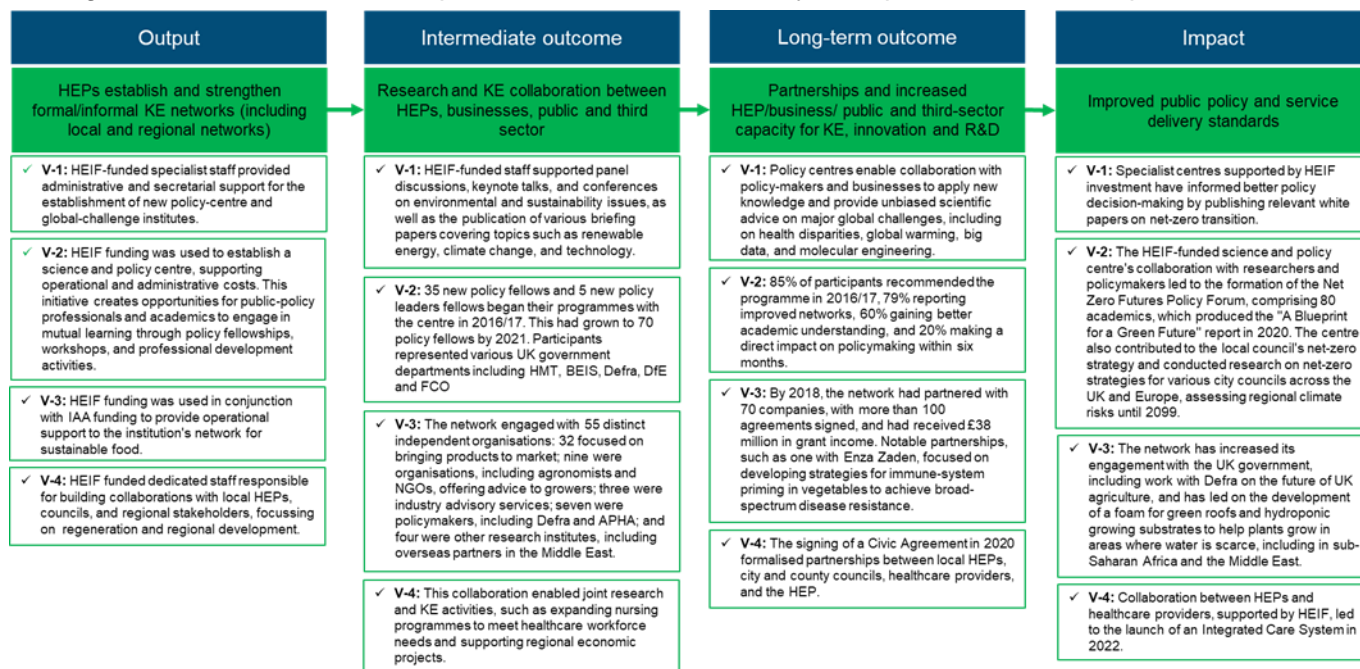


Figure 4: Cluster V Impact Analysis (Research 1) – Exemplar

4.4.2 Realist evaluation methods

Realist methods considered how HEIF delivered its intended impacts, examining "what works, for whom, under what circumstances and how?". The evaluation applied realist methodology by testing and refining hypotheses using combinations of context, mechanism, and outcome (CMO), to uncover how HEIF operated in different contexts, in an evaluation workshop attended by staff members with oversight of KE activities from each HEP. This workshop isolated and evaluated other aspects of a HEP's context

(particularly “place”) and explored whether cluster placement was sufficient to lead to trends of the same behaviour, or whether other contextual factors were more important in determining how HEIF was used to deliver on government priorities and contribute to the outcomes defined in the PT.

This approach is particularly suited for case studies measuring results and behavioural change across different contexts, offering valuable insights for lesson learning and adaptive project delivery. The realist evaluation method involves identifying, articulating, testing, and refining hypotheses about specific CMO combinations. Instead of merely assessing whether programmes worked, this approach analyses whether the hypothesised CMO theories are validated. Evaluators used realist methods as part of its ‘deep dive’ case studies for selected HEIF HEPs, examining different CMO combinations in varied operating environments. This context-specific analysis provided an additional layer of evidence, enhancing the understanding of how HEIF operates across different settings and contributes to the defined outcomes.

4.5 Data limitations

The following outlines the limitations encountered during the evaluation, with a focus on both secondary and primary data sources. To mitigate reliance on any single data source, a comprehensive approach was employed, including triangulation with additional data. This approach integrated HE-BCI data, AMS statements, KE strategies, and both core and follow-up interview questions to ensure a more robust and balanced analysis.

4.5.1 Primary data

- **Interviewees were motivated to produce a positive impression of their KE activities and to highlight examples of success rather than failure.** To mitigate against this self-reporting bias participating HEPs and interviewees were assured of their anonymity and that their outputs were not being captured to judge the quality of their institution. Moreover, evaluators used consistent interview questions for each key role interviewed with the aim of facilitating a discussion that highlighted pathways to impact and success, and which reflected on the importance of risk-taking and experimentation which make HEIF a distinctive funding mechanism. Follow-up questions were used to clarify subjective statements, for example, when vague language was used to define attribution and contribution of HEIF to activities and outcomes.
- **On some occasions, recency bias led interviewees to focus on more recent experiences of HEIF being used,** potentially skewing evaluation data. This was often the result of staff having only been in-post for a short time within the evaluation period. To mitigate against this, the evaluators emphasised in written communication and in interviews that examples provided should be relevant to the timeframe of the evaluation. In some cases, this meant that interviewees spoke with former KE-relevant post-holders to capture examples from earlier in the evaluation period and provided evidence in writing, including other collateral pertaining to HEIF investments in the period during which they may not have been in-post.

4.5.2 Secondary data

- **AMS returns and KE strategies contained varied levels of detail and quality, which created challenges in comparing and synthesising information.** The inconsistency in data standards and detail made it difficult to ensure comparability across sources. To address this issue, interviewees were asked to provide additional information where secondary sources were lacking.
- **Self-reporting bias introduced potential distortions and inaccuracies,** as institutions may have overstated achievements or under-reported challenges. Caution was exercised when interpreting and comparing data, considering varying standards, levels of evidence, and potential biases. Where relevant, interviewees were asked to provide greater detail about claims made in secondary sources.
- **The data indicated that the quality of evidence in AMS returns for 2019/20 appeared stronger compared to 2016/17.** However, the lack of a consistent reporting template between these periods made it challenging to measure changes over time. This variation could be due to improvements in KE quality, enhanced reporting mechanisms, or the introduction of RE's revised reporting template. To mitigate this limitation, efforts were made to standardise the comparison as much as possible by cross-referencing with additional data sources and seeking clarification from interviewees to ensure a comprehensive understanding of the changes.
- **Data from the annual HE-BCI survey served as a proxy for KE impact during the evaluation period 2008-2020.** This followed a precedent set by successive evaluations led by Tomas Coates Ulrichsen in 2008 and 2016. As articulated by Coates Ulrichsen, this proxy relies on the presumption that external collaborators in the private, public, and third sectors would only be willing to invest in KE with HEPs if they believe that the benefits derived from their investments exceeded the associated costs, making KE income a reasonable lower estimate of the actual impacts

achieved.¹⁶ Unlike other self-reported metrics, the income metrics used in HEIF can be verified against HEP accounts, and samples are subject to audit. Although guidance is provided for reporting, there may still be variations in returns depending on how the guidance is interpreted and its clarity in determining the appropriate classification of data. For example, one HEP's interpretation of contract research income might differ from another.

¹⁶ Coates Ulrichsen, T. (2020). *Assessing the Gross Additional Impacts of the Higher Education Innovation Fund (HEIF): An update for the period 2015/16 – 2018/19*. A technical note for Research England. Retrieved from: <https://www.ukri.org/wp-content/uploads/2020/10/UKRI-061020-HEIF-Additional-Impacts-Coates-Ulrichsen.pdf>; (2016) *Allocating HEIF: The Suitability of Knowledge Exchange Income as a Proxy for Outcome Performance*. Opinion Piece, Centre for Science, Technology and Innovation Policy, University of Cambridge. Retrieved from: https://www.ifm.eng.cam.ac.uk/uploads/UCI/knowledgehub/documents/2016_Ulrichsen_Allocating_HEIF.pdf

5 KE cluster analysis

This section includes a summary contribution analysis based on the case study sample from across all KE clusters. Insights were aggregated from these HEPs using secondary and primary data detailed in section 4.3. It also includes a summary of findings related to HEIF's effectiveness in driving key outcomes and impacts, both monetisable and non-monetisable. Full cluster analysis can be found in

Annex 1: cluster analysis.

5.1 Background

To provide context to the cluster analysis it is important to further assess the differences within KE clusters, introduced in 4.2, to provide a sense of scale of impacts, and to highlight how distinct institutional characteristics, KE capacities, and regional contexts shaped the outcomes of HEIF-funded activities. Understanding these differences is essential for measuring HEIF’s varied impacts across the HE landscape. To demonstrate differences between clusters, two figures are presented below.

Figure 5 shows how cluster V institutions outperformed other clusters in terms of KE income generation between 2008-2020. As cluster analysis demonstrated, this performance was due to their research-intensive focus, large-scale industry partnerships, and involvement in high value, applied research projects, which enabled cluster V HEPs to secure substantial funding through collaborative and contract research. Simultaneously, average annual growth rates in KE income demonstrated important progress for clusters beyond V. STEM saw the highest levels of income growth (9 percent), while cluster V (4.5 percent) and cluster X (2.6 percent) also experienced solid growth. cluster M (2 percent) and ARTS cluster (1.7 percent) had modest growth, reflecting steady but slower progress; however, cluster E (-0.1 percent) and cluster J (-2 percent) saw negative growth.

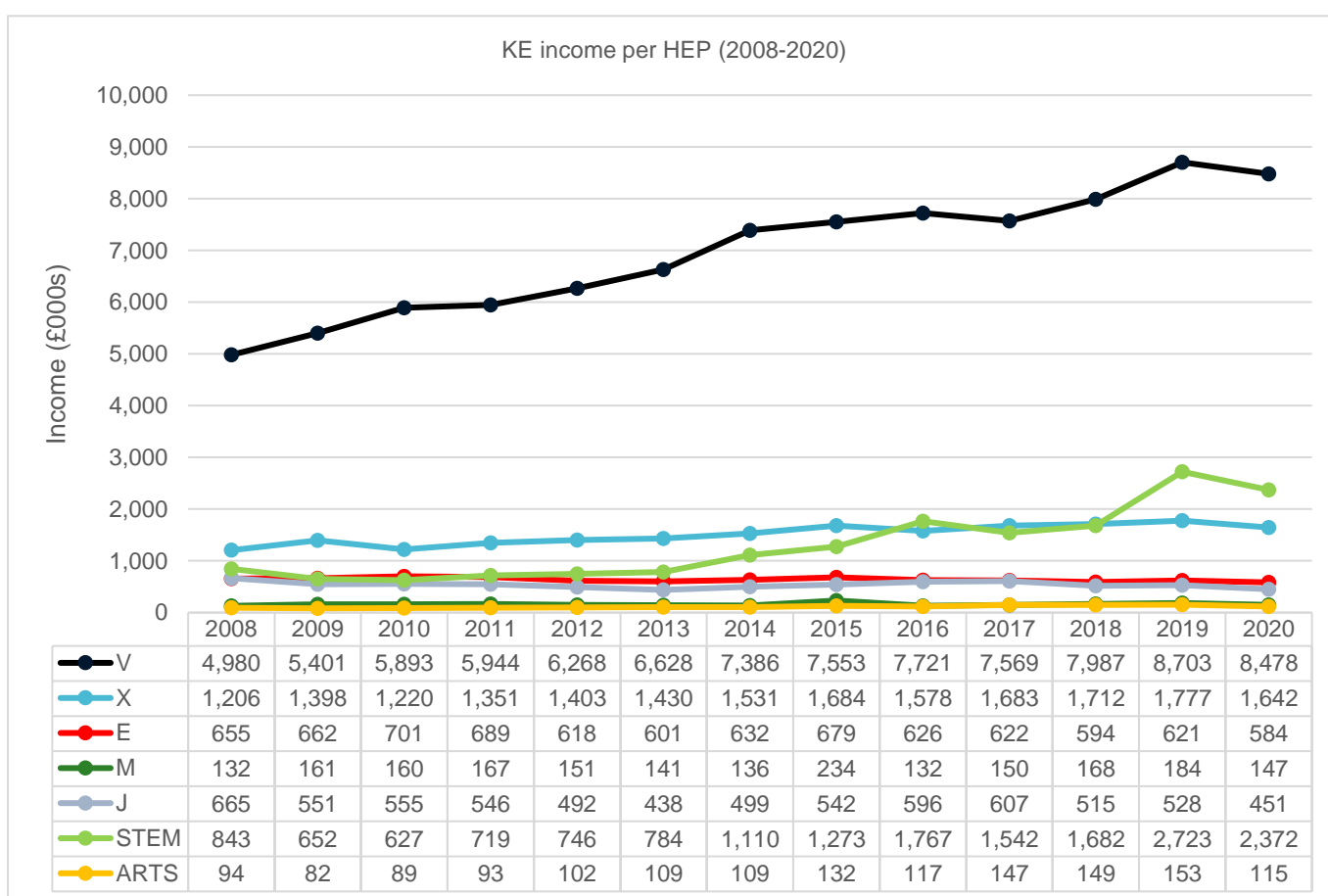


Figure 5: KE income per HEP (2008-2020)

With regard to income composition, Figure 6 illustrates the differences in levels of core KE income generated by different clusters, in-line with HE-BCI categories. This is significant when evaluating the impact of HEIF, as the variations in income composition between clusters reflect the distinct objectives, and specialisations of the HEPs within each cluster.

For clusters including V, X, and STEM, the strong emphasis on collaborative research and contract research indicated a focus on large-scale industry partnerships, applied research, and innovation with external stakeholders. These clusters likely had the infrastructure and partnerships necessary to support complex, high-value projects, and HEIF funding is therefore used to enhance and expand these activities.

The capacity to attract substantial income from these sources suggested that HEIF played a clear role in supporting high-impact KE activities that align with national innovation and productivity goals, contributing directly to economic growth and technological advancement.

By contrast, clusters including J, M, and ARTS relied more heavily on CPD and CE contracts, which indicated a more service-oriented application of HEIF, where the emphasis is on strengthening regional capacity and addressing immediate skills gaps. These clusters were less reliant on collaborative and contract research income which highlighted their role in supporting local economic growth through workforce upskilling.

Cluster E represents a hybrid model in which CPD and CE contracts remained the predominant income source, although a significant proportion of revenue is also generated from collaborative and contract research. This balanced approach reflects the diverse mission of institutions within this cluster, which are actively engaged in both regional capacity-building efforts and research-driven KE. By integrating skills development with research activities, cluster E institutions contributed to a dual agenda: advancing local economic priorities while maintaining involvement in traditional KE activities that support long-term innovation.

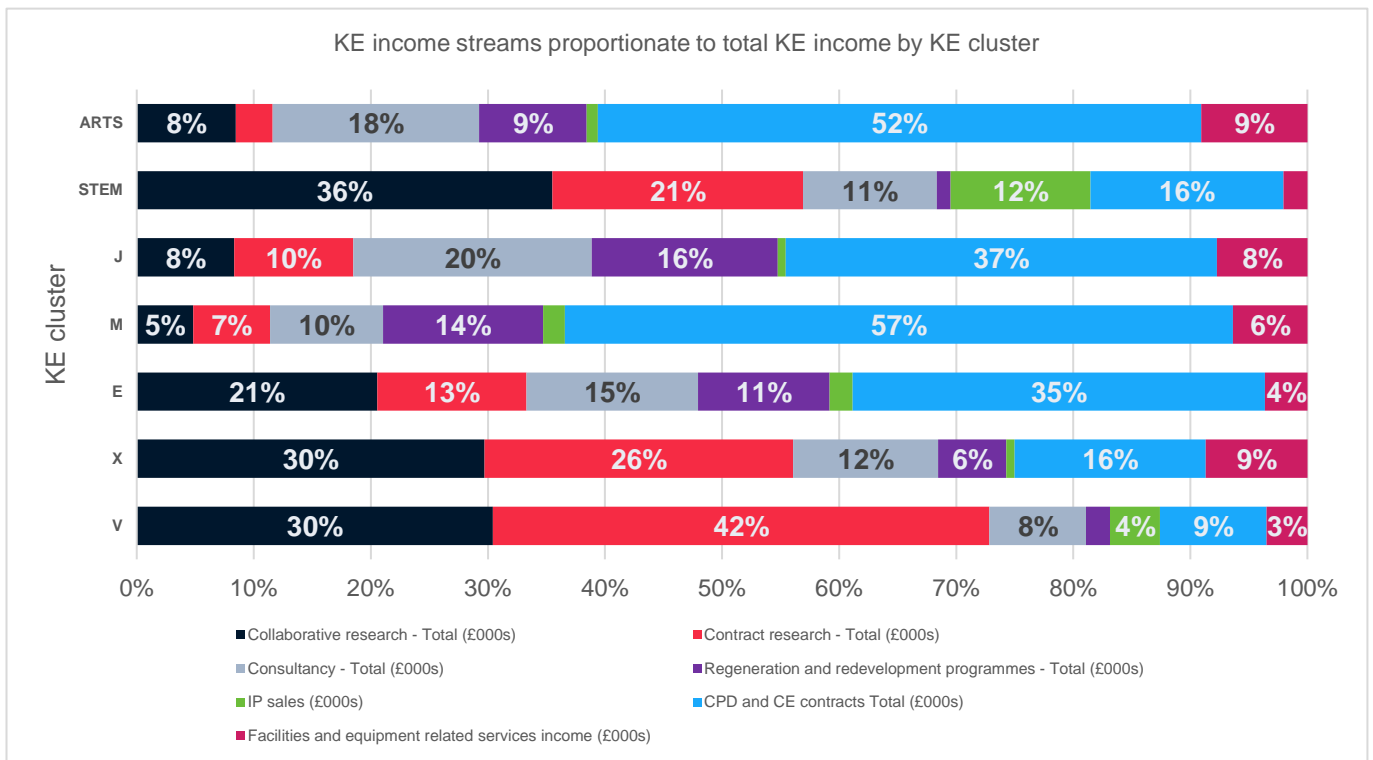


Figure 6: KE income streams proportionate to total KE income by KE cluster

5.2 Summary

The following summarises the analysis of the validity of PT pathways, informed by the cluster analysis (found in full in

Annex 1: cluster analysis). It evaluates how effectively these narratives illustrate the impact of the HEIF on KE and innovation while assessing their alignment with government priorities.

Additionally, the section identifies limitations and gaps in the existing evidence, particularly regarding the depth of data supporting some pathways. By highlighting areas where evidence may be insufficient or lacking, it provides stakeholders with a clearer understanding of the strengths and weaknesses of the PT pathways.

This summary highlights how HEIF supports, partially supports, or challenges the programme theory pathways: research, people, and infrastructure, providing a clear view of HEIF's impact and contribution.

The analysis is designed to consolidate pathways where there is strong evidence across multiple HEPs that either supports, partially supports, or challenges the programme theory. To distinguish between the strength of this evidence, a simple code is used:

- ✓ Indicates evidence that supports the programme theory pathway.
- ? Indicates evidence that partially supports the programme theory pathway.
- ✗ Indicates evidence that challenges the programme theory pathway.

Each pathway within the cluster analysis in

Annex 1: cluster analysis, and in the summary provided in this section, is made of three elements: a **contribution narrative**, a **schematic diagram** and **supporting evidence** which demonstrate HEIF's contribution towards the impacts set out in the programme theory:

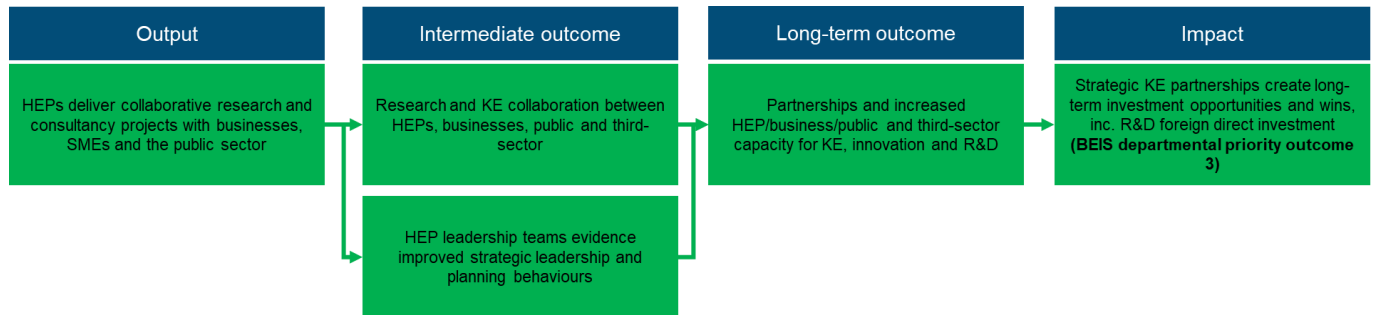
1. The **contribution narrative** summarises how HEIF achieved the impact outlined as a hypothesis in the programme theory. It provides a realistic and plausible route from output to impact level based on available evidence to demonstrate how HEIF works.
2. An accompanying **schematic diagram** sets out the causal pathway being investigated, using the benefit statements set out in the programme theory (see 2.2.1) to provide a step-by-step visualisation of hypothesised pathways to impact. The evidence supporting, partially supporting, or challenging the programme theory pathway is highlighted under each benefit statement, providing an aggregate view of the narrative.
3. **Supporting evidence** under each schematic provides examples from primary and secondary data to support the contribution narrative and details per schematic.

5.2.1 Research pathway

The following synthesises insights from separate contribution narratives to show how HEIF generated impact by funding the internal core KE capabilities to build collaborations and networks with other HEPs, businesses, public sector and third-sector bodies and organisations. This includes funding to support business development, partnership development, consultancy support, communications, employer engagement and fundraising. The text in the schematics summarises the extent to which HEIF contributed to government priorities outlined in the PT, as well as core HEIF objectives. More detail can be found in individual cluster analysis in

Annex 1: cluster analysis.

- ✓ **HEIF significantly contributed to collaborative research and consultancy projects, driving long-term growth in KE income growth while enabling HEPs to undertake sustained projects that yielded both economic and non-monetisable benefits.**



Evidence from the cluster analysis in

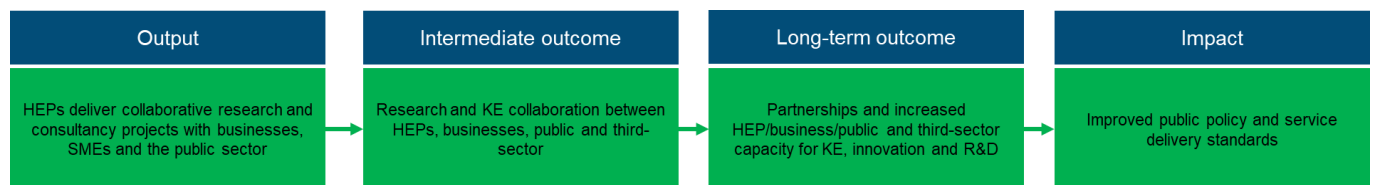
Annex 1: cluster analysis and contribution narrative showed that HEIF was a driver of long-term growth in KE income. The evaluation showed that HEIF supported collaborative research and consultancy projects by enabling HEPs to undertake sustained initiatives that delivered both economic and non-monetisable benefits. By providing strategic, long-term core KE funding, HEIF addressed market failures by enabling alliances between HEPs and businesses which provided resources for joint ventures and aligned efforts with regional and sectoral priorities.

HEIF funding also drove behaviour change among HEP senior leaders, who increasingly prioritised KE in their institutional strategies, viewing it as a function to achieve broader institutional goals. This shifted KE from being seen as a peripheral or ad hoc activity to becoming embedded in the strategic planning and decision-making processes at the highest levels of governance within case study HEPs.

Evidence from the contribution narratives in

Annex 1: cluster analysis showed how the stability of HEIF funding embedded KE within institutional frameworks, contributing to a substantial increase in KE income from £2.8 billion to £4.1 billion between 2008 and 2020. HEIF’s long-term support also facilitated the development of core internal KE capabilities by funding permanent KE staff who managed partnerships, coordinated complex projects, and secured additional funding to address societal challenges such as climate change and public health. This finding was consistent across every KE cluster, though the scale of this impact varied based on how effectively institutions leveraged HEIF to attract additional funding. Larger, research-intensive institutions were able to use HEIF as a foundation to secure substantial external investments, driving significant increases in KE income. Meanwhile, smaller institutions and more teaching-intensive institutions, although seeing more modest growth, utilised HEIF to unlock other regional and national funding streams, thereby enhancing their overall financial resilience and impact. Unlike alternative KE funding sources, HEIF enabled HEPs to sustain impactful collaborations and deliver substantial societal and economic outcomes.

✓ **HEIF funding supported HEPs in influencing public policy and achieving societal impact by facilitating partnerships with government agencies, think tanks, and public bodies.**



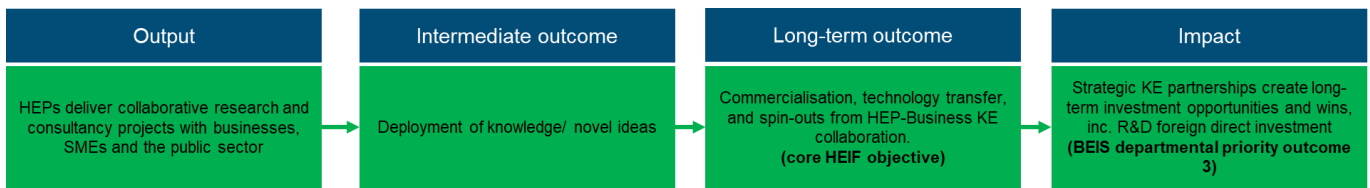
The analysis, included in

Annex 1: cluster analysis, showed that HEIF-funded activities significantly enhanced policy influence and evidence-based decision-making, specifically enabling cluster V, X and STEM institutions to establish strong KE networks and contribute research insights to public bodies. From 2008 to 2020, HEIF investment supported initiatives such as policy engagement centres, fellowship programmes, and research dissemination activities that informed public debates and shaped policy frameworks on complex issues, leading to more effective public services and societal outcomes.

These clusters leveraged HEIF to build long-term capacity for policy engagement, funding specialised staff and seeding impactful initiatives that strengthened partnerships with government and third-sector organisations. These activities facilitated the production of research briefings, policy papers, and collaborative workshops on key topics, such as sustainability, regional economic growth, and agricultural innovation. HEIF's flexibility allowed institutions to maintain these activities consistently, supporting strategic projects that aligned with national priorities and helping to integrate academic research into policy-making.

Unlike other project-specific funding sources, HEIF's rolling allocation enabled these institutions to invest in experimental approaches and respond quickly to urgent policy needs (including the COVID-19 pandemic). This stability allowed clusters to support high-impact, non-commercial activities with strong non-monetisable benefits, such as the development of net-zero strategies and local policy frameworks, that would have been difficult to sustain otherwise. As a result, HEIF supported HEPs in these clusters as contributors to national policy development and broader societal impact.

✓ **HEIF funding facilitated the delivery of high-impact KE projects by providing early-stage investment and proof-of-concept funds.**

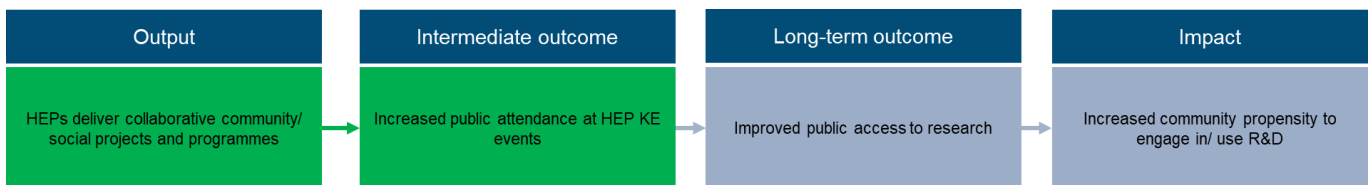


Contribution analysis showed that HEIF helped to drive commercialisation processes across various clusters, notably clusters V and X, as well as clusters E and J. In clusters V and X, HEIF funding addressed market failures and lowered barriers to collaboration between HEPs and industry partners. By investing in dedicated internal core KE capabilities, HEIF enabled institutions to establish stable platforms for translational research and technology transfer. This investment provided proof-of-concept support and allowed institutions to validate their innovative ideas before pursuing further investment. This stage is important in attracting external funding, as it demonstrated the feasibility and market potential of research outcomes, leading to numerous high-impact collaborations in emerging areas such as artificial intelligence and sustainability. Institutions in these clusters successfully leveraged HEIF funding to secure substantial additional investment, resulting in groundbreaking projects that generated new jobs and further R&D investment in their local regions.

Conversely, clusters E and J benefited from HEIF investments that bolstered internal KE capabilities which enabled institutions to engage more effectively with local businesses, SMEs, and the public sector. Institutions within clusters E and J utilised HEIF funding to establish dedicated roles focused on building relationships with local SMEs, resulting in tailored support that addressed specific business needs. In some cases, it was also used as proof-of-concept funding. This investment translated research into commercially viable propositions which enhanced the capacity for collaborative projects.

While the scale of impact within clusters E and J was not comparable to clusters V and X, HEIF was the underpinning element which maintained HEPs’ capacity for commercialisation by providing core funding to support these dedicated KE roles.

? **Limited evidence suggested HEIF contributed to substantial public engagement with research conducted by HEPs, and did not result in an increased community propensity to engage with R&D.**



The cluster analysis included in

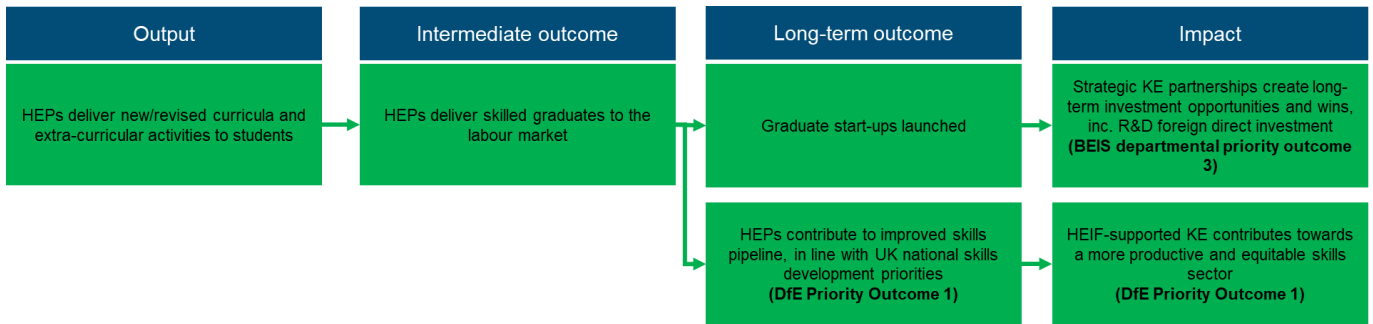
Annex 1: cluster analysis showed that while some HEIF-funded initiatives aimed to improve the visibility and accessibility of research outputs, this was a lower strategic priority for case study HEPs compared to other pathways. This aligns with HEIF's strategic focus since 2016 on business and economic growth, and the evidence suggested that HEPs adhered to the guidance set by RE in line with DSIT priorities. For example, many HEPs hosted community workshops and public lectures to disseminate research and engage local audiences, as well as specific research festivals to disseminate and communicate new knowledge. However, there was not enough evidence to demonstrate a comprehensive contribution narrative linking HEIF investments to increased community propensity to engage in/ use R&D. Though analysis did not find evidence to contradict this PT pathway, there was not adequate evidence based on available case studies to validate this pathway.

5.2.2 People pathway

The following synthesises insights from separate contribution narratives, included in full in

Annex 1: cluster analysis, to demonstrate how HEIF generated impact by funding the development of KE skills and capacity among all participants, both internal and external to HEPs. This included funding to support student, staff, and local training, student work placements, and student mentoring at HEPs. The text in the schematics summarises the extent to which HEIF contributed to government priorities outlined in the PT, as well as core HEIF objectives. More detail can be found in individual cluster analyses.

✓ **HEIF investment in student entrepreneurship programmes played a key role in developing entrepreneurial skills and facilitating the creation of new student-led businesses.**

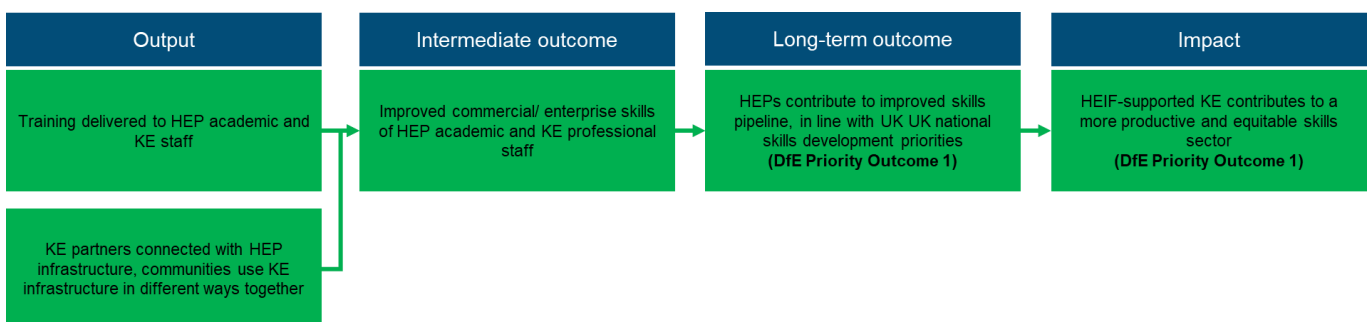


The full cluster analysis showed strong, consistent evidence of this pathway across each KE cluster, with clear evidence linking HEIF inputs to government priority outcomes. Based on evidence provided by HEPs, this pathway gained momentum after 2016, particularly with the publication of the government’s Industrial Strategy and new AMS reporting guidelines around student benefits. This focus led to a surge in entrepreneurial initiatives, including the establishment of incubators, mentorship schemes, and funding opportunities specifically designed for students. As a result, many institutions reported a significant increase in the number of student-led start-ups, improved entrepreneurial competencies among students, and stronger partnerships with local businesses, thereby contributing to regional economic growth and innovation.

Within clusters V, X, and ARTS, this investment resulted in successful start-ups that attracted external funding, created jobs, and contributed to local economies. Evidence showed HEPs achieved financial milestones such as securing venture capital, winning grants, and expanding their market presence. To a lesser extent, clusters E and J also produced notable start-ups. However, in many cases in these clusters, HEIF investment embedded students as agents of KE within existing businesses on placements and as consultants, and supported collaborations between HEPs and local enterprises. As a result, while the scale of start-up creation may not have matched that of clusters V, X, and ARTS, the impact on local economies in E and J was still significant and drove regional growth by addressing skills gaps in local areas.

These programmes collectively contributed to increased start-up creation and strengthened entrepreneurial capacity, contributing to a more dynamic local start-up ecosystem. The resulting new businesses led to job creation, economic diversification, and a culture of innovation, aligning with HEIF’s wider goals of driving regional economic impact. This contributed to a surge in external investment, which increased from £73 million in 2008 to over £400 million in 2020, and job creation, with the number of employees in these start-ups growing from 6,300 to 36,000.

✓ **HEIF contributed to skills development for SMEs by effectively addressing regional and sectoral needs through targeted support that filled skills gaps and promoted collaborations between academia and industry.**



The PT is designed to show how different outputs delivered through HEIF combine to contribute to long-term impacts. The above example is a good illustration of the synergies between the multiple functions of HEIF, namely combining staff training and access to infrastructure. In clusters E and J, as well as in cluster X, robust examples of how HEIF funding facilitated tailored training programmes that directly addressed the unique needs of local businesses emerged.

Evidence, shared in full in

Annex 1: cluster analysis, showed that HEIF enabled HEPs to provide flexible funding for bespoke training programmes, including KTPs which were tailored to the specific needs of SMEs. This adaptability allowed HEPs to strategically allocate resources to high-impact projects thereby ensuring SMEs received relevant training to enhance their capabilities and competitiveness. HEIF supported various training modalities, such as workshops and hands-on courses, while also facilitating partnerships that bridged the gap between research and practical application. By financing these initiatives, HEIF contributed to technological advancements and commercialisation pathways, delivering tangible benefits to both academia and businesses, while driving long-term, sustainable growth. Overall, the capacity-building efforts enabled by HEIF strengthened local economies and reinforced the role of HEPs as key players in regional development.

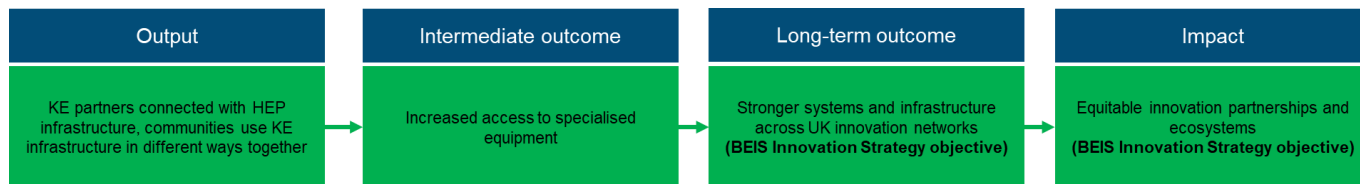
5.2.3 Infrastructure pathway

The following synthesises insights from separate contribution narratives, as seen in

Annex 1: cluster analysis, to demonstrate how Impacts originating from access to KE infrastructure, which is facilitated by core internal KE capability funded by HEIF. This included funding to support the maintenance of science parks, incubators, as well as specialist equipment and facilities. The text in the schematics summarises the extent to which HEIF has contributed to various government priorities outlined in the PT, as well as core HEIF objectives. More detail can be found in individual cluster analyses in

Annex 1: cluster analysis.

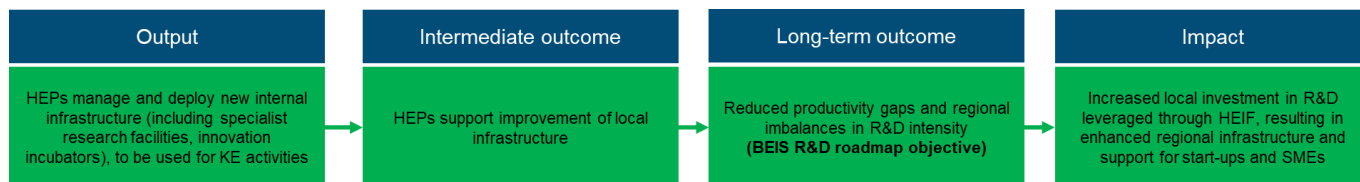
- ✓ **HEIF broadened access to high-quality research tools and infrastructure by funding the management of specialist and costly equipment within HEPs. This support contributed to an increase in facilities-related equipment services income from SMEs, rising from £373 million to £643 million.**



Cluster analysis showed that HEIF covered operational costs which ensured that advanced facilities and specialist equipment remained accessible to industry partners that could not afford the cost of purchasing said equipment. This pathway was particularly strong within more research-intensive institutions represented by clusters E, J and X. Through initiatives including KTPs, HEIF-funded facilities enabled collaborative projects that bridged academia and industry. For example, in cluster X, HEIF-funded staff supported the launch of innovation hubs (e.g., incubators and accelerators), while cluster E enabled SMEs to access specialised equipment for product development (e.g., a digital twin project for furniture manufacturing and metrology tools for industrial partners).

Overall, the contribution narratives provided compelling evidence linking HEIF to enhanced equitable access to research tools, significantly reducing disparities in capabilities among institutions. This facilitated the development of an inclusive innovation ecosystem that actively encouraged collaboration among diverse stakeholders, including start-ups, SMEs, and large corporates.

- ✓ **HEIF was used to leverage significant forms of capital investment to improve regional infrastructure by funding internal KE staff responsible for facilitating access to specialised equipment, managing KE activities, and building collaborations between academia and local businesses, thereby enhancing innovation and driving economic growth.**



Although it was not possible to definitively attribute an increase in total gross expenditure on R&D to HEIF investment, clear contributing factors emerged through local R&D investment being leveraged and regional infrastructure being enhanced across clusters E, J, X, and V. HEIF funding developed KE capabilities which generated local engagement with R&D activities and innovation which particularly benefited start-ups and SMEs with improved access to resources.

While HEIF did not directly fund infrastructure, it leveraged capital investment and attracted external funding (specifically ERDF) for advanced facilities and equipment, enhancing institutional R&D capabilities and driving innovation. HEIF funded staff helped secure this original investment, through business and partnership development, and provided the core staffing to support new infrastructure development. Evidence showed that case studies in cluster E and J were particularly reliant on this model. In cluster E evidence showed how ERDF was used support to establish a new health technology centre, which helped local SMEs improve their capacity in eHealth. Similarly, cluster J used HEIF to leverage ERDF funding to develop clean air and carbon reduction projects, building long-term R&D collaborations with SMEs.

Among clusters X and V, HEIF underpinned specialist incubators and innovation centres that facilitated collaboration between academia and industry, enabling businesses to access cutting-edge research, facilities, and expertise. Many businesses incubated within HEPs subsequently established operations nearby, creating a vibrant ecosystem that supported local economic growth. These initiatives, including a Bio-Economic accelerator in cluster X and the Cyber Innovation Centre in cluster V, attracted further investment, bolstered local job creation, and strengthened the region's overall innovation capacity.

This framework engendered a virtuous cycle of innovation that benefitted diverse stakeholders, including academics, students, and business partners, while aligning with government priorities to reduce productivity gaps and address regional imbalances in R&D productivity. By cultivating an inclusive environment that encourages collaboration among various entities, evaluation evidence showed that HEIF funding enhanced the overall effectiveness of R&D efforts across the UK.

6 Counterfactual analysis

This counterfactual case study explored the hypothetical impact of withdrawing or reducing HEIF support available to English HEPs. By examining how the withdrawal of Innovation and Engagement Fund (IEF), administered by the Higher Education Funding Council of Wales (HEFCW), impacted case study Welsh HEIs between 2008-2020, this study assesses the potential effects of discontinuing dedicated KE research and innovation funding on English HEPs. Full counterfactual analysis can be found in Annex 2: counterfactual analysis.

The IEF in Wales, similar to HEIF in England, was a government-funded initiative aimed at cultivating innovation and collaboration between HEIs and business, public sector and third-sector clients. It should be noted that unlike HEIF, IEF included capital funding. IEF replaced the “Third Mission” (3M) fund in 2010, with funding increasing from £5.2 million in 2008 to £7.1 million in 2011 before being discontinued in 2014. In 2019, the Research Wales Innovation Fund (RWIF) was established by HEFCW to promote KE, collaboration, and support for student enterprise, with funded institutions developing three-year strategies to contribute to social and economic prosperity in Wales, subject to annual monitoring and updates. The first £7.5 million of this funding was allocated in April 2020 through the one-off Innovation Capacity Development Fund (ICDF), and then from 2020/2021 allocations were made via the agreed RWIF funding model.

While recognising its limitations, including place-based factors, political factors, and alternative funding sources, the counterfactual case study showed how dedicated innovation funding influences the impact of KE activities. To investigate how the withdrawal of the IEF impacted KE in case study Welsh HEIs, semi-structured interviews were conducted with individuals responsible for KE offices at three case study Welsh HEIs. According to interviewees, the withdrawal of the IEF effected the innovation agenda at each institution, leading to significant shifts in their KE capacity, levels of KE income, and organisational cultures that empower KE impact.

In addition to qualitative data collection and analysis, data from the annual HE-BCI was analysed to estimate the societal and economic impacts of withdrawing the IEF. Using core KE income metrics captured in HE-BCI as a proxy indicator, descriptive statistical analysis was employed to evaluate the impact of withdrawing IEF on levels of income growth generated from collaborative research, contract research, consultancy, facilities and equipment-related services, CPD and CE, regeneration and development programmes, and intellectual property (including the sale of shares).

6.1 Background

The aim of this counterfactual case study was to explore the hypothetical impact of withdrawing or reducing the amount of HEIF available to English HEPs. In the absence of a representative control group of English HEIs who did not receive HEIF in the period 2008-2020, undertaking a counterfactual analysis part of the evaluation was instrumental in assessing the contribution that HEIF made to certain societal and economic impacts illustrated in the PT. Moreover, the period between the discontinuation of the IEF and the introduction of RWIF represented an ideal counterfactual scenario: a period during which Welsh HEIs were without dedicated and consistent KE funding and left to rely on other sources of KE funding.

By contrasting the English and Welsh experience of KE between 2008-2020, this study determines the extent to which the withdrawal of, or reduction in, dedicated research and innovation funding could have affected English HEPs. While this approach is not without its limitations, such as place-based factors influencing KE activities and the availability of other funding sources, it constituted a fundamental element in assessing how HEIF funding contributed to KE outcomes and impacts at English HEPs.

The IEF in Wales was a government-funded initiative aimed at promoting innovation, KE, and collaboration between HEIs and external stakeholders, including industry and businesses. As shown in Figure 77, in 2010, IEF replaced the “Third Mission” fund (3M) as the primary KE funding mechanism in Wales which had previously funded HEPs between 2004-2010. After IEF was withdrawn in 2014, Welsh HEPs did not receive any HEFCW KE funding until the introduction of RWIF in 2019. The first £7.5 million of this funding was allocated in April 2020 through the one-off Innovation Capacity Development Fund (ICDF), and then from 2020/2021 allocations were made via the agreed RWIF funding model. As with HEIF in England, 3M, IEF, ICDF and RWIF provided financial resources to Welsh HEIs to enhance their ability to work with various partners, including industry, local communities, and the public sector to drive innovation, share knowledge, and contribute to the broader social and economic progress of Wales. Cumulative funding for

both 3M and IEF gradually increased from 2008 to 2013 before being discontinued in 2014. During the period under evaluation, initially started at £5 million in 2008 and remained around this level before rising to £7 million in 2011.

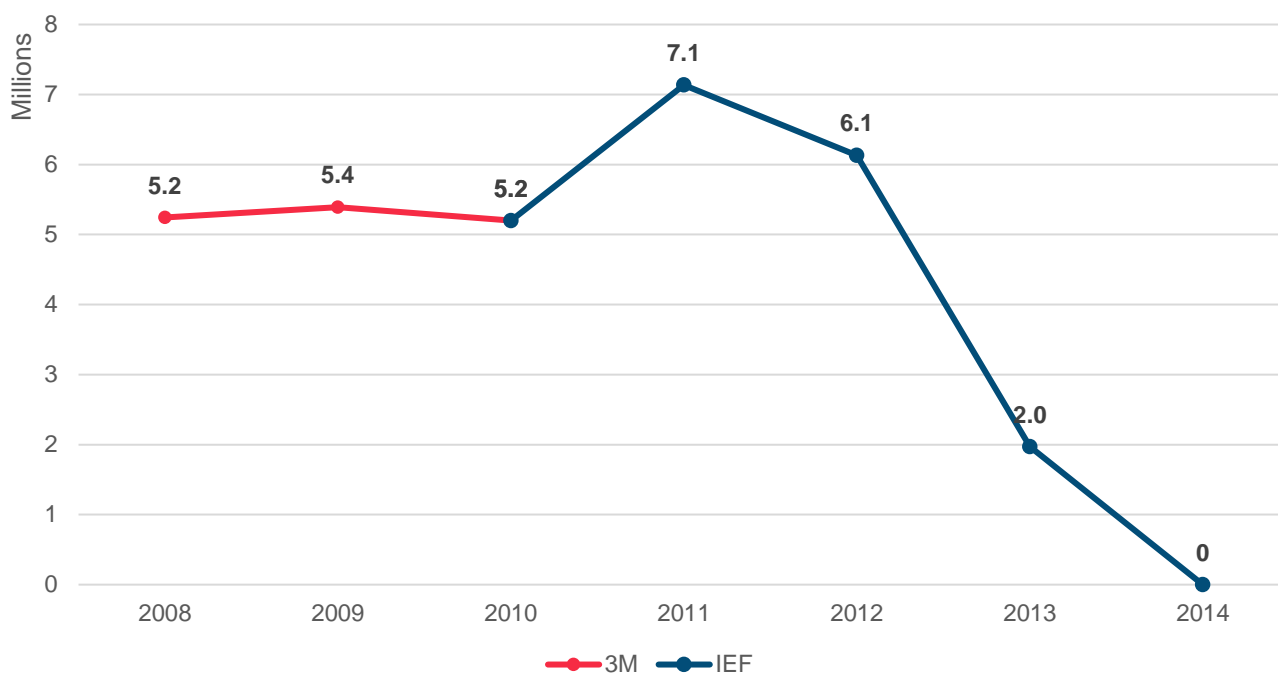


Figure 7: HEFCW KE funding 2008-2014

After funding for 3M and latterly IEF increased by 36 percent between 2008 and 2011, in 2014 IEF was withdrawn due to budget cuts, leaving a void for dedicated and continuous KE funding. Although ESIF and ERDF funding was still available to HEIs until 2020, this fund was more restrictive and was predominately aimed at funding project-based initiatives designed to support economic development and reduce regional disparities across the EU. The combined allocation of ESIF and ERDF funding for Wales between 2014-2020 €2.4 billion, or €780 per person, compared with €7.1 billion, or €130 per person in England; €940 million, or €180 per person in Scotland; and €510 million, or €280 per person in Northern Ireland. These funds were spread across projects aimed at promoting employment, enhancing innovation, improving education and skills, and increasing infrastructure development throughout the EU. Expenditure was allocated across different levels, including regional programmes targeting specific areas, national programmes benefiting the entire nation, and technical assistance for effective programme management.

Following Graeme Reid's *Review of Government Funded Research and Innovation in Wales* in 2017, HEFCW established the RWIF in 2019 to which provided annual funding to Welsh HEIs.¹⁷ Like HEIF and the IEF, the aim of RWIF was a dedicated KE funding mechanism aimed at promoting KE activities, collaborations between academia and industry, student enterprise, as well as contributing to civic engagement and public outreach goals. The funded institutions develop three-year strategies to focus on areas that contribute to social and economic prosperity in Wales. These strategies are subject to annual monitoring and updates to adapt to new challenges and opportunities. In addition to RWIF, HEFCW also supported various research, innovation, and engagement projects in Wales, including collaborations within Wales and UK-wide initiatives.

¹⁷ Reid, G. (2017). *Review of Government Funded Research and Innovation in Wales*. Retrieved from: <https://www.gov.wales/sites/default/files/publications/2019-04/review-of-government-funded-research-and-innovation-reid-review.pdf>

6.2 Summary

Analysis of quantitative and qualitative data sources found the withdrawal of IEF had a detrimental impact on the KE activities and financial sustainability of case study Welsh HEIs, resulting in a significant decline in their capacity for innovation, collaborative research income, and ability to empower transformative innovations. This highlighted the critical role of consistent and dedicated funding in shaping the success of KE initiatives in the HE sector. The following summarises key findings from the counterfactual analysis (found in full in Annex 2: counterfactual analysis):

- **The withdrawal of the IEF undermined the significance of KE within Welsh HEIs and negatively impacted the financial sustainability of Welsh KE functions.**

Before the introduction of the IEF, case study Welsh HEIs encountered challenges in prioritising KE alongside teaching and research due to limited funding options. The absence of dedicated innovation funding made it difficult to advocate for the significance of the “Third Mission” of HEIs. However, with the introduction of the IEF, it became easier to promote KE, which created a culture that acknowledged its importance alongside teaching and research. The lack of dedicated and consistent KE funding after the withdrawal of IEF also impacted the practical support that universities could offer to academics and external organisations, affecting the financial returns for these institutions. In the absence of dedicated funding, KE offices within Welsh institutions found themselves competing for central HEI budgets, which were typically allocated to research and teaching. Overall, this reprioritisation led to a decline in KE income.

Between 2008 and 2014, before the withdrawal of IEF funding, the total Welsh KE income grew annually by an average of 3 percent, compared with 4 percent in England, 2 percent in Scotland, and 7 percent in Northern Ireland. However, following the withdrawal of the IEF between 2015 and 2020, Welsh KE income decreased by an average of -2 percent per annum, while England experienced 2 percent growth, Scotland 3 percent growth, and Northern Ireland 8 percent growth during the same period.

- **Case study Welsh HEIs claimed the impact of withdrawing IEF reduced dedicated KE support units and led to a sharp decline in business partnerships and collaborative research income.**

The discontinuation of the IEF had negative consequences for case study Welsh HEIs, resulting in a significant reduction in dedicated resources and capacity to support KE activities. Staff losses and budget constraints hampered their ability to invest in new equipment and engage with potential international partners. The withdrawal also impacted KE support, hindering the development of new business partnerships and collaborations.

The withdrawal of IEF reduced dedicated KE staff and led to a sharp decline in business partnerships in case study HEIs. This finding was corroborated by quantitative analysis of HE-BCI data, as findings suggest that the withdrawal of IEF precipitated a steep decline in collaborative research income among case study Welsh HEIs.

Before the withdrawal of IEF in 2014, Wales achieved an annual growth rate in collaborative research income of 11 percent, outperforming England’s 8 percent annual growth rate in the same period. However, following the withdrawal of IEF, between 2015 and 2020 collaborative research income decreased by an average of -3 percent per annum, compared with an average annual increase of 6 percent among English HEPs. Without the core internal KE capabilities to support the development of new business partnerships, Welsh HEIs were unable to maintain the strong growth which characterised pre-2015 HE-BCI returns. As the dominant source of core KE income (representing 37 percent of total income for Welsh HEIs), this fall had significant consequences for the ability of Welsh HEIs to maintain pre-2015 levels of local, regional, and national impact.

- **The nature and scope of KE delivered by Welsh HEIs was impacted by subsequent reliance on European Structural and Investment Funds (ESIF) following the withdrawal of IEF in 2014.**

After the withdrawal of IEF, case study HEIs in Wales increasingly relied on ESIF to support KE activities. The ESIF funding structure led to a shift in KE activities from centrally planned initiatives to more project-based engagements. While the funding enabled ongoing KE impacts, this decentralisation process had negative consequences for HEIs, including a reduction in central initiatives and core teams, as well as a growing dependence on project-based engagement. The reliance on ESIF also affected HEIs’ ability to

maintain external relationships with businesses outside of Wales.

After the withdrawal of IEF, Welsh HEIs KE offices became mostly reliant on ESIF, which, according to HE-BCI is classified as regeneration and development project income. For example, despite experiencing a decrease in income from collaborative research, income from regeneration and development projects increased by an average of 10 percent per annum, compared with an average annual growth rate of 1 percent among English HEPs. During the period under evaluation, this income stream accounted for 18 percent of core KE income, a substantial difference from the 5 percent seen in English institutions.

- **Withdrawal of flexible funding decreased appetite for risk among Welsh HEIs.**

Similar to HEIF, the IEF was a resource for case study Welsh HEIs to support innovative research projects with commercial potential in aiding high-risk research projects with potential commercial value. It also supported instances of KE that could have brought broader societal benefits including in cases where a clear financial return on investment was not immediately evident. It provided flexibility in fund allocation, enabling HEIs to invest in projects that carried more risk or didn't align with other funding options including the ESIF.

Before the IEF, case study Welsh HEIs had to rely solely on internal income to initiate new projects or hire new staff. This limited their ability to seize new KE opportunities and maintain levels of KE income associated with the pre-withdrawal period. The competing financial demands within HEIs made it challenging to secure resources for such initiatives after the withdrawal of the IEF.

In summary, the withdrawal of the IEF prompted significant changes in how case study Welsh HEIs approached KE activities and disempowered institutions and their staff from exploring innovative KE projects and programmes. Without consistent and dedicated funding to support KE initiatives, case study Welsh HEIs described an inability to produce the same level of impact associated with the period 2008-2014. This finding was directly corroborated by quantitative analysis, which showed that the withdrawal of IEF precipitated a decline in total KE income and acutely effected collaborative research income. The subsequent reliance on ERDF and ESIF funding introduced new dynamics into the style of KE conducted by HEIs: the requirements of ERDF and ESIF limited the flexibility in the types of KE activities, ultimately leading to a lack of empowerment among staff to explore genuinely transformative innovations within KE. These findings underscored the interplay between funding structures, culture, and capacity in shaping KE at case study Welsh HEIs.

7 Findings

This section presents a detailed assessment based on three impact and three process evaluation questions, analysed across various KE clusters within the sample of 18 English HEPs.

7.1 Impact findings

The findings from the impact evaluation focus on understanding how HEIF has delivered on its strategic objectives, including contributions to government priorities, economic outcomes, and societal benefits. These impacts are analysed through a range of evidence and data sources to demonstrate HEIF's influence on both short-term and long-term goals in the HE sector and beyond.

7.1.1 EQ1: Has HEIF delivered progress in the strategic development of English HEPs in KE?

During the period 2008-2020, HEIF underpinned advancements in KE, facilitating an evolution from early 'third-stream' knowledge transfer to a more integrated and mutually beneficial KE model. Case studies showed that HEIF strengthened KE capabilities by funding long-term specialist recruitment, retention and development, improving institutional memory, user relationships, and collaborative investments. The consistency of HEIF funding enabled case study HEPs to embed KE strategies, establish dedicated offices, and facilities for collaboration with external partners. HEIF also encouraged innovation by providing discretionary pump-priming, proof-of-concept and early-stage investments, particularly benefiting student start-ups and the commercialisation of academic research. Over time, HEIF facilitated a shift from ad-hoc projects to strategic initiatives addressing complex, cross-sectoral challenges including climate change and digital innovation. The fund's consistency over time was enabled long-term planning, sustaining projects, and strengthening industry partnerships, while also leveraging additional public and private investment to amplify its impact.

a. HEIF funding strengthened internal KE capabilities through long-term specialist recruitment, enhancing institutional memory, business relationships, and collaborative investments. As a result, core KE income increased from £2.8 billion to £4.1 billion between 2008 and 2020.

Contribution analysis demonstrated that this sustained funding enabled institutions to develop and embed long-term KE strategies. As hypothesised in the PT, the steady investment of HEIF to recruit individuals with skills to support KE, as well as developing the skills of existing staff, led to a greater prioritisation of KE. As HEIF increased over the evaluation period, so too did its strategic and institutional importance across case study HEPs. This investment helped maintain existing and establish new dedicated KE offices, innovation and enterprise/skills hubs, and improved facilities for business and other user collaboration. Long-term hires, such as commercialisation, partnership development and enterprise experts, built institutional memory and ensured continuity in HEP KE partnership management.

Without this stable investment, it is unlikely that English HEPs would have been able to maintain the levels of KE income growth seen during the evaluation period. This point is affirmed by findings from the counterfactual case study, which – while specific to the Welsh experience – effectively demonstrated the impact of withdrawing or significantly reducing similar innovation funds on the capacity of Welsh institutions to maintain fundamental KE capabilities (including leadership and strategy, staff development, and KE professional functions such as a tech transfer office) to support collaborations with public, private, and third-sector partners.

Though research and teaching responsibilities continued to take precedent over KE for larger, more research intensive HEPs in clusters X and V, HEIF support helped KE achieve parity of esteem for clusters E and J, who often factor KE activity into performance assessment and promotion cases. Across clusters, case study HEPs showed how HEIF has helped stimulate the reorganisation of KE within institutions, whether by forming new directorates, hiring dedicated pro-vice-chancellors, or simply increasing the number of full-time staff working within KE roles. While the level of this progress is contingent on levels of HEIF funding, each case study HEP demonstrated how institutional cultures prioritised KE within organisational strategies and planning and improved their KE leadership and planning as a result of consistent HEIF funding.

- b. HEIF enabled HEPs to take risks and experiment to innovate, using the fund as discretionary proof-of-concept, project pump-priming, and seed investment, as well as funding staff to offer business development support to students. This investment had a notable impact on developing cultures of entrepreneurship within HEPs between 2008-2020, leading to graduate start-up success.**

Across the case study sample, HEIF was consistently used to underpin the costs of internal KE capability via dedicated KE staff responsible for catalysing the earliest stages of academic-business collaboration. For case study HEPs in receipt of higher levels of HEIF funding, most notably cluster V institutions, but also certain institutions from X, E, STEM, and ARTS, this funding provided a level of discretionary headroom which allowed institutions to fund the earliest stages of innovation.

Notable beneficiaries of this discretionary funding included academics looking to commercialise novel knowledge and research. However, evidence clearly showed that HEIF investment between 2008-2020 most directly benefited students at case study HEPs. As explored in further detail in **Error! Reference source not found.**, HEIF was instrumental in the development and maintenance of various entrepreneurship hubs and various forms of enterprise support. HEIF plugged early-stage investment gaps that would have been otherwise difficult to bridge, providing important funding for the initial phases of innovation and collaboration projects. This early-stage support enabled institutions to undertake high-risk, high-reward initiatives, develop proof-of-concept work, and attract further investment from industry partners, venture capital, and other funding sources. Without this funding, many promising projects might have stalled which would have limited their potential economic and social impacts. This support contributed to a growing pool of graduate start-ups that attracted rising amounts of investment over the period, increasing from £73 million in 2008 to over £400 million in 2020. Simultaneously, the number of employees from these start-ups grew from 6,300 to 36,000.

- c. The consistency of HEIF funding has helped HEPs transition from ad-hoc, project-based KE, towards institution-wide, strategic focuses on thematic and intersectoral challenges.**

Towards the beginning of the evaluation period, evidence from case study HEPs suggested that HEIF funds were often allocated to isolated projects, reflecting the view of KE as a ‘third stream’ activity, separate from core research and teaching. However, over time, case study HEPs increasingly utilised HEIF to support long-term, strategic initiatives that tackle complex, cross-cutting issues such as climate change, public health, and digital innovation. As HEIF allocations rose, particularly for larger clusters (X and V), the fund became an increasing focus for senior leadership at HEPs. This strategic shift also aimed to achieve parity of esteem with core academic activity, integrating KE more deeply into institutional strategies. By addressing broad thematic challenges and interdisciplinary collaboration, HEIF funding enhanced its impact, supporting sustained, meaningful outcomes through a more coordinated and strategic approach.

Unlike other similar KE funds, notably ERDF, HEIF provided case study HEPs with a consistent, long-term source of funding that was easily adaptable to various institutions. With HEIF, HEPs were granted the autonomy to pursue their own strategies, develop relevant performance indicators, and fully utilise their core specialisms, unconstrained by the bureaucracy associated with other available funds.

- d. HEIF’s ability to leverage public and private investment amplified the fund’s impact on KE activities and resulting societal and economic impacts.**

Case study HEPs consistently used HEIF to leverage public and private investment, enhancing the scope and impact of their KE activities. By serving as a catalyst for further investment, HEIF enabled institutions to multiply their resources, resulting in more substantial outcomes in commercialisation, business and other user collaboration, and skills/enterprise and local regeneration efforts. HEIF was often used to leverage ERDF funding, which specifically focused on regional economic growth, innovation, and SME support. By combining these funds, institutions were able to deliver impactful regional projects, with ERDF often used as capital investment, and HEIF providing the long-term operational and project delivery support to deliver these often-multi-year projects.

Given the focus of ERDF on promoting regeneration, this model was more applicable to institutions situated outside areas with high levels of growth. In a post-EU Exit KE funding landscape, potential challenges are foreseeable due to the loss of ERDF as a key source of support for regional innovation initiatives. However, during the period 2008-2020, this situation did not materialise in any observable effects for HEPs.

e. Consistency in HEIF funding was important for effective long-term KE planning; unpredictability could disrupt projects and strategic goals.

Reliable HEIF funding was highly valued for enabling long-term planning and stability in KE activities. Consistent funding allowed institutions to develop and execute comprehensive KE strategies, maintain ongoing projects, and build lasting business and other partnerships. The benefits of the allocation methodology, particularly the application of lower and upper caps on funding allocations, allowed institutions to plan effectively. Unpredictable or fluctuating funding levels could disrupt project timelines, create uncertainty in strategic planning, and undermine the effectiveness of KE initiatives. Interviewees frequently commented that while KE activities would still exist without HEIF funding, they would be of lower strategic priority, smaller scale and take much longer to execute. For less research-intensive KE clusters, including E, J, and M, this impact would be even more pronounced, and undermine a core pillar of their institutional KE offer.

Many institutions found that the income generated from KE activities, including commercialisation or technology transfer (TT), was insufficient to fully fund the support required for these efforts. The revenue from these activities often fell short of covering the comprehensive costs associated with KE/TT initiatives. Consequently, institutions typically relied on external funding sources, including HEIF, to complement and stabilise their support for these activities. This reliance underscored the necessity of a diversified funding strategy to ensure that KE activities were adequately supported and could achieve their full potential.

For institutions in clusters J, M, E, STEM, and ARTS, evaluation evidence suggested HEIF was fundamental to their operations, and provided support that is integral to their KE and TT functions. By contrast, institutions in clusters X and V used HEIF to enable experimentation and innovation in addition to their core staffing and existing resources. This distinction highlights the varying role of HEIF funding across different clusters, illustrating how institutional core funding remained a fundamental component in sustaining and enhancing KE and TT activities.

Counterfactual case studies conducted with Welsh HEIs showed how unpredictability of funding impacted KE activities. Before the withdrawal of the IEF, Welsh HEIs had experienced a steady 3 percent annual growth in KE income, while English HEPs saw a 4 percent growth during the same period. However, following the removal of the IEF, Welsh KE income declined by -2 percent annually, whereas English HEPs continued to grow at 2 percent annually. This divergence underscored the role of consistent funding in sustaining KE activities and highlighted how funding volatility could adversely affect institutional performance in KE.

7.1.2 EQ2: What contextual factors (which may include place factors) are important to understand/measure how HEPs use HEIF, and the impacts they deliver?

HEIF was highly adaptable, allowing case study HEPs to tailor KE strategies to their unique strengths, regardless of institutional size or research/teaching focus and intensity. It supported a wide range of operational models, enabling institutions in both high and low growth or R&D regions to engage in KE activities and extend their reach. HEIF funding aligned with local, regional, and national policy priorities, ensuring that projects were impactful and relevant to specific needs, such as regional economic regeneration and skills development. Additionally, HEIF provided support during significant changes to the HE sectors, and external events including the financial crisis, EU Exit, and the COVID-19 pandemic, helping institutions to maintain and enhance their KE efforts amidst these challenges.

a. HEIF is highly adaptable to a range of institutional characteristics and core specialisms across KE clusters and enabled institutions with the autonomy to tailor their KE strategies to their unique strengths and needs.

The sample exemplified the breadth of English HEPs characteristics and research and teaching specialisms. Within this sample were large, research-intensive institutions operating globally and collaborating with large R&D partners to tackle pressing challenges such as advanced technology development and international health issues. It also included civic anchor institutions that played a central role in their communities; HEPs that were deeply embedded in local supply chains, and institutions serving rural areas with limited R&D investment, focusing on regional development and innovation. Additionally, the sample featured emerging hubs for new industries, which forged new pathways in fields including digital arts and green technologies, reflecting the diverse and evolving landscape of the English HE sector.

Each of these institutions operated under distinct models, whether decentralised, centralised, or a hybrid approach that blended elements of both. This diversity transcended KE clusters and highlights how institutional structures influenced decision-making processes and KE activities during this period. There was no single “correct” model for managing KE; rather, each approach offered unique advantages and challenges depending on the institution’s goals, core specialisms, and regional contexts. Whether through centralised coordination that ensured strategic alignment and decision-making or decentralised autonomy that promoted local innovation, these varied operational models reflected the broader flexibility and adaptability needed to exploit diverse research/teaching strengths address diverse user and community needs across the English HE sector.

Within this ecosystem, HEIF represented a highly adaptable fund that catered to the diverse operational models of case study HEPs. The fund’s capacity to accommodate a range of models ensured that institutions, regardless of their structure, could effectively engage in KE activities and address both regional and global challenges.

b. HEIF’s flexibility helped to fortify and mobilise pre-existing KE capacity in areas of high growth or R&D and transcended restrictions within areas of lower growth or R&D infrastructure and investment.

Unlike other forms of KE funding (e.g. ERDF) that are regionally specific, institutions were free to use HEIF to forge the most impactful collaborations with all kinds of partners – whether global, national or local. The ability to mobilise KE activities in this manner proved beneficial for institutions, particularly in regions with limited R&D investment. By utilising HEIF, these institutions could engage with broader networks, tackle local challenges more effectively, and access expertise and resources that might not have been available within their immediate surroundings. This flexibility enabled them to adapt their KE strategies to their specific institutional contexts and sector-specific networks. This allowed case study HEPs to pursue international partnerships: notably, STEM-1 used HEIF to translate research findings from overseas work in Malawi to their local region, similarly E-3 used HEIF to catalyse new overseas development opportunities in sub-Saharan Africa. In essence, HEIF’s adaptable approach allowed institutions to overcome geographic and infrastructural limitations, enhancing their capacity to drive innovation and collaborate effectively across various contexts.

c. Case study HEPs drew on local, regional, and national policy priorities as communicated by RE when deciding how to invest HEIF funding.

From 2008 to 2020, case study HEPs directed their HEIF allocations to align with policy priorities at regional, national, and local levels, which ensured that KE activities were responsive to evolving policy demands. As institutional strategies adapted to these policy priorities, HEIF-funded projects were often designed to address specific regional needs, such as economic regeneration or skills development.

RE managed this process by checking and approving HEIF uses in line with government priorities, ensuring that allocations supported broader policy goals. While HEPs enjoyed significant autonomy in translating these high-level priorities into local and international contexts, they operated within a framework that required accountability to DSIT and DfE. This dual-layer of oversight ensured that the impact of HEIF funding was aligned with national objectives while allowing institutions the flexibility to innovate and respond to their unique community needs.

For example, institutions including E-2 created regional innovation hubs in Marine and Health Tech, securing substantial regional funding and aligning with local productivity strategies. Similarly, E-1’s Electric Revolution Skills Hub, funded by HEIF, tackled skills shortages in electrification, directly supporting national skills initiatives and attracting significant investment. These cases illustrate how HEIF funding was strategically utilised to complement and enhance institutional responses to policy priorities, ultimately boosting the effectiveness and sustainability of KE activities.

The case studies revealed how HEIF-funded projects were tailored to regional and national policy goals, with institutions adapting their strategies to maximise alignment with these priorities. This approach not only ensured that projects addressed local and regional challenges but also demonstrated how policy-driven alignment enhanced the impact of HEIF investments. Overall, the analysis highlights the significant role of policy alignment in shaping the success and long-term benefits of HEIF-funded initiatives.

d. HEIF helped to provide insulation against the impacts of major changes in the HE sector, as well as external economic and political events.

The period from 2008 to 2020 saw transformative changes in the English HE sector, including the increase in tuition fees following the Browne Review, the introduction of the Research Excellence Framework (REF) in 2014, and the Teaching Excellence Framework (TEF) in 2017. There was also the expansion of degree apprenticeships, a renewed focus on regional engagement through Local Enterprise Partnerships (LEPs), and the accelerated adoption of digital learning technologies, all set against the backdrop of EU Exit uncertainties. Additionally, the sector faced major challenges stemming from the financial crisis of 2008 and the COVID-19 pandemic.

In the context of these challenges, HEIF played a role in building core internal KE capabilities between 2008 and 2020. This investment helped insulate institutions from the worst impacts of macro-economic and political events, such as the financial crisis and EU Exit, enabling them to sustain their focus on KE activities amidst shifting institutional objectives and funding constraints. Case study interviewees regularly reflected on the agile design of the fund, which allowed the flexibility to adapt to evolving circumstances and emerging needs. This adaptability was particularly evident during the COVID-19 pandemic, when HEIF-supported institutions were able to quickly pivot resources to virtual collaborations, enhance digital platforms, and explore new R&D avenues. The fund's responsive nature ensured that institutions could maintain and even enhance their KE efforts, reinforcing their resilience and capacity to continue driving innovation and engagement despite significant global disruptions.

7.1.3 EQ3: What external economic and societal impacts have been delivered by HEIF?

HEIF addressed various external economic and societal challenges through its flexible funding model. It enabled institutions to diversify their KE activities, contributing to improvements in public policy and service delivery. HEIF supported the creation of policy centres, research initiatives, and collaborations with government and non-profits, which influenced national policy, developed evidence-based practices, and enhanced regional and national governance. The fund’s adaptability also facilitated the commercialisation of innovative research by de-risking early-stage projects and attracting substantial investments. Additionally, HEIF boosted graduate entrepreneurship by providing leverage and support services for funding incubators, resulting in a marked increase in graduate start-ups. By leveraging HEIF resources, institutions improved local infrastructure and reduced regional R&D imbalances, contributing to regional economic growth and encouraging a more competitive business environment. Through these initiatives, HEIF demonstrated its role in driving meaningful societal benefits and delivered public goods alongside commercial risk share. These findings align with the impact statements outlined in the PT, offering evidence from contribution analysis that validates these projected social and economic impacts.

a. HEIF’s flexible design enabled institutions to diversify their KE activities, supporting initiatives that deliver broader public goods beyond commercialisation, leading to significant improvements in public policy and service delivery standards. (Impact 2)

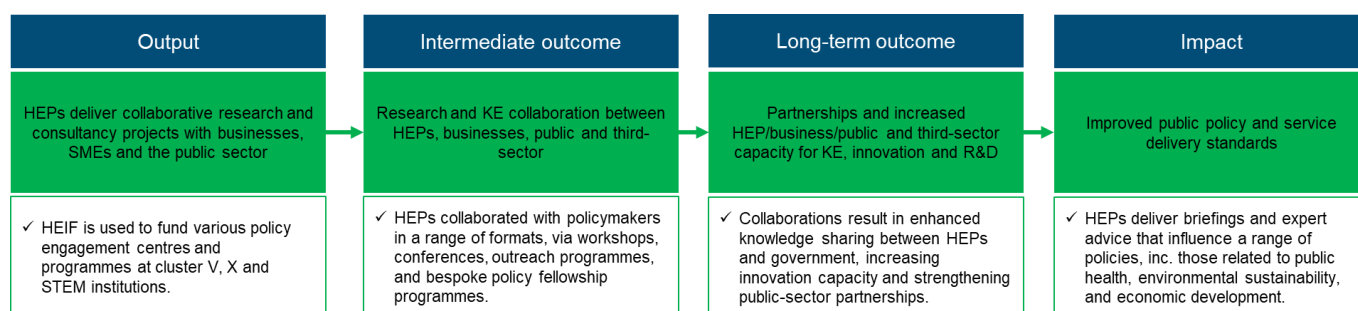


Figure 8: HEIF impact pathway 1

Institutions used HEIF funds to develop policy centres, create research initiatives with societal impact, and facilitate collaborations with government and non-profit organisations. These activities led to tangible improvements in public policy and service delivery. For example, institutions established advisory bodies that influenced national policy discussions, published influential reports on issues such as net-zero carbon strategies, and developed programmes that enhanced public services. The flexibility of HEIF funding also allowed institutions to experiment with innovative approaches and take on high-risk, high-reward projects. This experimentation resulted in significant, long-term impacts on public policy and service standards. HEIF-funded initiatives contributed to the development of evidence-based policies and practices, improved regional and national governance, and built collaboration between academia, industry, and government. Through these diverse activities, HEIF demonstrated its role in driving meaningful societal benefits and advancing public good beyond traditional profit-driven models.

b. HEIF provided proof-of-concept funds and business development support that de-risked early-stage innovation, leading to the successful commercialisation of novel research that addressed emerging societal challenges. (Impact 3)

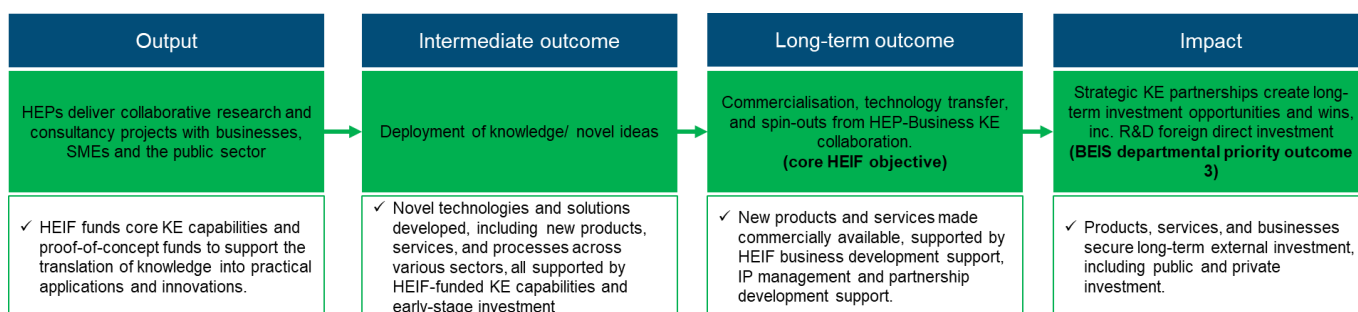


Figure 9: HEIF impact pathway 2

This support resulted in the transition of ideas from the laboratory to commercial viability by funding activities that leveraged other funds and support services for incubators, thereby mitigating risks such as high development costs, market uncertainty, and technical feasibility. For example, HEIF-funded projects led to the development of breakthrough technologies in healthcare, such as advanced diagnostic tools, and in clean energy, including next-generation renewable energy systems. These innovations not only solved pressing issues but also attracted substantial long-term investments from both public and private sectors. Case studies highlight how HEIF’s funding model helped scale these innovations, secure further investment, and establish lasting partnerships.

c. By funding dedicated entrepreneurial centres, student business incubators, and specialist enterprise support, HEIF improved the skillsets of graduates and contributed to strong growth in the number of graduate start-ups between 2008-2020. (Impact 4)

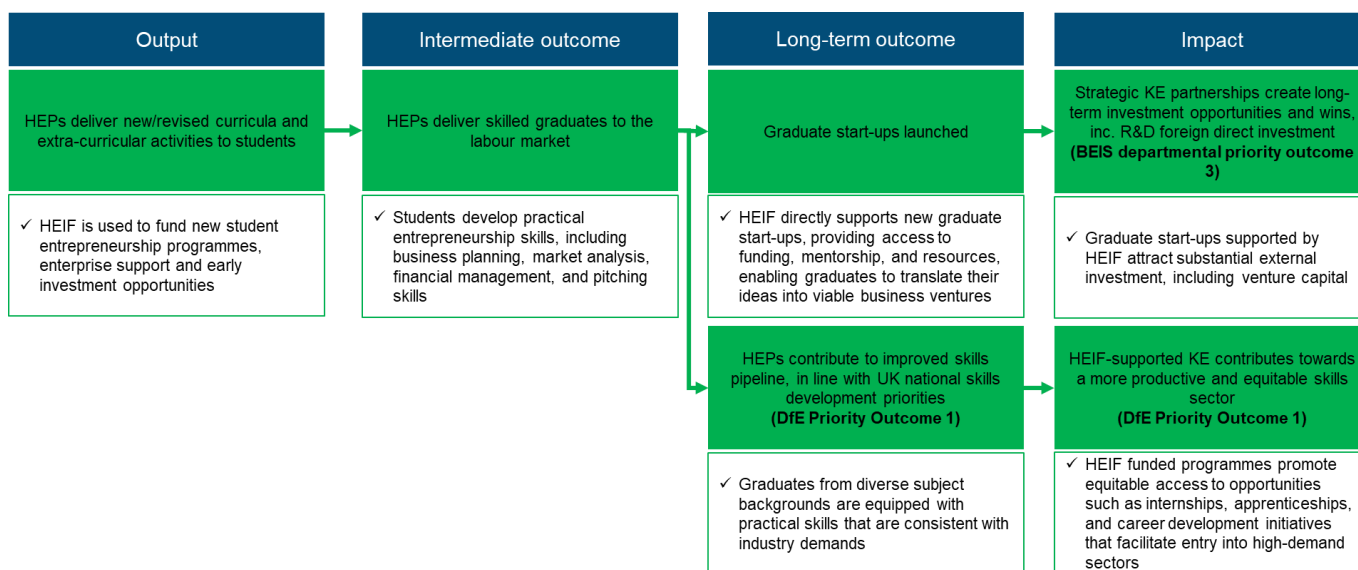


Figure 10: HEIF impact pathway 3

Institutions leveraged HEIF funds to establish and enhance facilities that provided resources such as seed funding, business mentoring, and access to business and other networks. These resources enabled students and recent graduates to transform innovative ideas into viable business ventures. For instance, HEIF-supported incubators offered tailored programmes that included workshops on business planning, market analysis, and pitch development, alongside mentoring from experienced entrepreneurs and industry experts. Additionally, specialist enterprise support services facilitated connections between graduates and potential investors and provided practical assistance with legal and financial aspects of start-up creation. This comprehensive support structure resulted in a marked increase in the number of graduate-led businesses, reflecting HEIF’s impact on HEPs’ culture of entrepreneurship and contributing to the broader economic growth through the successful launch and scaling of new enterprises.

d. HEIF was used to leverage additional funding to support the improvement of local infrastructure which reduced regional imbalance in R&D intensity. (Impact 5)

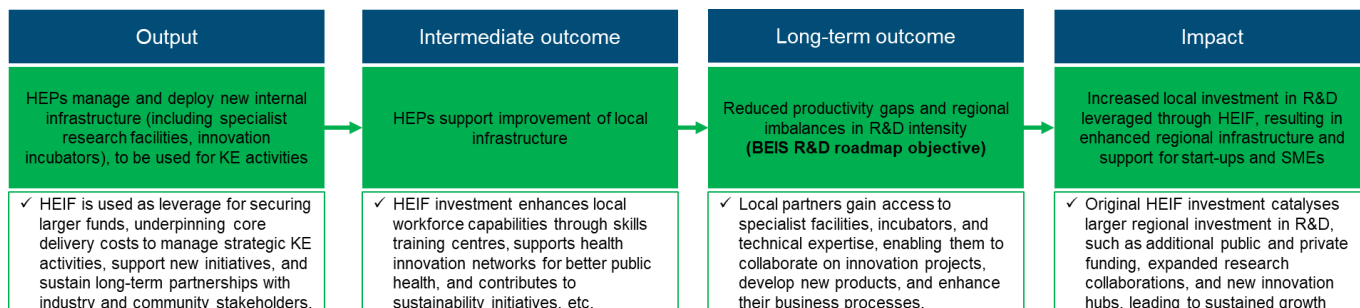


Figure 11: HEIF impact pathway 4

By leveraging HEIF resources, institutions were able to attract substantial co-investment from the ERDF and other sources. HEIF-funded projects often acted as catalysts for securing ERDF support, important for large-scale investments in regional research facilities and innovation hubs. For instance, HEIF investment enabled the development of state-of-the-art laboratories, innovation centres, and technology parks in areas previously lacking advanced R&D infrastructure. These facilities featured specialised equipment and support services tailored to local businesses and researchers.

Additionally, HEIF and ERDF collaboration led to the creation of business incubators and accelerator programmes designed to support start-ups and SMEs in underdeveloped regions. These initiatives provided resources such as mentoring, business development services, and access to advanced technologies, essential for encouraging innovation and enhancing regional competitiveness. Furthermore, the combined funding facilitated projects that bridged the gap between academic research and practical application, building partnerships between universities, local businesses, and public sector organisations. This collaboration enhanced the regional innovation ecosystem by promoting KE, encouraging entrepreneurial activities, and driving regional economic growth.

e. HEIF-funded staff increased access to specialised equipment among SMEs which increased the capacity for innovation for smaller businesses and resulted in increased productivity which contributed to economic growth local productivity and contributing to regional economic growth. (Impact 6)

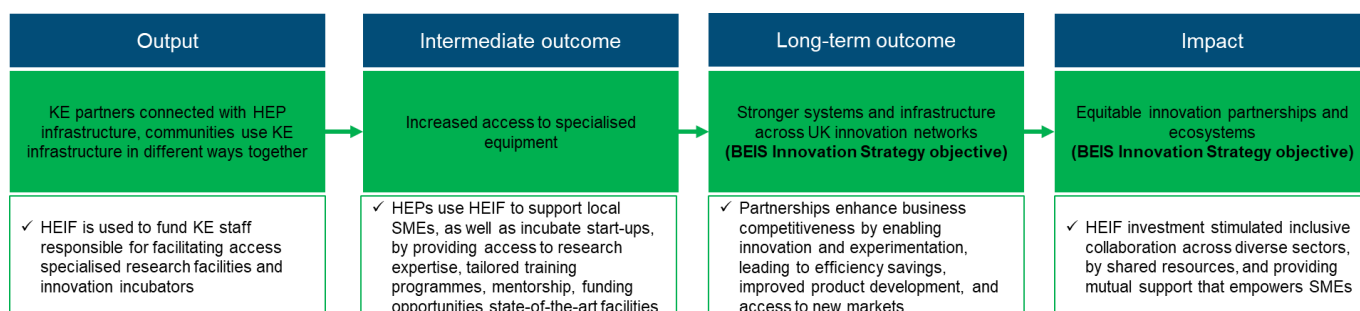


Figure 12: HEIF impact pathway 5

By supporting activities related to accessing advanced tools and technologies, HEIF enabled smaller businesses – often lacking the resources to invest in such equipment – to engage in high-tech research and development. Rather than directly funding capital investment, HEIF subsidised costs associated with accessing this equipment. This included covering meeting costs for user access, providing staff support to facilitate equipment usage, and securing leverage for additional funding. Additionally, HEIF contributed to networking opportunities among users, enhancing collaboration and knowledge sharing. This support helped smaller businesses overcome barriers to innovation and effectively utilise advanced technologies.

This access facilitated the development of new products, streamlined processes, and improved operational efficiencies. For instance, local manufacturers were able to leverage cutting-edge machinery to innovate in their production methods, while technology start-ups utilised advanced software and hardware to prototype and refine their products. The increased capacity for innovation led to direct improvements in business performance and contributed to regional economic growth by creating a more vibrant and

competitive business landscape. Moreover, the support from HEIF helped bridge the gap between large corporations and SMEs which enabled the latter to compete more effectively and stimulate job creation.

7.2 Process findings

The process findings examine the implementation and operational aspects of the HEIF programme and assess how effectively it delivered by summarising the perspectives of case study HEPs included in the sample. This includes an evaluation of management structures, resource allocation, and the alignment of activities with intended goals. The findings highlight key facilitating factors and barriers to the programme's execution, offering insights into best practices.

7.2.1 EQ4: What and how has the programme delivered on government priorities?

HEIF delivered against government priorities by aligning its funding mechanisms and governance processes with strategic national goals including innovation, economic growth, and regional development. RE communicated these priorities through funding guidance, performance criteria, and monitoring frameworks to ensure that HEPs understood these and incorporated them into their KE strategies. Since 2016, HEIF increasingly focused on supporting the government's economic objectives, specifically related to the Industrial Strategy, while adapting to changes in policy emphasis, including place-based development and skills enhancement. HEIF's flexible design allowed HEPs to respond rapidly to evolving needs, targeting funding to initiatives that would not have been feasible under more restrictive models, such as supporting SME engagement, developing regional innovation ecosystems, and contributing to the regional growth (previously known as "levelling up") agenda. This approach enabled HEPs to deliver impact through long-term collaborations with public and private sectors and aligning KE activities with DSIT and DfE priorities, demonstrating HEIF's contribution to translating government policy into meaningful economic and social outcomes.

a. HEIF allocation and governance processes were designed to align closely with government priorities and send a clear message to HEPs regarding these expectations.

These processes were guided by RE, which identified the government priorities that should guide the use of HEIF within HEIF guidance. HEPs then reflect these priorities in their strategic objectives and, in turn, develop specific opportunities with their partners. RE validates that HEP strategic KE plans and institutional objectives appropriately reflect government priorities, verifying that HEIF investment is relevant to national priorities and responsive to institutional contexts.

From 2016 to 2020, RE's communication reflected evolving government priorities, particularly in response to the Industrial Strategy and the R&D Roadmap, both of which stressed the importance of regional growth. HEPs clearly responded to these shifts, directing HEIF towards activities that promoted local and regional economic development, bolstered skills networks as well as innovation clusters, and enhanced productivity through partnerships with SMEs. Case studies showed that HEPs allocated funds to initiatives supporting high-growth sectors, such as technology and advanced manufacturing, often tailoring their activities to meet local economic needs.

b. HEIF's governance arrangements were fit for purpose and provided a balance between oversight and institutional autonomy.

Governance arrangements ensured that HEIF allocations were compliant and aligned with national strategic priorities, institutional goals, and key performance indicators. Evidence from case study interviews showed how the introduction of regular strategic monitoring and comprehensive reporting provided an improved framework for accountability, but also empowered HEPs to refine their strategies and adapt to changing circumstances. This approach, which centred around multi-year KE strategies, shifted focus from ad hoc project-based funding to long-term strategies that embedded KE activities within core institutional strategy. Senior leaders, including Pro Vice-Chancellors, took a more direct role in guiding HEIF allocations, ensuring that resources were directed towards initiatives with clear, measurable impacts. This evolution also saw greater engagement with external stakeholders which resulted in the development of collaborations that were more targeted and sustainable. The outcome was a more cohesive approach to using HEIF that prioritised long-term, high-impact projects over short-term gains.

The absence of prescriptive expenditure constraints also enabled HEPs to experiment with innovative KE models and respond to emerging challenges and opportunities. This flexibility, coupled with an outcomes-

based governance approach, promoted accountability and creativity. Overall, HEIF's governance arrangements created an environment in which HEPs could improve their performance. This maximised the impact of their KE activities and contributed to regional and national economic growth.

c. Changes to HEIF funding mechanisms, including adjustments to allocation formulas and the introduction of thresholds, delivered the intended outcomes by better targeting funding, and enhancing the capacity of HEPs to deliver high-impact KE.

Raising the minimum threshold for funding ensured that smaller institutions with demonstrable KE capabilities could sustain their activities, while additions to the formula, such as the business and commercialisation supplement, incentivised greater engagement with external partners. These adjustments resulted in a distribution of resources that supported a breadth of relevant expertise and a sharper focus on activities that drove economic and societal impact, as evidenced by improved KE performance metrics (namely, KE income growth) and enhanced alignment with government priorities.

The evolution of the HEIF allocation mechanism significantly influenced HEPs' strategic choices by promoting a more outcomes-focused approach to KE. Changes such as the introduction of performance thresholds and the increased emphasis on demonstrating impact encouraged HEPs to prioritise high-value partnerships and scalable projects. Institutions adjusted their KE strategies to better capture and report on economic and societal outcomes, leading to a stronger alignment between their use of HEIF and government priorities.

d. The formula-based nature of HEIF funding shaped strategic decision-making within HEPs by steering them towards impact-generating activities that aligned institutional objectives to national priorities.

The RE approach incentivised HEPs to build their KE strategies around key strengths, such as research specialisms or regional partnerships which ensured that they leveraged HEIF resources in the most effective way. Senior leaders, typically Pro Vice-Chancellors, played a central role in overseeing the distribution of HEIF, with support from KE offices and advisory committees. These groups undertook detailed assessments of institutional objectives, which guided the allocation of funds to high-impact areas, such as innovation support, staff and student training, proof-of-concept projects, and collaborative research or enterprise/skills development.

The institutional strategy process involved comprehensive strategic planning and consultation across faculties to ensure alignment with broader institutional goals. Furthermore, the HE-BCI survey (including in the KEF) played a clear role in informing these strategies by providing data on HEPs' engagement with businesses and communities, helping to identify opportunities for collaboration and measure the effectiveness of KE initiatives. The RE focus on metrics also encouraged HEPs to establish performance metrics to measure the impact of their KE initiatives, demonstrating contributions to national priorities, such as productivity enhancement and innovation.

Over time, the focus on strategic planning and performance monitoring also led to the development of new roles and dedicated teams within institutions, further embedding KE as a central pillar of institutional strategy and enabling more deliberate, outcome-oriented KE planning and execution.

e. The flexibility of HEIF was a key enabler for HEPs that allowed them to undertake innovative activities that would not have been feasible with more restrictive funding.

This included rapid responses to new opportunities, such as engaging with emerging industries, piloting new KE models, and addressing specific regional challenges. The absence of stringent spending restrictions allowed institutions to allocate resources where they were most needed, contributing to an environment conducive to experimentation and adaptation. For instance, HEPs were able to pivot quickly to sectors including renewable energy or digital technology when policy shifts in these areas created new opportunities for growth and collaboration in their regions. The relative lack of restrictions on how HEIF could be spent enabled institutions to support a broader range of activities, from early-stage commercialisation efforts – such as proof-of-concept projects and feasibility studies – to student enterprise and community initiatives which addressed local social issues.

This agility was valuable during periods of economic or social change, such as when institutions adapted their strategies in response to the COVID-19 pandemic. For example, several HEPs pivoted their

resources towards supporting public health initiatives, developing online platforms for knowledge sharing, or collaborating with healthcare providers to address immediate needs. This demonstrated the capacity of HEIF to empower institutions to be responsive and innovative in the face of challenges and changing user needs, ultimately enhancing their impact on regional economies and communities.

7.2.2 EQ5: How have impacts been delivered?

Despite the complex, unhypothecated nature of HEIF, and the wide variety of impacts it supported, the original PT demonstrated how the fund achieved a range of KE impacts from 2008 to 2020. HEIF enabled HEPs to leverage strategic partnerships and flexible knowledge strategies to drive innovation, build capacity, and attract external investment. This approach enhanced KE development and leadership within case study HEPs, where observed impacts aligned well with the PT pathways. HEIF supported the establishment of dedicated KE offices which were important for building research collaborations, consultancy projects, and partnerships with businesses and public sectors. This led to stronger knowledge transfer and effective commercialisation through intellectual property activities. Validation through contribution analysis workshops, supported by the TRP, confirmed HEIF’s role in enhancing KE capacity. HEIF’s consistent and adaptable support complemented other funding sources, helping HEPs build external partnerships and refine KE strategies. This flexibility contributed to reducing productivity gaps, balancing regional R&D intensity, and strengthening innovation ecosystems, thereby supporting regional development and innovation.

a. HEIF delivered impact by leveraging strategic partnerships and agile RD&I strategies to drive innovation, build capacity, attract external investment, and provide investment headroom, thereby improving social development and leadership within case study HEPs.

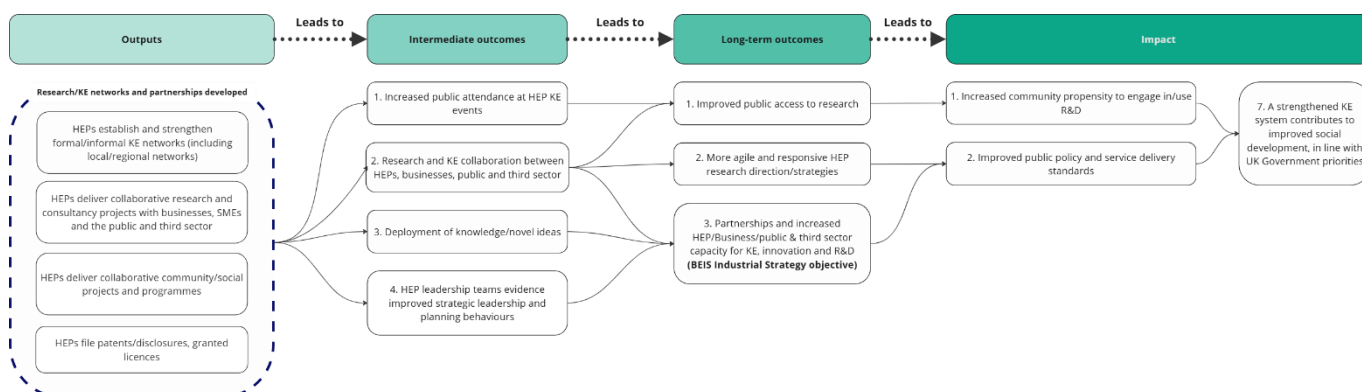


Figure 13: Programme theory excerpt - research pathway

Case studies provided strong verification of the role of HEIF in building the KE capacity, leadership, and competencies of HEPs between 2008 and 2020, which resulted in improved public policy and service delivery and new opportunities for external investment.

The fund supported the establishment of dedicated KE offices, which facilitated collaborative research, consultancy projects, and partnerships with businesses, SMEs, and the public and third sectors. This included reforming institutional structures to create new directorates and departments focused on KE, as well as recruiting new staff in specialised KE roles. Job descriptions were often updated to include a clear emphasis on KE responsibilities for academic and professional staff, further embedding KE into institutional culture. Case studies also showed how academic participation in KE was incentivised through promotion pathways, with several HEPs integrating KE achievements into criteria for career advancement. This contributed to the strengthening of research collaborations and the effective transfer of knowledge across various industries. Moreover, HEIF enabled institutions to engage in IP activities, such as filing patents and securing licences, which were essential for the commercialisation of research and the broader impact of academic work. The fund also supported HEPs in aligning their strategies with KE goals,

encouraging staff development, and extending KE linkages, all of which were critical to the success of their research and innovation efforts.

However, while HEIF contributed to various impactful initiatives in the research pathway, the case study evidence showed its role in supporting community and social projects was somewhat weaker. Although there were instances where HEIF facilitated community engagement and social initiatives, these areas showed less consistent and less robust outcomes compared with other KE activities. This causal link was not as strong as others due to the relative absence of evidence, but it has been retained in the PT because it remains a relevant factor in understanding the broader scope of HEIF’s impact and could potentially become more apparent in future evaluations.

Compared with other funds, the consistent and flexible support from HEIF supported KE development as it offered advantages that other funding sources could not. HEIF’s flexibility and adaptability enhanced the efficiency and impact of KE activities by complementing existing KE and R&D resources. Its stability allowed HEPs to build strong external partnerships, gain deeper insights into sector-specific research needs, and continuously refine their KE strategies and processes.

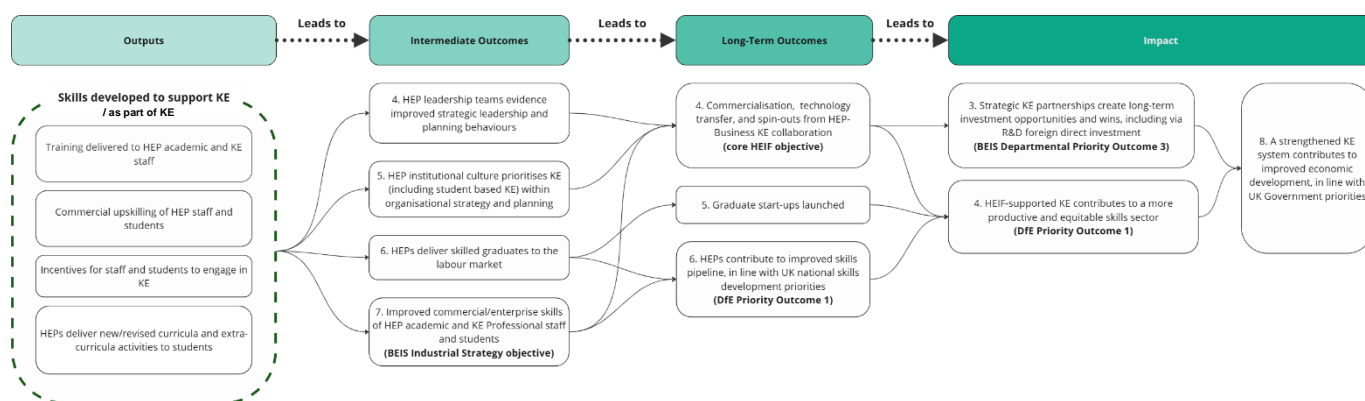


Figure 14: Programme Theory excerpt - people pathway

b. HEIF delivered impact by developing the skills internally in the HEP to support KE and externally to deliver from KE activities on the wider workforce, leading to the delivery of skilled graduates, the launch of graduate start-ups, and contributions to a more productive and equitable skills sector, thereby aligning with national skills development priorities.

From 2008 to 2020, case studies provided evidence that supported the original PT hypotheses relating to HEIF’s role in advancing people and skills development, which aligned closely with the DfE’s priorities. HEIF supported continuous professional development (CPD) for academic and KE staff, supported CPD for wider people and communities (i.e. workforce upskilling and professional development) recruited specialist KE personnel, and provided entrepreneurial support for staff and students and the wider workforce. These initiatives led to improvements in career services through employer engagement, and alignment with sector-specific needs, thereby addressing skills gaps and fostering stronger connections between HEPs and the economy.

HEIF’s impact was particularly evident in its investment in staff capacity and skills development, enabling institutions to carry out more effective KE activities and engage more successfully with external partners. Work placements, mentoring programmes, as well as general exposure to business and other services collaborations, enhanced the commercial and entrepreneurial skills of staff and students. This allowed HEPs to develop new curricula that better met the evolving demands of business, services and the local economy. Moreover, HEIF supported the establishment of entrepreneurial centres, business incubators, and enterprise hubs, contributing to long-term capacity building for KE and innovation within the institution.

While HEIF’s investment in people was significant, the evidence for its contribution to broader curriculum development was somewhat weaker compared to more focused outcomes, such as the creation of innovation hubs and entrepreneurial centres. The strategic emphasis on developing entrepreneurial skills, however, was more pronounced. Through these initiatives, HEIF contributed not only to academic staff upskilling but also to the creation of a culture that prioritised KE and industry engagement. This helped develop students’ practical, employable skills, bridging the gap between academic learning and future career prospects. Following feedback from the TRP, the output statement was revised from “**HEPs deliver**

new/revised curricula to students” to “HEPs deliver new/revised curricula and extra-curricular activities to students” to better reflect the broader scope of HEIF’s impact on skills development. The revised phrasing emphasises the integral role of extra-curricular activities, such as entrepreneurial programmes and work placements, in shaping students’ career readiness and enhancing engagement with business and other sectors.

Although evidence of HEIF’s direct role in curriculum development was somewhat limited, evaluation evidence showed the broader impact on skills development and employer engagement was clear. HEIF supported CPD activities for beneficiaries internal and external to the HEP (inc. academic staff, KE teams, and local businesses/services) to address the skills needs to contribute to the regional economy. This is an aspect of HEIF that aligns with the government’s broader agenda for workforce development.

c. HEIF delivered impact by developing internal KE capabilities, leveraging HEIF to underpin and amplify infrastructural investment. This approach facilitated access to specialised equipment, increased local R&D investment, and enhanced regional support for start-ups and SMEs, leading to reduced productivity gaps, balanced regional R&D intensity, and strengthened innovation ecosystems.

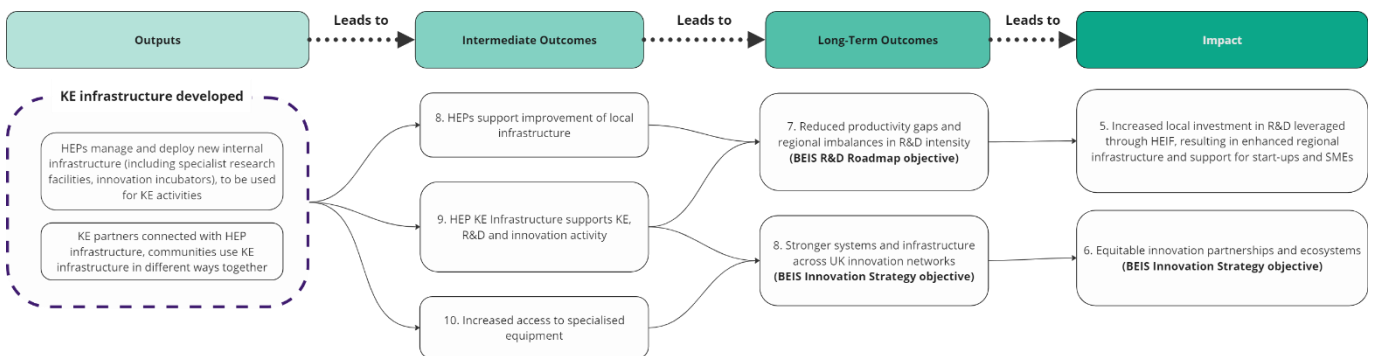


Figure 15: Programme theory excerpt - infrastructure pathway

Between 2008 and 2020, HEIF funding supported the management and optimisation of key KE capabilities within the case study HEPs. It primarily facilitated better access to existing assets, such as incubators and specialist research facilities, with other funding resources (e.g. ERDF) providing capital funding for new infrastructure. By enabling institutions to manage these resources and connect with external partners, HEIF contributed to the enhancement of KE activities, improving the relevance and accessibility of HEP resources and strengthening regional collaborations.

Unlike other funding programmes that may focus on building or upgrading infrastructure, HEIF’s contribution was centred on the efficient use of already established assets. This support allowed HEPs to better serve local businesses and services, particularly SMEs, by providing access to advanced research facilities and expertise. This access helped strengthen local innovation capabilities and supported the growth of start-ups, demonstrating HEIF’s role in enhancing regional economies.

The previous impact statement, **“increased gross expenditure on R&D as a percentage of UK GDP,”** was reconsidered as it was difficult to directly link HEIF’s activities to such a broad economic measure. The causal connection between HEIF funding and national R&D expenditure was too complex to establish. Following feedback from the TRP, the impact statement was revised to: **“Increased local investment in R&D leveraged through HEIF, resulting in enhanced regional infrastructure and support for start-ups and SMEs.”** This change more accurately reflects the specific impact of HEIF, focusing on its role in supporting regional R&D investment, improving infrastructure, and providing resources for small businesses and start-ups. The revision aligns more closely with the evidence, making the impact of HEIF clearer and more relevant to local economic development.

7.2.3 EQ6: What contextual factors (which may include place factors) are important to understand/measure how the programme should be designed and managed?

To understand how HEIF delivered value between 2008-2020, it is important to consider contextual factors including institutional characteristics, regional economic contexts, sectoral specialisations, local partnerships, and the broader policy environment. Differences in HEP size, mission, and KE capacity shaped the nature of support required. For example, research-intensive HEPs, particularly those in STEM-focused clusters V and X, emphasised large-scale innovation projects, TT, and global partnerships, while smaller or regionally focused institutions in clusters E and J prioritised capacity-building and local engagement to build regional economic growth. Regional economic conditions and place-based disparities also influenced the alignment of KE activities to government agendas including to the place aspects within the Industrial Strategy. Additionally, sectoral strengths and existing partnerships affected how HEPs drove impact which required HEIF to support specialised collaborations in fields including healthcare or energy. In addition, coordination with other KE and research and teaching funding streams ensured that HEIF complemented broader policy goals which enabled HEPs to maximise their contribution to national and regional development.

a. The quasi-guaranteed nature of HEIF, where annual fluctuations in funding are limited and predictable, provided HEPs with stability and confidence in planning their KE activities.

HEIF's financial predictability empowered institutions to embark on long-term projects and to develop sustained partnerships without the fear of funding disruptions that could have jeopardised their initiatives. Consequently, decision-making within HEPs became more forward-looking which enabled them to invest strategically in capacity-building efforts and multi-year initiatives that might otherwise have been deemed too risky without access to core funding. Moreover, this design feature of HEIF complemented other KE support programmes, particularly those that focused on shorter-term or project-specific funding. By serving as the backbone for institutional KE infrastructure, HEIF allowed HEPs to build a foundation on which to base their KE activities. This stability enhanced the institutions' ability to innovate and respond to local and wider needs and aligned HEIF with broader KE system goals.

Additionally, the reliability of HEIF funding facilitated the leveraging of additional resources which enabled HEPs to secure further funding opportunities for pilot projects and to provide match-funding for external grants. This strategic use of HEIF strengthened overall KE capabilities across the sector, enhancing the institutions' ability to contribute effectively to regional and national economic development.

Evidence suggested that the annual cycle to update allocations in each RE funding round meant some uncertainties in non-KE departments that were involved in securing and managing KE spending but lacked familiarity with the HEIF funding mechanism. While these departments had to navigate the process, the lack of familiarity with the funding structure occasionally posed challenges in planning and coordination. HEPs noted that the short-term allocation cycle at times made it difficult to secure long-term employment contracts. For example, finance departments could be reluctant to commit resources in advance without specific indications of HEIF funding levels. Despite these limitations, HEPs unanimously acknowledged that the flexibility and benefits of HEIF funding outweighed its restrictions. They noted that while the annual allocation system introduced some uncertainty, particularly with potential reductions, it remained preferable to the more restrictive approaches of other programmes including ERDF.

b. HEPs demonstrated responsiveness to feedback from RE regarding their strategy documents and annual monitoring statements.

This feedback mechanism led to adjustments in the allocation and utilisation of HEIF funds to better align with government priorities and performance expectations (i.e. performance as described in the HE-BCI survey and then KEF). For instance, some HEPs shifted their focus toward areas highlighted in the feedback, such as scaling up engagement with SMEs, enhancing their regional impact, and strengthening support for entrepreneurship and commercialisation activities.

In response, HEPs increasingly employed HEIF to target specific outcomes by refining their KE strategies and investing in initiatives that directly addressed gaps or improvement areas identified by RE. This included establishing new partnerships, expanding training programmes, and developing resources to

strengthen local economies. RE's feedback played a role in encouraging a culture of continuous improvement in KE, ensuring that HEPs were proactive in adapting their approaches and enhancing accountability. As a result, institutions were better positioned to align with national economic and social goals. This adaptive approach ultimately strengthened their contributions to regional development and innovation.

c. There is evidence that HEPs whose allocations are capped (having high levels of performance metrics) used HEIF differently compared to those with fluctuating allocations.

For those with smaller or variable allocations, a higher proportion of HEIF was typically directed toward capacity-building efforts to create a baseline for KE activity, whereas capped funding recipients focused on more advanced, large-scale KE initiatives that drive higher impact. Institutions with capped funding tended to have more established KE infrastructures and thus allocated a smaller proportion of their HEIF allocation to core staffing costs, focusing the majority on strategic investments such as scaling up existing projects that required additional funding to expand, supporting specialised activities, and investing in specialised initiatives that demanded higher risk tolerance. In contrast, HEPs with lower or variable funding allocations often prioritise foundational elements, such as maintaining or expanding TT and KE staff capacity, as well as funding basic KE support services. These institutions typically used HEIF to build core capabilities, such as academic engagement, establishing relationships with local industry, and supporting early-stage proof-of-concept activities. This difference in funding use reflects the distinct strategic objectives and capacities of HEPs at different stages of KE maturity and scale of performance, as well as the HEIF's adaptability across different case study HEPs.

d. HEPs were aware of how their current use of HEIF may influence future funding levels, especially as the funding formula rewards institutions based on their past performance in KE activities.

While HEPs considered their past performance in KE when allocating HEIF, specifically via the HE-BCI survey, this was not the only factor influencing spending decisions. Evidence from case study HEPs showed that the funding formula, which linked future allocations to demonstrated KE metrics performance, encouraged institutions to focus on metrics such as licensing agreements, and industry collaborations. However, HEPs also allocated HEIF in line with broader institutional strategies, regional economic priorities, and sectoral challenges. In addition to pursuing measurable outcomes, HEPs directed HEIF towards longer-term initiatives that supported student development, local economic development, strengthened innovation and skills ecosystems, and addressed public sector requirements. These activities did not always result in immediate performance metric gains but were important for sustained institutional growth and resilience.

Therefore, while performance-based funding influenced HEIF allocation, it was integrated into a wider decision-making process that also considered benefits that were not directly monetisable or quantifiable but contributed in their own right to societal impact. This approach ensured a balance between performing to improve KE metrics and fulfilling broader institutional and economic goals and delivering wider non-monetised benefits.

8 Annex 1: cluster analysis

This annex provides cluster analysis and contribution narratives and evaluates how effectively these narratives illustrate the impact of the HEIF on KE and innovation while assessing their alignment with government priorities.

Additionally, the section identifies limitations and gaps in the existing evidence, particularly regarding the depth of data supporting some pathways. By highlighting areas where evidence may be insufficient or lacking, it provides stakeholders with a clearer understanding of the strengths and weaknesses of the PT pathways.

The analysis is designed to consolidate pathways where there is strong evidence across multiple HEPs within the same cluster that either supports, partially supports, or challenges the programme theory. To distinguish between the strength of this evidence, a simple code is used:

- ✓ Indicates evidence that supports the programme theory pathway.
- ? Indicates evidence that partially supports the programme theory pathway.
- ✗ Indicates evidence that challenges the programme theory pathway.

Each pathway within the cluster analysis is made of three elements: a **contribution narrative**, a **schematic diagram** and **supporting evidence** which demonstrate HEIF's contribution towards the impacts set out in the programme theory:

1. The **contribution narrative** summarises how HEIF achieved the impact outlined as a hypothesis in the programme theory. It provides a realistic and plausible route from output to impact level based on available evidence to demonstrate how HEIF works.
2. An accompanying **schematic diagram** sets out the causal pathway being investigated, using the benefit statements set out in the programme theory (see 2.2.1) to provide a step-by-step visualisation of hypothesised pathways to impact. The evidence supporting, partially supporting, or challenging the programme theory pathway is highlighted under each benefit statement, providing an aggregate view of the narrative.
3. **Supporting evidence** under each schematic provides examples from primary and secondary data to support the contribution narrative and details per schematic.

8.1 Cluster V analysis

The following analysis synthesises and evaluates primary and secondary data sources from four case study cluster V institutions. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster's contribution to broader societal and economic outcomes, in line with PT pathways.

8.1.1 Background

Cluster V encompasses research-intensive HEPs involved in high-profile research across diverse disciplines. Cluster V consistently secured the highest HEIF funding within its cohort, due to it being one of the most research-intensive institutions in the UK and performing well in the HEIF funding allocation mechanism. These HEPs stand out due to significant proportions of staff exclusively dedicated to research activities. Funding for their research was sourced from a variety of channels, with 34 percent coming from UKRI, 26 percent from other government bodies, 24 percent from charities, and 11 percent from industry partners. Cluster V was notably active in clinical medicine and STEM disciplines, playing a significant role in advancing these fields. The respective student populations of these institutions encompassed a substantial number of both taught and research postgraduates.

8.1.2 Research pathway

Contribution narrative (cluster V, Research 1): HEIF was used to seed fund and cover the operational costs of specialised policy centres in cluster V that increased dialogue between academia and policy-makers at both national and local levels. This resulted in the formation of new collaborative networks addressing sustainability issues, which facilitated more informed decision-making for the government, and provided tangible solutions to global challenges.

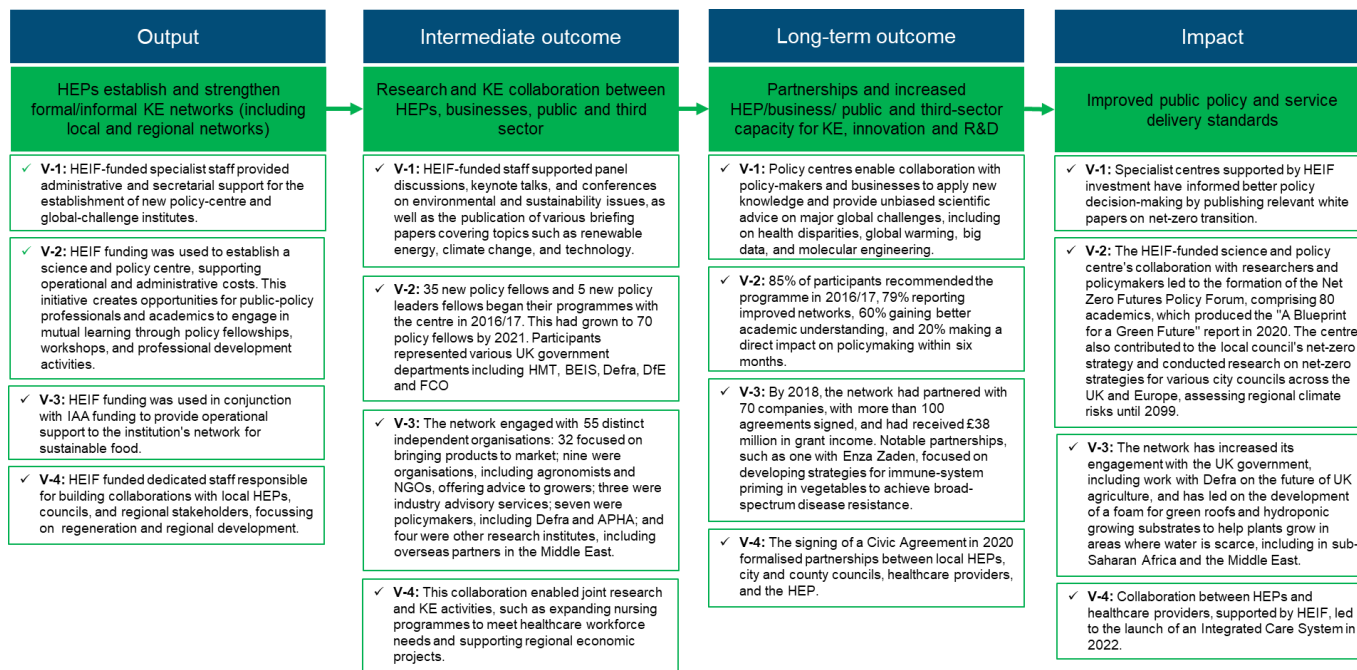


Figure 16: Cluster V Impact Analysis (Research 1)

✓ **HEPs established and strengthened formal/informal KE networks leading to research and KE collaboration between HEPs, businesses, public and third sectors**

From 2008-2020, HEIF was used by V-1, V-2, V-3, and V-4 to underwrite the operational costs of various policy engagement activities, funding specialist staff to facilitate and build local, national, and global KE networks. Primary and secondary evidence showed how HEIF was used to seed fund impactful initiatives, increasing levels of collaboration between highly intensive research institutions and government. A prime example was represented by V-1, whose AMS returns from 2008-2011 committed HEIF funding to “provide modest funds to help seed a science and policy activity”. The Head of Faculty responsible for the centre described how, during the early years, “there was a great deal of trial, error, and experimentation to define the purpose of the centre and how we were going to deliver it”. During this early period for the centre, HEIF constituted a “small but vital” income source that, at its peak, accounted for 20-25 percent of total income. The HEIF funding it did receive, they explained, involved less administrative burden and empowered genuine innovation:

“It’s worth much more money than the money if you see what I mean. It’s better money. You could get £100,000 that would be more hassle than it was worth. And you can get £100,000 that’s really enabling and the HEIF money falls into the second category.” (Head of Faculty, V-1)

The Head of Faculty 2 from V-1 described how unlike other available sources of funding HEIF had allowed the HEP to consistently invest in skilled staff with a “long-term strategic goal” in mind (Head of Faculty 2). Without the continuity of support represented by HEIF, negotiations with partners could have been subject to disruptions associated with new hires. Unlike other sources of KE funding which were often project specific, HEIF’s rolling allocation facilitated greater long-term planning. They elaborated:

“Whenever a new person comes in, the conversation will restart, and you may have to restart the negotiation, which takes an incredible amount of time.” (Head of Faculty 2)

✓ **Research and KE collaboration between HEPs, businesses public and third sectors leading to partnerships and increased HEP/ business/ public and third sector capacity for KE, innovation, and R&D**

Primary and secondary evidence showed HEIF enabled increased capacity for KE, particularly with government but also with NGOs and third-sector partners. HEIF supported HEPs conducted regular, high-profile policy engagements with government on a variety of topics, producing research briefings, policy papers, and reports, as well as hosting a range of seminars and workshops designed to improve public policy-making with reference to the latest scientific knowledge.

For example, V-2 used a portion of its HEIF allocation to support its policy fellowship programme – a professional development initiative for senior policy professionals. The programme enabled participants to engage in one-on-one meetings with academic experts, gain access to exclusive events, and collaborate on joint research projects. A survey in 2016-17 found that “89 percent of participants reported that the programme had helped them gain fresh perspectives on their current work; 89 percent had improved their network of contacts and 33 percent reported direct impacts on the policy-making process”. Since 2011, the centre has hosted over 500 policy fellows.

✓ **Partnerships and increased HEP/ business/ public & third-sector capacity for KE, innovation and R&D leading to improved public policy and service standards**

Various examples from across cluster V evidenced the direct and indirect benefits that HEIF-funded initiatives had on public policy and service standards. In particular, the case study sample showcased compelling evidence of initiatives funded by HEIF actively contributing to the implementation of net zero and supporting various sustainability initiatives across the UK. For example, V-1 showed how specialist policy centres supported by HEIF investment resulted in the publication of a white paper that explored cost-efficient methods of achieving a net-zero carbon emissions electricity system for Great Britain. The report estimated levels of investment required depending on different available technologies. Similarly, V2 demonstrated how its centre for science and policy led to the formation of a Net Zero Futures Policy Forum, comprising 80 academics, which produced the *Blueprint for a Green Future* report in 2020. The centre also contributed to the local council’s net-zero strategy and conducted research on net-zero strategies for various city councils across the UK and Europe, extending to assess regional climate risks until 2099 for the East of England, covering flooding, overheating, impacts on agricultural land, and biodiversity. Finally, V-3 used their AMS returns to demonstrate how their policy engagement work resulted in work with Defra on the future of UK agriculture, which has led to practical solutions to diverse agricultural challenges, including the development of a foam for green roofs and hydroponic growing substrates to help plants grow in areas where water is scarce, including in sub-Saharan Africa and the Middle East.

Without HEIF support, interviewees from V-1 also described how impactful policy engagement might not have been financially sustainable. The Head of Faculty 2 from V-1 explained that, while commercialisation is a cornerstone of their KE activity: “We don’t want to become a money-making machine.” HEIF provided the necessary funding mechanism to “help more with social entrepreneurship, which is always a loss-making mechanism but highly impactful”. Similarly, the Head of Faculty from V-2 described how HEIF enabled the centre to subsidise its costs to the UK government. They explained how HEIF allows the HEP to cover “shortfall between the level of service we provide and what government departments are willing to pay”.

“In principle, we could aim to maximise income generation. If we did that, we would likely be doing a lot of work for civil servants from Dubai, Singapore, Malaysia. However, we are striving to maximise our contribution to government policy-making in the UK, and there’s only a limit to how much money that people, civil servants, and the government can pay for the kinds of services we offer.” (Head of Faculty)

Without the support of HEIF funding, the centre would have continued to generate income but might have needed to increasingly depend on international income. Consequently, the centre would have offered “less value to government and in the long run... we’d be less able to experiment and kind of respond to surprises”.

Contribution narrative (cluster V, Research II): HEIF was used by cluster V HEPs to establish corporate partnerships, cover administrative costs of tech transfer, and support proof-of-concept funding schemes. This resulted in the successful translation of research into commercially viable products and spin-outs, along with collaborative research opportunities. Consequently, there has been a consistent influx of long-term investment from private businesses and an increase in KE funding opportunities.

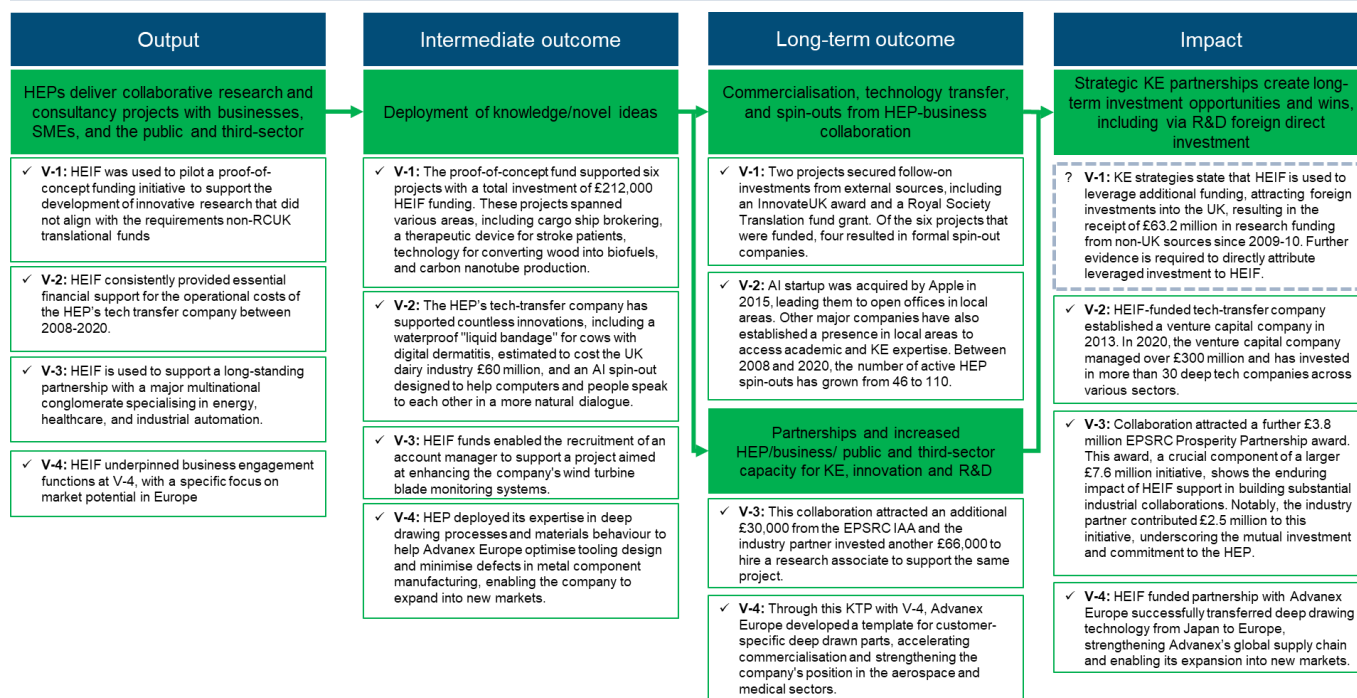


Figure 17: Cluster V Impact Analysis (Research 2)

✓ **HEPs delivered collaborative research and consultancy projects with businesses, SMEs, and the public and third sector leading to the deployment of knowledge/novel ideas**

Evidence collated in cluster V case studies showed how HEIF was consistently used to fund translational research that did not align with the requirements of other funds, as well as supporting long-standing partnerships with industry and fund core operational costs of tech-transfer activities. As the Head of KE Office at V-4 commented, as HEIF increased over the evaluation period, so too has the availability of discretionary levels of pump-prime funding. As they said: “as the HEIF funds have increased year on year, we've been able to expand both the people within the office, but then also the pump priming funds. That's also an essential part of the equation” (Head of KE Office, V-4). Interviewees across this cluster also commented on the uniqueness of the fund, comparing the flexibility of HEIF with other similar funding pots that required more administrative burden, restricted the scope of research outputs, and slowed the KE process. The Head of Faculty 2 from V-1 commented:

“You have flexibility to use [HEIF] how you see fit to maximise the impact, and that is very good ... usually do [KE] through competition funding. You get it for two to three years, and this is what you must do in these two years based on your proposals, and you shouldn't do anything else. If you want to do something else, you come back to discuss. Just assume it's the same amount. What you're going to see is a very strong administrative burden, and you're locking your people to do something that might be outdated in a year or two. They do not have the flexibility to change the funds, and there are too many reporting requirements. You're wasting a lot of time and funding. It's not the right way to use public resources.” (Head of Faculty 2)

✓ **Deployment of knowledge/novel ideas leading to commercialisation, TT, and spin-outs from HEP-business collaboration**

The flexibility of the fund enabled cluster V institutions to quickly identify and pursue opportunities to translate new knowledge into commercial opportunities. Case studies provided various examples of HEIF supporting successful innovations from early-stage funding. Specific examples from cluster V

include an AI spin-out designed to help computers and people speak to each other in a more natural dialogue which was acquired by Apple in 2015 (V-2).

In addition to having supported the translation of specific research into spin-out companies in cluster V, HEIF was used by V-3 over the period to establish a long-term partnership with a major multinational conglomerate specialising in energy, healthcare, and industrial automation. An analysis of consecutive AMS returns from 2016 to 2019 illustrated how HEIF facilitated the recruitment of an account manager to assist a project focused on enhancing the company's wind turbine blade monitoring systems. This collaboration attracted an additional £30,000 from the Engineering and Physical Sciences Research Council (EPSRC) Impact Acceleration Account (IAA), prompting the industry partner to invest £66,000 to hire a research associate to support the same project.

✓ **Commercialisation, TT, and spin-outs from HEP-business collaboration leading to strategic KE partnerships that create long-term investment opportunities and wins, including via R&D foreign direct investment**

The lasting impact of this collaboration was underscored by the substantial £3.8 million EPSRC Prosperity Partnership award, a pivotal component within a £7.6 million initiative. This award exemplified the enduring influence of HEIF support in promoting significant industrial collaborations, with the industry partner contributing £2.5 million, emphasising mutual investment in the HEP (Impact 3).

In 2019, the HEP showcased the expansion of this partnership, extending collaboration to include a local water supplier. This initiative focused on addressing wastewater challenges, resulting in an AI-enhanced blockage predictor solution that reduced pollution incidents. Implemented in an ongoing trial across 70 sites, the solution offered up to two weeks' advance notice of blockages, aligning with the water supplier's objective to reduce pollution incidents by 50 percent through early intervention. This illustrated the practical applications of HEIF-supported projects in addressing environmental challenges.

The Head of Faculty 2 from V-3 underscored the role of HEIF funding in this collaboration, enabling the HEP to cultivate a substantial partnership over time. HEIF's flexibility allowed for short projects, consultancy, facilities access, and testing, building trust and paving the way for more extensive collaborations:

“When [company] came to us, our partnerships generally start off requiring flexibility. Companies rarely come in cold and say we want to invest for 12 months in a project to do X. It's like we're interested in these areas. It takes a while before they'll expose their problems, but there's a lot of trust building required, and that typically starts with maybe some consultancy, facilities access, and testing. Then hopefully, you'll lead on maybe a three-month project or something like that to just deliver something that presents quite a bit of challenge for academic institutions in terms of resources. We're not like a company like Jacobs where we have people on bank that we can deploy to projects. Our researchers are generally employed on a specific project. HEIF can be used quite flexibly to start those relationships. So, if you look at [company] and the water company's projects, they go back to short projects for maybe two or three months to deliver something to build trust, and those were enabled by HEIF funding.” (Head of Faculty 2, V-3)

8.1.3 People pathway

Contribution narrative (cluster V, People): HEIF was used by the 3/4 HEPs from the cluster V sample to seed fund and cover the operational costs of student entrepreneurship centres that have provided mentoring support, helped with business cases, and provided spaces to develop business ideas. This has resulted in the considerable growth in graduate start-ups for V-1, V-3, and V-4 and produced long-term investment opportunities for certain graduate start-ups.

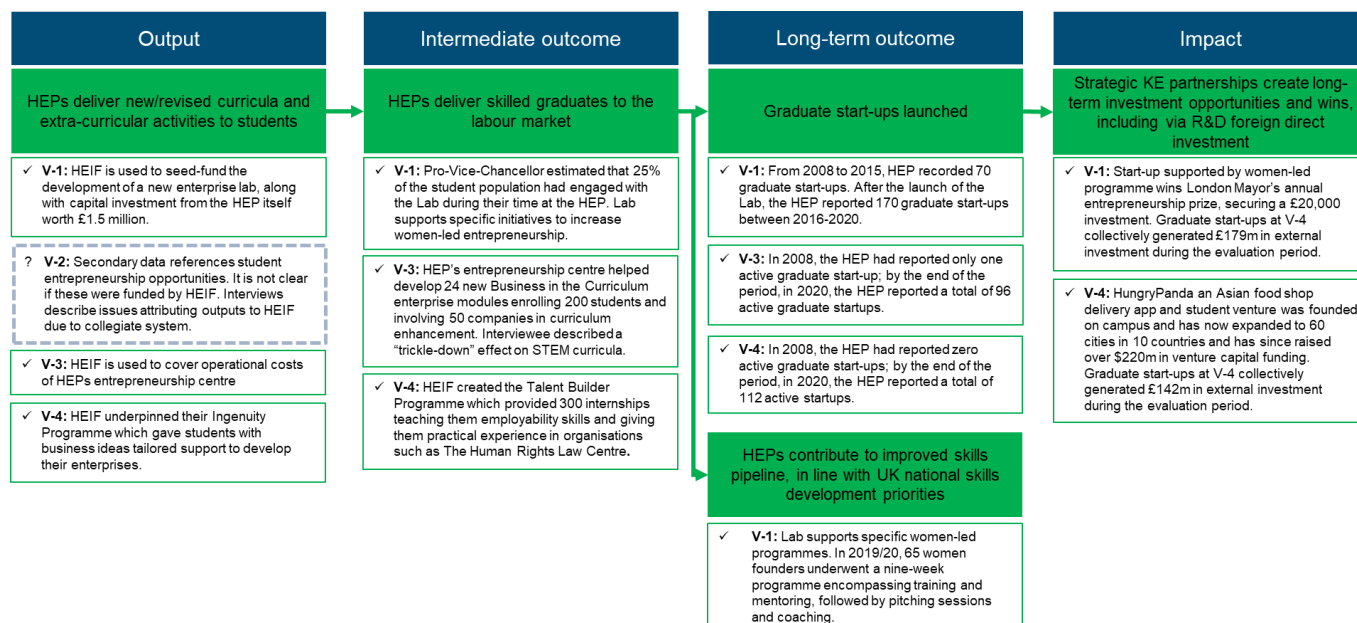


Figure 18: Cluster V Impact Analysis (People)

✓ HEPs delivered new/revised curricula and extra-curricular activities to students leading to HEPs delivering skilled graduates to the labour market

Primary and secondary evidence from a series of KE strategies, AMS returns, and case study interviews illustrated cluster V institutions' persistent use of HEIF to build an entrepreneurial culture and student-facing KE systems at their respective institutions. Specifically, these institutions aimed to benefit their undergraduate, post-graduate, and early career researcher population. This marked a substantial shift from early in the evaluation period when student-facing KE activities were scarcely mentioned in secondary documentation. Following 2016, however, institutions provided strong examples of how HEIF had accelerated student entrepreneurship programmes.

In the case study sample, three out of four cluster V institutions deployed HEIF to establish dedicated student entrepreneurship centres. These centres aimed to provide students with opportunities to transform ideas and knowledge into commercially viable products and services. Additionally, they offered students upskilling opportunities, teaching them how to draft a business case and present pitches to potential investors. V-1's student entrepreneurship centre represented an exemplar of the kind of infrastructure that has increasingly become a feature of highly intensive research universities included in cluster V. The institution used HEIF to seed fund the establishment of the new centre alongside a £1.5 million investment from the institution. Since its foundation, HEIF funding was used to cover the costs of 12 FTE staff. Interviewees from V-1 underlined the role of HEIF in maintaining their student entrepreneurship function:

"The entrepreneurship centre relies heavily on HEIF funding. Without it, we would be unable to provide commercial advice to students and early career researchers on building start-ups. We wouldn't have the necessary staff to offer one-on-one support and guidance, or to provide incentives." (Head of Faculty 2, V-1)

"[HEIF] provided a core funding mechanism to enable these kinds of centres to exist. The challenge is that we can't rely on HEIF funding. We must bring in external funding, but it's provided pump-priming that's meant that we've created a space that you've got a team who are dedicated to this." (Head of Faculty 1, V-1)

In a post-Augar Review policy landscape, the Pro-Vice-Chancellor from V-1 described how HEIF had enabled the institution to creatively respond to new student demands:

“When I started, students came here seeking a strong technical background, aiming to secure jobs in the industry. Now, the focus has shifted towards ‘doing whatever I can to apply my skills to make a difference in the world.’”

On an institutional level, the Head of Faculty 2 from V-3 described the “trickle-down” impact of their own dedicated student entrepreneurship centre on wider curricular enhancement. According to the Head of Faculty 2:

“I think that’s where HEIF is trickled down into the undergraduate population outside of the entrepreneurship centre and that offer to undergraduates... think specifically in engineering we have been able to use HEIF to fund extracurricular or co-curricular activities where there’s a link either to public engagement or industrial partners.” (Head of Faculty 2, V-3)

✓ **HEPs delivered skilled graduates to the labour market leading to graduate start-ups launched and an improved skills pipeline, in line with UK national skills development priorities**

Evidence from V-1 and V-3 underscored the contribution that HEIF made to graduate start-up opportunities, and, arguably, a more efficient skills pipeline in the UK. Unlike other translational research funds that might be tied to RC-UK or EU KPIs during the evaluation period, HEIF’s flexibility allowed these institutions to take risks and invest in nascent student start-ups. Though interviewees from V-1 highlighted an ambition for their student entrepreneurship centre to become self-sustaining through private investment, the Head of Faculty 2 clarified the importance of HEIF as a source of early-stage investment for students by accommodating levels of risk and experimentation that other sources of funding would not tolerate:

“When you’re talking about student entrepreneurship you are talking about the very earliest stages of innovation where there is no investment... you’re not going to take equity stakes in every student idea because most of them are too early stage. The [entrepreneurship centre] means that you can invest at a level where nobody else would. But it’s essential because you need lots and lots of students feeling enabled and empowered to start exploring ideas and then guess what? More ideas, more innovation, more successful start-ups.” (Head of Faculty 1, V-1)

Additionally, for V-3, HEIF allowed the institution to build targeted interventions to address barriers to KE participation, using HEIF-funded staff to support a programme for women-led start-ups. In the 2019-2020 period, AMS returns stated that the programme provided support to 65 women founders. These founders underwent a nine-week programme encompassing training and mentoring, followed by pitching sessions and coaching.

For V-3, the funding allowed the institution to effectively embed entrepreneurship into the undergraduate curriculum. Activities supported by HEIF included the development of 24 new Business in the Curriculum enterprise modules in 2016/17, the enrolment of 200 students in modules integrating enterprise elements, with the goal of providing all students with access to enterprise opportunities and involving 50 companies in curriculum and case study development.

✓ **Graduate start-ups launched leading to long-term investment opportunities and wins, including via R&D foreign direct investment**

Between 2008 and 2020, V-1, V-3, and V-4 recorded significant increases in the number of graduate start-ups launched, with graduate start-ups launched from V-1 and V-4 generating £179m and £142m in external investment respectively. However, since the foundation of their student entrepreneurship centre in 2016 this figure increased by 170. One notable success story, referenced by an interviewee from V-4, was based on a start-up that won the VC’s Entrepreneurial Potential prize, and was initially co-located on the HEP campus with HEIF support. Hungry Panda was a mandarin language app which delivers food and groceries from Asian shops and restaurants. Established in 2017, HungryPanda rapidly expanded to over 60 cities in 10 countries and recently introduced new services such as Panda Fresh for Asian groceries. Since 2017, the business has raised a total of \$220m in venture capital funding across multiple funding rounds.

8.1.4 Infrastructure pathway

Contribution narrative (cluster V, Infrastructure): HEIF was used by cluster V HEPs to leverage funding for infrastructural development and cover the operational costs of said infrastructure to support improvement of their local regions, increase capacity for KE and increase access to equipment. These investments resulted in local benefits for SMEs, generated further research grant income, and provided systems to manage unprecedented public health crises. More evidence is required to link HEIF with an increase in total gross expenditure on R&D.

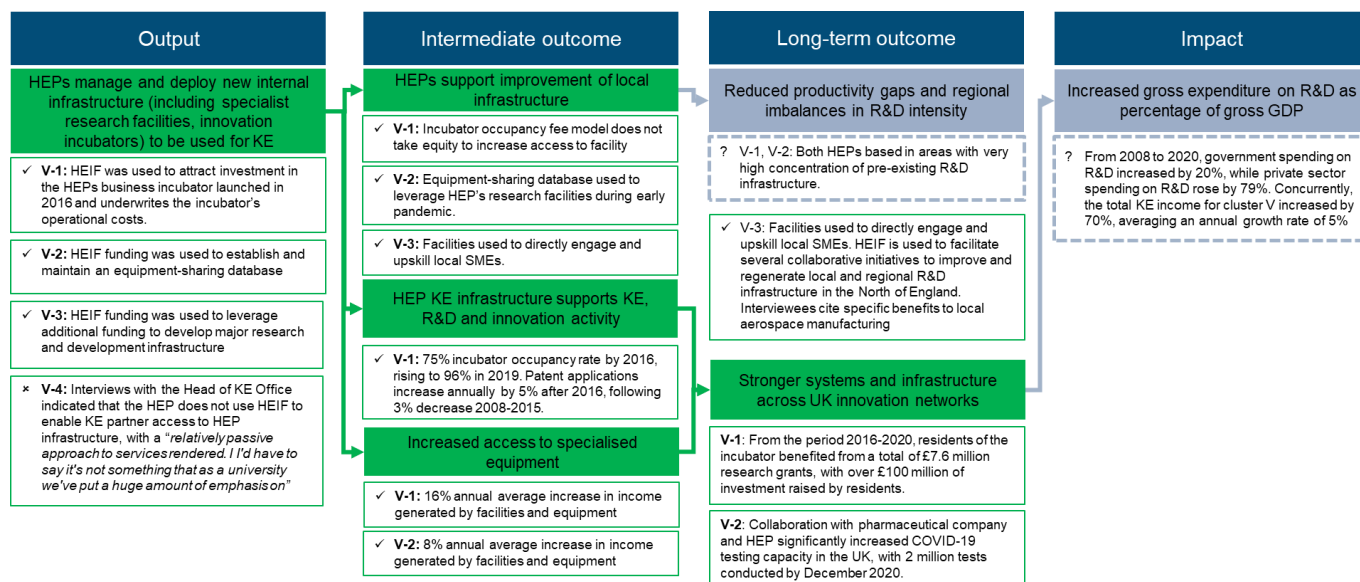


Figure 19: Cluster V Impact Analysis (Infrastructure)

- ✓ **HEPs managed and deployed new internal infrastructure (including specialist research facilities, innovation incubators), to be used for KE leading to improvement of local infrastructure, KE infrastructure that supports KE, R&D and innovation activity and increased access to specialised equipment**

Although capital investment using HEIF is not permitted, cluster V HEPs in the case study sample used HEIF funding to either fund the staff costs of new infrastructure (V-1), build new systems to manage existing specialist equipment (V-2), or leverage additional funding to develop major new infrastructure (V-3). The latter example provided key evidence of how HEIF was effectively used to leverage other funds, which, in the case of V-3, included a successful ERDF proposal. This combination of funding streams led to the development of new research and innovation infrastructure, including an engineering laboratory, a translational research centre, and civil engineering research centre.

- ✓ **Improvement of local infrastructure, KE infrastructure that supports KE, R&D and innovation activity and increased access to specialised equipment leading to stronger systems and infrastructure across UK innovation networks and reduced productivity gaps and regional imbalances in R&D intensity**

Primary and secondary evidence from across all three case studies from cluster V consistently highlighted how HEIF facilitated increased access to specialised equipment and physical assets within these HEPs. This was achieved through initiatives such as incentivising local engagement with incubation facilities (V-1), establishing new equipment sharing databases (V-2), or utilising facilities for direct collaboration with local SMEs (V-3). In the case of V-1, HEIF served as a funding stream which was important for sustaining the operations of its highly successful new incubator, whose residents have collectively secured over £100 million in investments since its launch in 2016. For V-2, the digital equipment-sharing infrastructure enabled a swift response to the COVID-19 pandemic, made possible by the operational groundwork laid by HEIF in the preceding years.

"One of the examples on that actually being fantastically useful is when the pandemic hit, we were involved in first helping to set up and share equipment for our test centre in Milton Keynes... HEIF was instrumental to setting that up." (Head of KE Office 2, V-2)

Within the case study sample, a discrepancy emerged between V-1/V-2, situated in areas of very high R&D intensity, and V-3, which operated within an area with lower (but still substantial) R&D intensity. Due to these factors, it was challenging to estimate the net benefit of HEIF on regional imbalances in R&D intensity near V-1/V-2, given their exceptionally high baseline productivity. Nevertheless, V-3 clearly demonstrated how HEIF was used to facilitate collaborative initiatives with local SMEs to address regional productivity imbalances in R&D intensity. Specific benefits extended to the local aerospace manufacturing sector, including companies engaged in designing alloys, producing parts, and supplying sub-components for aircraft engines:

“The focus has been substantial on the regional industrial base, particularly in metals manufacturing and processing industries. HEIF has enabled these companies to engage with research, gaining a deeper understanding of their challenges. We’ve done this by providing access to new facilities, some of which were previously funded by the ERDF, with HEIF sustaining this access... HEIF funding serves as a catalyst, enabling us to showcase the latest advancements, especially in areas like additive manufacturing, where significant investment has been made, and access to facilities is granted.”

? Stronger systems and infrastructure across UK innovation networks and reduced productivity gaps and regional imbalances in R&D intensity leading to increased gross expenditure on R&D as percentage of gross GDP

There was no conclusive evidence directly linking HEIF long-term outcomes to an increased gross expenditure on R&D as a percentage of gross GDP. Although there was a clear correlation between levels of government/private sector R&D expenditure and total KE income for cluster V, it was not possible to establish a meaningful causal relationship between these two figures. While the evidence did not rule out the existence of such a relationship, it also failed to provide supporting evidence. Concerns about the applicability of this impact in the PT were raised during contribution analysis workshops with the TRP, which suggested a more appropriate impact might relate more to local R&D investment opportunities.

8.2 Cluster X analysis

The following analysis synthesises and evaluates primary and secondary data sources from four case study cluster X institutions. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster’s contribution to broader societal and economic outcomes, in line with PT pathways.

8.2.1 Background

Institutions from cluster X were typically large, research-intensive HEPs with a broad range of disciplines. Their research was predominantly funded by UKRI and other government bodies, with a smaller portion from industry. The discipline portfolio was balanced across STEM and non-STEM fields, but with less focus on clinical medicine. The student population had a high proportion of taught postgraduates.

8.2.2 Research pathway

Contribution narrative (cluster X, Research): HEIF was used to develop cluster X’s business partnerships, resulting in collaborative work projects between the HEP and the public/private sector. Often collaborative work allowed the HEP to leverage/pool additional funding, increasing its capacity to conduct KE. HEP’s KE activities often aligned with government priorities and improved public policy and service delivery standards.

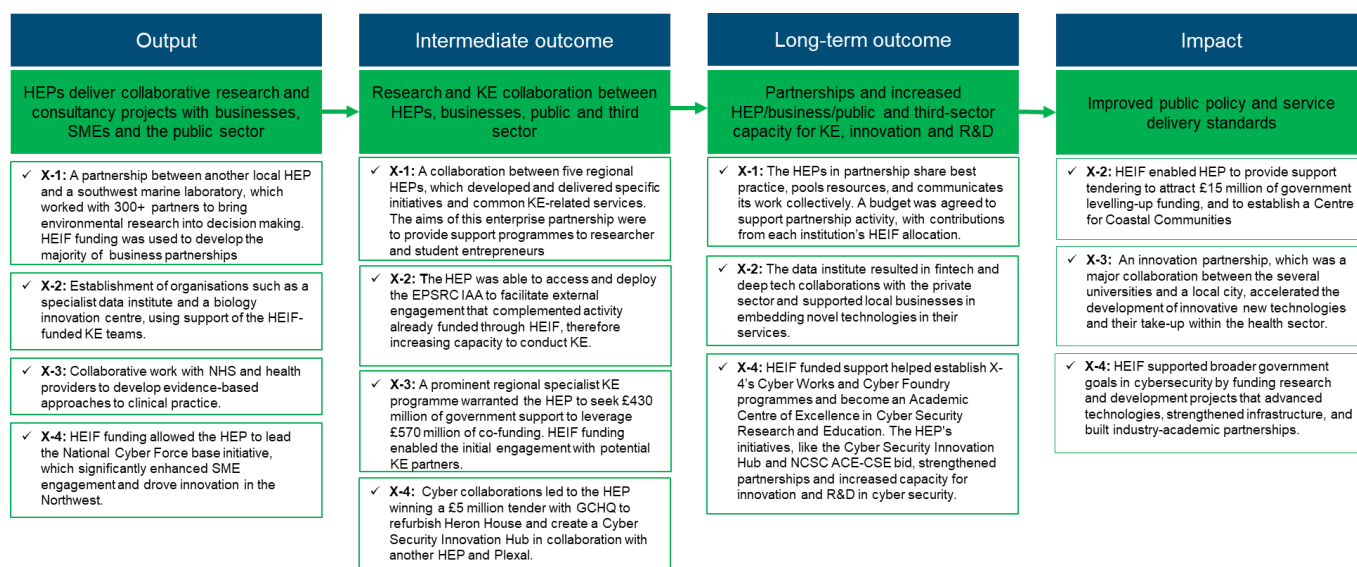


Figure 20: Cluster X Impact Analysis (Research)

✓ **HEPs delivered collaborative research and consultancy projects with businesses, SMEs and the third sector leading to research and KE collaboration between HEPs, businesses public and third sector**

Primary and secondary data across cluster X provided consistent evidence of how HEIF contributed towards the development and delivery of collaborative projects, across both the private and public sectors. Examples were numerous, including partnerships between the HEP and a southwest marine lab (X-1) between 2017-2023, who worked with 300+ highly engaged business, policy and community partners to bring environmental research into decision-making. HEIF funding was used to develop business partnerships, and other aspects of the collaboration were funded by the Natural Environment Research Council (NERC). X-2 launched organisations such as a specialist data institute (established in 2015) and a biology innovation centre (established in 2019). The launch and management of these organisations were enabled by the support of the HEIF-funded KE teams. X-3 worked with NHS and health providers worldwide working with the HEP’s health-related departments to develop evidence-based approaches to clinical practice. At X-4, HEIF funding created the capacity for the HEP to produce several new research postings in the KE department which allowed them to respond to industry trends.

As noted by their Head of KE Office, HEIF support was central to fostering HEP-SME relationships: “SME engagement has been totally driven by HEIF.”

HEIF’s role in facilitating these projects included funding specific KE staff, whose role was to engage with businesses to develop and formalise relationships. For example, X-2 increased the number of KE dedicated staff from seven to 37 members, comprising the KE, Business Engagement and Start-Up Support teams. Furthermore, a common theme seen across case studies in cluster X is that as the HEP’s HEIF allocations increased, and confidence and certainty in the fund grew, HEPs had the stability to employ staff on permanent contracts, rather than short-term or yearly contracts (as referenced by Heads of KE spending within the CMO workshop). Longer-term contracts increased the effectiveness of the KE teams’ work due to staff continuity and their ability to forward plan.

✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to more agile and responsive HEP research direction/strategies**

HEIF also enabled more agile and responsive HEP research direction/strategies (Long-Term Outcome 2). Projects were able to progress more quickly, as KE activities did not have to wait for central HEP allocations. Furthermore, the unhypothecated nature of HEIF in comparison with other funding allowed the HEP to focus on rapid KE translation from the HEP’s areas of expertise to directly address emerging government and industry priorities. X-1 provided an example from 2020, where HEIF was used to swiftly adapt an existing immersive training toolkit for use by NHS workers to ensure the correct and safe use of PPE equipment during the COVID-19 pandemic. This was in response to NHS trusts identifying the need for remotely accessible, widely available and effective training.

✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to partnerships and increased HEP/business/public and third sector capacity for KE, innovation and R&D**

HEIF played a role in increasing research and KE collaboration (Intermediate Outcome 2). The mechanisms deployed by HEPs included leveraging additional funding, and pump-priming and seed funding projects, only possible due to HEIF’s flexibility. To exemplify, X-2 demonstrated how the HEP accessed funding from a RCUK Impact Accelerator Account to facilitate external engagement that complemented activity already funded through HEIF. With this further funding, the HEP introduced a strategic initiative in a ‘challenge lab’ format which brought together academics and businesses in facilitated workshops focused on business challenges. Furthermore, in X-3, a significant regional specialist KE programme, facilitated by HEIF-funded staff, prompted the HEP to pursue £430 million in government support to leverage an additional £570 million in co-funding. At X-4 HEIF funded staff won a £5 million tender from GCHQ, leading a project to create a Cyber Security Innovation Hub in collaboration with the University of Manchester and Plexal. For case study HEPs in cluster X, HEIF funding enabled the initial engagement with potential KE partners, resulting in additional interest and investment from stakeholders and generating additional funding to support further KE, R&D and innovation activity.

✓ **Partnerships and increased HEP/ business/ public and third sector capacity for KE, innovation and R&D leading to improved public policy and service delivery standards**

The increasing levels of research and KE collaboration directly led to increased capacity for KE and innovation (Long-Term Outcome 3). X-1 provided a strong example of how HEIF directly increased HEPs’ and partner capacity to conduct KE through a collaboration between five regional HEPs, which developed and delivered specific initiatives and common KE-related services. The partnership shared best practice and pooled resources. The collaboration worked with partnership-level management and governance structures developed over the course of 10 years. A budget was agreed to support partnership activity, and HEIF’s flexibility allowed for contributions to be made from each institution’s HEIF allocation. X-2 also provided an example of a £13 million project, which brought together businesses in the region, a catapult, and the local council to develop marine technology.

Furthermore, cluster X HEPs demonstrated an increased ability to influence improvements in public policy and service delivery standards. For example, X-3 provided examples of the HEP influencing public policy by providing consultancy services on policy issues. This included work with Departments of Health Sciences and Social Policy and Social Work, and the Centres for Health Economics, Reviews

and Dissemination, Housing Policy and the Social Policy Research Unit. In addition, X-3 developed an innovation partnership, a major collaboration between several universities and a local city. This aimed to accelerate the development of innovative new technologies and their take up within the health service through a partnership of academic institutions, industry and the health service, and was sustained with HEIF funding. Within X-2 HEIF enabled the HEP to provide support tendering to attract £15 million of government levelling-up funding, and to establish a centre which focused on coastal communities in response to Chris Whitty's report on stark health disparities that existed in these areas. This provided evidence of how HEIF was used to reduce regional imbalances and contribute towards HMG's place-based agenda.

8.2.3 People pathway

Contribution narrative (cluster X, People 1): HEIF was used to fund specific staff incentives and to increase cluster X's KE monitoring capacity. This embedded an impact driven culture within HEPs, meaning HEPs tracked their KE performance, allowing them to target lower performing areas, as well as encouraging the development of centralised KE teams. As a result, more streamlined processes for academics wanting to commercialise their research were developed.

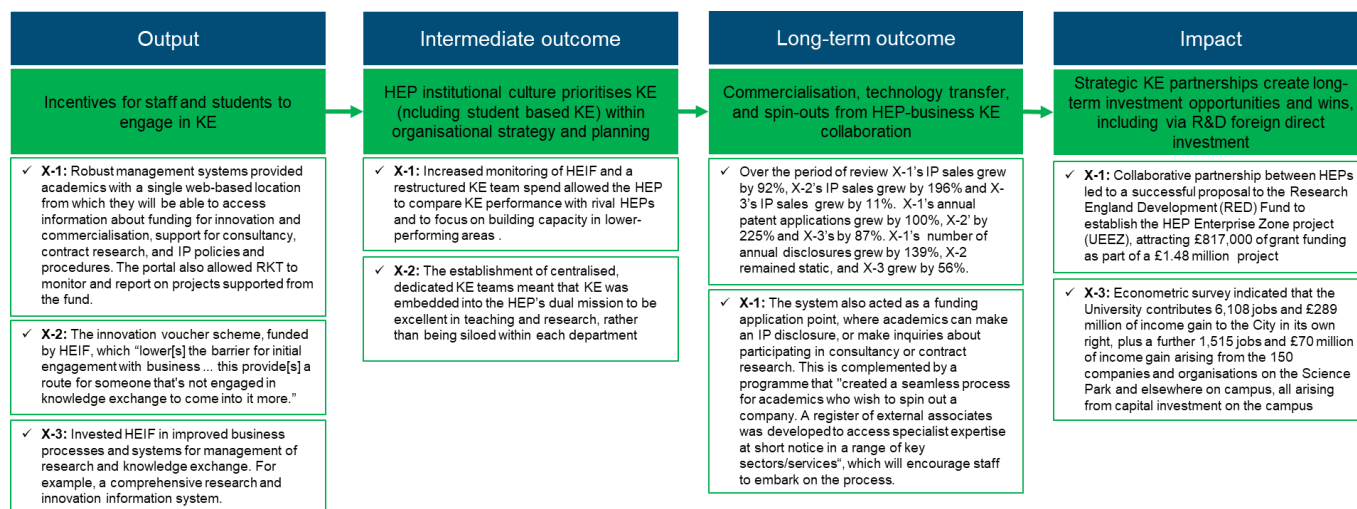


Figure 21: Cluster X Impact Analysis (People 1)

✓ **Incentives for staff and students to engage in KE leading to HEP institutional culture prioritising KE (including student-based KE) within organisational strategy and planning**

HEIF was used to fund specific staff incentives. These included i) a programme that created a process for academics to develop spin-outs (X-1), and ii) an innovation voucher scheme, funded by HEIF, lowering the barrier for initial engagements with businesses (X-2). Furthermore, case studies note that HEIF's role in increasing HEPs' KE activity has provided informal training and upskilling opportunities for HEP staff, via increasing staff exposure to KE as it became an increasingly integral and centralised stream of work to the HEP. Furthermore, as noted in the research section above, HEPs within cluster X were increasingly able to employ dedicated KE staff on permanent contracts over the period under review. This increased HEPs' willingness to invest in staff development and training due to the longevity of their staffing contracts.

Furthermore, HEIF funding encouraged/incentivised HEPs to develop more robust management systems and reporting processes to monitor their KE activities. X-1 built a single web-based portal from which academics could access information about funding for innovation and commercialisation, and support for consultancy and contract research, IP policies and procedures. The portal also allowed KE staff to better manage the approvals process and to administer, monitor, and report on projects supported by the fund. These monitoring systems were set up prior to the period under review, but since 2008 the HEP used HEIF to improve their monitoring approach and trend analysis mechanism. As an additional example, X-3 implemented a comprehensive research and innovation information system. An additional driver for HEPs increased monitoring capacity was their increased accountability as a result of RE's reporting requirements which became increasingly rigorous during the period of review. This was referenced within the CMO workshop by several attendees from cluster X.

✓ **HEP institutional culture prioritised KE (including student-based KE) within organisational strategy and planning leading to commercialisation, TT, and spin-outs from HEP-Business KE collaboration**

By tracking KE performance, HEPs could compare KE performance with similar HEPs and focus on building capacity in lower-performing areas, driving a more systematic, structurally embedded approach to KE across the entire institution. This rooted an impact driven culture within cluster X HEPs, evidencing how they prioritised KE within organisational strategy and planning. This correlated with

the emergence of the impact agenda, and the focus on increased monitoring mechanisms since 2016, such as the introduction of REF and KEF.

Further evidence of how HEP institutional culture prioritised KE within organisational strategy and planning included the establishment of an internal team to consolidate and improve the efficiency of HEPs HEIF funding allocation, which can be seen across the three cluster X case studies. In X-1, the operational management of HEIF spend was the responsibility of the Director of Research and Knowledge Transfer who reported to the Registrar and Deputy Chief Executive. Strategic management of the programme was through the Research and Knowledge Transfer (RKT) Management Group, which was chaired by the Deputy Vice-Chancellor for RKT and attended by the lay member of Council with responsibility for Research and KT. X-2 noted that the establishment of centralised dedicated KE teams meant that KE was embedded into the HEPs dual mission to be excellent in teaching and research as a cross-cutting priority, rather than being siloed and defined within each department. The HEP implemented formal KE governance structures, such as an enterprise board, the membership of which included Executive Deans for each faculty, Deputy Deans for Research, PVC Research and three external members. The Enterprise Board worked with academics on the development and approval of KE initiatives, and also drove the HEP's enterprise and innovation strategy.

Increased monitoring and development, as well as the establishment of centralised KE teams have resulted in more streamlined and efficient processes for academics wanting to commercialise their research. For example, X-1's portal (referenced above) acted as a funding application point where academics could make an IP disclosure, or make inquiries about participating in consultancy or contract research. More generally, HE-BCI returns showed an almost unanimous increase in annual IP sales, annual patent applications and annual disclosures within each case study. Over the period of review X-1's IP sales grew by 92 percent, X-2's IP sales grew by 196 percent and X-3's IP sales grew by 11 percent. X-1's annual patent applications grew by 100 percent, X-2' by 225 percent and X-3's by 87 percent. The number of annual disclosures at X-1's grew by 139 percent, X-2 remained static, and X-3 grew by 56 percent.

✓ **Commercialisation, TT, and spin-outs from HEP-Business KE collaboration leading to strategic KE partnerships created long-term investment opportunities and wins, including via R&D foreign direct investment**

There is evidence that HEIF-enabled activity created long-term investment opportunities. For example, in X-1, the partnership between five local HEPs, as referenced above, led a successful proposal to the RE Development (RED) Fund to establish the HEP Enterprise Zone project, attracting £817,000 of grant funding as part of a £1.476 million project. The project built links across the local county and allowed business acceleration and spin-out support to be available countywide. X-3 commissioned an annual econometric report on the income gain and additional jobs attributable to the HEP within the Unitary Authority. The report provided data and analysis related to the HEP itself, businesses located on the HEP campus, and on jobs and economic activity created through capital investment on the campus. The 2014-15 survey indicated that the HEP contributed 6,108 jobs (6.7 percent of the city's total) and £289 million of income gain (6 percent) to the city in its own right, plus a further 1,515 jobs (1.6 percent) and £70 million of income gain (1.4 percent) arising from the 150 companies and organisations on the Science Park and elsewhere on campus.

However, there is limited evidence of cluster X case study KE activity creating long-term investment opportunities and wins via R&D foreign direct investment.

Contribution narrative (cluster X, People II): HEIF was used to launch programmes that increased the entrepreneurial skills of cluster X's students. These increased skills, in combination with financial support (funded by HEIF), encouraged the launch of graduate start-ups. Furthermore, collaboration with businesses provided more opportunities for students to do work placements and land permanent roles, improving the employment prospects of HEP students.

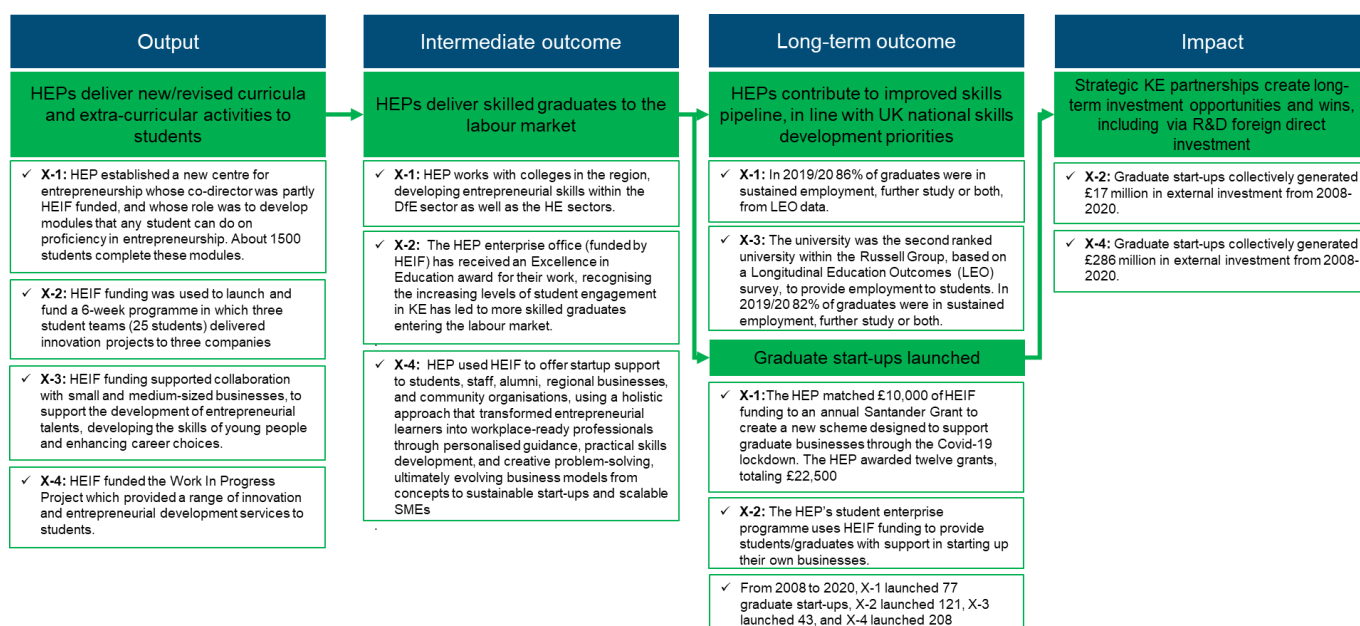


Figure 22: Cluster X Impact Analysis (People 2)

✓ **HEPs delivered new/revise curricula and extra-curricular activities to students leading to HEPs delivering skilled graduates to the labour market**

HEIF was used to develop curricula and launch programmes that increased the entrepreneurial skills of cluster X's students (Output). For example, X-1 established a new centre for entrepreneurship whose co-director was partly funded by HEIF. Its role was to develop entrepreneurship modules for students to improve proficiency. Circa 1,500 students completed these modules a year. Within X-2 HEIF funding was used to fund a six-week programme in which three student teams (25 students) delivered innovation projects to three companies. X-3's HEIF-funded student-facing internship hub expanded its activities to offer students a wide variety of internship options.

It is important to note that in the case of X-1, entrepreneurship programmes were later delivered without HEIF funding as they were prioritised to the extent that they formed a core part of the institution's KE activities. However, it was HEIF funding that acted as the initial driving force that put student entrepreneurship on the HEP's agenda. The Head of the HEP's KE Budget Spending in X-1 said:

"[Entrepreneurship programmes] wouldn't have happened with HEIF in the first place... we definitely led the way with the HEIF because again it was one of those where it was like we want to take a chance on this. Again, it was when it wasn't quite fashionable".

✓ **HEPs delivered skilled graduates to the labour market leading to graduate start-ups launched**

Increased entrepreneurial skills, in combination with financial support (funded by HEIF) encouraged the launch of graduate start-ups. X-1 matched £10,000 of HEIF funding with an annual Santander grant to create a new scheme to support graduate businesses through the COVID-19 lockdown. Graduate start-ups could apply for a grant of up to £2,000 to undertake specific projects and initiatives in direct response to the impact of the pandemic. This included innovating their current business model, developing new products, or supporting initiatives to reach out and engage with new audiences. The HEP awarded 12 grants, totalling £22,500. In X-2, HEIF funding was used to launch and continually fund an extracurricular student enterprise programme, supporting aspiring entrepreneurs through business services, a dedicated student business incubator, and networking opportunities, and ensured

links were established with national organisations such as the National Council for Graduate Entrepreneurship and Students in Free Enterprise. This finding is corroborated by HE-BCI data, as between 2008-2020, X-1 launched 77 graduate start-ups, X-2 launched 121 and X-3 launched 43.

✓ **HEPs delivered skilled graduates to the labour market leading to HEPs contributing to improved skills pipeline, in line with UK national skills development priorities**

HEIF funding facilitated partnerships with private sector companies, enhancing students' employment prospects. These collaborations offered work placements that frequently led to permanent roles. X-2's enterprise office received an award recognising that the HEP's work in increasing student levels of engagement in KE led to more skilled graduates entering the labour market. Longitudinal Education Outcomes (LEO) data corroborated this insight. The X-3 HEP was the second ranked HEP within the Russell Group, based on a LEO survey, to provide employment to students. In 2019/20, 89 percent of graduates were in sustained employment, further study or both one year after graduation. Similarly, X-1 had 87.4 percent and X-2 had 86.1 percent of graduates were in sustained employment, further study, or both one year after graduation.

? **HEPs contributed to improved skills pipeline, in line with UK national skills development priorities leading to HEIF-supported KE contributes towards a more productive and equitable skills sector**

When considering whether HEIF-supported KE contributed towards a more productive and equitable skills sector, there is anecdotal evidence from X-3 that HEIF funding "*helped students from different background and socioeconomic groups to be able to take opportunities, where they haven't previously been able to, because they're funded by HEIF*", but this will need to be corroborated with secondary further data to strengthen the contribution narrative.

8.2.4 Infrastructure Pathway

Contribution narrative (cluster X, Infrastructure): HEIF was used to fund partnership activities and training initiatives linked to KE infrastructure, encouraging businesses to use the space. Often KE infrastructure was used in-line with government priorities for the local area. KE infrastructure acted as a “linchpin” for businesses and HEPs in the regions, creating stronger KE systems and networks.

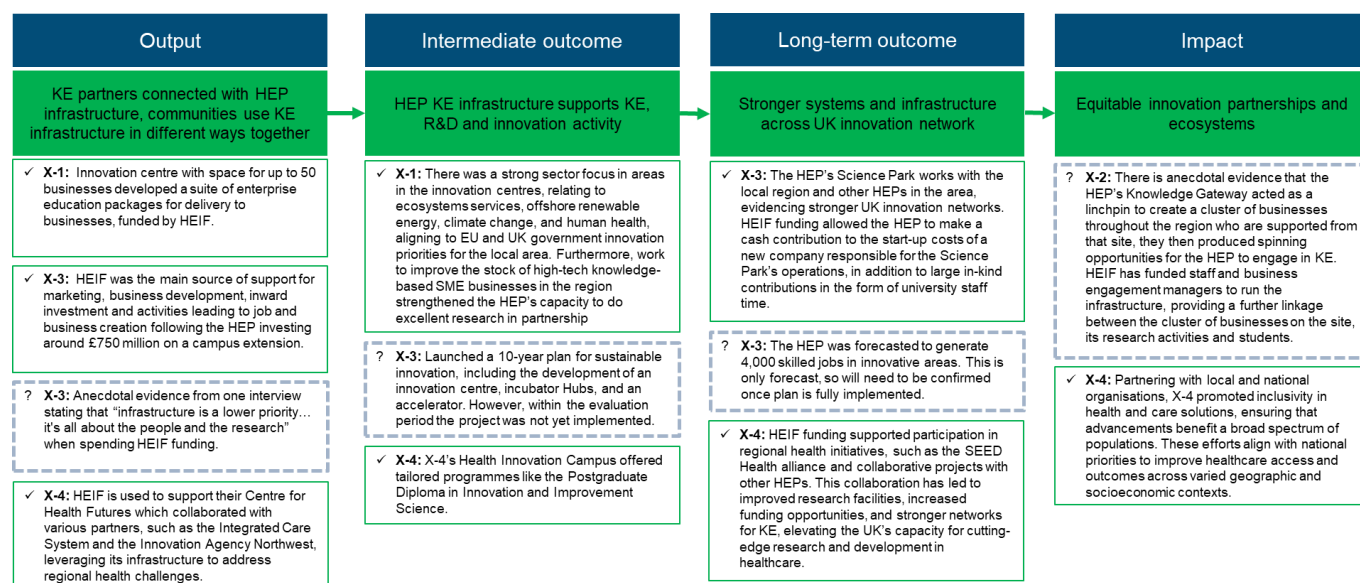


Figure 23: Cluster X Impact Analysis (Infrastructure)

✓ **KE partners connected with HEP infrastructure, communities used KE infrastructure in different ways together leading to HEP KE infrastructure supported KE, R&D and innovation activity**

HEIF was used to fund partnership activities and training initiatives linked to KE infrastructure, encouraging businesses to make use of the physical space (Output 9). For example X-1 detailed how HEIF-funded staff supported the HEP’s innovation centre, which could accommodate up to 50 businesses. The HEP also developed a suite of enterprise education packages for delivery to businesses, funded by HEIF. Similarly, X-2 committed HEIF funding to staff time to develop the institution’s flagship KE infrastructure, with the goal of establishing the HEP as the central hub for an innovation community, catering to the needs of both tenants and the broader business community. For X-3 HEIF was the main source of support for marketing, business development, inward investment and activities leading to job and business creation following the HEP investing ~£750 million on a campus extension.

✓ **HEP KE infrastructure supported KE, R&D and innovation activity leading to stronger systems and infrastructure across UK innovation network**

Often KE infrastructure was used in-line with the local government innovation priorities, and was used to support KE, R&D and innovation (Intermediate Outcome 9). For example X-1 used innovation centres to focus on environmental sectors such as renewable energy. Furthermore, the geographical location of the HEP meant that they:

“Don’t have a kind of big industrial or manufacturing hinterlands, you know, or a big life science hinterland for that matter. So, I think we’ve always recognised we need to work hard and stay focused on [developing partnerships]. As a consequence, many local businesses are SMEs.”

Through supporting the growth of innovation centres, HEIF enabled the HEP to broaden its reach and target high-growth SMEs through initiatives such as innovation vouchers and through access to the HEP’s innovation infrastructure demonstrating the HEP’s awareness of the drive from central government from 2016 (Sainsbury Review) to engage and support the SME community.

Furthermore, X-3 launched a 10-year plan for sustainable innovation in 2020. Part of this plan involved the development of an innovation centre (accommodating researchers and businesses to maximise

opportunities for interaction), incubator hubs (linking start-ups with the facilities and training in the innovation centre) and an accelerator (providing advice, expertise, networks and promotional opportunities for businesses across the region), which was forecasted to create 4,000 jobs. The Head of KE Office confirmed that HEIF was “used to kind of pump-prime some of that activity to drive those relationships” in relation to the plan. Without HEIF, the HEP

“just wouldn’t have had the resources to put into it to do that initial work and to build that capacity and expertise in the region”.

? Stronger systems and infrastructure across UK innovation network leading to equitable innovation partnerships and ecosystems

There was anecdotal evidence that KE infrastructures acted as a “linchpin” for businesses and HEPs in their local areas, creating stronger KE systems and networks by encouraging them to work together and share knowledge, particularly from X-2. This acted as a two-way relationship between the HEP and businesses on site, as proximity to businesses provided spin-out opportunities for HEP staff. However, limitations of available evidence meant the extent to which HEIF-funded infrastructure contributed to equitable innovation partnerships and ecosystems was unclear.

8.3 Cluster E analysis

The following analysis synthesises and evaluates primary and secondary data sources from three case study cluster E institutions. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster’s contribution to broader societal and economic outcomes, in line with PT pathways.

8.3.1 Background

Cluster E institutions were mid-sized universities with a focus on teaching and learning excellence, with more modest research profiles than other clusters, e.g., cluster V and X. They covered a range of STEM and non-STEM disciplines, including health, computer sciences, architecture/planning, social sciences, business, humanities, arts, and design. Research activities were primarily funded by government bodies and hospitals (~45 percent), 9 percent from industry and 12 percent from charities.

8.3.2 Research pathway

Contribution narrative (cluster E, Research): HEIF was pivotal in supporting the core KE infrastructure within cluster E institutions, through the recruitment of specialised business development staff and the provision of resources for bid writing, networking, and upskilling academic staff. These investments not only facilitated collaborative research and consultancy projects with businesses, SMEs, and the public sector but have also spurred TT, commercialisation efforts, and the formation of strategic partnerships, ultimately driving long-term investment opportunities and nurturing innovation and economic growth at regional, national, and international scale.

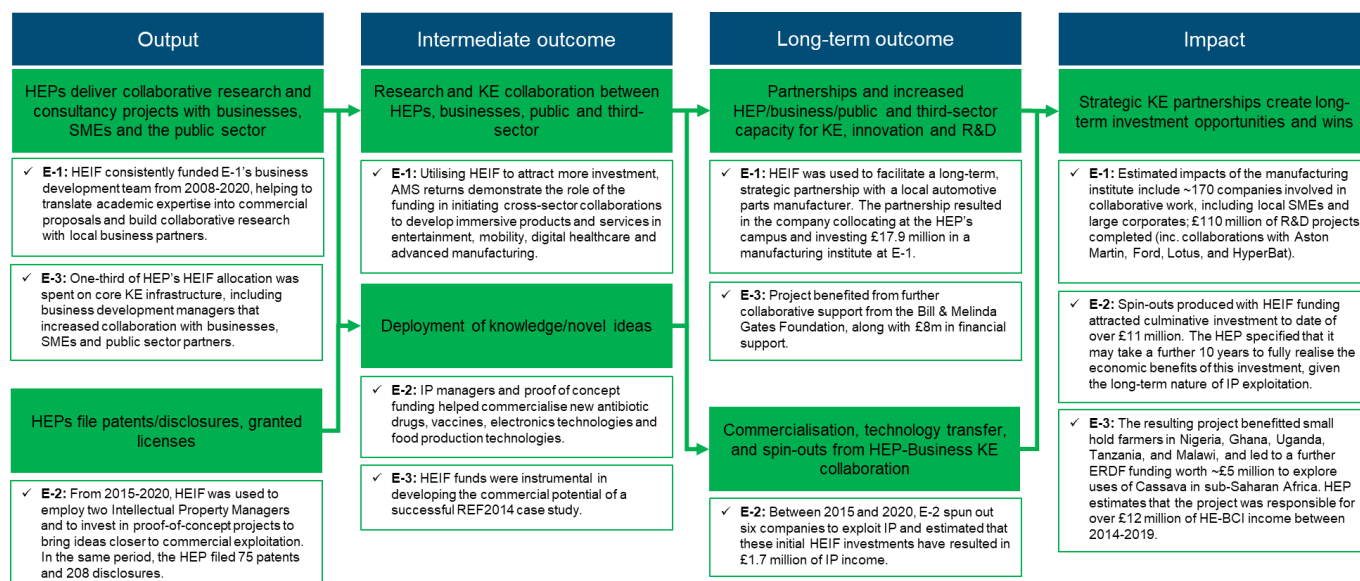


Figure 24: Cluster E Impact Analysis (Research)

- ✓ **HEPs deliver collaborative research and consultancy projects with businesses, SMEs and the public sector leading to research and KE collaboration between HEPs, businesses public and third sector and the deployment of knowledge/novel ideas**

From 2008-2020, HEIF was used by E-1, E-2, and E-3 to underpin core internal KE capabilities and was strategically invested in each HEP to recruit specialist business development staff, with the aim of upskilling existing academic staff, which translated research into commercially viable propositions, supporting bid writing and network-building. Primary and secondary evidence provided various examples of HEIF being used in a similar capacity across cluster E. Between 2008-2011, HEIF supported bid writing for collaborative projects, enhancing proposals and academic expertise. From 2011-2015, HEIF directly funded the Business Development Team, which grew to nine managers and eight officers, focusing on KTPs, intellectual property, and entrepreneurship.

During case study interviews, stakeholders recognised the role of HEIF-funded staff in underpinning their KE function. The Head of KE Office 2 for E-1 described how “HEIF is predominantly used to

support the staff resource” which then, in turn, allowed the institution to “engage a wider variety of internal people with a wider variety of external customers and it builds that experience, it builds a peer-to-peer support internally and it builds the innovation culture within the organisation”. The Head of KE Office 1 at E-1 emphasised the same point, describing how HEIF was used to pursue funding opportunities and translate academic expertise into commercial promise:

“And it was the bid writing function supported by HEIF that brought all of this together. Clearly, you’ve got lots of other people in the institution that are involved, bringing the technical expertise, but the HEIF is very specifically used to bring in specialists who can create that narrative.” (Head of KE Office 1, E-1)

While the commercial portfolio of cluster E institutions was less expansive than in cluster V and X, interviewees demonstrated instances where HEIF-funded staff had helped with the commercial application of novel research. E-2 also used HEIF to promote IP commercialisation by employing two dedicated IP Managers and funding proof-of-concept projects. The HEP’s spin-out portfolio directly addressed global challenges with impactful solutions. Supported by effective IP protection and exploitation funded by HEIF, the research contributed to transformative impacts. Examples include novel antibiotics, advanced vaccines, rapid environmental analysis tools, robotic fruit harvesting, and power electronics technology for energy efficiency.

✓ **Deployment of knowledge/novel ideas leading to commercialisation, TT, and spin-outs from HEP-business KE collaboration and partnerships and increased HEP/business/public and third-sector capacity for KE, innovation, and R&D**

In cluster E, according to HE-BCI returns, income from intellectual property (IP) sales experienced modest growth over the period, averaging an annual increase of 1 percent, from £391,000 in 2008 to £393,000 in 2020. By contrast, the average growth rate of active spin-outs accelerated more significantly, averaging 5 percent annually. Despite this growth, the number of active spin-outs remained relatively small, rising from 62 in 2008 to 98 in 2020.

Despite slower income growth throughout the period, case studies provided clear evidence of HEIF investments driving successful spin-outs and IP exploitation. Between 2015-2020, E-2 used HEIF-funded IP Managers to improve their commercialisation portfolio, leading to £1.7 million worth of IP sales.

Separately, E-3 utilised HEIF-funded staff to conduct innovative novel research into the cassava supply chain in sub-Saharan Africa, resulting in a funded project with the Bill & Melinda Gates Foundation valued at £8 million.

✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to partnerships and increased HEP/business/public and third-sector capacity for KE, innovation, and R&D**

Primary and secondary evidence illustrate how HEIF contributed to cluster E adopting more sophisticated, long-term collaborations between businesses and the public sector. This evidence underscored a distinct shift from ad-hoc business support towards mutually beneficial KE models, thereby promoting industry collocation and enhancing business capacity for R&D.

For example, between 2008 and 2020, E-1 utilised HEIF to implement novel business engagement strategies aimed at cultivating strategic, enduring partnerships. Notably, both the Heads of KE Office and the Head of Faculty at E-1 cited a flagship partnership that emerged during this period with an automotive parts manufacturer. This partnership, initiated around 2012 through a “short KTP,” was made possible by HEIF-funded staff:

“We wanted a strategic relationship with them, and it all started from a really small piece of KE work which at the time was a short KTP... The short KTP it was great, but in a way it was neither here nor there, what it did prove, was that we could work on time to budget with a commercial partner... That relationship has since exploded. There’s so much going on between us now. We’ve got joint facilities; we’ve got joint staff. But the change from let’s try and get this company to do a small KTP to having a huge joint factory in training facility together in [the local area] is just massive.” (Head of KE Office 2, E-1)

The resulting £32 million project established an international centre for engineering and manufacturing excellence, offering students practical industrial experience alongside their studies, while also serving as a platform for collaboration between academia, industry, and R&D. This included a £7.9 million grant from the HEFCE Catalyst Fund and a £17.9 million contribution from the corporate partner to build the facility.

✓ **Commercialisation, TT, and spin-outs from HEP-business KE collaboration and partnerships and increased HEP/business/public and third-sector capacity for KE, innovation, and R&D leading to strategic KE partnerships that create long-term investment opportunities and wins**

Each case study HEP within cluster E provided strong evidence of how their flagship KE functions, enabled through HEIF investment, produced long-term opportunities for investment albeit through various means, ranging from collaborative research, commercialisation, and business collocation.

For instance, E-1 reported that the estimated monetary impact of their manufacturing institute included over £110 million of R&D projects completed with partners such as Aston Martin, Ford, Lotus, and Hyperbat. In total, they estimate that the centre has helped generate approximately £500 million of economic value for the UK industry.

Additionally, E-3's cassava project not only secured support and investment from the Bill & Melinda Gates Foundation but also attracted a further £5 million in ERDF funding. This project had a measurable impact on the lives and incomes of smallholder farmers in sub-Saharan Africa, with an impact report published in 2020 estimating that the research project was associated with a 50 percent increase in average salaries of participants.

Finally, the commercial income growth reported by E-2 and attributed to initial HEIF spend materialised in long-term investment in HEP spin-outs collectively worth over £11 million.

8.3.3 People pathway

Contribution narrative (cluster E, People): HEIF was used to underpin staff costs of entrepreneurial centres and placement opportunities for cluster E’s HEPs, with the aim of producing new start-ups and spin-outs. For 2/3 case studies, HEPs demonstrated strong growth in the number graduate start-ups and the amount of external investment received from said start-ups. In many cases, these start-ups remained in the local region, increasing regional productivity, and producing a talent pipeline that had resulting benefits for the HEP and its students. For E-3, these successes were more limited, displaying low levels of start-up growth and investment.

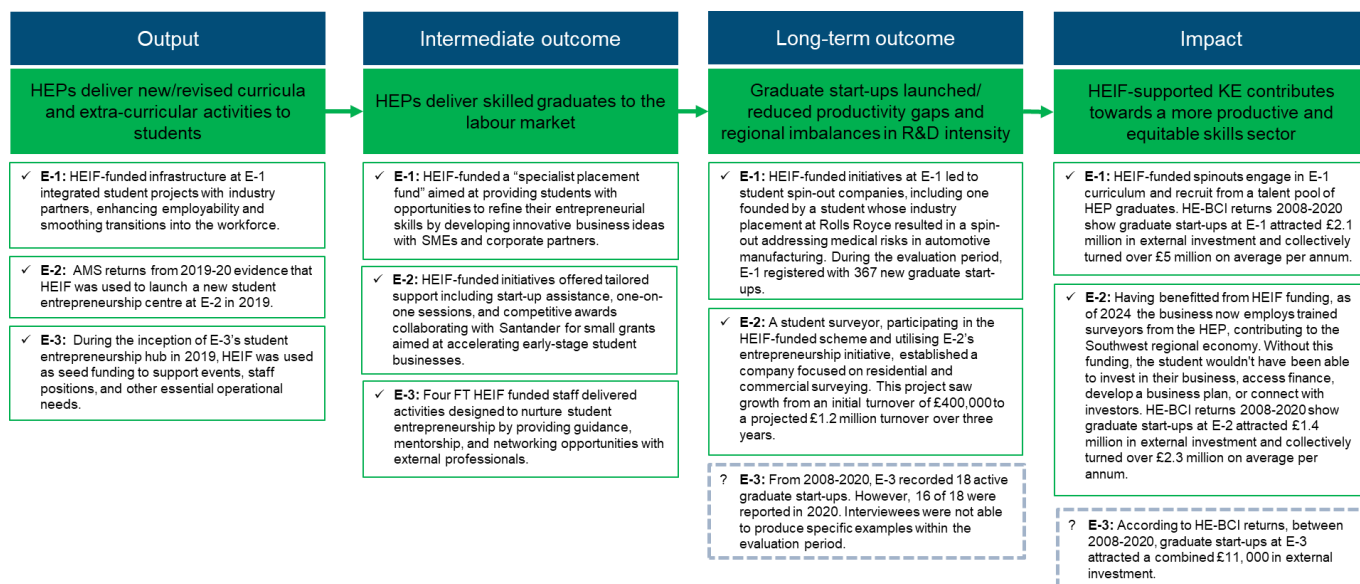


Figure 25: Cluster E Impact Analysis (People)

✓ **HEPs delivered new/ revised curricula and extra-curricular activities to students leading to HEPs delivering skilled graduates to the labour market**

Primary and secondary data showed how HEIF was consistently used by cluster E institutions to stimulate new student enterprise and entrepreneurship activities. All three case studies provided evidence of how HEIF was used to stimulate these activities, with the aim of diversifying the skillsets and applied knowledge of students, as well as attracting graduates to their local regions and stimulating regional growth in R&D. The various place-based contexts distinguished each case study HEP: E-1 was deeply connected with local supply chain dynamics, E-2 was largely isolated from major industry and R&D investment, and E-3 straddled a region with very high levels of R&D investment and more rural areas with lower levels of investment. Despite these differences, each had developed comprehensive and compelling entrepreneurship and enterprise offers for students.

To take E-2 as an example, AMS returns from 2019-20 showed how HEIF was used to establish a dedicated student entrepreneurship centre. This initiative aimed to expand enterprise activities for students through workshops, events, and collaboration opportunities, following an “Explore, Develop, Launch” pathway. The “Explore” stage provided digital resources and events for idea exploration, while the “Develop” stage offers workshops, support appointments, and access to funding. The “Launch” stage supports students ready to start their ventures with external assistance and quarterly awards. The Head of KE Office 2 noted student entrepreneurship as a growth area, acknowledging that HEIF funding enabled this initiative beyond what could have been achieved with internal funds.

“HEIF has remained a constant in supporting those activities throughout. I mean, it’s the individuals that have driven the changes which have been really positive, but clearly they wouldn’t have been able to even be there without HEIF.” (Head of KE Office 2, E-2)

✓ **HEPs delivered skilled graduates to the labour market leading to graduate start-ups launched and an improved skills pipeline, in line with UK national skills development priorities**

Cluster E is notable for the large number of graduate start-ups it produced in the evaluation period. Between 2008-2020, HE-BCI figures showed that cluster E institutions produced the highest number

of graduate start-ups that lasted over three years, reaching 2,352 by 2020. Collectively, all other English HEPs generated 2,995 in the same period. On a HEP-by-HEP basis, this represents an average of 81 graduate start-ups per HEP for cluster E by 2020, compared with 62 for cluster V, 45 for cluster J and 21 for cluster X. Collectively, these start-ups employ over 11,000 people, outperforming cluster V throughout the period until 2020 when numbers increased from 6,238 to 13,702 employed by active graduate start-ups at cluster V.

Case study HEPs provided various examples of graduate start-ups that benefited from HEIF investment and support. To take an example from E-1, the Head of KE Office 1 described how a student that benefited from the HEIF enabled “specialist placement fund” founded a spin-out company based on intellectual property they had developed while working at Rolls Royce. This company now actively recruits from the pool of graduates at E-1. Moreover, the resulting innovation addressed a significant medical risk prevalent in automotive manufacturers.

“The student who did his placement discovered that there’s a need for a better way to identify when somebody might be at risk of getting vibration finger so he created a glove that operators could wear when using machinery that vibrates. So, it can basically detect when you might be at risk, and you should take a break. So [the student] approached the university for help negotiating what he wanted to do with Rolls Royce, with his idea. [The resulting company] is now a spin-out company of [E-1] because we took on his intellectual property and we took on the negotiation with Rolls Royce. The company was formed, he is the founder, the CEO and he’s based at the University’s Technology Park, where he actively recruits graduates and undergraduate placements into his business to work [at company]. It’s kind of an animal that feeds itself. On the one hand, you know the better [the company does] obviously, that’s better for the university, that’s great. But also, he’s a really good example [to students]; he goes back and talks to the Faculty of Engineering College of Engineering and will talk to people about how you can set up your own business.” (Head of KE Office 1, E-1)

As well as encouraging the growth of new graduate start-ups, programmes led by E-1 and E-2 were launched with the explicit aim of retaining graduate talent within their local region, thus improving regional skills development and R&D investment. At E-2, the Head of KE Office 1 also highlighted the importance of this initiative, which they described as having contributed to job creation in the local region and helped retain talent within the area, countering the “brain drain” phenomenon the HEP had previously observed. They claimed that the success of this initiative has led to significant improvements in university rankings and national recognition, demonstrating the impact of HEIF funding in enabling innovative programmes and initiatives.

“Without the HEIF money, we couldn’t have gone on that process of understanding what that programme is to look like, funding that programme, resourcing that programme, and embedding innovations within that programme.” (Head of KE Office 1, E-2)

While E-1 and E-2 provided strong examples of graduate start-ups launched because of their student enterprise and entrepreneurship offer, E-3 provided fewer strong examples of HEIF enabling graduate start-ups. As referenced in **Error! Reference source not found.**, this is either explained by poor quality monitoring returns or a genuine lack of strong examples. HE-BCI returns suggest that E-3 was much less successful than the other two institutions in the sample, recording only 19 new graduate start-ups in the period which collectively raised only £11,000 in external investment.

✓ **Graduate start-ups launched leading to long-term investment opportunities and wins, including via R&D foreign direct investment**

E-1 and E-2 both provided strong examples of graduate start-ups leading to long-term investment opportunities and broader benefits to the HEP and regional economy. For example, the Head of KE Office at E-2 described a student surveyor who benefited from E-2’s student entrepreneurship initiative and launched a company focusing on residential and commercial surveying. Initially achieving an annual turnover of £400,000, the student’s business expanded, reaching a projected £1.2 million turnover over three years. They also hired trained surveyors from the HEP, supporting the South West’s regional economy. Without HEIF funding, the student would not have been able to invest in his business, access finance, develop a business plan, or connect with investors.

“All of that came as a result of HEIF funding, so that’s one individual that’s gone from £400,000 to a three-year forecast of £1.2 million.” (Head of KE Office 1, E-2)

At a cluster level, HE-BCI provided evidence to support this impact analysis. The collective turnover of all active graduate start-ups in cluster E by 2020 was £369 million increasing from £77 million in 2008 at an average annual rate of 13 percent. Over the same period, graduate start-ups in cluster E attracted £162 million in external investment, second only to cluster V institutions. By 2020, graduate start-ups at E-1 generated £2.1 million in external investment, collectively turning over ~£5 million per annum, while graduate start-ups at E-2 attracted £1.4 million in investment, and collectively turned over £2.3 million.

8.3.4 Infrastructure pathway

Contribution narrative (cluster E, Infrastructure): HEIF funding facilitated stronger regional innovation ecosystems, particularly benefiting SMEs with limited R&D budgets, by providing access to specialised equipment and expertise, as exemplified in cases such as E-1 and E-2. This support accelerated commercialisation efforts and augmented productivity. Moreover, the investment in initiatives including the Food Innovation Lab in E-3 led to significant economic growth, including job creation and increased GDP contribution, reflecting a broader impact on regional development, and reducing productivity gaps in R&D intensity.

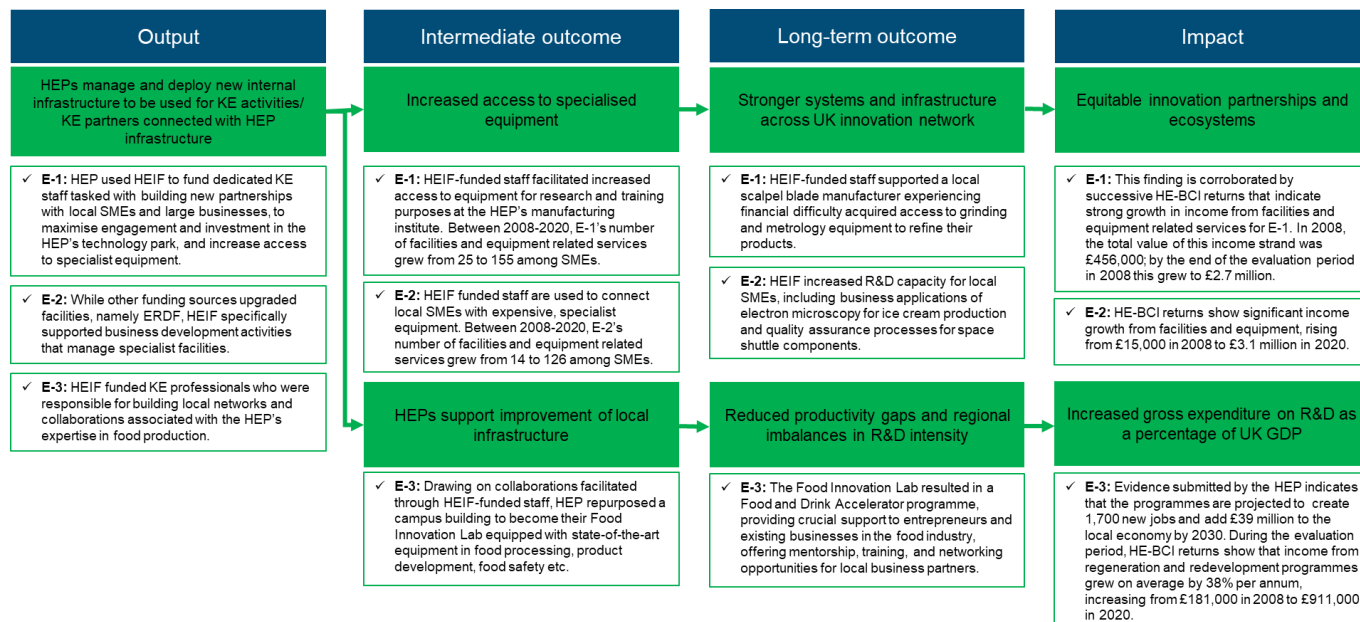


Figure 26: Cluster E Impact Analysis (Infrastructure)

- ✓ **KE partners are connected with HEP infrastructure and HEPs manage and deploy new internal infrastructure leading to improvement of local infrastructure, KE infrastructure that supports KE, R&D and innovation activity and increased access to specialised equipment**

Situated in a geography with a high density of SMEs involved in supply chain dynamics, as well as large corporates, E-1 leveraged HEIF to fund staff responsible for increasing local SME access to specialist equipment that might otherwise be too costly to purchase. The business development team, supported by HEIF, played a role in identifying industry needs and connecting them with available resources, driving productivity and supporting start-ups and early-stage scale-up businesses. The Head of Faculty for E-1 explained:

“We’ve built up the portfolio of training courses as well as access on a commercial or consulting basis to use that kit that is available to businesses. And so, that’s been running for several years now, and it is generating a good level of ongoing income to the university by using those assets, those physical assets and equipment that are available and have spare capacity. So, it’s helping commercial organisations, it’s helping drive productivity by connecting spare capacity with a need, and the business development team, if you like, that’s funded by HEIF, is helping make those connections by knowing what’s out there in the industry and businesses, what are the challenges, what are the needs, and connecting that with what we’ve got to offer and what capability we’ve got.” (Head of Faculty, E-1)

Stakeholders at E-2 described a similar process whereby HEIF-funded staff were tasked with increasing access specialised equipment. The Head of KE Office 2 highlighted the interplay between various other funding streams, such as RDA funding, Research Council funding, and other investments from RE, that have been used to upgrade the HEP’s facilities. These funds were used to acquire new equipment, including a wave tank and brain imaging scanner. However, they emphasised that that HEIF funding played a distinct role in supporting human resources for engagement activities.

“HEIF is fundamental in driving engagements with our solutions, providing outreach and raising awareness of opportunities to engage with our facilities, supporting SMEs regionally with access to facilities typically available only to large corporates.” (Head of KE Office 2, E-2)

Though E-3 did not provide explicit examples of HEIF spend being used to facilitate connections between industry and the HEPs physical assets, they provided a strong example of how HEIF provided funding that facilitated engagements with businesses in the horticultural sector between 2018-2020 which helped leverage further funding to build a state-of-the-art Food Innovation Lab.

- ✓ **Improvement of local infrastructure, KE infrastructure that supported KE, R&D and innovation activity and increased access to specialised equipment leading to stronger systems and infrastructure across UK innovation networks and reduced productivity gaps and regional imbalances in R&D intensity**

In all three cluster E case studies, primary and secondary evidence provided strong examples of how HEIF had strengthened regional innovation ecosystems, specifically benefitting SMEs that had limited budgets to invest in R&D. During separate interviews with the Head of KE Office 1 and 2 at E-2, both clearly described the contribution HEIF funding has made to improving regional imbalances in R&D intensity, as well as cultivating stronger KE systems. E-1 described a scalpel blade manufacturer facing financial challenges. With the support of the HEP using HEIF funded staffing at E-1, they acquired access to grinding and metrology equipment to refine their products.

“They needed access to our metrology equipment, so access to equipment and space and people with certain knowledge has allowed businesses there through that knowledge exchange to where they need it to accelerate them into commercial reality a lot quicker.” (Head of Faculty, E-1)

Similarly, stakeholders at E-2 discussed how HEIF helped, from business applications of electron microscopy to ice cream production and quality assurance for space shuttle components.

“If you’re an SME, you can’t afford to buy a £3 million piece of equipment... not being able to have it serve that business community is really, really important to help our economic base.” (Head of KE Office 1)

For E-3, the HEIF-enabled Food Innovation Lab led to the launch and operation of a Food and Drink Accelerator programme. This initiative provided support to entrepreneurs and existing businesses in the food industry, offering mentorship, training, and networking opportunities. By nurturing talent and innovation, the accelerator programme supported numerous businesses, including those from under-represented groups, thereby contributing to economic growth and social inclusion in the region.

- ✓ **Stronger systems and infrastructure across UK innovation networks and reduced productivity gaps and regional imbalances in R&D intensity leading to increased gross expenditure on R&D as percentage of gross GDP**

Throughout the period under review, facilities and equipment-related services income grew at the highest rate of all core KE income streams. In 2008, this income stream was worth £11.2 million, and by 2020 was worth £20.8 million, growing at an annual average rate of 6 percent. This increase was specifically driven by strong growth in facilities and equipment related services income from SMEs, which grew from £5.4 million in 2008 to £10.1 million in 2020, at an annual growth rate of 10 percent. E-1 and E-2 reported exceptionally strong growth in this income category between 2008-2020. E-1 recorded an average annual growth rate of 23 percent per annum, growing from £456,000 in 2008 to £2.7 million in 2020 and E-2 recorded an average annual growth rate of 400 percent, growing from £15,000 in 2008 to £3.1 million in 2020. Despite E-3 experiencing a reduction in facilities and equipment-related services income (contracting by -9 percent on average per annum), they anticipate numerous monetisable and non-monetisable benefits stemming from the HEIF investment in the Food Innovation Lab. This investment contributed to a successful Strength in Places bid valued at £18 million over five years, expected to generate 1,700 new jobs, and inject an additional £39 million annually into the local economy.

8.4 Cluster J analysis

The following analysis synthesises and evaluates primary and secondary data sources from three case study cluster J institutions. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster’s contribution to broader societal and economic outcomes, in line with PT pathways.

8.4.1 Background

This case study is based on primary and secondary data collected for an institution in KE cluster J. Institutions from cluster J are typically mid-sized universities with greater focus on teaching than other clusters, e.g., cluster V and X, although research is still in present. Their research is predominantly funded by government bodies and hospitals, with a smaller portion from industry. The discipline portfolio is across STEM and non-STEM fields. There are 17 cluster J HEPs (as categorised in 2020).

8.4.2 Research pathway

Contribution narrative (cluster J, Research): HEIF funded core staff infrastructure, which was used to develop cluster J’s business partnerships, resulting in collaborative work projects between the HEP and the public/private sector. Often collaborative work was done in partnership with local SMEs, consolidating HEPs’ roles as “regional anchors”, increasing regional productivity. This demonstrated a close relationship between “research” and “infrastructure” PT pathways, due to the role HEIF had in enabling cluster J HEPs to develop resilient KE partnerships and exploit opportunities for local regeneration. Cluster J’s KE activities often aligned with government priorities, particularly around net zero and digital transitions.

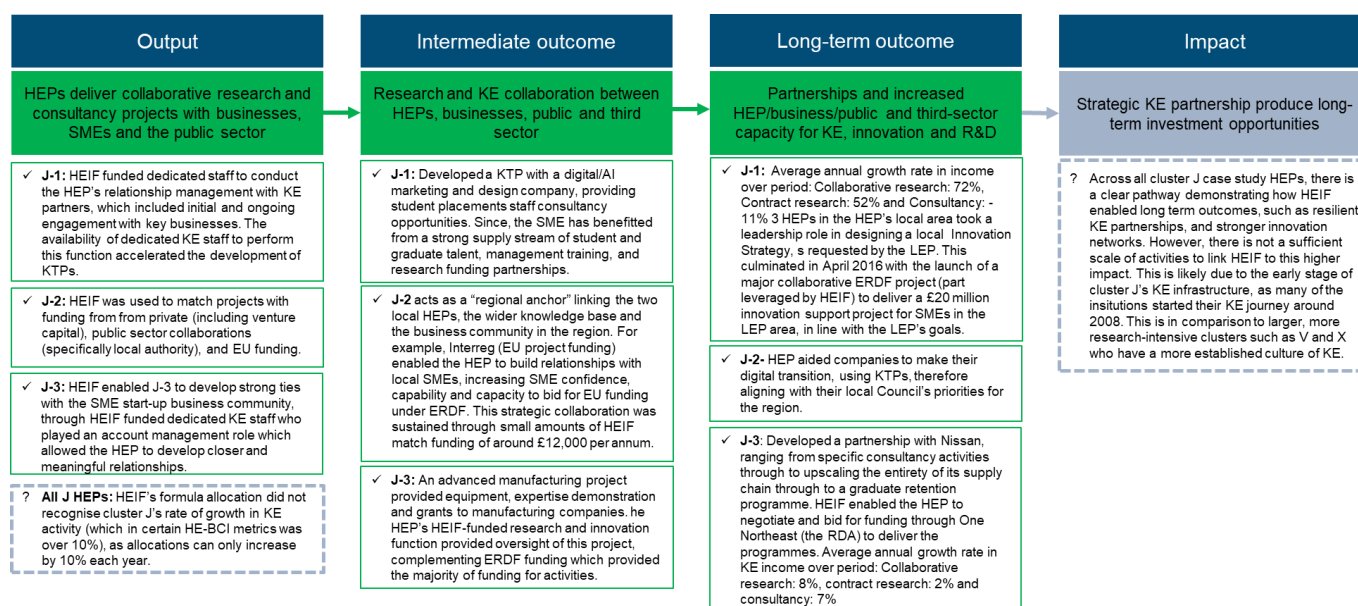


Figure 27: Cluster J Impact Analysis (Research)

✓ **HEPs delivered collaborative research and consultancy projects with businesses, SMEs and the third sector leading to research and KE collaboration between HEPs, businesses public and third sector**

Primary and secondary data across cluster J provided consistent evidence of how HEIF funded dedicated KE staff and core internal KE capabilities. These investments ensured HEPs developed capacity and maintained institutional memory in relation to KE and facilitated the efficient development of collaborative research and consultancy projects. For example, within J-2, about 50 percent of core KE staff were funded by HEIF, and J-3 allocated approximately 90 percent of funding towards dedicated KE staff and academic staff KE activity. KE teams included enterprise support staff, IP protection and legal services for the commercialisation of products and services, business development managers, business engagement teams and centres, and partnership and account

managers. These staff developed effective mechanisms for engaging KE partners. Without HEIF, these core KE teams would not have been funded.

“We have staff employed for six or seven years on the ERDF, but it was always known that when a particular piece of European funding stopped, the projects stop, and so did the staff funding. However, if you took the HEIF funding away, the first question I’d be asked by finance is how we support these staff going forward; you have got to get more money or become leaner. So HEIF is kind of critical for us.” (Pro-Vice-Chancellor, J-1)

Additionally, HEIF enabled HEPs to match funding from private sector sources, such as venture capital funds, and from public sector collaboration, such as local authority and EU funding, which increased the volume of collaborative consultancy and research HEPs could conduct. This was possible only due to HEIF’s flexible and unhypothecated nature.

✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D**

HEIF played a role in increasing research and KE collaboration (Intermediate Outcome 2). Cluster J HEPs often worked with local businesses, most of which were SMEs. HEIF-funded staff enabled capacity for the HEPs to build relationships with local businesses which strengthened the local innovation network.

For example, J-1 had a regionally rooted KE network in an internationally significant manufacturing area. Partners were often key equipment manufacturers within local supply chains; therefore, KE collaboration drove local innovation and productivity. One example was a KTP with a local digital/AI marketing and design company in this ecosystem. This company benefited through a range of opportunities, including a strong supply of student and graduate talent through placements and internships, management training, and research funding partnerships.

J-2 also used HEIF-funded KE staff to position the HEP as a “regional anchor” linking two local HEPs, the local innovation network, and the local business community to contribute to the knowledge economy and enhance economic growth and job creation. For example, Interreg (EU project funding) enabled the HEP to build relationships with local SMEs, increasing confidence, capability and capacity within these SMEs to bid for EU funding under ERDF. This strategic collaboration was sustained through small amounts of HEIF match funding of about £12,000 per annum.

J-3’s advanced manufacturing demonstrator supported local manufacturers to develop prototypes and products, improve processes using cutting edge equipment. Industries that particularly benefited included aero-auto, energy, agri-tech, medical technology, applied materials, transport, and food and drink. Each bespoke partnership was fully funded and supported by a student or graduate alongside a dedicated academic expert. Participating businesses had access to state-of-the-art facilities including robotics, metal 3D printers and a new micro gas turbine.

The increasing levels of research and KE collaboration within the region directly increased KE and innovation capacity, due to well established and resilient KE partnerships, furthering opportunities for local regeneration and SME engagement. For example, J-1 was tasked by the LEP to take a leadership role on a local Innovation Strategy. This culminated in April 2016 with the launch of a major collaborative ERDF project to deliver a £20 million innovation support project aiming to enable innovation for SMEs in the LEP area. More generally, increased capacity for KE can be demonstrated by the growth in the HEP’s core HE-BCI metrics, with an average annual growth rate in KE income over period: collaborative research: 8 percent, contract research: 2 percent, and consultancy: 7 percent. J-3 developed a long-term strategic partnership with Nissan. Activities ranged from specific consultancy activities through to upscaling the entirety of its supply chain through to a graduate retention programme. HEIF enabled the HEP to negotiate and bid for funding through One NorthEast (the RDA) to deliver the programmes. More generally, increased capacity for KE can be demonstrated by the growth in the HEP’s core HE-BCI metrics, with an average annual growth rate in KE income over period: 8 percent in collaborative research income, 2 percent in contract research income and 7 percent in consultancy income between 2008-2020.

? **Partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D leading to strategic KE partnership produce long-term investment opportunities**

However, despite the fact that across all cluster J case study HEPs there was a clear pathway demonstrating how HEIF enabled long-term outcomes in the research pathway of the PT, there was not a sufficient scale of activities to link HEIF to this higher impact. This was likely due to the early stage of cluster J's KE capability, as many of the institutions started their KE journey around 2008, much later than many larger, more research-intensive clusters such as V and X which had a more established culture of KE.

8.4.3 People pathway

Contribution narrative (cluster J, People): HEIF was used to launch programmes that increased the entrepreneurial skills of cluster J's students and graduates, including internships and KTPs. A unique aspect of these KTPs was that they often involved students, as well as graduates and post docs. Cluster J students were given the opportunity to participate in specialist local placements and encouraged the launch of graduate start-ups. Furthermore, collaboration with businesses provides more opportunities for students to do work placements and land permanent roles, improving the employment prospects of HEP students. Graduates often landed roles and remained in the local region, encouraging growth of the local economy.

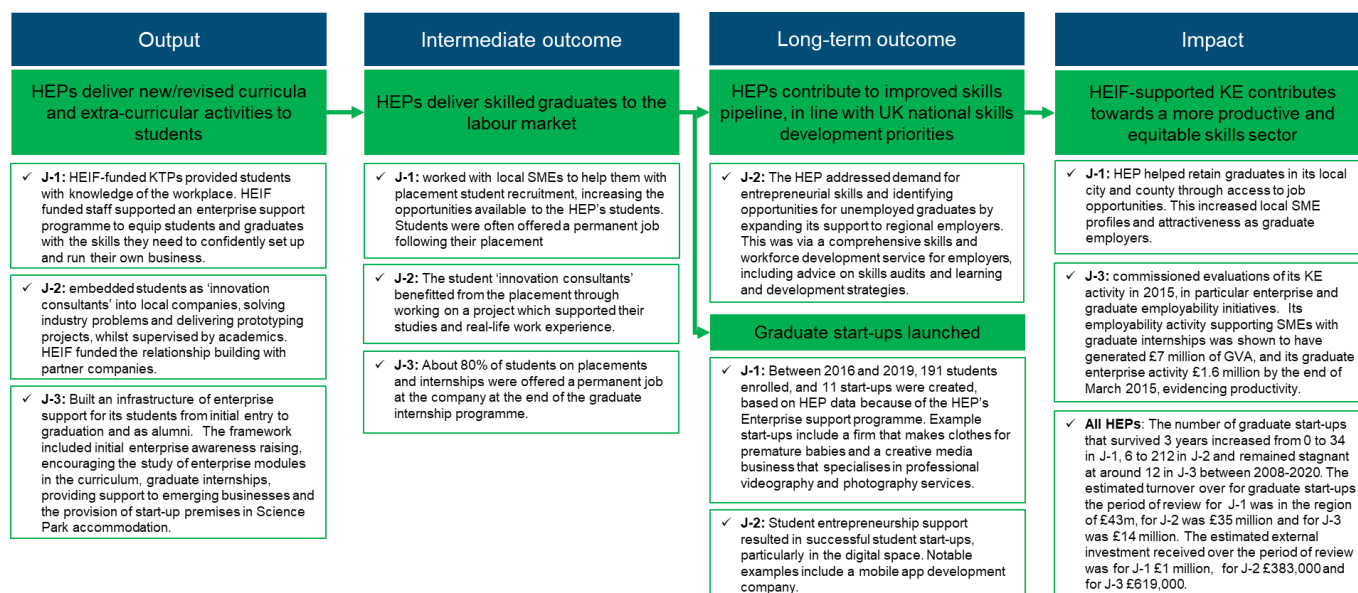


Figure 28: Cluster J Impact Analysis (People)

✓ HEPs delivered new/ revised curricula and extra-curricular activities to students leading to HEPs delivering skilled graduates to the labour market

Primary and secondary data evidenced how HEIF-funded staff supported programmes that increased the entrepreneurial skills of cluster J's students. These programmes often took the form of KTPs, work placements and enterprise support for students, allowing students to solve real problems and to gain work experience. A unique aspect of these KTPs was that they often involved students, as well as graduates and post docs.

For example, in J-1, HEIF-funded 'mini' KTPs provided students and graduates with knowledge of the workplace which helped retain them in its local city and county through job opportunities. Furthermore, HEIF-funded staff assisted an enterprise support programme to equip students and graduates with the skills they needed to confidently set up and run their own businesses. The programme led to successful graduate start-ups which were enabled through a combination of action planning, one-to-one support provided by experienced business advisors, a series of workshops, and grants. Example start-ups included a firm that made clothes for premature babies, a fitness firm, and a creative media business specialising in professional videography and photography services.

J-2 embedded students as 'innovation consultants' into local companies to solve challenges facing industry, and delivered prototyping projects, whilst supervised by academics. This led to a number of long-term KTPs, including partnerships that produced ballistic missile vests for the female body, and VR pilot training. Each SME partnership received up to 12 months of tailored support which included a student or graduate to support the development of a new product or service as well as access to a dedicated academic, the HEP's specialist facilities and technical support. Dedicated KE staff, funded through HEIF, built relationships and embedded ways of working with the partner SMEs. The Head of KE Office commented:

"How could I develop a model to embed students who are the largest resource at the university at all levels from PhDs to Master's to undergraduates, supervised by the academic or the researcher,

and working as a team with the technical specialists?... We partly use HEIF to prime it. We partly use ERDF and partly we use University resources, and this is a kind of risk we took as a delivery model back in 2018... So, you can see how the traditional model that you have an academic who is teaching and doing all the research. But if you put them in a different mode, almost as a KTP lead and a KTP supervisor, we took that similar model, but we applied it to students and we went from handful of projects and now we have hundreds of examples and I tell you now from those projects we had several who ended up as a long term, two to three year, KTPs.” (Head of KE Office, J-2).

Over the period of review, J-3 built a framework of enterprise support for its students through to graduation, and beyond as alumni. The framework included enterprise modules in the curriculum, providing support to emerging businesses and the provision of space for start-up premises in science park accommodation. This enterprise capacity provided an opportunity to market the HEP as a centre for entrepreneurial excellence which was reflected in its undergraduate and postgraduate programmes (2011 and 2015 KE Strategy).

“A lot of what we do around our enterprise agenda feeds back into the curriculum. So, it’s about building enterprise modules within the curriculum rather than it being a standalone extracurricular activity. So, our academic base feed into and support our enterprise agenda. So, when we’ve been running SME start-up type activities. We get external people in to speak, they may be solicitors and marketing experts (Long-term Outcome 6)” (Head of KE Budget Spending, J-3)

✓ **HEPs delivered skilled graduates to the labour market leading to HEPs contributing to improved skills pipeline, in line with UK national skills development priorities**

HEIF-funded staff supported the formation of partnerships with private sector companies through which HEIF improved employment prospects for students.

J-1 worked with local SMEs to help them with placement student recruitment, increasing the opportunities available to the HEP’s students. Often students would be offered a job following their placement. HEIF was specifically used to:

“Match fund some European projects that came through, in particular a post in the careers space... to engage with business to help support our students. [The role] generated placement opportunities with small to medium enterprises, Rolls Royce has its own scheme, but SMEs just don’t know how to navigate taking the placement student on the whole recruitment of them” (Head of KE Office).

J-2’s ‘innovation consultants’, described above, benefited from their placements through working on projects they can use in their studies, and from real-life work experience. Successful projects and technology which emerged from innovation consultancy projects include:

- An electronic gaming student developed VR training for a company that provided training for Airbus 320 pilots. This helped the company to transition from outdated courses reliant on PowerPoints and videos to updated technology.
- A fashion student designed a ballistic missile vest for the female body, which provided women in combat with better protection from oblique shots to the side, supervised by an academic from fashion. The process involved interviewing police officers, and other relevant stakeholders, and using 3D body scanners to ensure the best fit. These vests are now supplied to the Ministry of Defence.
- A student designed an automated process and online system for conducting risk assessments for a local electrical installation company, reducing the time it takes the company to produce risk assessment method statements from 45 minutes to five minutes.

Furthermore, in contributing towards an improved skills pipeline, J-2 expanded its support to regional employers by creating a comprehensive skills and workforce development service run by HEIF-funded staff. This service provided advice on skills audits and learning and development strategies, particularly addressing demand for entrepreneurial skills and identifying opportunities for under-employed graduates.

✓ **HEPs delivered skilled graduates to the labour market leading to graduate start-ups being launched**

Increased student entrepreneurial skills, in combination with financial support (funded by HEIF) encouraged the launch of graduate start-ups.

For example, in J-1, between 2016 and 2019, 191 students enrolled, and 11 start-ups were created as a result of the HEP's enterprise support programme. Start-ups included a firm that makes clothes for premature babies, a fitness firm, and a creative media business that specialises in professional videography and photography services.

Within J-2 student entrepreneurship support resulted in successful student start-ups, particularly in the digital space. Notable examples, referenced by a Head of Faculty included a mobile app development company. The company's successes included the development of student experience apps for three HEPs, including an app for J-2 itself.

More generally, HEIF support meant that the number of graduate start-ups that remained for three years or more increased from 0-34 in J-1, 6-212 in J-2 and remained stagnant at around 12 in J-3 between 2008-2020. The estimated turnover over for graduate start-ups the period of review for J-1 was around £43 million, for J-2 was £35 million and for J3 was £14 million. The estimated external investment received over the period of review was for J-1 £1 million, for J-2 £383,000 and for J-3 £619,000.

✓ **HEPs contributed to improved skills pipeline, in line with UK national skills development priorities leading to HEIF-supported KE contributing towards a more productive and equitable skills sector**

Across all three HEPs, primary and secondary evidence pointed towards increased productivity and employment levels in the region, across a range of businesses and sectors.

J-2's work improved local SME profiles and attractiveness as employers beyond typical large employers (Head of KE Office, backed by 2011-2015 KE Strategy). HEIF was specifically used to:

“Match fund some European projects that came through, in particular a [to fund a] post in the careers space... to engage with business to help support our students. [The role] generated placement opportunities with small to medium enterprises, Rolls Royce has its own scheme, but SMEs just don't know how to navigate the placement process.” (Head of KE Office)

In 2015, J-3 commissioned evaluations of its KE activity including enterprise and graduate employability initiatives. Its employability activity which supported SMEs with providing graduate internships was shown to have generated £7 million of Gross Value Added (GVA), and its graduate enterprise activity £1.6 million by the end of March 2015, as detailed in its 2015 KE Strategy. Additionally, KE activity was focused on engagement with innovative companies to develop vocational pathways, including via CPD, leading to higher level skills increased curriculum development and research relevance of its post-graduate provision. As an example, the HEP offered CPD for healthcare professionals including NHS nurses and paramedics, in advanced IT, and in environment and health and safety (2011 KE Strategy, supported by Head of KE Office).

8.4.4 Infrastructure pathway

Contribution narrative (cluster J, Infrastructure): HEIF was used to fund partnership activities, engagement hubs and training initiatives, encouraging businesses, particularly regional SMEs, to use HEP facilities and infrastructure. All three cluster J HEPs used HEIF to leverage ERDF capital funding to increase the impact of their physical infrastructure such as incubators and accelerators, strengthening regional innovation networks. However, it is difficult to link these outcomes with higher impacts.

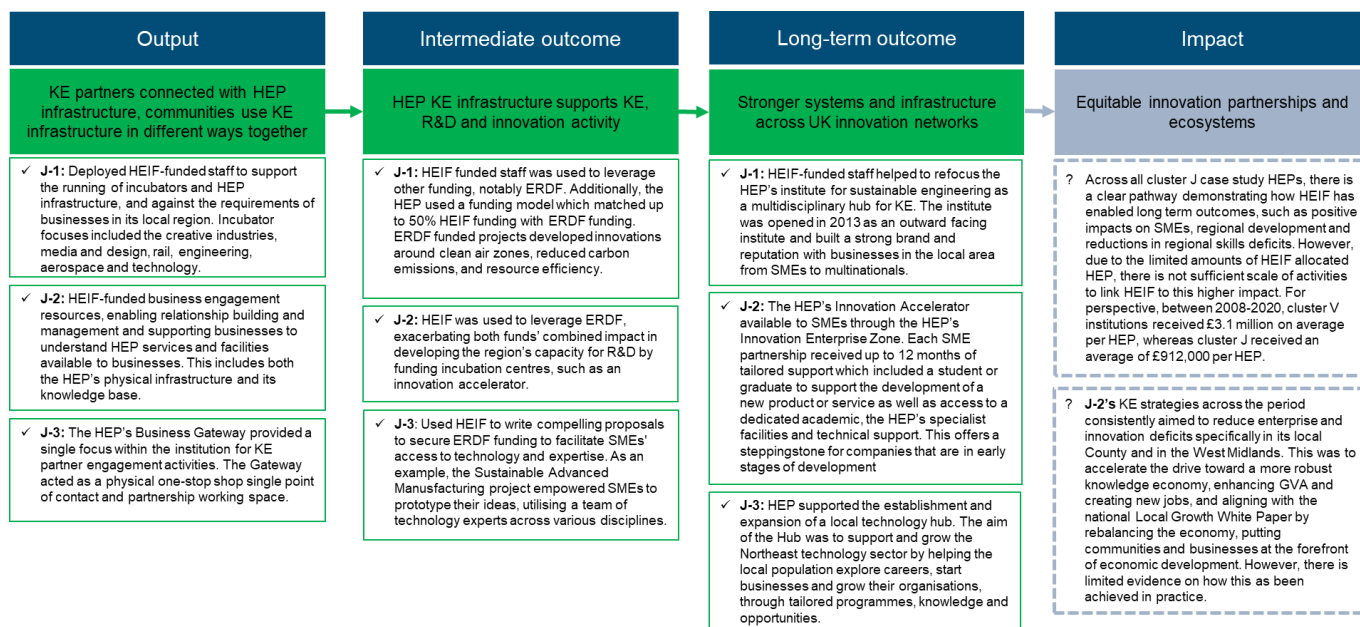


Figure 29: Cluster J Impact Analysis (Infrastructure)

✓ **KE partners connected with HEP infrastructure, communities used KE infrastructure in different ways together leading to HEP KE infrastructure supporting KE, R&D and innovation activity**

Primary and secondary data evidenced how HEIF-funded staff supported cluster J HEPs to manage and deploy physical KE infrastructure, such as incubators and accelerators which worked closely with local business to support their industry needs. KE staff also provided business engagement resources, which encouraged external access to HEP infrastructure.

As an example, HEIF-funded staff helped to refocus the J-1's sustainable engineering institute as a multidisciplinary hub for KE. The institute was opened in 2013 and built a strong brand and reputation with businesses from SMEs to large multinationals, such as Rolls Royce. From 2016/17 onwards the institute provided a cross-institutional applied research, innovation and KT resource moving beyond its focus on advanced manufacturing, with partnering activities supported by HEIF-funded staff. Over this period, the institute supported 197 SMEs leading to 58 long-term R&I collaborations. The HEP also operated four business incubators, each with a different sector focus. These focuses included the creative industries, media and design, rail, engineering, aerospace, and technology. J-2 used HEIF funding to improve KE partners' access to the HEP's physical assets. The Head of KE Office referenced how HEIF funded business engagement resources, enabling relationship building and management and supporting businesses to understand HEP services and facilities available to businesses. This included both the HEP's physical infrastructure and its knowledge base, through accessing academics and students. Similarly, in J-3, the HEP's business gateway provided a single focus within the institution for employer engagement activities. The gateway acted as a physical one-stop shop and partnership working space to support its employer engagement and partnership development activities. The HEP invested HEIF funds into staffing this facility as part of its long-term development strategy and commitment to business engagement.

✓ **HEP KE infrastructure supported KE, R&D and innovation activity leading to stronger systems and infrastructure across UK innovation networks**

Across all three-case study HEPs, there was strong evidence that cluster J HEPs used HEIF funding to leverage ERDF funding and maximising the impact of both which led to opportunities for local regeneration.

J-1 used a funding model which matched up to 50 percent HEIF funding with ERDF funding. The Head of KE Budget spending commented:

“If we look at kind of the KE trajectory, I think the step change comes in our KE activity probably around 2017, which is when the ERDF portfolio really got going and to say that it was a step change for the university is not an understatement. I think over the following six to seven years, we’ve had a portfolio of around about 10 million of structural funds, which for us was huge. HEIF was critical in opening that up because it gave us the infrastructure, the KE professionals to kind of cope with articulating and setting up these projects. And then it also enabled us to provide the match because if you’re familiar with the ERDF, an intervention rate 50 percent. You’ve got to get the other 50 percent from somewhere. If we hadn’t had HEIF, I don’t think we could have delivered it.”

Notable ERDF funded projects (matched with HEIF) included i) a project which helped entrepreneurs bring innovative technology to market, to increase manufacturing efficiency whilst improving environmental performance and ii) a project which helped businesses reduce carbon from their workflow.

At J-2, HEIF was used to leverage ERDF. The HEP sought to maximise both funds through developing the region’s capacity for R&D by funding incubation centres, such as an innovation accelerator. The innovation accelerator was available to SMEs through the HEP’s Innovation Enterprise Zone. This project was funded by £986,000 from the local LEP and part-funded by the ERDF from 2014 to 2020. Each SME partnership received up to 12 months of tailored support which included a student or graduate to support the development of a new product or service as well as access to a dedicated academic, the HEP’s specialist facilities and technical support. This offered a stepping stone for companies in early stages of development. Examples included a drone project that looked to develop a bridging mechanism to connect goods with consumers in a safe and secure way.

Leveraging HEIF to fund dedicated KE staff, J-3 drafted proposals that secured ERDF funding to facilitate SME access to technology and expertise. With a substantial capital investment supported by the HEP, an advanced manufacturing project empowered SMEs to prototype their ideas, utilising a team of technology experts across disciplines. This support spanned the innovation lifecycle, from proof-of-concept to full-scale manufacturing (Intermediate Outcome 3). The project also allocated cash grants from a dedicated fund to contribute to the capital investments made by businesses. Whether engaging in the full lifecycle or joining at different stages, companies benefited from technical expertise in areas such as large-scale 3D printing, logistics, and product management (Intermediate Outcome 10). (Head of KE Budget Spending, Head of KE Office). This demonstrated the benefits of HEIF as:

“We use HEIF as a catalyst and ERDF, we only use it for delivery of specific projects like the ones of referred to... HEIF gives us the flexible resource to be able to develop all those projects and make them happen. It takes a huge amount of work to engage in all the partnerships to, you know, get the support over a period of years and establish your itself in the region... we don’t use HEIF for actual project delivery, but we do in other sources of funding.” (Head of KE Office, J-3)

Furthermore, the HEP supported the establishment and expansion of a local technology hub. The aim of the hub was to support and grow the northeast technology sector by helping the local population explore careers, start businesses and grow their organisations, through tailored programmes, knowledge and opportunities.

? Stronger systems and infrastructure across UK innovation network leading to equitable innovation partnerships and ecosystems

Across all cluster J case study HEPs, there was a clear pathway demonstrating how HEIF has enabled long-term outcomes, such as positive impacts on SMEs, regional development and reductions in regional skills deficits. However, due to the limit of HEIF allocated to each HEP, there was not a sufficient scale of activities to link HEIF to this higher impact. For perspective, between 2008-2020, cluster V institutions received £3.1 million on average per HEP, whereas cluster J received an average of £912,000 per HEP.

For example, despite providing limited evidence of how this has been achieved in practice, J-2’s KE strategies across the period consistently aimed to reduce enterprise and innovation deficits specifically

in its local county and in the West Midlands region more broadly. This was to accelerate the drive towards a more robust knowledge economy, enhancing GVA, creating new jobs, and aligning with the national Local Growth White Paper by rebalancing the economy, putting communities and businesses at the forefront of economic development.

8.5 Cluster STEM analysis

The following analysis synthesises and evaluates primary and secondary data sources from two case study STEM institutions. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster's contribution to broader societal and economic outcomes, in line with PT pathways.

8.5.1 Background

KE cluster STEM institutions are specialised HEPs that focus on science, technology, engineering, and mathematics. They have a high concentration of academic staff in these disciplines and often engage in high-quality research, particularly in bioscience and veterinary sciences, as well as engineering.

8.5.2 Research pathway

Contribution narrative (cluster STEM, Research): HEIF provided small, specialist STEM institutions with the autonomy to use core specialisms to effect societal and economic change. For example, through vaccine development and sustainable agriculture, HEIF empowered these institutions to innovate and address pressing global challenges with targeted solutions by increasing public sector and business capacity for innovation and R&D.

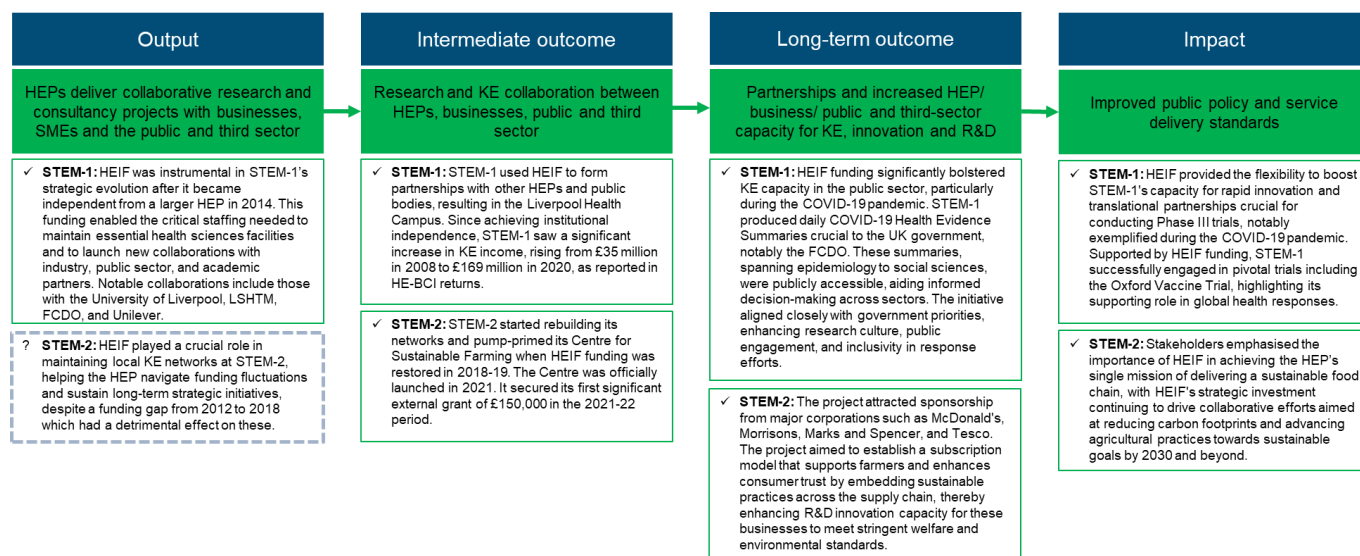


Figure 30: Cluster STEM Impact Analysis (Research)

- ✓ **HEPs delivered collaborative research and consultancy projects with businesses, SMEs and the third sector leading to research and KE collaboration between HEPs, businesses, public and third sector**

Primary and secondary evidence highlight HEIF's role in giving STEM-1 and STEM-2 the autonomy to independently shape their KE strategies. This funding supported staffing and proof-of-concept funds, which enabled these institutions to develop independent KE initiatives.

STEM-1 leveraged HEIF funding to support its strategic evolution as a newly independent HEP, following its separation from a larger HEP in 2014. From 2008 to 2014, STEM-1 had limited control over KE due to its previous affiliation. However, with the support of HEIF, STEM-1 developed strategic initiatives, including the Liverpool Health Campus, which positioned Liverpool as a leader in biomedical sciences. This transformation was reflected in a substantial increase in KE income, rising from £35 million in 2014 to £169 million in 2020.

By contrast, STEM-2 experienced challenges due to inconsistent HEIF funding. The institution faced a notable HEIF funding gap between 2012 and 2018, during which it lost its £450,000 annual allocation. Although STEM-2 maintained KE income levels of ~£4.6 million annually during this period, the lack of HEIF support limited its ability to pursue long-term strategic initiatives and sustain networks with larger corporate partners. The restoration of HEIF funding in 2018-19 enabled STEM-2 to rebuild its research

capacity and networks, and to use £150,000 of HEIF funding to pump-prime the HEP’s new Centre for Sustainable Farming and scale the world’s first autonomous farm.

✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D**

Both STEM institutions used their HEIF allocations to enhance capacity for KE and R&D across the private and public sectors. Evaluation evidence suggested this strategic use of funding advanced their respective research agendas and contributed to broader societal benefits.

STEM-1 concentrated on global health, leveraging HEIF funding to produce daily COVID-19 Health Evidence Summaries. These summaries provided timely, evidence-based updates to UK HMG officials, particularly within the Foreign, Commonwealth & Development Office (FCDO). By covering diverse topics such as epidemiology and social science, the summaries facilitated informed decision-making and promoted evidence-based responses across sectors. The widespread accessibility of these summaries promoted a broader understanding of the pandemic, demonstrating HEIF’s role in bridging gaps between research and policy.

By contrast, once STEM-2’s HEIF allocation was restored, the institution capitalised on the increased capacity to address previously underfunded projects. A prime example was the Centre for Sustainable Farming. The Head of Faculty for STEM-2 highlighted that smaller, specialist institutions often face challenges with limited cash reserves, which made early-stage project investment particularly difficult. HEIF funding served as “pump-prime funding”, enabling the centre to develop a comprehensive business plan and attract sponsorship from major corporations such as McDonald’s, Morrisons, Marks & Spencer, and Tesco.

The Head of Faculty emphasised how HEIF funding provided this small, specialist institution with the “investment headroom” necessary to explore innovative KE models. The Centre’s initiative aimed to create a subscription model for farmers to access a wide network, embedding sustainable practices throughout the supply chain. This approach not only contributed to sustainable farming but also supported net-zero targets, demonstrating how HEIF funding accelerated progress towards long-term environmental goals. As the Head of Faculty noted:

“We’ve now got the investment headroom to dip our toe in the water and trial these things. This will eventually be a subscription model where farmers can pay a small fee to access a wide network. It’s like a field-to-fork message, embedding practices into the supply chain so standards are realised at every step. It becomes self-financing through industry investment. Starting from scratch would require significant investment and time. With industry funding, we’ve accelerated the process, mindful that 2030 is only six years away.”

✓ **Partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D leading to improved public policy and service delivery standards and long-term investment opportunities and wins, including via R&D foreign investment**

STEM-1 used HEIF funding to drive rapid innovation and forge translational partnerships in response to COVID-19. The funding underpinned KE capability by funding the recruitment of dedicated KE staff, facilitating effective collaboration with industry, academic institutions, and government departments. The Centre for Drugs and Diagnostics (CDD) became central to this effort, uniting multidisciplinary experts to develop and validate COVID-19 drugs and diagnostics. STEM-1’s role as a Phase III trial site for the Oxford Vaccine Trial underscored the HEP’s contribution to the pandemic response.

STEM-1’s HEIF-funded COVID-19 related projects were closely aligned with government priorities, supporting societal and economic recovery through community-led approaches. By focusing on local needs and employing grassroots methods, these initiatives addressed public health challenges. For example, the HEP used HEIF funding to employ a Public Engagement Manager who led their Vaccine Equity Project. This project adapted successful strategies and approaches developed during overseas work in Malawi to address vaccine hesitancy in Liverpool. By tailoring these methods to the local context, the project effectively reduced vaccine hesitancy and improved community trust in vaccination efforts. Collaborations with local organisations, such as Liverpool Football Club and Everton in the Community, also extended the project’s reach and impact. STEM-1 further enhanced community

understanding and countered misinformation during the pandemic by participating in BBC Radio Merseyside's Breakfast Show. Additionally, HEIF-supported vlogs and extensive media engagement provided COVID-19 updates, expert advice, and public reassurance, effectively improving community understanding and addressing misinformation.

STEM-2 focused on leveraging HEIF to scale-up new projects to achieve financial independence, thereby enabling the reinvestment of HEIF resources into new ideas. Examples include the aforementioned Centre for Sustainable Farming and their 'Hands Free Farm', which subsequently attracted £1.5 million in investment from Innovate UK. The Pro-Vice-Chancellor explained:

“One high-level project that I know HEIF supported was Hands Free Farm and its prerequisite, Hands Free Hectare. That was a project where we had academics investing time in developing autonomous harvesting of crops. HEIF then used engagement funnels to bring in industry to see - at a small scale initially - if this could be done. We showed that we could plant, cultivate, harvest, and process a crop completely autonomously, with no human intervention, just by using robots and converted machinery. That principle, supported by HEIF, led to a major investment from industry into the world's first autonomous farm, which was Hands Free Farm. [STEM-2] was the first university to completely cultivate, harvest, and process multiple crops from a farm with no human intervention.”

8.6 Cluster ARTS analysis

The following analysis synthesises and evaluates primary and secondary data sources from one case study ARTS institution. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster's contribution to broader societal and economic outcomes, in line with PT pathways.

8.6.1 Background

ARTS cluster HEPs are specialised institutions that focus on arts, music, and drama. They vary in size, but many are relatively small and specialised, with a high concentration of academic staff in these disciplines. Throughout the period under review, cluster ARTS HEPs received £60.3 million of HEIF funding, increasing from ~£4.3 million in 2008 to ~£6.4 million in 2020. As shown below, in 2008, this equated to an average of £225,000 per HEP, reaching a maximum of £338,000 in 2010.

8.6.2 Research pathway

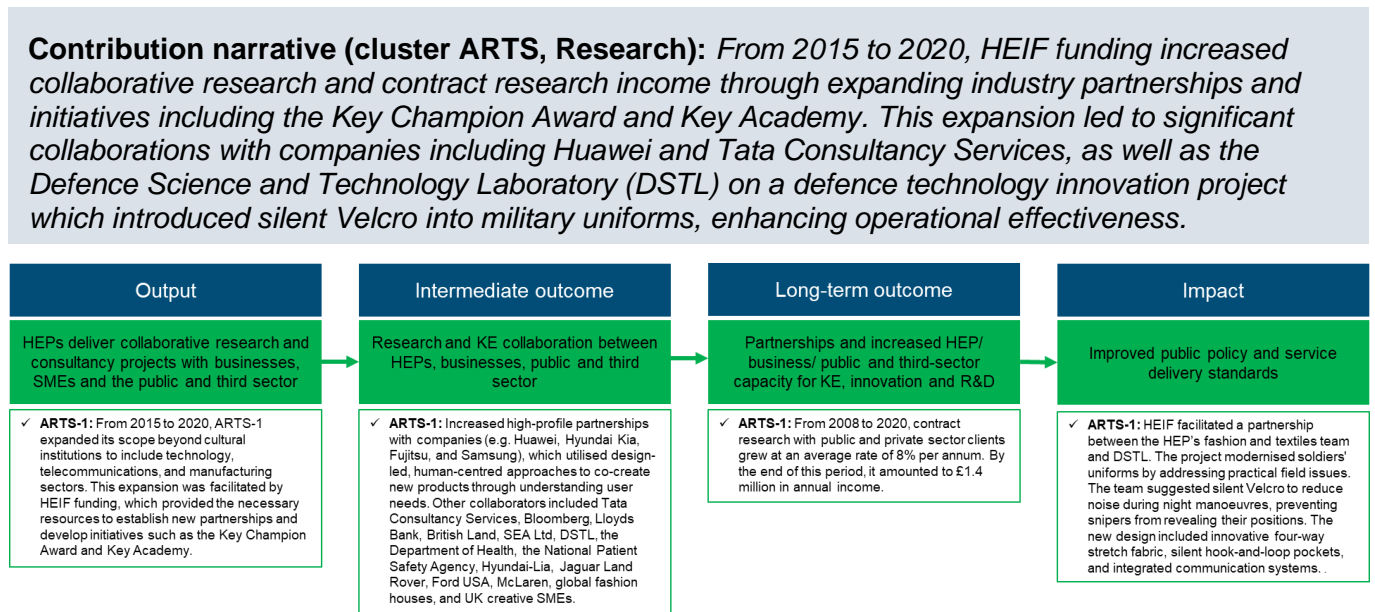


Figure 31: Cluster ARTS Impact Analysis (Research)

✓ **HEPs delivered collaborative research and consultancy projects with businesses, SMEs and the third sector leading to research and KE collaboration between HEPs, businesses public and third sector**

Historically, ARTS-1 transformed staff and student ideas into successful start-ups by leveraging academic innovation. Since 2015, ARTS-1 shifted its focus from cultural institutions to a broader range of industries, including technology, telecommunications, and manufacturing. HEIF de-risked these opportunities and funded two major initiatives: the Key Champion Award and the Key Academy, to strengthen academia-industry ties.

- **Key Champion Award:** Recognised and celebrated outstanding academic individuals who made substantial contributions to bridging the gap between academic research and industry practice. Recipients were often those who successfully translated their research into practical applications, including driving innovation and creating new business opportunities. The Key Champion Award not only acknowledged individual achievements but also served to inspire other academics to engage in impactful industry collaborations.
- **Key Academy:** Was established to provide a structured framework for facilitating business-academia partnerships. It offered training, resources, and networking opportunities designed to enhance the ability of academics and industry professionals to collaborate effectively.
- ✓ **Research and KE collaboration between HEPs, businesses public and third sector leading to partnerships and increased HEP/business/public and third-sector capacity for KE, innovation, and R&D**

The additional capacity for business collaboration through HEIF enabled ARTS-1 to leverage its design expertise and increase capacity for KE between the HEP, public, and private sector clients. This included partnerships with large companies, including technology firms such as Huawei, Hyundai Kia, Fujitsu, and Samsung. Other partners included financial and business services (Tata Consultancy Services, Bloomberg, and Lloyds Bank), housing and future city planners (British Land), defence (SEA Ltd and the UK government’s Defence Science and Technology Laboratory (DSTL), the Department of Health, National Patient Safety Agency (NPSA), the automotive sector (Hyundai-Lia, Jaguar Land Rover, Ford USA, McLaren, and others), as well as collaborations with global fashion houses and UK creative SMEs. This work challenged traditional business practices by using design-led, human-centred approaches to gain new insights into user and customer needs.

Based on primary and secondary data, HEIF funding facilitated a significant transformation of ARTS-1’s executive education and CPD programmes. Interviewees highlighted that the financial support from HEIF provided ARTS-1 with the flexibility to trial new initiatives and ensure their viability. The Head of Faculty 2 at ARTS-1 described how:

“HEIF funding helped to set up some open courses so that anybody could apply for them, but it also set up some processes behind costing and making sure we actually made a surplus from this activity. And over the years we’ve grown, you know, to start with it was just me, but now we’re a team of four people and I think this year we’re going to be about £1.3 million. I think when I started it was about £100,000.”

These initiatives attracted senior executives from large companies such as Time Inc., Ogilvy & Mather, Eurovision Broadcasting, Fujitsu, and RGA since 2015. The programmes, which included summer schools in contemporary art, disruptive market innovation, and critical curating, received positive feedback from delegates spanning 17 countries. By 2016-17, ARTS-1 delivered 15 courses over 63 days to 352 delegates, covering topics such as design-thinking and innovation, creative leadership, and criticism and curating in art and design. Between 2015-2020, collaborative research income at ARTS-1 grew by 7 percent per annum (compared with -5 percent from 2008-2014), contract research income grew by 18 percent per annum (compared with -2 percent from 2008-2014), and consultancy income grew by 7 percent (compared with -9 percent from 2008-2014). This growth facilitated consulting opportunities with organisations including McKinsey, JP Morgan, and ITV.

✓ **Partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D leading to improved public policy and service delivery standards**

Reflecting on new business collaborations developed since 2015, ARTS-1’s Pro-Vice-Chancellor provided an example of how HEIF facilitated a partnership between the HEP’s fashion and textiles design team and DSTL. The project modernised soldiers’ uniforms to tackle practical issues faced by soldiers in the field. The design team advised DSTL on a solution using silent Velcro, which aimed to address concerns about noise during night manoeuvres.

“The MOD staff were talking about some of the things that were annoying about the uniforms when they were used in the field, and our fashion and textiles people came up with things like, ‘Did you know that you can get silent Velcro?’ That was kind of revolutionary. The MOD had never come across this but said that it makes all the difference because it stops snipers on night manoeuvres from giving away their position by ripping open the Velcro pockets to get out their ammunition.”

The design featured innovative four-way stretch fabric, silent hook-and-loop pockets, and highly functional elements for built-in communication systems. According to AMS returns for 2016-17, a military partner on the project praised ARTS-1’s design-led approach to creating a practical and convenient uniform, stating: “It would not be unreasonable to say that the work you and your team delivered reinvigorated interest in thoughtful design over mass-produced, cheapest-cost garments.”

Contribution narrative (cluster ARTS, Research II): HEIF funding underpinned the staff costs of ARTS-1’s sector-leading incubator, which facilitated the filing of 84 patents and the successful incubation of numerous ventures, including a concrete manufacturer, which achieved a turnover of £13m by 2020. This support provided access to resources such as mentoring, prototyping, and business development. As a result, the incubator also enabled the launch of 440 graduate start-ups, which collectively generated a turnover exceeding £50 million, secured over £32 million in external investment, and, by 2020, created 780 new jobs.

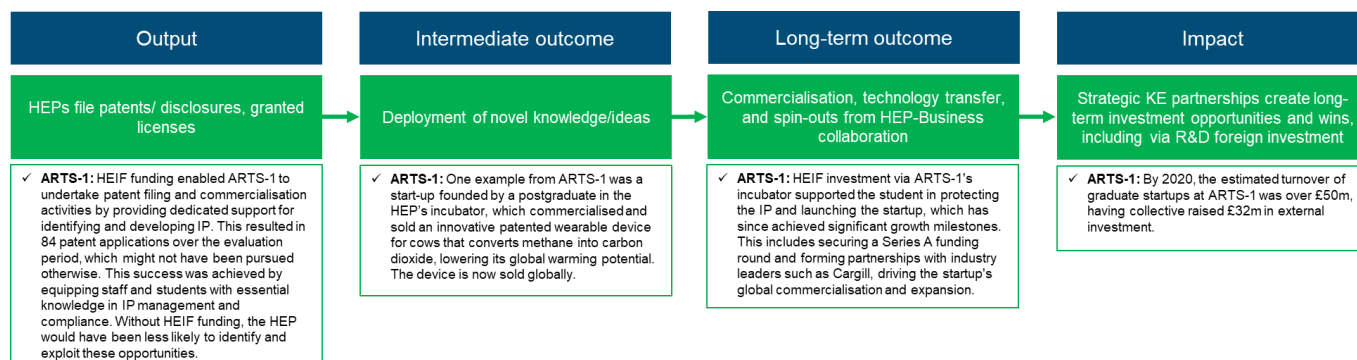


Figure 32: Cluster ARTS Impact Analysis (Research 2)

✓ **HEPs file patents/disclosures, granted licences leading to the deployment of novel knowledge/ideas**

HEIF funding supported ARTS-1 by covering staff costs and providing resources for its sector-leading incubator. This investment facilitated activities such as mentoring, access to prototyping facilities, business development initiatives, and the creation of industry collaborations. As a result, ARTS-1 successfully filed 84 patents between 2008 and 2020, demonstrating the substantial impact of this support on their ability to develop and protect intellectual property.

The Head of Faculty highlighted that the incubator, established with HEIF funding, had been operational for 20 years. They emphasised: “We wouldn’t have existed had it not been for HEIF.” Initially, the incubator focused on patenting and licensing inventions from the HEP. However, in 2009, it expanded to include a start-up incubator and spin-out programme. HEIF funding played a role in enabling the incubator to build a skilled commercial team with diverse expertise. This team provided support in market knowledge, business development, financial management, and IP strategy. Their efforts contributed to start-ups securing over £8 million in Innovate UK grants. The Head of Faculty also noted how HEIF funding facilitated grant writing and commercial skills development, underscoring that “no matter how many benefactors’ doors we knocked on, nobody ever wanted to pay staff salaries”.

The Pro-Vice-Chancellor added that HEIF funding supported dedicated roles for facilitating structured conversations between academics and industry partners. This support had been invaluable in helping academics understand the commercial value of their IP and ensuring that partnerships were mutually beneficial. The Pro-Vice-Chancellor remarked: “Our team made the difference by advising academics on the importance of appropriately valuing their IP and charging for it.”

An illustrative success story was a start-up founded by a postgraduate in ARTS-1’s incubator. The start-up developed a patented wearable device for cows that converted methane into carbon dioxide, reducing its global warming potential. This innovative product was commercialised globally, highlighting the impact of HEIF-funded support in driving both local and international success for start-ups.

✓ **The deployment of novel knowledge/ideas leading to commercialisation, TT, and spin-outs from HEP-business collaboration**

By the end of 2020, ARTS-1 had incubated 440 graduate start-ups, up from 200 in 2008. Two examples were highlighted by interviewees which received HEIF-funded support providing the necessary resources to flourish and ultimately emerge as successful businesses:

- A technology aimed at tackling methane emissions from grazing cattle. This was founded by a postgraduate. The company developed and patented a wearable device for cows that converts methane to carbon dioxide, reducing its impact on global warming.
- A flexible, concrete-filled fabric that hardens when hydrated to create a durable, waterproof, and environmentally friendly alternative to traditional concrete. This originated from a student project in 2004 which received support from the HEP's incubator.

On the second example, the Head of Faculty 1 for ARTS 1 commented:

“So that company started with the two students... coming up with an idea because they saw a competition for cement. They had an idea, developed it, and we filed a patent for them straight away before they graduated. We then provided some proof-of-concept and HEIF funding to enable them to have a six-month part-time salary to be able to develop the prototype further and improve the concept. That enabled them to attract Technology Strategy Board funding. We also helped them raise 150,000 of pre-seed investment, and that company, as I say, is manufacturing in the UK and exporting all over the world.”

✓ **Partnerships and increased HEP/business/public and third-sector capacity for KE, innovation and R&D leading to long-term investment opportunities and wins, including via R&D foreign investment**

By 2020, the estimated combined turnover of graduate start-ups at ARTS-1 was over £50 million, having collectively raised £32 million in external investment, and generated 780 new jobs. Both examples given by ARTS-1 interviewees provided strong examples of how start-ups originating from student IP progressed to secure external investment. The first company since achieved significant milestones, including a Series A funding round and partnerships with industry leader Cargill. By 2020, the second company had achieved a turnover exceeding £13 million and employs over 70 staff, exporting its materials to more than 80 countries, with approximately 80 percent of its revenue coming from exports.

8.7 Cluster M analysis

The following analysis synthesises and evaluates primary and secondary data sources from one case study cluster M institution. It includes background information on this cluster, as well as a detailed breakdown of evidence regarding the cluster’s contribution to broader societal and economic outcomes, in line with PT pathways.

8.7.1 Background

This case study draws on both primary and secondary data collected from an institution in KE cluster M. Institutions in cluster M are generally smaller institutions with a strong emphasis on teaching. Their academic activity is multi-disciplinary, with a notable focus on health domains and non-STEM fields. Research at these institutions was predominantly supported by government bodies and hospitals, with only 14.7 percent of funding coming from industry sources. There are 18 cluster M HEPs (as categorised in 2020).

Throughout the period under review, cluster M HEPs received £49 million in HEIF funding. This funding rose from £5.1 million in 2008 to £7.4 million in 2010, before gradually decreasing to approximately £3.4 million between 2010 and 2020. As shown above, this equated to an average of £288,000 per HEP in 2008, reaching a peak of £415,000 in 2010, before falling to about £200,000 per HEP for the remainder of the evaluation period.

8.7.2 People pathway

Contribution narrative (cluster M, People): HEIF funding enabled the HEP to embed enterprise education across its curricula and provided diverse work experience opportunities which enhanced student employability and industry engagement. These efforts contributed to the creation of 457 graduate start-ups between 2008-2020, although specific details on their impact are limited.

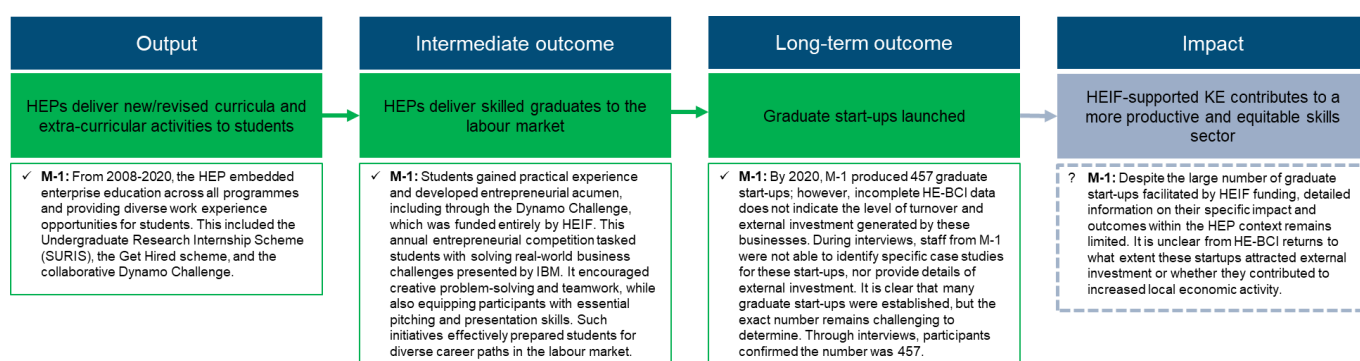


Figure 33: Cluster M Impact Analysis (People)

✓ HEPs deliver new/revised curricula and extra-curricular activities to students leading to HEPs delivering skilled graduates to the labour market

From 2008 to 2020, the HEP embedded enterprise education across all programmes and provided diverse work experience opportunities for students. For example, the Undergraduate Research Internship Scheme (SURIS) allowed students to enhance their research skills through real-world projects with academics, while the Get Hired! scheme connected students with potential employers to gain industry experience and improve employability. HEIF also supported Professional Development Units (PDUs), which offered tailored skill development for industry professionals.

A notable programme highlighted in interviews and KE strategies from 2011 to 2015 was the Dynamo Challenge. This annual entrepreneurship competition brought students from four HEPs together to tackle real-world business problems presented by IBM. Teams brainstormed, developed, and presented their ideas to a panel of judges, showcasing their creativity, problem-solving skills, and business acumen. The Dynamo Challenge provided a platform for students to apply theoretical knowledge to practical scenarios, developing entrepreneurial thinking and collaboration across institutions.

✓ **HEPs delivering skilled graduates to the labour market leading to graduate start-ups launched**

HEIF funding enhanced the HEP's support for student start-ups and internal entrepreneurial initiatives, solidifying its position as a leader in generating graduate start-ups, with 457 active graduate start-ups registered by 2020. Throughout the evaluation period, the HEP demonstrated a strong commitment to supporting student start-ups, ranking as the fifth best institution in the country for this initiative. From 2011 to 2015, their KE strategies included the 'Knowledge Transfer Tasters' project, which focused on internal start-up companies and provided valuable learning experiences for graduates acting as associates. This initiative was furthered by HEIF and informal feedback from HE-BCI returns in 2009, highlighting success in establishing sustainable student start-ups.

HEIF played a fundamental role in building up the core internal KE capabilities by funding the recruitment and development of dedicated KE staff. These staff members were pivotal in driving KE initiatives by offering mentorship, guidance, and expertise to students and graduates. Their efforts helped to integrate entrepreneurial elements into the curriculum and establish additional pre-incubation and incubation spaces.

? **Graduate start-ups launched leading to a more productive and equitable skills sector**

By 2020, M-1 had produced 457 active graduate start-ups; however, incomplete HE-BCI data does not indicate the level of turnover and external investment generated by these businesses. During interviews, staff from M-1 were not able to identify specific case studies for start-ups or provide details on external investment. Despite these gaps, the substantial number of active start-ups suggested the impact of the HEP's initiatives on entrepreneurship and its contribution to a more productive and equitable skills sector.

9 Annex 2: counterfactual analysis

9.1 Qualitative analysis

The following section presents the findings from thematic analysis conducted on transcripts from semi-structured interviews. Qualitative findings suggest that the withdrawal of the IEF had an impact on HEPs' tolerance of risk when funding new KE initiatives, institutional cultures relating to KE, and restricted the strategic ambition of HEPs aiming stimulate new business and public sector partnerships. Key insights include:

- The loss of IEF funding led to a reduction in capacity and resources for KE activities within Welsh HEIs, making it challenging to establish new partnerships with businesses and to maintain existing relationships with them.
 - IEF funding provided flexibility for innovative research projects, enabling HEIs to invest in relatively high-risk projects. The withdrawal of IEF resulted in challenges to secure funding for such projects, leading to a narrower innovation agenda based around project-based engagements aimed at local regeneration and development.
 - The withdrawal of IEF had a significant impact on the culture and attitudes towards KE within Welsh HEIs, making it challenging to advocate for KE alongside teaching and research. The reintroduction of funding through RWIF funding facilitated a shift towards recognising and rewarding KE activities.
 - The reliance on European Structural and Investment Funds (ESIF) increased after the withdrawal of IEF. While ESIF provided essential funding, it had a more rigid, project-oriented approach to KE, affecting the nature and scope of KE activities.
 - ESIF funding led to more regionally specific KE activities, reducing collaborations extending beyond Wales. The stringent requirements of ESIF funding limited universities' autonomy in deciding where funding was most needed based on regional insights.
- **Withdrawing IEF reduced dedicated core internal KE capability and led to a sharp decline in business and public-sector partnerships.**

Among the multiple impacts that the withdrawal of IEF had on Welsh HEIs surveyed was the dramatic reduction in capacity and dedicated resources to enable long-term outcomes and impact. Without dedicated and consistent funding to support the maintenance of specific roles within HEIs, each Welsh Provider reported that they struggled to build new and maintain existing relationships with partners, including businesses. After the withdrawal, Welsh HEIs delivered KE activity through ESIF until 2020 which enabled a range of regional and development programmes.

The withdrawal of the IEF had a far-reaching impact on W-3's strategic approach to KE. As the interviewee shared, all the institution's KTPs "just disappeared". Despite still having European funding to support specific KE projects, the HEI had to restructure the team and repurpose roles, resulting in the loss of many roles, especially around tech transfer and KTP support. Along with the withdrawal of the IEF, W-3 described the "devastating impact" that EU Exit had on KE and innovation in Wales:

"By losing that funding, which had enabled us to engage and support companies in regional communities, we've not been able to continue projects like that especially after this year. Only since the reintroduction of non-hypothecated research and innovation funding through RWIF has the HEI been able to build new partnerships with businesses."

The interviewee from W-3 claimed that this loss of capacity had a direct impact on overall levels of KE income generated by the institution, as measured by the HE-BCI. This was corroborated by analysis of HE-BCI returns for the period, showing an overall decline in KE income generated by core KE activities throughout Wales, and specifically a sharp downturn in income generated by collaborative research income. Though W-3 were able to build new partnerships using other Welsh government and European funding, the latter subject to stricter requirements and delivered according to European KPIs rather than institutional targets. In addition, W-2 noted that IEF had been instrumental in establishing some of its most successful KTPs in the early years of the period under evaluation. They provided the example of an elite

performance consultancy established using IEF funding in 2008 which, as of 2021, employed over 130 people with over 100 clients.

For W-1 the loss of funding also had a direct impact on core internal KE capabilities that enabled KE activity:

“In the years when the funding stopped and we lost members of staff, we didn’t have a budget to invest in new equipment and we couldn’t send academics to conferences or to meet with potential company partners overseas.”

The impact of this was two-fold: academics were no longer able to explore the commercial potential of their research, and local businesses and partners could not benefit from HEI expertise. With reduced dedicated KE capacity and professional support, academics found it more difficult to translate their research into feasible business proposals. While an academic “will be an expert in their field, they might not have any experience of writing a contract” (W-1).

The loss of KE capabilities at Welsh HEIs had a direct impact on main KE income sources. The interviewee from W-3 described how the impact of this meant a sharp decline in patent disclosures. Though RWIF funding has begun to build this resource back, the interviewee claimed that the lack of strategic investment over time has gradually eroded the capacity of the HEI to generate and exploit new intellectual property till the present day:

“Disclosures a few years ago [were] about 100 a year, you know we’re about 20 now. Unless you can build up the disclosures then your patent portfolio you’re never going to be able to commercialise. We’ve probably got a couple of rough years before we can really build that back up... so there is a lag as well in terms of the impact the funding has had.”

Beyond citing a decline in HE-BCI outputs, a key proxy for KE impact, W-3 found it difficult to attribute specific societal and economic impacts to the withdrawal of the fund. As they arrived in post shortly after the withdrawal of the fund, they could not clearly determine the impact that this had on specific business opportunities, but they did note that since the return of equivalent funding via RWIF they have been able to generate many more impact case studies that document successful commercially driven activity, as well as civic mission and public engagement projects.

W-1 noted that whilst certain existing KE activities and partnerships were insulated from IEF withdrawal, the institution faced challenges when establishing new partnerships. They described how a long-standing partnership with the Welsh government aimed at providing food businesses with technical, operational, and commercial support was unaffected by the withdrawal of the fund. However, without IEF-funded business professionals available to attend business-to-business exhibitions or open days, it was not possible to catalyse new business partnerships: “The things that the established centres do will be fine, but the opportunity to grow new centres was diminished.” This finding was expanded on by the dramatic reduction in collaborative research income. Likewise, our interview with W-2 discussed how through European funding, it was still possible to maintain a host of major KE programmes, including the development of an arts and innovation centre. However, projects tied to European monies were beset by a large administrative and logistical burden.

As well as impeding the opportunities of academic staff, W-2 described the negative effect that the withdrawal of IEF had on the student-led KE activity. The HEI had been using IEF to support a long-term collaborative research project with local industry partners to connect PhD and Master’s students with small and medium enterprises (SMEs). After the withdrawal of the IEF, the HEI was forced to shift its focus towards securing alternative funding sources to continue the project. While the project continued, “we had to shift our focus to securing alternative funding sources, which delayed progress”. Conversely, since the introduction of RWIF, W-3 noted that they had noticed an increase in new local start-ups launched by graduates:

“The funding enabled us to do a lot more with our early career researchers as well like our [postgraduate research students] as well as former student enterprise graduates... So, we’ve got some really successful graduate businesses which are now staying in the region.”

- **Withdrawal of flexible funding decreased appetite for risk among Welsh HEIs.**

As with HEIF, IEF served as a valuable resource for Welsh HEIs in supporting high-risk research projects with potential commercial value as well as examples of KE that might have had broader societal benefits without a clear financial return on investment. The IEF enabled flexibility that encouraged greater impact,

allowing Welsh HEIs to invest in projects that carried more risk or did not align precisely with other funding options, such as ESIF. According to W-1:

“Before we had [IEF], all the university had to invest, or pump-prime new projects, or bring new staff in, was internal income... so if I wanted to create a new post, say a KTP bid writer or a manager, I’d have to go to the director of finance and convince them that it was more important than another academic member of staff, or another accountant, or another somebody in HR. So that was a challenge.”

While the HEI nominally supported KE activity, the competing financial demands of central budgets made it difficult for the institution’s KE activity to flourish. This naturally impacted the nature of collaborations that were pursued by Welsh institutions. As referenced in 3.1.4, while certain KE partnerships were self-sustaining, it became increasingly difficult to find the funds to pump-prime new commercial business opportunities or engage with local SMEs to generate regional impact. They explained:

“I haven’t got the support from the universities and research and innovation team because the team isn’t as big as it used to be and therefore, I can’t risk getting involved in something new. And that will have a direct impact on businesses and organisations around the university that would find it more difficult to engage with us.”

For W-1, the reintroduction of dedicated KE funding through RWIF helped translate academic research into KE projects that involved higher levels of uncertainty. An example included a project aimed at conducting research into infant feeding, an outcome which resulted in the foundation of a local milk donation centre. While this research did not have clear commercial potential, the availability of flexible KE funding enabled more projects that were aimed at societal improvement rather than economic growth. In 2019, the above project was subsequently acknowledged at the Economic and Social Research Council and Universities UK’s “Lifesaver” awards. Without the reintroduction of dedicated KE funding, the level of investment in the research centre “simply wouldn’t have happened... because we’ve just not had the resources and capacity”. Likewise, they cited public engagement activity that would not have been financially viable without dedicated KE investment. These projects include interdisciplinary collaborations between different faculties, including humanities and social sciences, science and engineering and health and life sciences, which did not have clear commercial potential.

- **The absence of dedicated funding undermined the significance of KE within Welsh HEIs.**

The findings of the interviews with Welsh HEIs revealed that the withdrawal of the IEF had a significant impact on the culture and attitudes towards KE at their institutions. Prior to the fund’s withdrawal, challenges existed in justifying the importance of KE, with limited internal resources and competing financial demands. However, the introduction of IEF allowed stakeholders to advocate for the parity of KE alongside teaching and research, facilitating a cultural shift towards recognising and rewarding KE activities within these institutions.

The interview with W-1 discussed the shifts in cultures and attitudes towards KE at their institution before and after the withdrawal of the IEF. The interviewee spoke about the challenges faced by the HEI before the establishment of the fund, where they had to invest in primary new projects or bring in new staff using internal income. This was difficult because HEIs had many competing demands on their income streams, and convincing the Finance Director to invest in a new post or project was challenging. Though other funding was available through ESIF, the lack of dedicated, ring-fenced innovation funding made it difficult for institutions to argue that the so-called “Third Mission” of the HEI was as important as teaching and research.

After the introduction of the IEF, it was easier for stakeholders to argue for the importance of KE activity. As an interviewee from W-1 said, once the funding was available: “I was able to argue for parity of esteem for the innovation agenda alongside teaching and research.” This sentiment was also shared by an interviewee working at W-2 who noticed that it became very difficult to argue that KE was as important as other functions of the HEI: it made it “more difficult to argue that it you know it had parity with other activities because the funding arrangements weren’t there.”

The consequences of the funding withdrawal had a broader impact on the wider engagement of academic staff in KE. During an interview with W-1, the interviewee mentioned:

“The amount of practical support that the university can provide to academics and to external organisations who might want to engage in this activity” was affected. This included a direct impact on the ability to provide support and a perceived impact that the support was not as important.

They mentioned that “having other income streams, even if they were not as large, can make the difference between... a good financial return for the university or not”.

Another interviewee from W-3 commented that the absence of dedicated funding for KE activities made it challenging to recognise and reward staff adequately. However, with the reinstatement of dedicated research and innovation funding via RWIF, there has been a noticeable shift in culture. The institution is now focusing on building a culture that recognises and rewards KE. As the interviewee mentioned: “The more [funding] we have, the more momentum we gain, and the more others will want to get involved.” They highlighted the importance of IEF funding in its ability to promote a culture where KE was not only encouraged but also seen as an integral part of the institution’s mission. The subsequent impact of withdrawing IEF not only impacted the KE function of the institution, but also the ability of academics to generate impact measured by the Research Excellence Framework (REF).

- **Subsequent reliance on European Structural and Investment Funds (ESIF) directly impacted the nature and scope of KE delivered by Welsh HEIs.**

Following IEF withdrawal and before the introduction of RWIF, Welsh HEIs increasingly depended on ESIF to invest in certain forms of KE activity. All HEIs acknowledged the role played by ESIF during these interim years, with some asserting that, in certain cases, the KE function of their institution would have been severely compromised had it not been for the availability of this fund. It’s important to note that this reliance on ESIF presented a stark contrast to the IEF, both in terms of allocation and operational dynamics. While the IEF, similar to HEIF, promoted flexibility, ESIF exhibited a more rigid, project-oriented approach to KE activities. This shift had implications for the strategic direction and execution of KE efforts within these institutions and the ability of HEPs to retain long-term KE staff.

According to W-2 the availability of ESIF funding had a direct impact on the style of KE conducted at the HEI. The funding required projects to be delivered in a specific way, resulting in more granular, project-level focuses and fewer centrally planned KE activities. This shift led to a transition from a “centrally planned KE architecture to a very devolved one,” with many individuals engaging with companies in a less efficient, project-by-project basis. The interviewee acknowledged some adverse consequences of this shift, including a reduction in the number of individuals involved in KE and a lack of growth in new central initiatives. Previously, the HEI had established strong connections with businesses beyond Wales, including an award-winning KTP with a company in Chester. However, reliance on ESIF meant that a significant portion of the HEI’s KE activities became regionally specific. Similar sentiments were expressed by W-3. While they “were able to secure funding through the Welsh government and European funding to develop a standalone project” with other HEPs in Wales, NHS trusts and businesses to protect and exploit intellectual property, they were also forced to realign their goals.

“We had to repurpose our structures into a project that delivered specific key performance indicators (KPIs) related to European targets. This approach was not entirely ideal from our perspective, as it meant we had no centralised governance.”

While this focus on the local region had its advantages, it also came at the expense of collaborations extending throughout and beyond Wales. Without IEF funding, the institution faced challenges in determining its independent, endogenous KE strategy informed by the institution’s strategic objectives, ambitions and existing relationships. Nevertheless, both interviewees from W-2 and 3 indicated that the HEI managed to maintain certain core teams despite these challenges, partly due to ESIF funding.

The stringent requirements of ESIF funding limited universities’ autonomy to decide where funding was most needed based on their regional insights. W-1 cited an example of a KE skills scholarship that was administered based on postcode eligibility, recounting:

“I remember someone not meeting the postcode criteria. They were located in Corris, and the geographical boundary between Gwynedd and Powys ran down the middle of the street, with the student residing on the other side of that divide.”

Consequently, the postgraduate student was unable to benefit from the scholarship, potentially missing the opportunity to develop new skills and engage in KE activities.

9.2 Quantitative analysis

The following section presents the findings from quantitative analysis of the Welsh counterfactual conducted using annual HE-BCI survey results. This analysis identifies and assesses key trends related to KE income and the number of KE contracts, comparing them to HEPs in England from 2008 to 2020. To evaluate the comparative performance of Welsh HEIs against English HEPs, year-on-year HE-BCI data points have been expressed as a growth rate compared with a 2008 baseline. These quantitative findings are discussed in combination with the qualitative findings above in section 7. Key insights and include:

- After the 2014 withdrawal of IEF, Welsh HEIs experienced declining total KE income, in contrast with significant growth in English HEPs.
- English KE income increased by 45 percent between 2008 and 2020, reaching £4.2 billion in 2020. In contrast, Welsh HEIs had marginal 2 percent growth, reaching £201 million in 2020.
- Post-IEF withdrawal, Welsh KE income declined by an annual average of 2 percent, while English HEPs experienced a 2 percent annual increase. Compared with Scotland and Northern Ireland, Wales's KE income growth was notably lower.
- Collaborative research income for Welsh HEIs declined by an average of -3 percent per year after the IEF withdrawal. This was in sharp contrast to English HEPs, which continued to see an annual increase of 6 percent in collaborative research income.
- Welsh HEIs saw a 19 percent increase in regeneration and redevelopment income, reaching £50 million in 2020, aided by the availability ESIF.
- Before the IEF withdrawal, they grew by an average of 14 percent annually from 2008 to 2014, compared with -7 percent among English HEPs. After the withdrawal, Welsh growth slowed to 6 percent from 2015 to 2020, but it increased in relative terms compared with total KE income. By 2018, this revenue stream had become the second-largest source of KE income for Welsh HEIs.

• **Analysis of KE core income metrics**

This analysis is based on KE core metrics, which include income generated from collaborative research, contract research, consultancy, facilities and equipment-related services, Continuing Professional Development (CPD) and Continuing Education (CE), regeneration and development programmes, and intellectual property (including the sale of shares).

Figure 34 illustrates the total proportion of income generated by these core metrics between 2008 and 2020. It demonstrated that Welsh HEIs were predominantly reliant on collaborative research as their primary income-generating KE activity, in contrast with English institutions, which relied more heavily on contract research as their primary income stream. While other income streams remained roughly proportionate during the period from 2008 to 2020, the data showed that Welsh institutions generated a larger proportion of income from regeneration and development programmes compared with English providers. This was most likely due to an increasing reliance from 2014-2020 on ESIF, specifically ERDF, as a key KE funding stream.

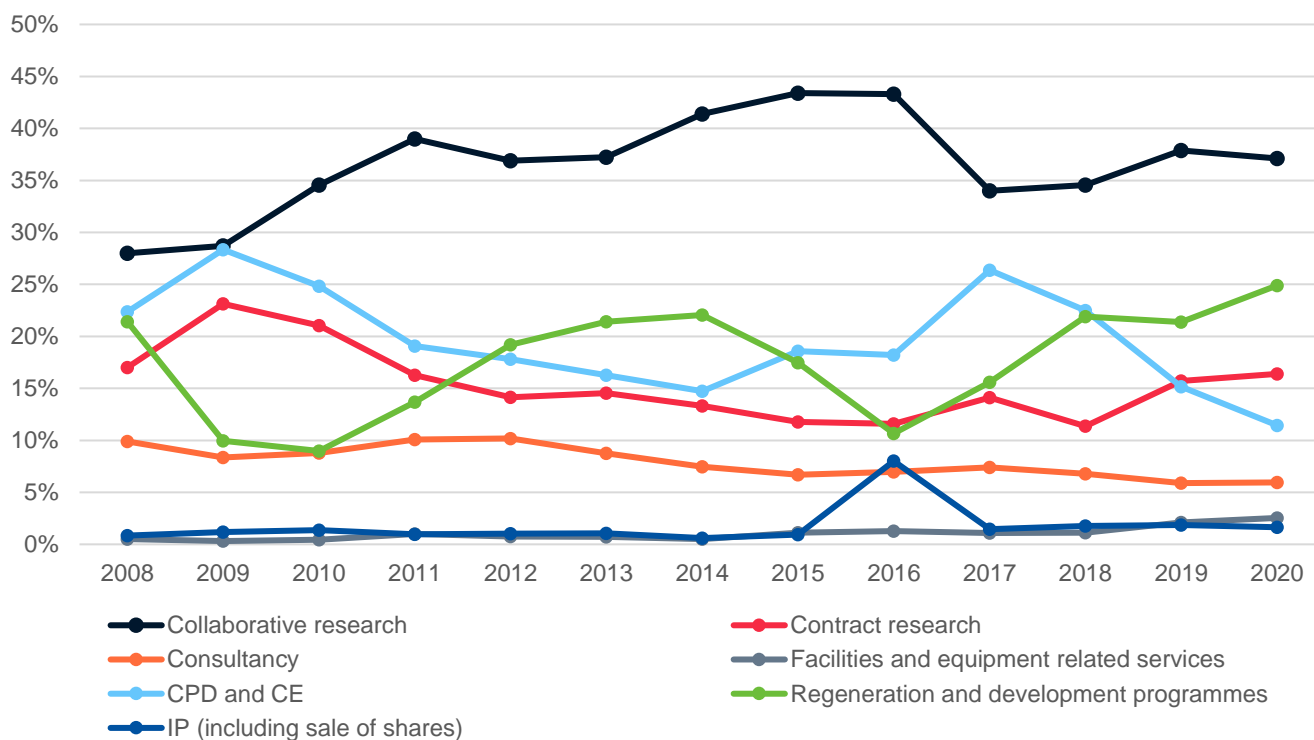


Figure 34: Welsh KE income 2008-2020

Figure 35 showed how the proportion of different income streams also changed over time. While collaborative research remains the dominant income stream among Welsh HEPs from 2008-2020 by the end of the period, regeneration and development programmes represent the second largest income stream as a proportion of total KE income.

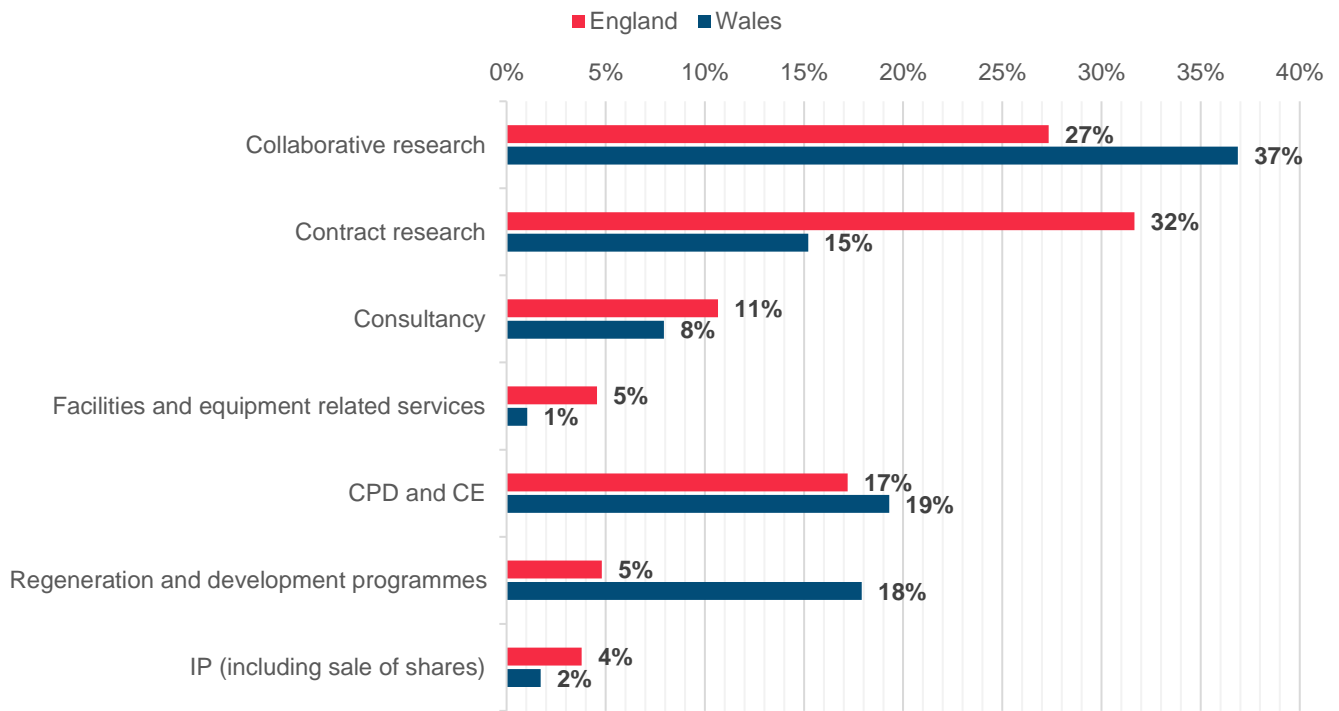


Figure 35: Proportion of KE income by core metrics (2008-2020) – England vs Wales

• **Analysis of total KE income (core metrics)**

As shown in Figure 36 KE income for English HEPs experienced significant growth, increasing by 45 percent between 2008 and 2020, amounting to £4.2 billion in income generated in 2020. By contrast, Welsh HEIs saw only marginal growth of 2 percent during the same period, representing £201 million in income in 2020. Before the withdrawal of IEF in 2014, Wales achieved an annual growth rate in total KE income of 3 percent, compared with 4 percent among English providers. After the withdrawal, total KE income in Wales decreased by an average of -2 percent per annum, compared with an average annual increase of 2 percent among English HEPs. Moreover, when compared with Scotland and Northern Ireland (both of which received similar dedicated KE funding throughout the period), Wales’s situation was even starker. From 2008-2015, Scottish KE income increased by an average of 2 percent per annum, and Northern Irish income grew by 7 percent per annum. After 2015, Scottish income continued to grow by an average 3 percent per annum and Northern Irish income grew annually by 8 percent. In total, this amounted to a 30 percent increase in total KE income between 2008-2020 for Scottish HEPs, and a 92 percent increase for Northern Irish HEPs.

Although income growth trends did not match the levels in England throughout the period, this evidence strongly suggested that the withdrawal of IEF funding in 2014 hastened a decline in the total income generated by KE activities across Welsh HEIs. Key drivers of this difference are explored in 4.3 which presents data relating to the seven dominant KE income streams for Welsh and English institutions.

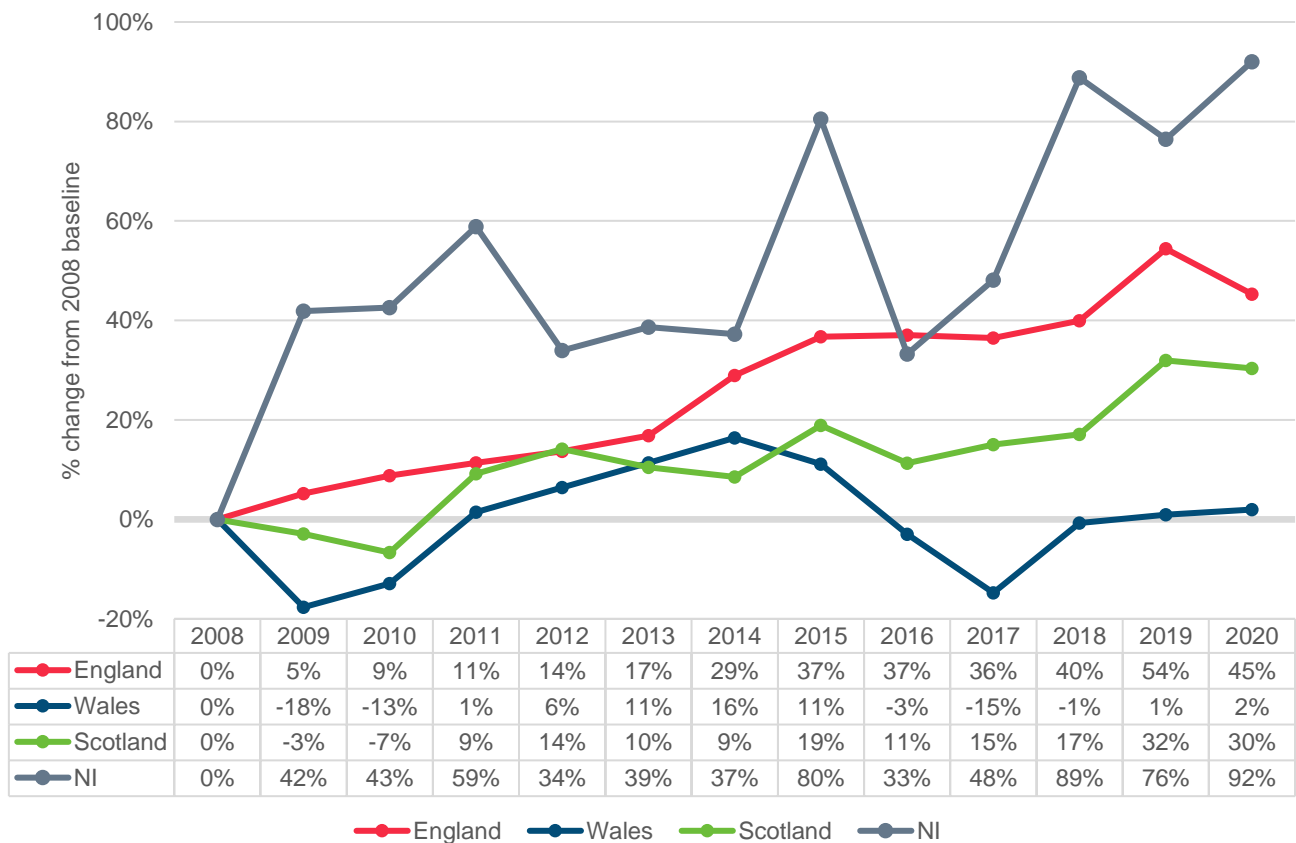


Figure 36: Growth rate of total KE income compared to 2008 baseline

• **Analysis of collaborative research income**

The HE-BCI survey refers to collaborative research as academic research that receives public funding and involves participation from at least one external partner. This type of research is considered a specific subset of all the research activities conducted by HEIs. Typically, formal collaboration agreements outline the rights of each partner regarding the utilisation of research outcomes, with the underlying assumption that all partners derive benefits from the research. As part of the survey, HEIs report the financial contributions from public sources as well as the contributions, both monetary and in-kind (such as data, equipment, time, or other resources), received from external partners.

Figure 37 depicts the growth of collaborative research income compared with the 2008 baseline. Before the withdrawal of IEF in 2014, Wales achieved an annual growth rate in collaborative research income of 11 percent, outperforming England’s 8 percent annual growth rate in the same period. However, following the withdrawal of IEF, between 2015 and 2020 collaborative research income decreased by an average of -3 percent per annum, compared with an average annual increase of 6 percent among English HEPs.

From 2017 to 2020, English HEPs’ collaborative research income continued to grow, resulting in an overall percentage increase of 112 percent compared with the 2008 baseline, totalling £1.4 billion of income in 2020. By contrast, while Welsh institutions experienced a marginal recovery toward the end of the period, this represented an overall increase in collaborative research income by 35 percent compared with 2008, totalling £74 million of income in 2020. This dramatic change in income between English and Welsh institutions before and after the withdrawal of IEF suggested that the withdrawal of IEF funding was a significant factor contributing to the decline in collaborative research income, which, as explained earlier, served as the primary source of KE income for Welsh institutions between 2008 and 2020.

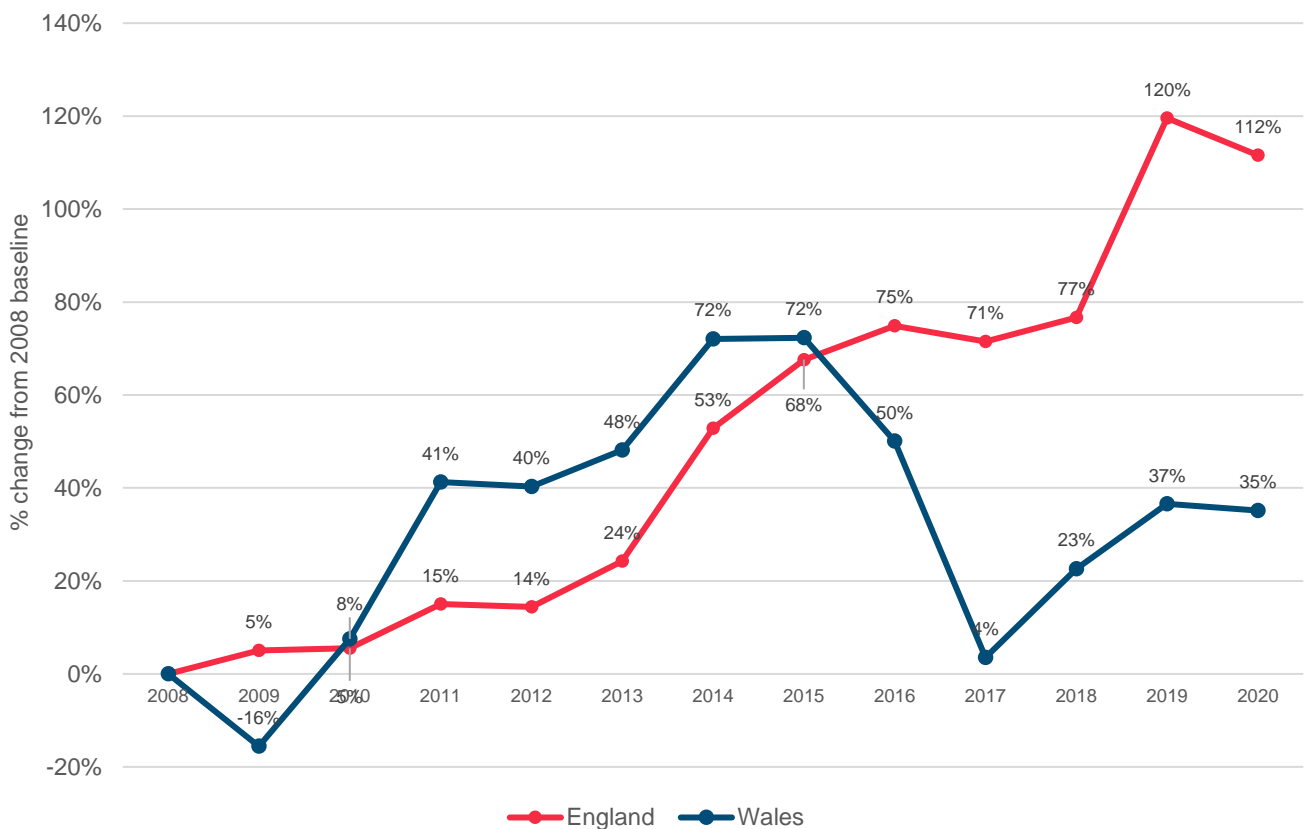


Figure 37: Growth rate in collaborative research income by nation compared to 2008 baseline

• **Analysis of contract research income**

Contract research, whether fundamental or applied, addresses the specific research needs of external partners. Income from third-sector organisations can be included if they are contracting research for their own purposes. However, income from research charities funding research for others isn't included, unless it meets collaborative research criteria.

Throughout the evaluation period, English HEPs consistently outperformed Welsh HEIs in terms of growth in comparison with the 2008 baseline in contract research income (Figure 38). Between 2008 and 2020, English institutions experienced a 39 percent growth, totalling £1.2 billion, while Welsh HEIs' contract research income amounts to £33 million – 2 percent less than the 2008 baseline.

Before the withdrawal of IEF in 2014, Welsh HEIs contract research income decreased by an average of -1 percent per annum, while in the same period English contract research income grew by an average of 5 percent. From 2015 to 2020, Welsh contract research income increased by an average of 3 percent per annum, compared with an average annual increase of 1 percent among English HEPs.

Contract research income for Welsh institutions had been declining before the 2014 withdrawal; however, between 2014 and 2016, income levels dropped by 25 percent to £22 million. This suggested that although the withdrawal of IEF funding did not directly cause a decline in contract research income, it did act as an accelerant of this decline.

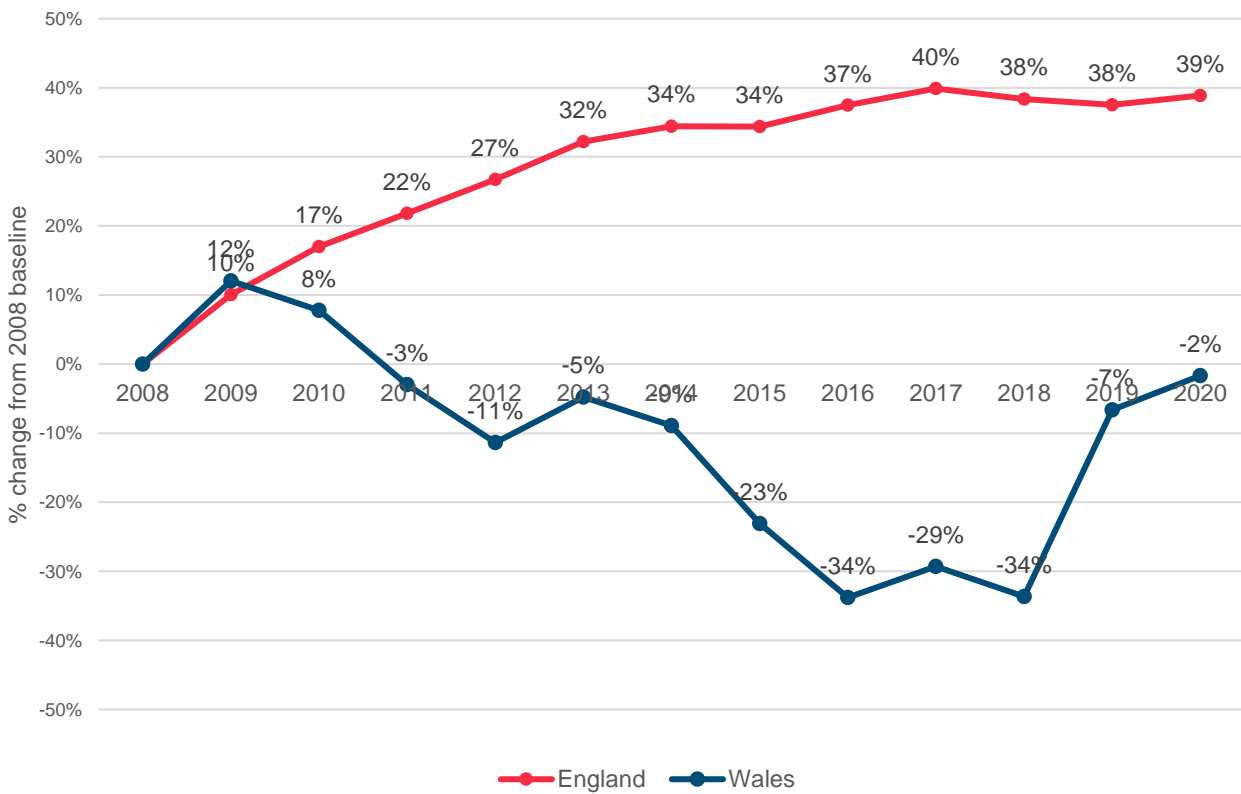


Figure 38: Growth rate in contract research income by nation compared to 2008 baseline

• **Analysis of consultancy income**

In the HE-BCI survey, consultancy is defined as the provision of advice and services that rely on intellectual contributions from the HEI to the client, whether commercial or non-commercial. Both academic and non-academic personnel within the HEI can engage in consultancy activities. Figure 39 shows that income generated by consultancy for Welsh institutions depreciated over the evaluation period, with a particular downturn beginning in 2014 after the withdrawal of the IEF. Between 2008-2020, Welsh income from consultancy shrank by 39 percent, decreasing by an annual average of -3 percent between 2008-2020. For English HEPs, consultancy income was similarly stagnant, and grew by an annual average of 0 percent from 2008 to 2020, amounting to £360 million of income in 2020.

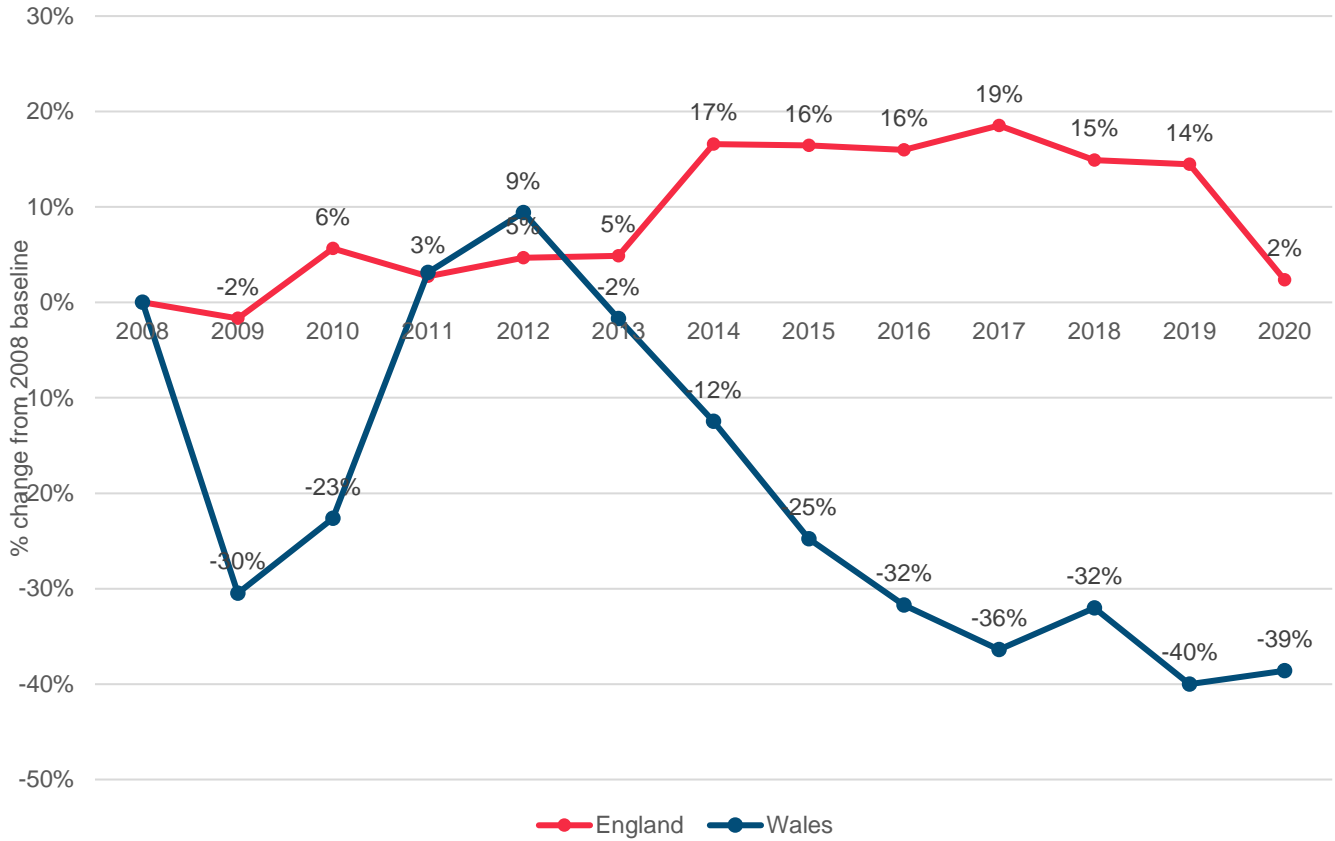


Figure 39: Growth rate in consultancy income by nation compared to 2008 baseline

• **Analysis of regeneration and development programmes income**

In the HE-BCI survey, regeneration and development programmes income refers to the income earned by HEIs through their involvement in projects aimed at improving economic, social, or environmental conditions in a specific area or community.

During the evaluation period, regeneration and development programmes income was not a consistent growth area for either English or Welsh institutions (Figure 40). Over the period, Welsh HEIs experienced more income growth for this stream than England, an increase of 19 percent in 2020 compared with the 2008 baseline. This amounts to a total of £50 million income in 2020. Before the withdrawal of IEF, and despite a downturn immediately following the beginning of the period, Welsh HEIs maintained an average annual growth rate of 14 percent between 2008 and 2014, compared with -7 percent among English HEPs. After the withdrawal, Welsh rates of growth slowed to 6 percent from 2015 to 2020, while English income from regeneration and development programmes accelerated to 9 percent per annum. The resilience of this income stream can be explained by the availability of European funding throughout the evaluation period, which was classified in HE-BCI returns as regeneration and development programmes income according to HE-BCI.

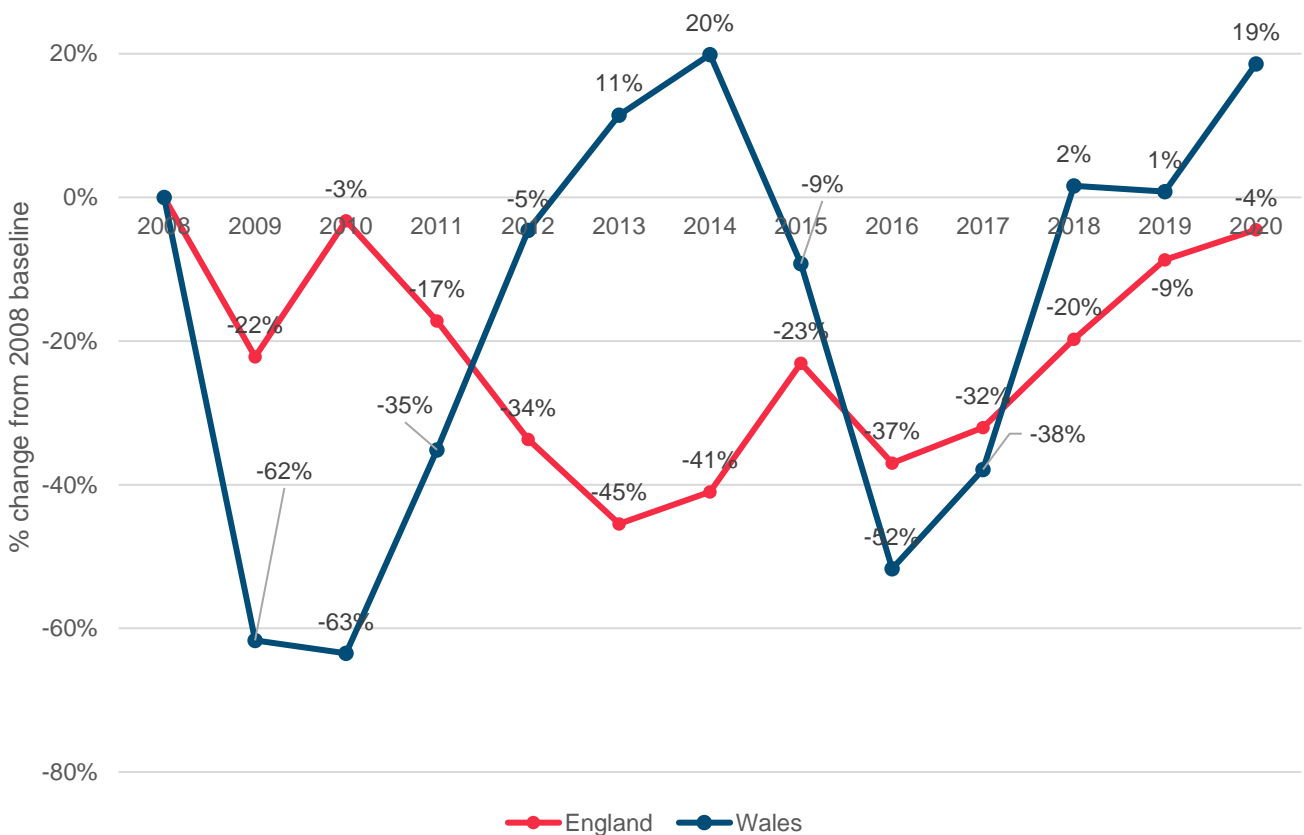


Figure 40: Growth rate in regeneration and development programmes income by nation compared to 2008 baseline

- Analysis of Continuing Professional Development (CPD) and Continuing Education (CE) income**

In the HE-BCI survey, CPD refers to the structured learning activities and training that professionals pursue to enhance their expertise and stay current in their respective fields. HEIs often provided CPD programmes and courses tailored to the specific needs of professionals, offering opportunities for skill development, knowledge updates, and career advancement. These activities are significant as they contribute to the lifelong learning and career progression of staff in diverse industries. Compared with other income categories in this section, CPD was more often driven by academic staff than KE, as it is allied to existing teaching.

CE, within the context of the HE-BCI survey, encompasses a broader spectrum of post-formal education initiatives that HEIs offer to the community and professionals. They serve as a means for individuals to expand their knowledge and skills beyond traditional academic degrees, supporting lifelong learning and personal growth.

As depicted in Figure 41, English HEPs exhibited stronger overall growth in CPD and CE income compared with their Welsh counterparts over the specified period. From 2008 to 2014, CPD and CE income was already declining by -4 percent per annum, while English income in this category grew by 3 percent. After the withdrawal of IEF, CPD and CE income continued to decline by -4 percent per annum, with English income also falling by -4 percent per annum.

However, the data presented does not indicate that the withdrawal of the IEF in 2014 was the primary driver of this discrepancy. Instead, it is noteworthy that income in this category had consistently declined since 2010, with only a marginal recovery observed in 2017-2018.

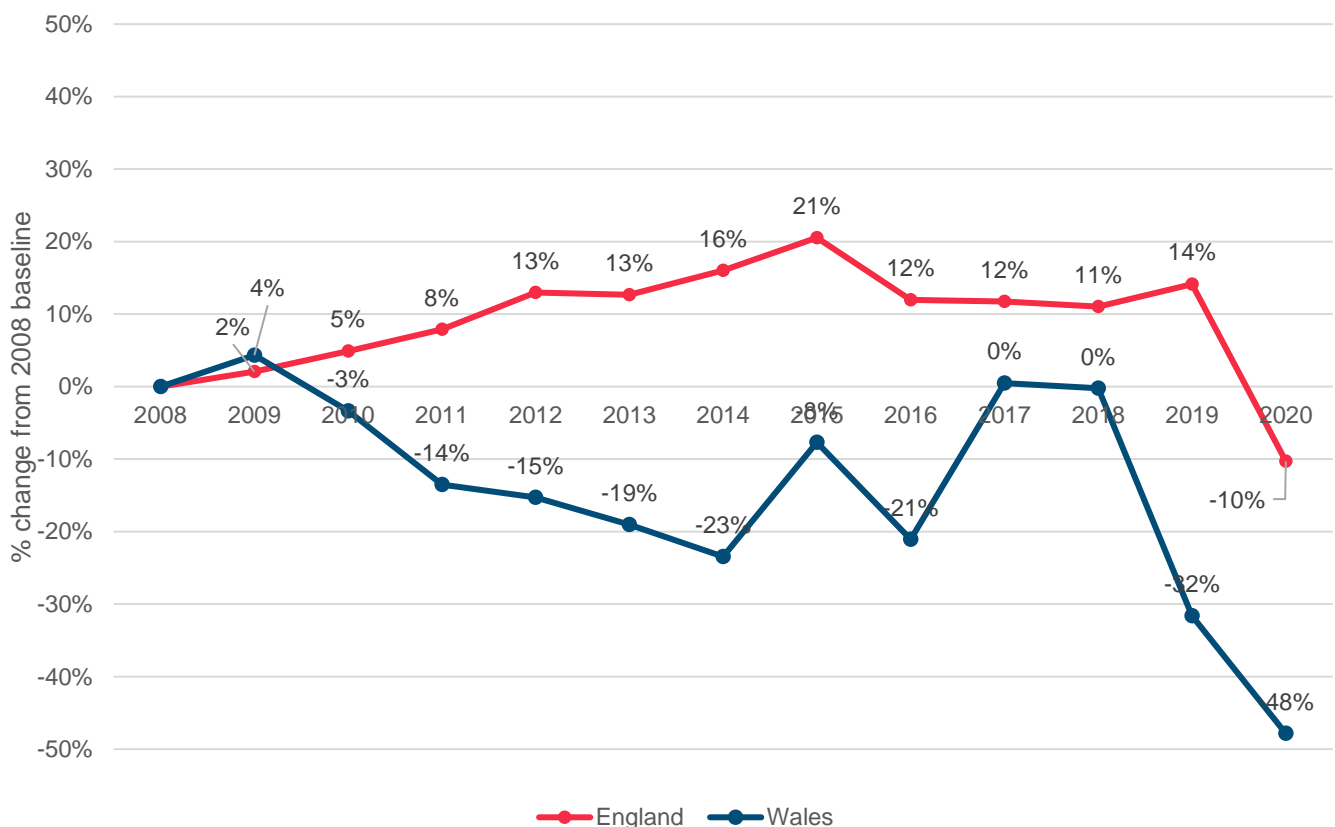


Figure 41: Growth rate in CPD and CE income by nation compared to 2008 baseline

• **Analysis of facilities and equipment-related services related income**

In the context of HE-BCI, facilities and equipment-related services income refers to the revenue generated by HEIs through providing external partners, often from business and industry, access to institutions’ facilities and equipment. This income category included revenue from services related to the use of these facilities and equipment, such as renting equipment, offering training and technical support, conducting testing and analytical services, and providing access to libraries and information resources. As with CPD and CE income, this income category was often driven by academic equipment owners and/or conference facilities, which are less likely to be supported by IEF/HEIF.

Figure 42 indicates that Welsh institutions experienced substantial growth in this income stream, commencing at under £1 million in 2008 and culminating in 2020 with over £5 million in this category. English HEIs similarly witnessed robust growth in this category over the evaluation period, starting at approximately £10 million and reaching just under £20 million by 2020.

Due to the large variance in proportionate income, it was difficult to draw meaningful comparisons between Welsh and English institutions. However, due to the consistent growth of this income channel for Welsh HEIs (averaging 27 percent annual growth between 2008 and 2020), this data suggested that the withdrawal of IEF in 2014 did not have a substantive impact on revenue generated by facilities and equipment-related services income.

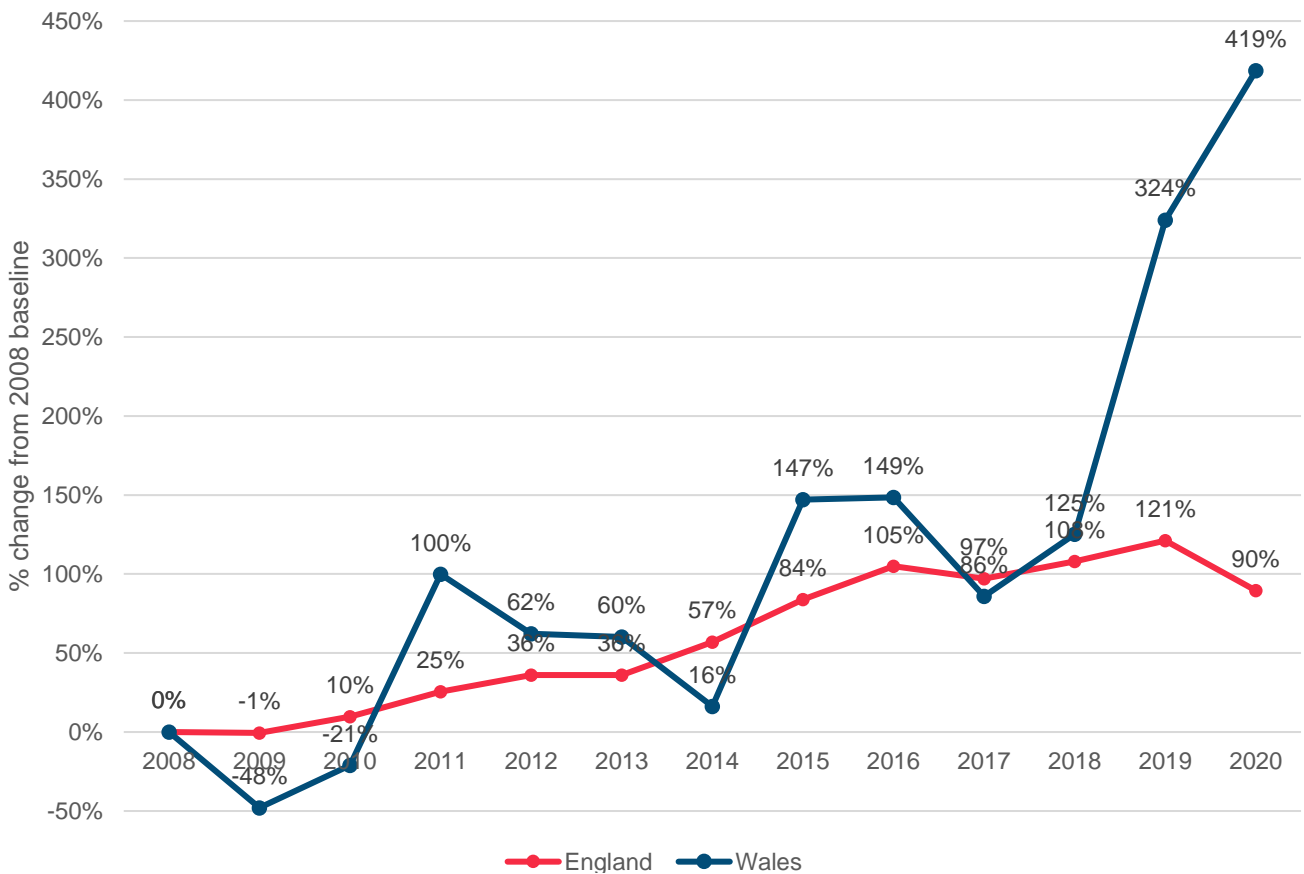


Figure 42: Growth rate in facilities and equipment-related services related income by nation compared to 2008 baseline

• **Analysis of intellectual property (including sale of shares) income**

Intellectual property (IP), including sale of shares, refers to the ownership and commercialisation of intellectual property assets developed by a HEI, such as patents, copyrights, and trademarks, and the potential sale or transfer of shares or equity related to these intellectual property assets. For this income category, it should be acknowledged that there was a considerable lag between KE activity and resultant income received – often a few years for licensing income, or potentially 10 to 15 years in the case of spin-outs. Therefore, it was difficult to draw firm conclusions about the impact of withdrawing IEF on this income stream.

Figure 43 shows that both English and Welsh institutions experienced strong overall growth throughout the period, representing 54 percent average annual growth between 2008 and 2020 for Welsh institutions, compared with 17 percent for English institutions. As the graph above illustrates, this average was heavily skewed by an anomalous event in 2016 – likely spurred by a major IP sale. Given the proportionately low baseline levels of income generated by IP among Welsh institutions, representing £1.6 million of income (compared with £76 million for English HEPs), any meaningful comparison was skewed by this low baseline. Moreover, as with income generated by facilities and equipment-related services, this revenue stream was proportionately insignificant compared with dominant income streams, including collaborative and contract research. As described above, because of the susceptibility of this income stream to occasional events and major IP sales, as well as the lag associated with the IP sales process, it was very difficult to determine the impact of dedicated KE funding on this revenue stream.

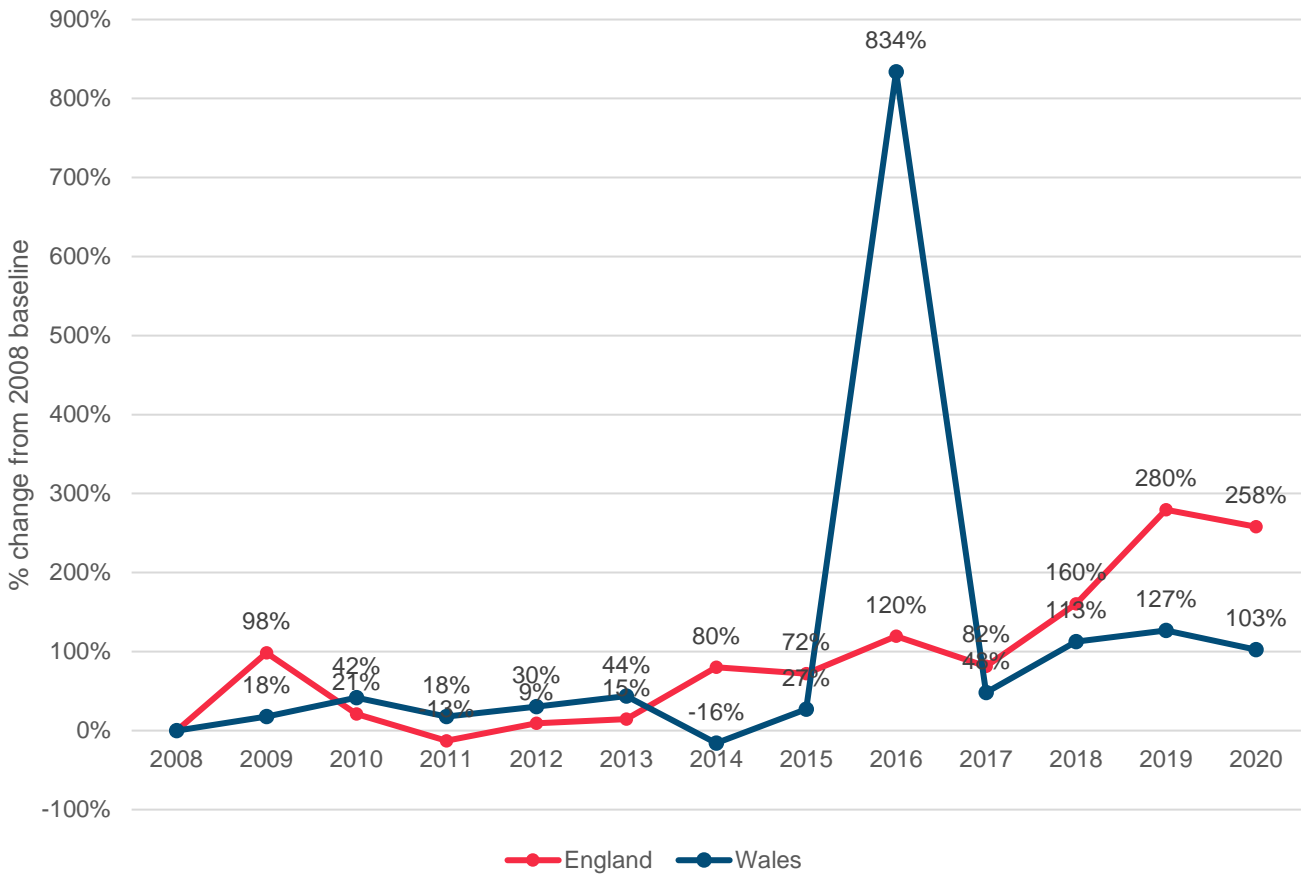


Figure 43: Growth rate in intellectual property income by nation compared to 2008 baseline

9.3 Conclusions

- **Impact on new collaborative research opportunities with business, public and third-sector partners**

One of the immediate consequences of the IEF withdrawal was the reduction in dedicated KE capabilities within HEIs. The loss of IEF funding led to a shortage of resources to support the maintenance of specific roles focused on KE, such as tech transfer and KTPs. HEIs reported that they struggled to maintain the teams responsible for building and sustaining partnerships with businesses and other external partners. This finding was corroborated by quantitative findings from HE-BCI analysis which showed that before the withdrawal of IEF in 2014, Wales achieved an annual growth rate in total KE income of 3 percent, compared with 4 percent among English providers. After the withdrawal, total KE income in Wales decreased by an average of -2 percent per annum, compared with an average annual increase of 2 percent among English HEPs. Specifically, data suggested that the withdrawal of IEF, and the business support infrastructure that it enabled, resulted in a sharp decline in collaborative research income. Welsh HEIs had outperformed their English counterparts before the withdrawal, with growth rates slumping following withdrawal. Given the rates of growth before the withdrawal of IEF, it is reasonable to suggest that with the continuation of IEF this trend would have continued.

- **Impact on risk tolerance and strategic decision-making**

The qualitative findings suggested that the withdrawal of IEF had a pronounced impact on the risk tolerance of Welsh HEIs in how they considered KE investment. Without the flexible funding provided by IEF, institutions became more risk averse in their approach to KE activities. This risk aversion could be attributed to the uncertainty of securing funding for KE projects, which led institutions to opt for fewer projects and to concentrate instead on KE initiatives that had clearer commercial potential rather than broader societal benefits. The removal of the dedicated IEF funding created uncertainty in financial support for KE projects and meant that HEIs prioritised projects that were more likely to yield immediate and guaranteed returns and that were based on prior business relationships rather than new opportunities. The increased risk aversion led to a shift in the types of projects pursued by Welsh HEIs. This shift in focus could have implications for the long-term innovation and economic development in Wales. In response to the loss of IEF, institutions had to explore alternative funding models, relying almost completely on European grants.

- **Impact on local and regional development and infrastructure**

Following the withdrawal of the IEF and prior to the introduction of RWIF, Welsh HEIs increasingly relied on ESIF to sustain their KE activities. ESIF played a role during the interim period before RWIF, although it differed from the IEF in terms of allocation and operational dynamics. ESIF had a more rigid, project-oriented approach to KE activities, shifting HEIs from centrally planned initiatives to more project-based engagements. The prevalence of ESIF monies, specifically ERDF funds, may have buttressed certain income streams for Welsh HEIs, specifically regeneration and development programmes income. While this income stream vacillated over time – perhaps due to the project-specific nature of certain programmes income from regeneration and development programmes represented a higher proportion of total income for Welsh HEIs and achieved 10 percent average annual growth from 2008 to 2020 compared with 1 percent average growth in English HEPs. Though this support drove income and certain economic and societal impacts, qualitative findings suggested that the availability of ESIF impacted the style and execution of KE efforts, making them regionally specific and reducing opportunities for broader collaborations. ESIF's stringent requirements also limited universities' autonomy in allocating funds, sometimes causing unintended limitations on participation.