
**Evaluating the Non-
Monetised Achievements of
the Higher Education
Innovation Fund**

**Report to HEFCE
by PACEC**

A report prepared by

PACEC

on behalf of
HEFCE

PACEC

Public and Corporate
Economic Consultants
www.pacec.co.uk

49-53 Regent Street
Cambridge CB2 1AB
Tel: 01223 311649
Fax: 01223 362913

e-mail: admin@pacec.co.uk
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The team comprised Rod Spires (Project Director) with a core project team including Barry Moore, Matt Rooke, Aldabra Stoddard, Stephanie Wright, Bernard Fischer, Nic Boynes, Paul Ellis and Sam Goodall.

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Executive Summary

- X1.1 The purpose of this study is to examine the nature and degree of non-monetised achievements and benefits to participants in the knowledge exchange (KE) activities and services provided by universities. There is considerable information on the income universities receive from the users of the services as a proxy for the benefits they receive. This study seeks to identify the additional benefits.
- X1.2 To support KE, the Higher Education Funding Council for England (HEFCE) has provided 99 Universities with £625K of Higher Education Innovation Funding (HEIF) funding over the past four years since 2011. The Universities have been able to supplement this through additional funds, and lever in funding from other public sector agencies and the private sector as income.
- X1.3 The evidence from this study shows the funding Universities received from HEFCE, primarily through HEIF, which, combined with the additional funds they levered in, has allowed them to strengthen their KE activities. The capability, capacity, and skills of University staff¹ have developed, along with their culture and enthusiasm for KE, allowing them to customise KE activities to meet the needs of organisations they engage with in the private and community and public sectors. There were benefits in terms of the KE skills and capabilities for the Universities.
- X1.4 The businesses improved their enterprise and innovation skills and outputs, resulting in the adoption and exploitation of technology in products and services and business performance impacts. The community and social groups gained insights into issues for themselves and those they support for better outcomes. There were wider economic effects through a focus on small and medium-sized enterprises (SMEs), supplier linkages, technology and innovation diffusion, inward investment, and the development of regional economic partnerships.
- X1.5 The evidence for this study comprised case studies with 25 Universities and interviews with around 120 University staff, some 200 businesses, and a group of community and social organisations.
- X1.6 These benefits have resulted against a background of considerable economic uncertainty over the period since 2007/08, arising from the credit crunch, the subsequent recession, and reductions in both public and private sector investment, with the latter becoming more risk averse and reducing investment.
- X1.7 Part of the rationale for HEFCE's KE policies and activities is to address market failure issues, for example, incomplete information, in that the potential users of services are unsure of what the Universities offer, businesses may not recognise the need for enterprise support, and, on innovation, businesses are reluctant to seek investment and investors are not aware of the needs of businesses, and/or they can

¹ These comprised academic staff (including pro vice-chancellors for research and heads of faculties/departments), staff in KE teams and non-academics who implement KE activities.

be excessively risk averse. There are also systems failures, for example, in the innovation ecosystem, where Universities play an important role, where organisations fail to co-ordinate their activities in response to needs.

- X1.8 The Universities, with their KE funding, have been able to achieve important improvements in the way they manage and implement their KE activities. KE is underpinned by senior level responsibilities amongst pro vice-chancellors (PVCs) and the heads of faculties and departments working with dedicated KE groups and staff for implementation. A diverse range of activities is provided, combining events (such as seminars, workshops, and conferences) and networking activities with enterprise, innovation, and research support, student and graduate placements, continuing professional development (CPD), and community development support.
- X1.9 The achievements of KE within Universities are wide ranging. There is a strong KE culture which has become embedded and has led to greater integration with teaching and research, cutting across disciplines and departments. The Universities considered that their staff had developed their skills and capabilities to organise KE activities and improve the outputs/outcomes. The events led to better information and a better understanding of the issues faced by participants and the solutions. The enterprise support resulted in improved skills that have assisted start-ups and spin-outs, and stimulated growth. The advice for innovation had improved technology outputs, along with the contract, collaborative, and consultancy research to exploit it as products and services. The staff were better able to provide student and graduate placements. The ability to work with community and social groups and provide support had increased. These activities were combined with greater involvement in local and regional partnerships and improved economic development capability.
- X1.10 Although activity has strengthened, there are some barriers to KE involvement amongst University staff, especially because of a lack of time and other research and teaching priorities. The Universities have sought to alleviate these through incentives such as promotion, providing leadership opportunities (with some KE 'Champions' in some disciplines), and offering training/CPD. The Universities also seek to develop sustainable activities when deciding on those to resource.
- X1.11 The benefits to businesses from participating in KE activities have been significant. From the outset, their aims were to develop products and processes, establish contacts amongst academics and other businesses, undertake research to develop their technological bases, and subsequently improve business performance. For most businesses (i.e., eight in ten), KE engagement had been successful. Businesses had paid primarily for the University research services to help develop and exploit technology and intellectual property (IP), incubation space as premises, and the use of machinery and equipment, but were less likely to have paid for enterprise advice and participation in events.
- X1.12 The non-monetised benefits were those over and above what the businesses had paid for. In this context, the majority said they believe the services were good value for money. The main non-monetised benefits identified by businesses were:–

- Events and Networks. The ability to identify contacts, gain insights into trends and opportunities, especially for technologies, and better understand ideas and solutions that would lead to product and process development and growth.
- Enterprise Support. Enterprises were able to start up and grow, and entrepreneurs strengthened their management and business-growth skills.
- Innovation and Research. Improved skills resulted in the development and testing of technology, the improved outputs of collaborative² research (with Universities and businesses), and development of IP.
- Products and Processes. A third of businesses had developed products and services for the market. A quarter had developed processes.
- Professional Skills. These had improved, for a quarter of businesses, for business management and innovation.
- Recruitment of Student Placements and Graduates. One in five businesses said student placements had helped resolve technology and business operational issues. They provided a very useful pool for recruitment.

- X1.13 Around half the businesses said that their business performance had improved. Sales and employment had increased by up to 20% for a third of businesses. A fifth had improved their productivity, and a third their profits. Many of the businesses were start-ups and at early stages, and many were in the innovation and high technology sectors where performance could improve significantly over time.
- X1.14 The additionality of University KE services was significant. Some four in ten businesses would not have experienced similar benefits in the absence of the KE involvement. For those that would, by and large, the benefits would have been later in time, smaller in scale, and narrower in scope.
- X1.15 There have been important benefits for community and social groups from their participation in KE activities. They comprise charities, social enterprises, and voluntary groups that provide services, with other organisations, to local groups, sometimes in deprived areas. They were involved in innovative KE initiatives (such as theatre groups, student volunteer services, and projects with ethnic minority initiatives to improve access to government services). Members of the groups benefitted from forging links with collaborators, improved insights into issues faced, and solutions to address them.
- X1.16 There are wider economic and social non-monetised benefits that result from KE activities. The Universities had helped to strengthen their regional economies through focussing their enterprise services on SMEs and their business growth and management needs, combined with support for research and development (R&D), innovation, and the exploitation of technologies. Part of the regional focus included promoting the regions Universities were located in and helping to improve their image.

² Research where there is joint working with the Universities and co-investment, which can involve novel research and IP.

- X1.17 The wider regional effects result as Universities and the businesses they support through KE purchase regional supplies and services. This stimulates additional income and indirect employment opportunities. Enterprises assisted by the Universities play a role in the short and longer-term diffusion of technology and innovation practices through customers, suppliers, and collaborators. The emphasis was on regional sectors and clusters such as biosciences, medical and other instruments, electronics and engineering, and computing and software. Associated examples of technology were smart construction, bio activities, nanotechnology, the low carbon and environmental technologies, and plastic electronics.
- X1.18 An important wider impact is the contribution Universities make to the regional labour market as businesses are assisted through student placements and the KE impacts on teaching and research. The regional recruitment of graduates is a powerful means of KE. The role of Universities in promoting their areas, providing expertise on innovation, and strengthening the labour supply helps to stimulate inward investment to the regions, especially from Europe, North America, and the Far East.
- X1.19 These activities are underpinned by the way in which Universities have developed their role and collaborative activity as part of local and regional economic partnerships involving the Local Enterprise Partnerships (LEPs), local authorities, business groups and associations, community and voluntary groups, and the network which forms the innovation system.
- X1.20 In conclusion, in addition to the non-monetised benefits for businesses, community and social groups, and the wider regional economy which demonstrate the effectiveness of the KE activities, the efficiency is reflected in the scale and nature of the benefits supported by the HEIF funding and other funds levered in. The KE activities have become more embedded and integrated into University practices. The KE activities have allowed key market failures and systems issues to be addressed, for example, information asymmetries, the extent to which enterprises recognise the need for support, and the alleviation of the uncertainty and excessive risk associated with innovation.
- X1.21 KE HEIF-funded activities resulted in significant additional benefits and outputs. Almost one in three Universities, four in ten enterprises supported, and the majority of community and social groups considered that, without the KE activities, they would not have experienced similar benefits to the ones they identified. Generally, where they would have proceeded with similar activities anyway, well over half considered that the benefits would have been smaller in scale, later in time, and narrower in scope.

1 Introduction and Aims

- 1.1.1 In June 2014 the Higher Education Funding Council for England (HEFCE) commissioned PACEC and the Centre for Business Research (CBR) to carry out an assessment of the non-monetised achievements of HEFCE mainstream funding for knowledge exchange (KE) activities, especially those funded by the Higher Education Innovation Fund (HEIF) between the years 2011 and 2014.

1.2 Aims and Objectives of the Research

- 1.2.1 The headline aims of the evaluation are to assess:–
- The non-monetised achievements and benefits from ongoing HEFCE KE funding.
 - The extent to which HEFCE KE funding is an effective and efficient means of supporting the activities that led to these achievements and benefits.
 - The present extent of embedding of KE in higher education (HE) mission, leadership, strategy, institutional structures, and University staff capability.
 - Any negative consequences or disadvantages from HEFCE KE policy and funding to date.
 - Areas for improvement in the future, and how these might be achieved.
- 1.2.2 The issues include the extent to which the KE policies and activities address perceived market failures, such as inadequate information flows, and knowledge and system failures where the policy response to issues is not fully co-ordinated and effective.
- 1.2.3 The study is intended to give an English HE sector-wide view across all these aspects. It is also intended to look particularly at the value of HE contributions to supporting small and medium-sized enterprises (SMEs) and local area/sub-regional economic development as an input to implementation of the Witty Review recommendations³.
- 1.2.4 Underpinning the main aims, the research will seek to identify:–
- The benefits to research and teaching, and the capability and positive attitudes towards KE amongst University staff that feed into research and teaching decisions and practice.
 - Long-term benefits to institutional missions and strategy development, for example, professional staff and structures; senior leadership and management; and collaborative approaches to KE infrastructure as a means to achieve higher efficiency.
 - Wider economic benefits, for example, support for local economic development infrastructure and local growth; support for innovation networks and innovative SMEs, together with the diffusion of technology through the innovation system, economic linkage effects, and labour market benefits.

³ Witty, A., Encouraging a British Invention Revolution. Sir Andrew Witty's Review of Universities and Growth. 2013

- Wider social benefits, such as support for community, cultural and societal engagement, and public engagement that helps raise local aspirations.
- 1.2.5 The research also seeks to examine the efficiency and effectiveness achieved through the HEFCE approach. For example:–
- The complementarity of HEFCE KE funding with other funding sources.
 - The benefits from the flexibility of funding to address regional/national priorities and respond to changing demand in collaboration with other organisations.
- 1.2.6 KE in HE is necessarily diverse, reflecting the range of disciplines and types of higher education institutions (HEIs), and hence the range of partners and users involved.
- 1.2.7 The evaluation is not concerned with individual projects and initiatives run by Universities but with the overall programme of KE activities funded through HEIF. Neither is it concerned with complementary funding streams and programmes, or additional projects that are funded from outside the main formula funding. The evaluation is intended to add value to the econometric research on KE based on using KE income received from participants in activities as a monetary proxy for benefits and impact. Income features in the Higher Education – Business and Community Interaction Survey (HEBCIS) returns made by Universities to the Higher Education Statistics Agency (HESA)/HEFCE. It will focus on the non-monetised benefits and achievements that cannot be captured through income analysis.⁴ Non-monetised benefits and achievements present a complex issue. Universities charge for some key services and KE activities, for example, contract, collaborative, and consultancy research, the provision of premises and innovation/incubator space, and mentoring, continuing professional development (CPD), and other enterprise support and innovation advisory services. However, they do not charge for all, and the Universities do not seek to maximise income as they seek to address market failure issues and stimulate benefits for the users of KE activities and generate wider positive spill-over effects. Universities use a co-investment model, combining their funds with those of participants and other public sector funding. Participants can obtain non-monetised benefits as they are not charged for the activities and/or they pay for activities but believe they obtain benefits over and above what has been paid for or captured in the price (i.e., added value).
- 1.2.8 Many wider economic and social benefits that result from KE activities are non-monetisable where they comprise spill-over effects and may result from collaboration between Universities and other organisations to strengthen economic development infrastructure and policies for the area.
- 1.2.9 Alternative ways to monetise the impacts, apart from the flow of income to the Universities, which this study does not cover, are the quantified turnover/sales for

⁴ HEFCE. Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector. Tomas Coates Ulrichsen: Centre for Science and Technology and Innovation Policy (CSTI) University of Cambridge. 2014

businesses and employment attributable to University support and how business performance (such as turnover/sales and employment) impact upon gross value added (GVA) for the economy.

1.3 Knowledge Exchange Policy and HEIF

- 1.3.1 HEFCE KE policies with 'third stream' funding began in 1999 in conjunction with other government departments. These funds were specifically designed to support institutions to increase their capacity and capability for KE – the broad range of knowledge-based interactions between HE institutions and the wider world which result in economic and social impact.⁵ This was distinct from the two established HE funding streams for teaching and research, though intended to build upon and complement both these. The HEIF commenced in 2002. It has been moving to fit increasingly with the Council's approaches to recurrent funding more generally, with the most recent allocations for the period 2011–15 which are the focus on this research.
- 1.3.2 In addition to main KE formula funding through HEIF, the Council may support KE projects through its other programmes, for example, most recently from its Catalyst Fund.
- 1.3.3 Funding for KE was initially for time-limited projects but has been provided through the formula since 2006.⁶ Since successive governments have reviewed their approaches to HEIF, allocations have been made to date for whole Spending Review periods, rather than annually as with research and teaching formula funding.
- 1.3.4 Since 2011, in the light of the maturing policy agenda for KE and increased pressures on public funding, the approach has changed to selective allocations based on performance measures (using income as a proxy for impact on the economy and society, and hence as an imperfect, but currently our best, measure of KE performance). This is intended to drive higher levels of efficiency and effectiveness in the use of scarce public funding. HEIs remain free to use funds for the full range of KE activities. HEIs are expected largely to take responsibility for their own development of good practice and innovation in KE activity.
- 1.3.5 KE builds upon and is linked with core HE research and teaching activity. Hence institutions may use research and teaching funding to support KE activities in addition to dedicated HEFCE KE funds. They also draw upon other sources of funding such

⁵ While there are no national or international standardised definitions of KE (although HEFCE works closely with many overseas countries and international bodies to share practice on definitions of KE and related terms), the range of KE activities is illustrated in the HEBCIS, see HESA website) and in HEFCE KE funding policy documents. The definition includes the enterprise agenda for University staff and students.

⁶ Details of HEFCE's funding method for KE and the distribution of funds across HEIs are at <http://www.hefce.ac.uk/kess/heif/>

as EU Structural Funds (e.g., the European Regional Development Fund (ERDF)), which will support and enhance KE activities. In addition, users of HE knowledge and expertise should contribute to the costs of services and support that are of benefit to them.

1.4 Market and Systems Failures

1.4.1 Part of the rationale for the KE policies and activities is to address perceived market failure issues. This is justified on the grounds that public initiatives are required if markets are not behaving perfectly, i.e., there are costs and benefits that are not fully reflected in market prices. The research and innovation process is more complex in that there is significant uncertainty about the current position and the future where change is dynamic.⁷ The main market failures related to KE, and in particular to the interactions with businesses, in summary comprise:–

- a Incomplete information or asymmetrical information for Universities and external organisations, in that, for example, the latter may be unsure what Universities offer and how staff can be accessed. The Universities are unsure of the needs of organisations, irrespective of charges for services and payments.
- b Assistance for business growth and innovation. Businesses, in particular, may not recognise the need for support and assistance or how they may access it.⁸
- c Innovation. On the demand side, businesses may not be aware of support and what is available and may be reluctant to seek investment for innovation, for example, as control of the business may be foregone. On the supply side, universities may not be aware of the needs of business, and for example, advisers and investors can be excessively risk averse and lack knowledge about the capabilities of businesses to manage innovation and deliver revenue and profits in a timely way⁹.

1.4.2 There are also inherent uncertainties in the research and innovation process and outcomes which point to ‘systems failures’, in that there are problems with the lack of co-ordination between organisations such as Universities, businesses, and others, and conflicting norms and behaviour. These can be expressed as ‘institutional failure’, in response to the market failure issues outlined above.¹⁰

⁷ CIHE. UK-IRC. Enhancing Impact. The Value of Public Sector R&D. 2012.

⁸ UCL Advances, Economic Impact Assessment of UCL Advances Activities. PACEC. 2014.
University of the West of England, iNets Monitoring and Evaluation. PACEC. 2013.

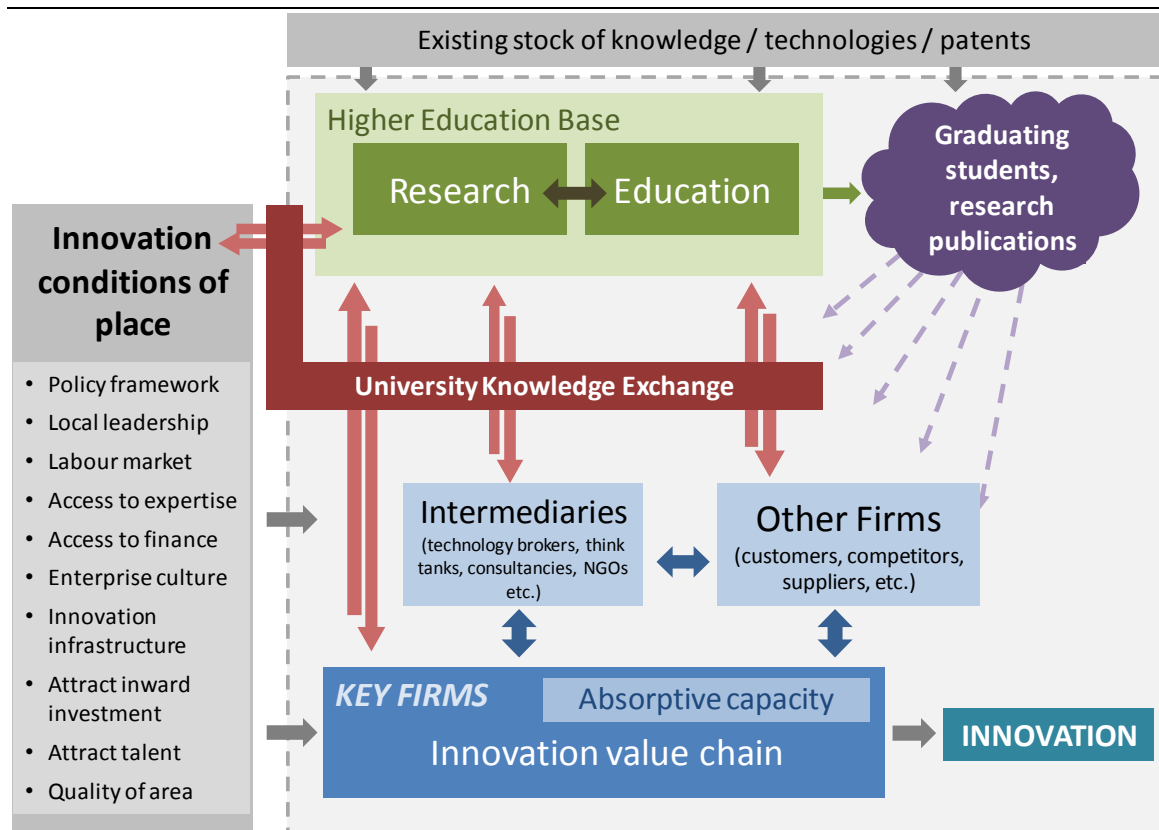
⁹ Technology Strategy Board, Evaluation of Collaborative R&D Between Universities and Business. PACEC. 2012.

¹⁰ CIHE. UK-IRC. Enhancing Impact. The Value of Public Sector R&D. 2012.

1.5 Knowledge Exchange and the Innovation System

- 1.5.1 Knowledge exchange encompasses an extensive range of organisations that interact with the Universities and with one another on a range of issues. KE takes place within Universities through the different faculties, departments, and schools representing their disciplines and engaging with initiatives and teams that have a remit for KE and other activities. The KE takes place in a multi-faceted way through teaching, research, and funding for KE activities through HEIF.
- 1.5.2 Universities play an important role in the KE and innovation system. This is multi-faceted, with a wide range of organisations that interact with the Universities and the HE base. They consist of businesses that interact with the Universities, public sector bodies (e.g., public sector research establishments (PSREs)), and the wider range of intermediaries (such as technology brokers, consultants, and non-governmental organisations (NGOs)). To illustrate these interconnections and other exchanges, Figure 1.1 below shows a framework KE and innovation system with the HE base. The system is not static but dynamic, and there are complex relationships between the participants that vary over time and reflect the aims of participants. Nor is the system consensual, but encompasses a wide range of rivalries within a highly competitive and market-driven environment.

Figure 1.1 Knowledge exchange and innovation system



Source: PACEC

1.6 The Methodology

- 1.6.1 To provide a focus for the study and the narrative for the impact of KE, we have developed a logic model which allows us to examine the inputs, outputs, outcomes, and benefits of KE, as well as effectiveness and efficiency; their impact on the HE mission, strategy, and practices; and the degree to which they have become embedded over time. The scope for potential improvements and lessons learnt can also be drawn out. The logic chain comprises:-
- The rationale for KE and HEIF funding.
 - The inputs as expenditure, leverage, and income.
 - The activities, for example, networks/events, enterprise support, innovation and research, CPD, and community projects.
 - The outputs/outcomes for the Universities, businesses, and community groups.
 - The wider economic and social benefits and spill-overs.
 - The effectiveness and efficiency of policy, and lessons learnt.
- 1.6.2 Appendix C gives a fuller description of the logic chain used for the study.
- 1.6.3 The programme of empirical research designed to obtain the evidence for the study comprised:-
- The inception stage to agree the research methods, sources for the interviews, the University case study sample and discussion guides for the interviews.
 - The desk study of background information on KE policies and HEIF funding.
 - Case studies with 25 Universities. These were selected to allow the results to be aggregated for the sector as a whole. The Universities included those selected for the 2009 HEFCE study¹¹ excluding those that no longer received HEIF funding. Some 120 interviews were held with a representative group of University staff involved in KE activities. They included pro vice-chancellors (PVCs) for research, the heads of faculties and departments and staff who managed the KE initiatives.
 - Research with external organisations. Interviews were carried out with a representative group of approximately 180 businesses that engaged in HEIF-funded activities and 20 social and community groups.
- 1.6.4 These were scoping discussions with Universities as part of the design stage. The interview discussion guides, and questionnaires, were piloted as part of the research.
- 1.6.5 The full methodology and how the results were analysed are set out in Appendix D. Both the samples of University staff and businesses were weighted in the analysis to reflect the overall population of Universities.¹² The interviews with Universities were analysed for the whole group and by different groups according to their research

¹¹ 'PACEC. HEFCE.' Evaluation of the Effectiveness of HEFCE/OSI Third Stream Funding. 2009

¹² The results of the interviews are primarily stated as the views of Universities, businesses, and community and social groups, i.e., they are the views of the staff interviewed.

intensity and the arts.¹³ The differences are reported on below where they existed. The results of the business interviews were disaggregated where possible by size and industrial sector and the different views are shown where they existed.

1.7 Qualifications to the Results

- 1.7.1 Results of the research and their interpretation are qualified. The interviews with University staff did not cover all the KE activities that were organised. A representative sample was selected for the main KE activities. Although representative samples were sought from Universities for businesses and social groups engaged in KE, it is possible that some contacts may have declined the invitation to participate for various reasons. Hence the samples may be biased to some degree. The achieved samples are not large, which limits, to some degree, the extent to which results can be disaggregated.
- 1.7.2 The following chapters set out funding for KE with HEIF and the aims of Universities for KE and how they manage it. Subsequent chapters detail the KE achievements for Universities, businesses, and community groups, as well as the wider benefits. The final chapter draws out the main conclusions, reflecting the aims of the study.

¹³ See Table 2.1 for the Universities by research intensity.

2 The Nature of KE Funding

Panel 2.1 Summary

The key findings of this chapter were the following:–

- A total of 99 institutions have received HEIF 5 funding (2011/12 to 2014/15). The amount of funding per institution was initially capped at £2.85m, and the total allocation for 2011/12 was £150m.
- £45.5m of the 2011/12 HEIF funding was allocated to the 25 case study universities – 30% of the total.
- The Universities were asked which funding sources were used specifically in combination with HEIF for KE. The most common were internal resources, other public sector funds, and other HEFCE funding.
- Almost all of the Universities said that they had used HEFCE KE funding to lever in external funds, with two fifths saying this had been successful to a large extent.
- The Universities charge for some KE activities and use a co-investment approach whereby the participants may make a contribution to costs with the University. Hence the Universities do not seek to cover the full costs of services or charge for all benefits received by individual users or the wider public.

2.1.2 This chapter outlines the total funding for KE with HEIF, for all Universities, as a key input to the KE programmes and activities delivered by the Universities, reflecting the logic chain given in the introduction. It covers the total funding from 2000 to 2015, and the 2011–15 HEIF 5 period in particular. It shows funding for the case study Universities and how they distribute it, as well as how it is combined with other sources. It discusses income, co-investment, wider public benefits, and leverage and the extent to which the Universities seek to charge participants for their KE services. The main sections are:–

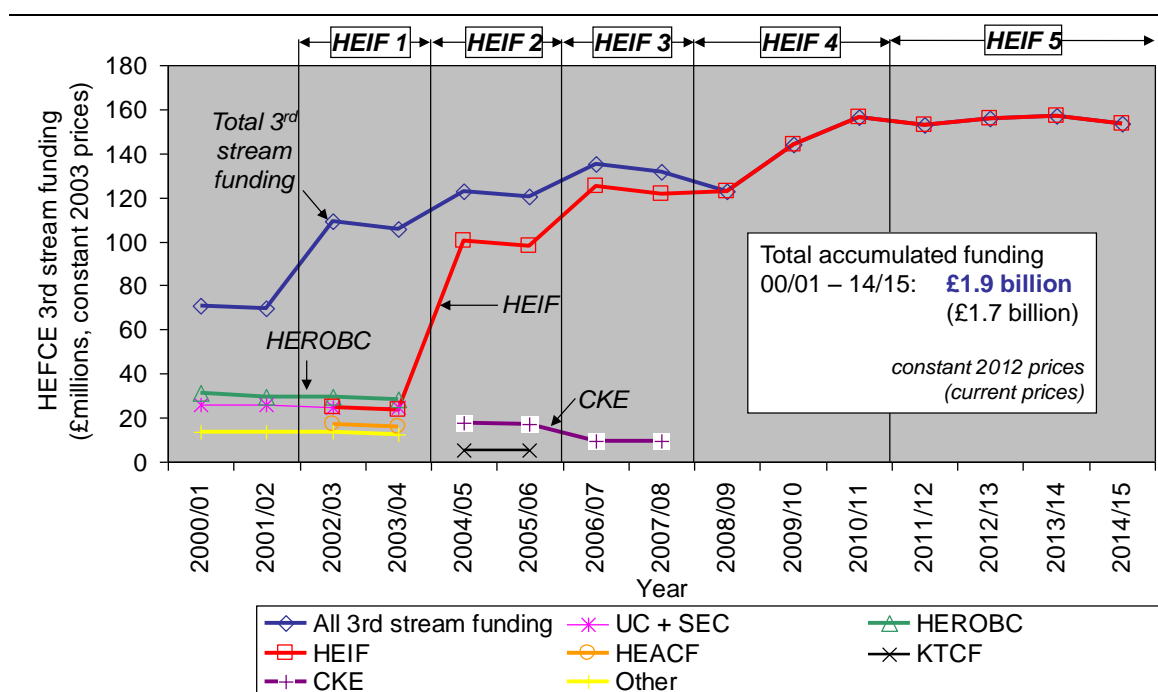
- The overall funding for KE using HEIF.
- The HEIF funding for case study Universities.
- Main sources of funding with HEIF.
- HEIF funding and leverage.
- Income from activities, co-investment, and wider benefits.
- Key factors that influence the distribution of HEIF.

2.2 The Overall Funding for KE using HEIF

2.2.1 Figure 2.2 shows the evolution of HEFCE third stream funding in constant 2012 prices from 2000/01 to 2014/15. KE funding is used here to describe the public funding provided to HEIs to support KE engagements. The figure shows a general tendency for third stream funding as a whole to rise in aggregate in real terms. Over the period as a whole, total accumulated funding is estimated to have been £1,905m. The sharp jump from 2001/02 to 2002/03 arises because of the introduction in the latter year of the new Higher Education Active Community Fund (HEACF) and HEIF 1 streams. The amalgamation of many schemes into the overall third stream funding pattern from HEIF 2 onwards means that the evolution of total third stream funding

and HEIF funding moved closely together from 2004/05 onwards. From 2008/09 onwards, KE funding was consolidated into the HEIF 4 and 5 allocations, and since 2010/11 the annual level of funding has stayed roughly constant at around £155m (in 2012/13 prices).

Figure 2.1 Third stream funding since 2000/01



Source: HEFCE, PACEC, CBR analysis

- 2.2.2 The total amount of HEIF funding made available to eligible English HEIs was £150m per academic year from August 2011 to July 2015.¹⁴ Funds were allocated to each University by formula on the basis of performance, based on various measures of income (as a proxy for impact on the economy and society). The maximum amount of funding per University was capped at £2.85m per year. A total of 99 institutions received funding.

2.3 The HEIF Funding for Case Study Universities

- 2.3.1 The initial allocation of HEIF funding for the 25 case study Universities is shown in Table 2.1 below. All the Universities in the 'top six' research intensity cluster, and almost all those in the high research intensity cluster, received the full allocation of £2.85m. In total, £45.5m of HEIF funding was allocated to the 25 case study Universities – 30% of the total.

¹⁴ Hence the total initial planned allocation was £600m over the four years. Additional allocations were made available in the three academic years 2012/13 to 2014/15, bringing the total funding to £626m.

- 2.3.2 The funding and expenditure by Universities was used to lever in income from a wider range of sources, in particular, the income from businesses.

Table 2.1 Case Study Universities and their HEIF 2011–15 Allocations

Cluster	Number of HEIs	HEIs studied	HEIF 11-15 (£)
Top six research	6	University of Cambridge	£2,850,000
		Imperial College London	£2,850,000
		King's College London	£2,850,000
		University of Manchester	£2,850,000
		University of Oxford	£2,850,000
		University College London	£2,850,000
High research	5	Cranfield University	£2,850,000
		University of Birmingham	£2,850,000
		Institute of Education	£1,021,022
		University of Sheffield	£2,850,000
		University of Southampton	£2,850,000
Medium research	6	Oxford Brookes University	£1,637,663
		Brunel University	£1,124,470
		University of Hertfordshire	£2,850,000
		School of Oriental and African Studies	£475,221
		University of Plymouth	£1,504,655
		University of Sunderland	£1,033,888
Low research	5	University of Derby	£674,476
		Liverpool Hope University	£684,878
		Southampton Solent University	£876,722
		Leeds Beckett University	£1,501,198
		University of Lincoln	£509,526
Arts	3	University of the Arts London	£2,519,630
		Royal College of Art	£300,811
		Royal Northern College of Music	£254,194
Total	25		£45,468,354

- 2.3.3 A supplement of £6m additional funding was made available for 2012/13, and a further £10m in both 2013/14 and 2014/15. The additional allocations were made to the highest research intensity Universities based on their recent performance and growth, using data from the HEBCIS, as shown in Appendix D, Table D1.1. Three quarters of the additional funding made available in 2012/13, and roughly half the funding in 2013/14 and 2014/15, was granted to case study Universities – this reflects the project's selection of the top six research Universities as a case study group. Hence out of the total of £626m made available to HEIs over the four years of funding (2011/12 to 2014/15), case study universities received £196.5m, or 31%.

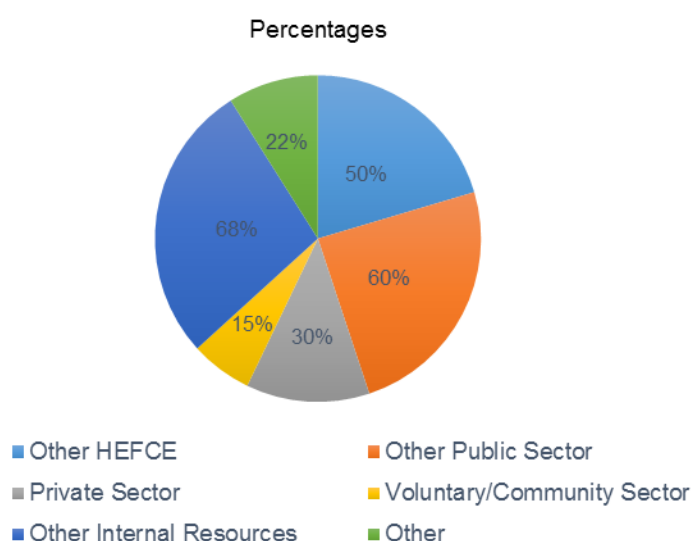
2.4 Main Sources of Funding used with HEIF

- 2.4.1 Universities were asked which other main sources of funds were usually used in conjunction with HEIF for KE. Two thirds of Universities (66%) mentioned other public sector funding, and almost two thirds (61%) mentioned private sector funds. Half mentioned other HEFCE funding for core activities and to a small extent Quality Research (QR) funds, while a similar share used other internal resources. The low

research intensity Universities were least likely to mention other HEFCE funding sources (12%), and the top six research Universities were most likely to use this (81%).

- 2.4.2 The Universities were asked which funding sources were used specifically in combination with HEIF for KE. The most common were internal resources (68%) and other public sector funds (60%), mainly ERDF or some Research Council funds. The ERDF funds helped strengthen the enterprises and innovation advice programmes (such as innovation sector iNets, innovation vouchers, and specialist/mentoring advice). The Research Council funding could link to themes and issues that businesses were interested in that resulted in contract, collaborative, and consultancy research with the Universities. The Universities also used other HEFCE funding (50%). It was noted that institutions could use research and teaching funding to support KE activities.

Figure 2.2 KE Funds used in Combination with HEIF



Source: PACEC Interviews with University staff

- 2.4.3 The funding had been attracted against a background of considerable economic uncertainty over the period since 2007/08, arising from the credit crunch, the subsequent recession, and reductions in both public and private sector investment, with the latter becoming more risk averse and reducing investment.
- 2.4.4 Universities estimated that HEFCE and other public sector funding had increased more rapidly since 2011 than private sector and voluntary/community sector funding.

2.5 HEIF Funding and Leverage

- 2.5.1 Almost all of the University staff (93%) said that they had used HEFCE KE funding to lever in external funds, with two fifths (42%) saying this had been successful to a large extent. These funds helped to improve the KE activities, their coverage, and scale, which helped increase the degree of engagement and the benefits. Only 5% of

Universities said they had an explicit target proportion of funding, relative to the HEFCE KE funding, that they aimed to raise from external sources.

“And sometimes just the fact that we’ve done work supported by supplied funding can enable us to go to a potential sponsor and get some support. So it has that seed core funding in some areas, which is critical for us. Money follows money. If you’ve already got it, and you’ve got an evaluation and can prove it, you can sometimes go to a sponsor and say we want to take it to the next level, could you support us partially to do that?” [University view.]

- 2.5.2 Universities thought external funders were restricted by public spending cuts (73%) and the current economic uncertainty (73%). Other factors included risk aversion (36%), declining spending on research and development (R&D) and innovation (27%), and reduced demand for KE and partnerships (21%).
- 2.5.3 Some University staff said their KE funds were focussed on particular disciplines or initiatives, such as named centres for research and KE. Others said KE ran through everything the University did, rather than being a specific add-on activity. Some were explicitly student-focussed, concentrating on placements and start-ups; others prioritised University staff research consultancy and collaboration funds, with a view to securing external funding sources.

2.6 Income from Activities, Co-investment, and Wider Benefits

- 2.6.1 The KE activities result in benefits for the Universities, participants in the activities, and the community, resulting in wider public benefits. The Universities generally do not seek to maximize their income or to make profits. The Universities charge for some of the KE activities and use a co-investment approach whereby the participants may make a contribution to costs alongside the University. Hence the Universities do not seek to cover the full costs of services or charge for all benefits received by individual users or the wider public. By not charging fully for services, the HEIs are seeking to address some of the market failure issues mentioned above, such as providing information and enterprise advice and support for innovation. The sharing of costs with beneficiaries helps to contribute to the public good and local, regional, and national growth.
- 2.6.2 The Universities are also mindful of the state aid regulations, in that the provision of KE activities in terms of institutional infrastructure (e.g., KE transfer activities) and the development of KE capabilities within the Universities (e.g., staff and student entrepreneurship) are non-economic. KE activities organised by institutions may be non-economic (e.g., public engagement) or economic (contract research, consulting, and enterprise incubators) where charges may be relevant.
- 2.6.3 On average, and as a reflection of the above, the Universities do not charge participants for some nine out of 10 KE events, networks, and seminars/workshops that are organised. Charging was more prevalent for some enterprise support and innovation and training activities, with around 45% of activities being charged for.

Some nine out of 10 of the research and technology exploitation activities were charged for, reflecting the economic nature of these activities. A third of student and graduate placements were charged for (excluding knowledge transfer partnership (KTP) placements where charges were made for graduates and some items). On average, very few community support activities are charged for, demonstrating the wider public benefits of Universities support.

- 2.6.4 The external beneficiaries of KE with HEIs receive a non-monetised benefit from services which are provided below cost, or not charged for. The research with businesses later in this report shows that they typically report good value for money in their interactions with universities where they pay for these. (See Figure 2.3.)

Figure 2.3 HEIF-Funded KE Activities: Co-Investment Model

Activities	Co-investment policy
Events/Networks Relatively low charges/payments	
These comprise 'public space' activities with seminars and workshops being prominent, combined with conferences and network building and development.	On average, only 10% of activities involve a transaction. Typical policy seems to be that users contribute around 20% to 50% of the full costs where a transaction is made, with HEIs contributing the remainder for the public good.
Enterprise support Medium level charges/payments	
Half the Universities provided advice for their own students/graduates and spin-outs as well as for SMEs and larger businesses. Incubator/co-working space (for start-ups) and training and continuing professional development were provided by four in 10 Universities. The latter could address occupational skills and some technology issues.	Almost half of the different enterprise support ¹⁵ activities are charged for on average. Typical policy seems to be that users contribute to around half of the full costs of the different enterprise support activities (between 25% to around 75%) where a transaction is made, with HEIs contributing the remainder.
Innovation and Research Relatively high level charges/payments	
The focus was on collaborative research, primarily to support the exploitation of technology, in conjunction with contract and consultancy research (between the University staff and businesses of all sizes, with research cutting across the departments), followed by advice on innovation issues from trends to take-up in technology, to testing, prototyping, intellectual property (IP)/patents, and product development.	On average, 87% of activities involve a transaction. Typical policy seems to be that users contribute to at least half of the full costs where a transaction is made, with contributions ranging from 50% to 100% of the full cost.
Student/Graduate Placements Low to high level charges/payments	
These could be wide ranging from the more formal KTPs to student/graduate placements in organisations to address specific issues and staff placements to help develop ideas and products.	On average, only 33% involve a transaction. Institutional policy is divided – two thirds of institutions have an arrangement where users contribute 50% to 75% of full costs, in the remaining third of institutions, the full costs are covered by HEIs.
Community Development/Support Relatively low charges/payment	
For two fifths of Universities this could range from joint projects (with research, services to client groups, and work with the arts and theatre groups) to visits to groups to share views on issues and exchange information. Civic events involved a wide audience and could showcase University activities and provide 'open days' to departments.	Community support activities, in the great majority of cases, do not involve a transaction (only 12% included a transaction between user and HEI). Where there is a transaction, users contribute 0% to 50% of the full costs.

Source: PACEC Survey of University staff)

¹⁵ The enterprise support can include advice for University students/graduates who start a business (or consider doing so), University spin-outs and other businesses who engage with the Universities.

3 The Aims and Activities of Universities

3.1 Introduction

Panel 3.1 Summary

The key findings of this chapter were the following:–

- Based on their aims, all of the University interviewees said KE was important to them and on a par with research and teaching.
- Almost all of the Universities said KE had become more important over the past four years, and for half it was significantly more important.
- The most important factors influencing the amount of KE activity were said to be government policy, overall HEFCE funding, and the Research Excellence Framework.
- The KE activities organised, and supplied, by Universities have strengthened over time. The main activities were: –
 - Events/Networks
 - Enterprise Support¹⁶
 - Innovation and Research
 - Community Development Support
 - Student and Graduate Placements.
- The activities which were thought to have increased most in importance were collaborative research, seminars and workshops, network building and development, advice to enterprises and student start-ups, and advice to SMEs.
- The main constraints to participation faced by academics were a lack of time, other teaching responsibilities, and other research priorities.

3.1.2 This chapter sets out what is distinctive about KE and HEIF funding and the specific and diverse range of activities that it is used for to engage external participants and develop staff skills and competencies. It starts with what the 25 case study Universities are seeking to achieve with their KE activities and HEIF funding. Related to this, it sets out how funding is managed and allocated to the various faculties and departments and the specific KE initiatives. It then goes on to outline the range and diversity of KE activities that are important, in order that Universities can meet their KE aims. The topics in the chapter are as follows:–

- The aims of HEIs and HEIF funding.
- How funding is managed and allocated.
- The specific KE/HEIF-funded activities.
- Incentives for University staff, and constraints.

¹⁶ Ibid. See footnote on p.18.

3.2 The Aims of HEIs

3.2.1 The overriding mission, and aims, of the 25 Universities reflected their submissions to HEFCE for HEIF funding and focussed on the fusion of academic rigour with real-world experience and engagement with a wide range of partners, at local, national, and international levels. KE involved being willing to exchange information in a collaborative way to address issues faced and to allow insights to be gained into the world of external partners to help shape University engagement. Businesses and the commercial sector provided a focus for HEIs. Desired impacts, for the Universities, reflected the 'Impact Agenda', including economic, social, and cultural benefits and the creation of human, community, and economic capital.¹⁷ The HEBCIS returns and Annual Monitoring Statements provided a focus for the aims and activities including income generation.¹⁸

"Therefore in order to answer the question as to what knowledge exchange is, it is about doing fundamental research, producing something of value – in this case knowledge, and disseminating it in such a format to society that it can then realise benefits for the economy, for industry, for individuals." [University view.]

3.2.2 Part of the aim of Universities was to try to ensure that their activities were based on sustainable models and activities that could continue to run in the future. The HEIF funding could have a catalytic and leverage effect in drawing in and attracting other funds and could test whether activities were sustainable through pilot activities.

3.2.3 Based on their aims, all of the University interviewees, comprising senior academics (i.e., PVCs and heads of faculties and departments) and KE managers, said KE was important to them and on a par with research and teaching.

3.2.4 Almost all of the University staff said KE had become more important over the past four years, and for half it was significantly more important.

3.2.5 The University staff were asked what they considered to be the key factors influencing the amount of KE activity. The most important factors were said to be government policy (73%), overall HEFCE funding (67%), and the Research Excellence Framework (58%). Other significant factors included private sector funding (47%), staff views (44%), income generation (41%), and student views (40%).

¹⁷ Ibid.

¹⁸ The annual HEBCIS returns to HESA/HEFCE and the monitoring statements.

3.3 How Funding is Managed and Allocated

3.3.1 To achieve their aims, the key factors that the Universities take into account when allocating KE funding include past performance of initiatives and the size, scale, and potential impact of projects. There was some variation between Universities in the approach taken, with some prioritising income generation, links with industry, student promotion, and academic interests. The Universities were very aware of the impact agenda and the need to secure economic and social benefits.¹⁹

“The HEIF fund, we tend to spend on things that have a clear unmet market need, but if it has an unmet medical or social need as well, that’s the ideal for us.” [University view.]

3.3.2 Responsibility for KE policies rested with senior University staff, i.e., faculty committees, departmental committees, specific KE management groups, and other groups.

3.3.3 To deliver KE, most of the Universities said they had increased the numbers of dedicated University staff over the past four years, rising to three quarters of high research intensity Universities.

3.3.4 Three quarters of the Universities also said that they had increased the time put in by dedicated University staff to develop and implement KE activity over the past four years. A slightly smaller proportion had increased the KE time of University teaching and research staff.

3.3.5 The staff involved in KE, as defined by the Universities, included those who primarily managed the KE initiatives and co-ordinated the day-to-day KE activities and University staff whose main roles were primarily teaching and research as well as KE involvement.

- KE Managers. For the individual case study Universities, the estimated number of KE management staff (including some senior academic and non-academic staff) was in a range of three to eight per University on average, and between 10 and 40 University staff (including academics) were regularly involved. The main activities the University staff were involved in were the contract, collaborative, and consulting research, events, and networks.
- Teaching and Research Staff. These were primarily the University staff who were less regularly engaged in KE, and could number scores to hundreds of staff who may participate in events and networks (with conferences, seminars, and workshops), and support the core staff in some way, such as in contract, collaborative, or consultancy research and CPD. The rates were between 10% and 20% of all staff.

3.3.6 Overall, it was considered that staff involvement could be “a fraction” to “almost all University staff – 75% to 85%”, and smaller and specialist institutions were likely to have higher proportions of staff involved compared to the larger ones. The

¹⁹ The Impact Agenda of Research Councils. Universities UK and HEFCE. Joint Statement, 2015.

Universities with high KE/HEIF budgets generally had more core and non-core staff involved.

3.4 The Specific KE/HEIF-funded Activities

- 3.4.1 The KE activities organised by the 25 Universities have strengthened over time. This has been in response to the positive attitudes of staff but also a result of external demand for services and activities. The general view was that the supply of activities had in itself raised awareness and stimulated demand.

“You can make connections as you get to know people because they have come to a number of different things, you understand them, you understand their profile.”
[University view.]

- 3.4.2 The range of activities funded by HEIF, and supported by other funds, was diverse, showing the scope of KE in response to issues, and integrated, in that the activities were interrelated and reinforced one another. For example, external participants could progress from involvement in events and networks to making contacts for enterprise support and contract or collaborative research.

“If somebody comes on the course to learn the basic skills... then they may come to a practitioner talk at lunchtime, they may ask some questions, and then they may apply for funding because we have a seed fund, so we put money aside each year to invest in start-ups from across the University, whether it is entrepreneurship or social entrepreneurship. The idea is to take people on a journey, depending on where they are. We hope to offer something at each stage.” [University view.]

- 3.4.3 The generic types of activities were:–

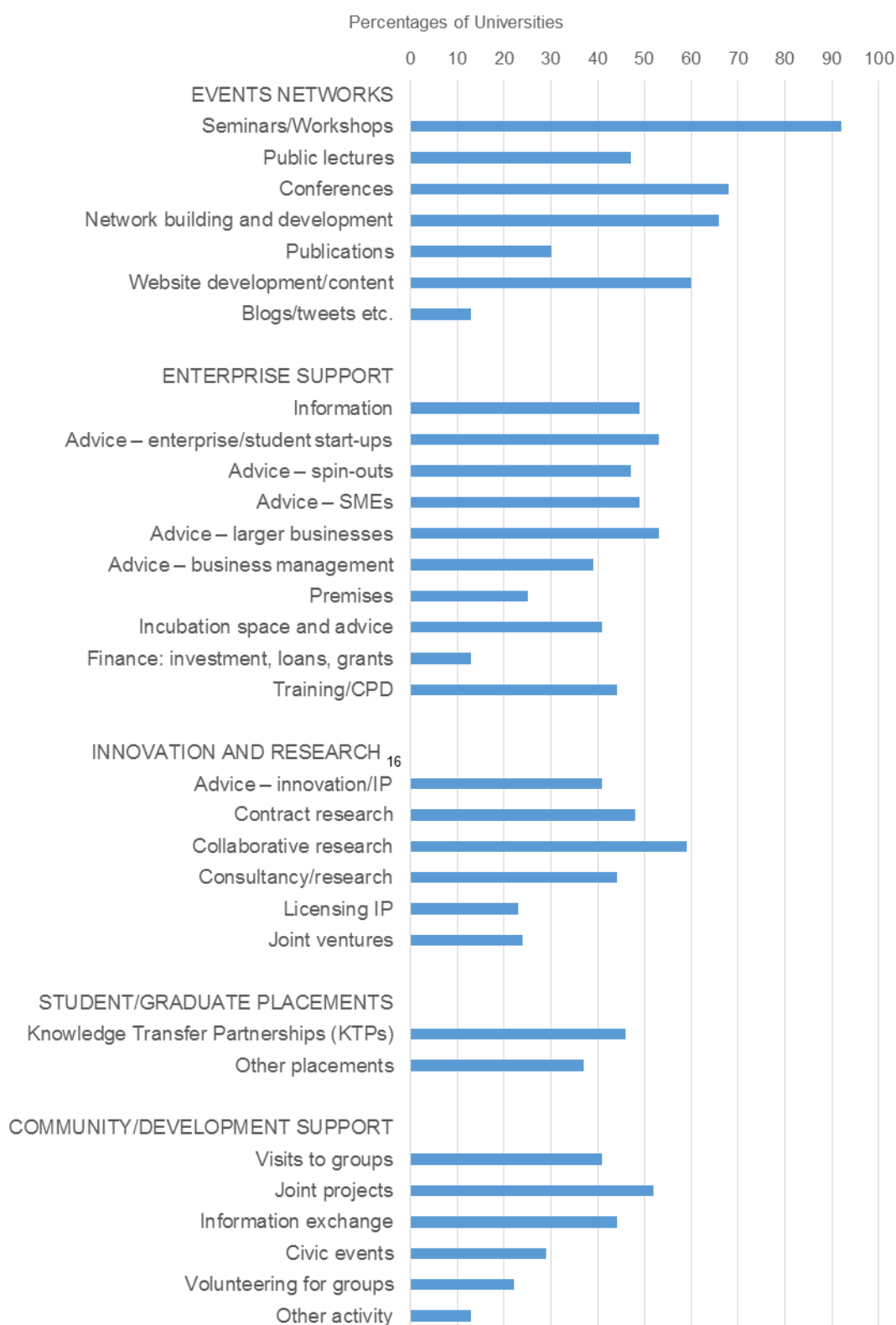
- **Events/Networks.** These comprise public space activities with seminars and workshops being prominent, combined with conferences and network building and development.
- **Enterprise Support.** Half the Universities provided advice for their own students/graduates and spin-outs as well as for SMEs and larger businesses. Incubator/co-working space²⁰ (for start-ups) and training and CPD were provided by four in 10 Universities. The latter could address occupational skills and some technology issues.
- **Innovation and Research.** The focus was on collaborative research, primarily to support the exploitation of technology, in conjunction with contract and consultancy research (between the University staff and businesses of all sizes, with research cutting across the Departments), followed by advice on innovation issues from trends to take-up in technology, to testing, prototyping, IP/patents, and product development.
- **Community Development Support.** For two fifths of Universities this could range from joint projects (with research, services to client groups, and work

²⁰ Incubator/co-working centres include desk space where occupants (mainly as sole traders) can sit in close proximity and share ideas relatively easily with ‘like-minded’ entrepreneurs. Mentoring is usually also available.

with the arts and theatre groups) to visits to groups to share views on issues and exchange information. Civic events involved a wide audience and could showcase University activities and provide 'open days' to departments.

- **Student and Graduate Placements.** These could be wide ranging from the more formal KTPs to student/graduate placements in organisations to address specific issues and staff placements to help develop ideas and products.

3.4.4 Figure 3.1 shows the diversity of activities. Some of the Universities, especially those with higher levels of funding, had a more diverse range of activities that spanned the events, enterprise support, innovation and research activities, CPD, and student placements. They were able to position them so that businesses (especially ones new to the Universities) could start, for example, with events and move to enterprise support and the research services as the business needs were identified. Alternatively, start-ups and spin-outs could receive initial enterprise advice and strengthen the engagement by occupying premises (incubation space) and benefit from ongoing mentoring – some also received University funding and/or were introduced to other sources such as business angels and venture capital (VC) groups. Other Universities (often those with less funding) could focus their activities on a specific initiative, for example, incubator space and mentoring support, introductions to experts and funders, or the organisation of events and introductions to University staff. Businesses could engage in several activities over time with the Universities who funded KE to a greater extent compared to those involved in single (or a few) activities in the Universities who spent less. The indications are that there were greater non-monetised benefits through engaging with the Universities with more activities.

Figure 3.1 The Diversity of HEIF Activities (2011-15)

Source: PACEC Interviews with University staff

²¹ Research was primarily to support the exploitation of technology.

- 3.4.5 There were few differences between the types of University by research intensity in terms of their activities. The top research intensive Universities had developed their websites more. They also provided more information on starting up in business with a focus on student start-ups and innovation/IP and they supported the licensing of IP more. The Universities at the high level of research intensity placed more emphasis on contract and consulting research and they also highlighted civic events as part of their knowledge exchange with community groups. The arts Universities highlighted the finance, grants and loans they provided as part of their enterprise support.
- 3.4.6 The University KE activities which were thought to have increased most in importance were collaborative research (48%), seminars and workshops (44%), network building and development (40%), advice to enterprises and student start-ups (37%), and advice to SMEs (34%). The arts Universities had significantly increased their advice to enterprises and student start-ups (87%), but tended not to engage in collaborative research.
- 3.4.7 The activities with the highest participation rates were events and conferences. Enterprise support and research collaborations had fewer participants.
- “The mechanisms which network industry and Universities are, in my view and the view of most of my colleagues, profoundly helpful.” [University view.]*
- 3.4.8 Apart from HEIF funding activities for external organisations, the funds cover the development of KE University staff, for example, training and professional development activities in entrepreneurship skills, understanding business needs, management skills, and developing their KE activities. These are seen as incentives for University staff.
- 3.4.9 Almost all the Universities said their KE activities cut across the different disciplines and faculties/departments. Over a third (37%) said this happened to a significant extent.
- “Some projects have really pulled people in from different parts of the organisation. For all the centres there’s big elements of interdisciplinarity. Without the HEIF money that wouldn’t have happened as readily.” [University view.]*
- 3.4.10 Discussions on the scale of participation showed that, generally, the numbers varied depending on the size of the KE/HEIF budgets and were considered to be higher for Universities with the larger KE/HEIF budgets. The estimates ranged from hundreds to thousands of external organisations, with the largest share, some 75% to 85%, comprising business participants. The activities which generally attracted the greatest number of external participants were the events and networks (including the conferences), followed by CPD, (covering development for enterprise, innovation and other professional skills) and the research activities. The other activities, such as enterprise advice and the provision of incubation, co-working, and innovation space, attracted fewer participants but could amount to several hundred, and were often linked to other sources of external funding such as ERDF programmes. However, the

take-up was not just about scale but related to the requirement for quality and improved services.

- 3.4.11 A recent study on the students/graduates who started a business on leaving University showed that around a third had had support/advice from their University, either through the curriculum or direct support. This compared to some 2500–3000 graduates per annum, reflecting probably a third or two-fifths for the case study Universities, i.e., 800–1000.²²
- 3.4.12 The number of participants from community and social groups was considered to be smaller, comprising a tenth of the enterprise take-up, i.e., the lower to the higher tens of different groups for each of the case study Universities.
- 3.4.13 In the period 2011–15, the geographical catchment areas for participants in KE activities was wide. Almost all Universities had a local remit for their activities (nine out of 10), with the more research intensive and the arts Universities slightly more likely to have a local remit, while for two thirds it was national and for half it was international. The local and regional areas had become more important in the past four years for around six in 10 Universities, with the national and international aims more important for a third to a quarter, respectively.

3.5 Incentives for University Staff, and Constraints

- 3.5.1 To underpin the KE activities, the 25 case study Universities used incentives to stimulate staff commitment to KE and improve the effectiveness and efficiency of activities for users. Staff development was an important HEIF-funded activity which formed part of funding bids.²³ The most common incentives were promotions (62%), leadership opportunities and increased responsibilities (46%), and CPD (43%). It was considered that, for University staff (academic and non-academic KE staff), promotion linked to KE activities on their own was highly unlikely – publications were more important. The incentives which have been strengthened the most were upgrading and promotion and CPD.
- 3.5.2 The constraints to participation in KE can have an adverse impact on effectiveness and efficiency and the extent to which KE is integrated and embedded. The main one that University staff faced was a lack of time as a consequence mainly of teaching responsibilities and research priorities. The inflexibility of University rules, the lack of rewards for University staff, and academic freedom were generally not seen as constraints.

²² PACEC. HEFCE. The Value of Student Start-ups and Spin-outs. 2015.

²³ PACEC. HEFCE. Strengthening the Contribution of English Higher Education Institutions to the Innovation System: knowledge exchange and HEIF funding. April 2012.

4 The Impacts or Achievements of HEIs

Panel 4.1 Summary

The aim of this chapter is to assess the achievements and benefits of KE funding for the Universities and external partners. The key findings are as follows: –

- Overall, some nine out of 10 staff see KE as very important and on a par with teaching and research. Some one in three staff said that KE and teaching were integrated to a large extent, while for two-thirds integration had occurred to some extent. Over the past three years, and during the recent HEIF funding period, over eight in 10 said teaching and KE had become more integrated.
- It was considered that there had been positive changes in the culture which helped support KE aims and objectives and the activities carried out. Over half of the University staff considered that KE culture had become embedded in Universities to a great extent.
- Almost half of the University staff (including PVCs, heads of departments and KE management staff) had developed a better understanding of issues that they and external parties faced. Half the staff had developed skills to understand the requirements of start-ups and spin-outs. Three quarters had improved their skills and practise to engage in collaborative research. HEIF support has helped develop skills and practices to organise and manage placements for around three in 10 Universities. Universities had also strengthened their practices for working with community and social groups in almost half of the cases.
- Around one in three Universities considered that they would not have developed their KE policies and activities at all without HEIF funding, which in turn would have negatively impacted on their skills and practices for KE.
- The activities that would have gone ahead without HEIF funding would have been smaller in scale in most cases, narrower in scope in three quarters, and later in three fifths of cases.

4.1.2 A key part of the research is to assess the achievements and benefits of KE funding for the 25 case study Universities and external partners. These provide insights into the outputs and outcomes in the logic chain, as shown in the introduction to this report. The discussion covers the influence of KE activities on teaching and research in the Universities and changes in culture amongst staff. We also report on the views of those consulted on the changes in KE skills and practices of University staff and other staff and the extent of interaction in the local/sub regional area. The sections are:–

- The integration of KE with teaching and research.
- The changes in culture in Universities.
- The impact on University skills and practices.

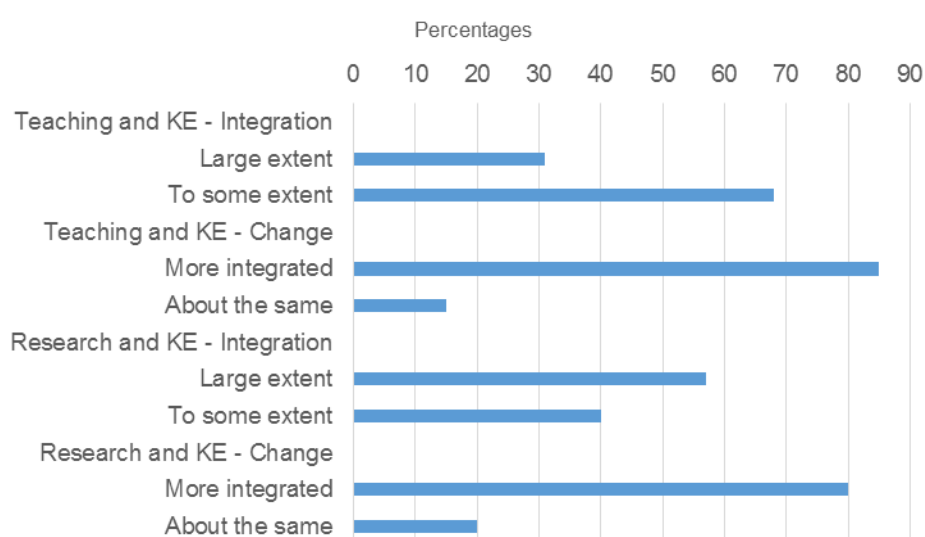
4.1.3 The final section examines views on the counterfactual and the changes that might have occurred if the University had not pursued its KE activities with HEIF and other funding.

4.2 The Integration of KE with Teaching and Research

4.2.1 Knowledge exchange policies and activities in Universities have developed over many years, and have been supported by HEFCE funding from 2000 onwards through the HEROBC and HEIF funding programmes. This has given Universities the opportunity to build up their capacity and capabilities, and skills and practices. KE has become an accepted role of Universities, both internally amongst staff and externally with the wide range of partners.

4.2.2 To this extent, some nine out of 10 staff see KE as very important and on a par with teaching and research. Some one in three staff said that KE and teaching were integrated to a large extent. Over the past three years, and during the recent HEIF funding period, over eight in 10 said teaching and KE had become more integrated. By contrast six in 10 thought that KE was integrated with research to a large extent. As with teaching, some eight in 10 considered that KE and research had become more integrated over the past three years or so. (See Figure 4.2.)

Figure 4.1 The Integration of KE with Teaching and Research



Source: PACEC Interviews with University staff

4.2.3 An additional measure of integration is the extent to which KE may have displaced or enhanced teaching or research activities over the past few years. A fifth of University staff said that KE had displaced teaching and research to some extent, but for around seven in 10 it had displaced neither. For nine out of 10 KE had significantly enhanced teaching (for 45% significantly). Similarly, KE had enhanced research for just over nine out of 10 University staff (for 57% significantly).

“As an academic, one has a high level of freedom for curiosity-driven research, but one can be curious about lots of things, and some of them are going to make a difference and some of them are not, and some of them are predictable and some of them are not. What, increasingly, we are finding is that working closely with industry, and working on knowledge exchange activities, actually directs you towards people

that, rather than confining your research agenda, actually have a very vivid awareness of the research questions that are going to make a difference. [...] What we find is that the industry knows where the blockers and barriers are, and by focussing the research on those things that are going to make a material difference, we can have a bigger impact than if we focus on things that are only of marginal significance, so I think increasingly academics are feeling empowered and valued, with the sense of making a positive difference.” [University view.]

4.3 Changes in Culture

4.3.1 Overall, it was considered by eight in 10 University staff that there had been positive changes in the KE culture at Universities supported by HEIF. Around half said there were greater benefits to the Universities, and they recognised the value of engaging with businesses to help bring the ‘two worlds’ together and reduce barriers. Some one in five University staff recognised the benefits of working with social and community groups to raise awareness of respective areas and opportunities for joint working.

4.3.2 The University staff considered that KE culture had become embedded in Universities to a great extent (61%). For the vast majority, there were no tensions between departments and disciplines and the central management functions within University. Around a fifth to a quarter of staff said there were some minor tensions.

“But then again ... knowledge exchange is now so much a part of what we do that it’s difficult to always say when it’s research and when there is knowledge exchange. A lot of people have caught on to the fact that knowledge exchange is part of the research, because you get ideas for your next project or you set up your next grant through KE. Or you simply build KE into your research. So you do a KE workshop with people but it’s a two way exchange. So you get something back. You get their comments on your research as well.” [University view.]

4.4 KE Impact: University Skills, Practices and Outputs/Outcomes

4.4.1 A key issue, in terms of the effectiveness of HEIF funding and activities, is how they have impacted on the skills of University staff and the outputs associated with them, and how these have changed over the past few years, especially in the current funding round of HEIF. The impact was explored initially for some HEIF-funded categories of activities agreed with the Universities: public space activities such as events and networks, general enterprise support, engagement for innovation and research, and student/staff placements. There were also discussions which focussed specifically on support for community and social groups.

Events and Networks

4.4.2 As a result of the public space activities, the University staff considered that, for almost half of them, there was a better understanding of issues they and external

organisations faced and ideas being considered to address them. They had also developed skills and practices to allow them to organise events and develop networks. This allowed University staff to strengthen links with businesses and other organisations, make contacts, and identify areas for collaboration, including research.

“We have those lectures and we always put on what we call a showcase afterwards, so we have local entrepreneur businesses coming in, so there are networking opportunities and they are talking to each other, and what’s lovely about that is that we are trying to embed blended learning.” [University view.]

Enterprise support

- 4.4.3 Half the staff at Universities interviewed (including the academic and non-academic staff) had also developed their KE skills to allow them to gain a better understanding the requirements of start-ups and spin-outs. They could give better advice to students and people outside the University starting up and to spin-outs from the University. Skills have also been developed to advise on enterprise and business growth issues (65% of staff) and business management (50%). As a result the start-ups were more likely to occur and grow successfully.

“The fact that we have been successful with spin-outs, it does attract good researchers to come in with their commercial ideas.” [University view.]

Innovation and Research

- 4.4.4 Innovation and the exploitation of research is a key area for Universities which is supported by HEIF and KE activities. The main benefit was that University staff had improved their skills and practices to engage in collaborative research (75%) with businesses and other organisations and exploit technology and IP. Hence there were improvements in outputs from the research. There had been improvements in practices for contract and consultancy research (around half the University staff). It was considered that external partners were more likely to progress these stages in the innovation process and exploit the IP that arose from joint research.

- 4.4.5 The research activities HEIs undertake generate significant income for the Universities. This monetised effect forms part of the HEBCIS returns that Universities make to HESA/HEFCE. The skills have wider application both within and outside the University. The research skills that University staff gain and the outputs through KE activities have positive knock-on effects for teaching and research. (See above.)

“I mean, research gets better. Especially if you want to do applied research. If you want to be exposed to practitioners – I always find it a very useful reality check. I can sit here and dream up a great peace agreement. But it’s only when I go there and meet people who do the negotiations that I realise “Well, that might work on paper but because I didn’t know x, y or z it clearly can’t work in reality”. So I think the best KE is really a two-way street where we make a real contribution to whoever or whatever but also in return – a refined way of thinking about particular issues. In that sense one of

the contributions that we get – in terms of returns from KE – is better research. But also what I think is really useful is to work it back into teaching. So if you can teach students how whatever they learn is useful then that's a valuable thing." [University view.]

Student/Graduate Placements

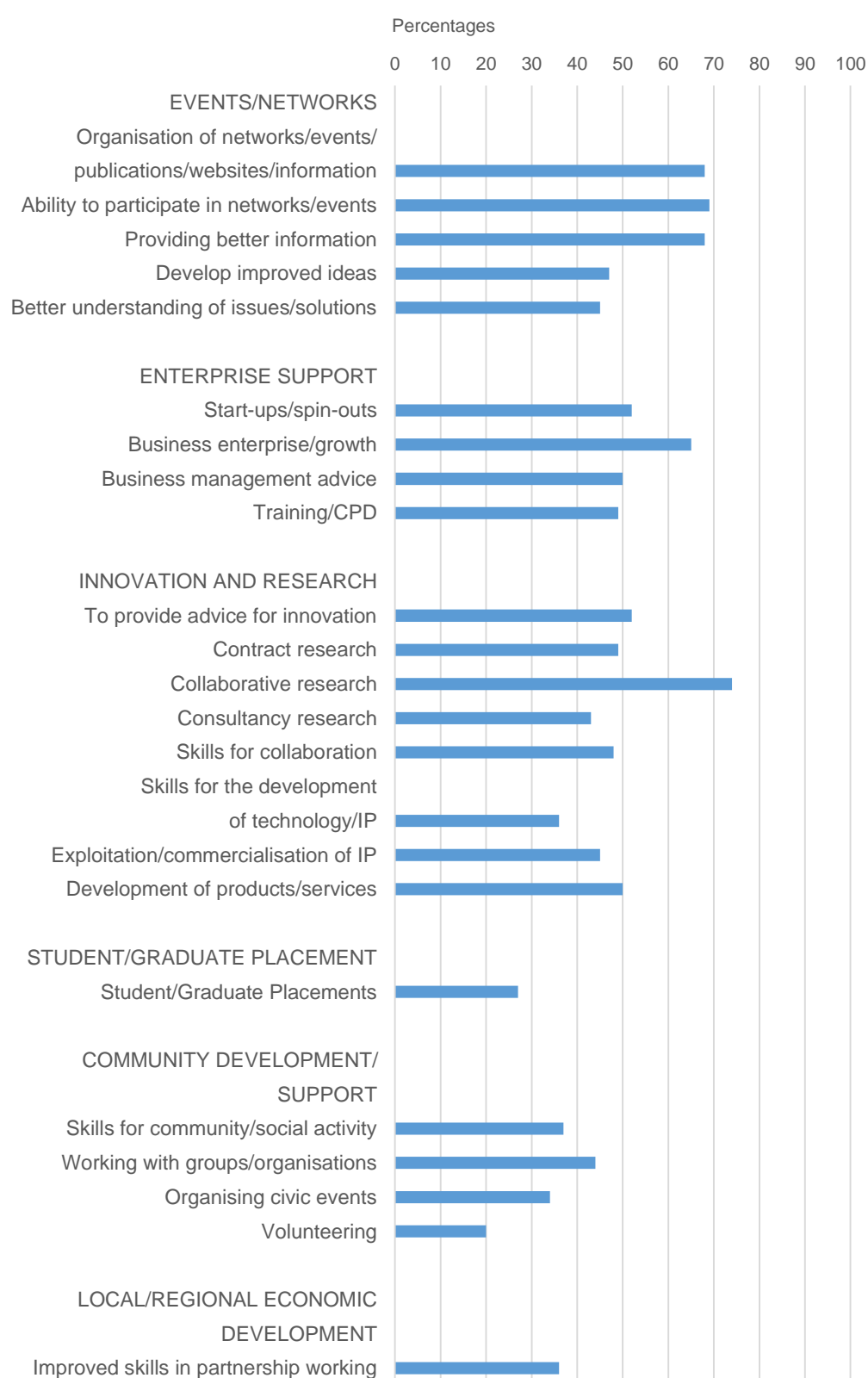
- 4.4.6 Just over half the Universities have student/graduate placement initiatives and programmes. HEIF support has helped develop skills and practices to organise and manage placements for around three in 10 Universities to improve the benefits for students and the 'host' organisations. External partners could combine placements with their joint research activities with Universities.

"So there's this whole agenda of placements and internships becoming more and more ingrained." [University view.]

"For the students, the benefits are that they get to work in a team. [...] It's a real thing. So also, having it on the CV, it enables them to answer those difficult interview questions. 'Tell me about a time when you worked in a team and the project was going a bit wrong, and what you did?' Now, instead of reaching back to Young Enterprise in the sixth form, or the Boat Club, they can say, 'Well, working with the Playhouse...' and then you have a real business issue. They find that very strong." [University view.]

Community and Social Groups

- 4.4.7 Apart from the skills that University staff had developed to engage with business partners, the Universities had also strengthened their practices for working with community and social groups to help improve outputs and services for them. Albeit the proportion of University staff was generally lower, some 44% said they were better placed to work with community groups/organisations and a third had better skills for 'working in the field' on community and social projects and volunteering (20%).

Figure 4.2 Skills/Practices and Outputs

Respondents could select several options; so percentages in any column may sum to more than 100
 Source: PACEC Interviews with University staff

- 4.4.8 The benefits arise from the ongoing liaison between the Universities and potential participants in the KE activities, and the sense in which the supply stimulates demand and hence the benefits will flow.

“I will benefit, I hope, enormously from that activity because I will make lots of new contacts and it will help me refine my research activities, and it may well lead to the development of a solution that has real tangible impact. I can see that by that one day of knowledge exchange activity potentially there are massive benefits from me. I have to earn that so I have to be pro-active to do that.” [University view.]

- 4.4.9 The Universities mainly collaborated with employer groups and associations in specific sectors and clusters. The sectors include key high-tech sectors and clusters with businesses that were more likely to be innovative.

4.5 The Counterfactual

- 4.5.1 A critical issue is the extent to which the impact of HEIF and KE on the skills and practices of University staff would have occurred anyway if the HEIF funding had been considerably less or had not existed, and how the outputs would have been affected. The context for the discussion was that the Universities had developed their KE policies and been engaged in KE activities for over 20 years. Hence they had built up their capacity, skills, and practices in response to internal and external requirements.

- 4.5.2 Around one in three University staff interviewed considered that they would not have developed their KE policies and activities at all without HEIF funding, which in turn would have negatively impacted on their skills and practices for KE as well as reducing the benefits for organisations that participate in KE activities. (See Table 4.1.) For the 62% that would have developed some KE activities and subsequent skills, the nature of activities would have been different and not so effective. Just 5% would have continued in the same way. However, for half who would have gone ahead the activities would generally have been smaller in scale (i.e., fewer activities and a smaller number of participants), for almost half they would have been narrower in scope and nature, and for 38% the activities would have taken place later in time. Some one in 10 interviewees were not sure what the alternative course of action would have been.

“Maybe we’re in a group of universities where, if that funding hadn’t come, we’d have probably not have embedded our business thinking and strategies in the way that we have. [...] We’re much further on than we would be [chronologically], than if we hadn’t received this money.” [University view.]

- 4.5.3 Overall the results show significant additionality attributable to HEIF funding, in spite of the view that KE capacity and skills have been built up in the Universities over time. Many of the University staff said it would have been very difficult to support the KE teams and the KE initiatives. There were few other sources of funding available in spite of the income generated primarily from of the research projects.

“If the research wasn’t there, we wouldn’t have the knowledge to take through to commercialisation for practical impact, but if HEIF money wasn’t there we could end up in a situation where we’d got the research but it was actually very difficult to take it to concept development and then on to market. I think there is a symmetry between the two funding streams, and one without the other wouldn’t be as good.” [University view.]

Table 4.1 Counterfactual. KE Activities and Benefits without HEIF Funding

	Percentages of all respondents By Cluster					
	Total	Top Six research	High research	Medium research	Low research	Arts research
Not gone ahead at all	29	26	7	43	33	53
Gone ahead to some extent	62	72	73	57	57	34
Where activities went ahead and benefits resulted (% of 62% above):						
- in the same way	8	39	10	0	5	0
- smaller in scale	92	67	92	100	88	97
- later in time	61	56	55	60	88	0
- narrower in scope/nature	74	56	55	100	82	32
Don't know	9	2	20	0	10	13
Respondents could select several options; so percentages in any column may sum to more than 100						
Source: PACEC Interviews with University staff						

5 The Benefits to Business

Panel 5.1 Summary

The key findings from the research with businesses are as follows: –

- Most of the businesses had introduced new or significantly improved products or services in the last few years, and six in 10 had introduced new processes.
- The most important aims that businesses had, which motivated them to engage with the Universities, were developing new or existing processes, participating in seminars, conferences, and networking, and undertaking collaborative research.
- It was a key aim of businesses from the outset to improve their practices and performance as a result of KE. In this context, some nine in 10 thought that their interaction with the University was important (for almost a fifth, critically so).
- Overall, businesses who paid said the services they used were value for money. Some 33% of businesses who had paid for services said there were benefits over and above what had been paid for.
- The Universities usually focussed their activities on key sectors rather than spreading them across all sectors. Target sectors included the following: –
 - Creative industries
 - Health, pharmaceuticals, life sciences
 - Engineering and materials science
 - Environmental science.
- As a result of the interactions with Universities, two thirds of the businesses had developed more positive attitudes to KE. Just over six in 10 recognised the role of Universities, and around about half were more willing to engage with them and recognised the benefits.
- Almost two thirds of the businesses thought they might not have been able to achieve these outcomes without the University involvement, with a little over half saying they probably or definitely would not have been successful.
- The overwhelming majority of businesses said Universities had become more willing to engage with businesses than they used to be.

5.1.2 One of the fundamental issues for the HEIF/KE activities is the extent to which external organisations, especially businesses, benefit from the engagement with Universities. These are softer benefits and impacts in that they are not monetised, i.e., they may not attract an income stream, or participants do not pay the full cost in the sense that the Universities do not maximize their income.²⁴ Neither have they been converted into estimates of Gross Value Added (GVA to the local, regional, or national economies.²⁵ Through the process and stages of engagement (from events to advice and research) there can be impacts on their skills and practices, innovation, and the development of products and services, leading to business performance improvements. The subsequent generation of net additional sales/turnover, income, and jobs ultimately benefits the wider regional and national economy. To assess

²⁴ Monetised impacts comprise income paid by participants in KE initiatives, although not necessarily the full amount as charges may not be made by Universities.

²⁵ GVA is the income generated by organisations and individuals as full employment costs and profits where appropriate.

these KE impacts, this chapter covers the views of the c.180 businesses interviewed and the Universities. It sets out:–

- The characteristics of business.
- Engagement with the Universities.
- The business benefits.
- Non-monetised benefits.
- Business performance impacts.
- Changes in business attitudes to KE.
- Constraints to participation.
- The role of Universities in innovation.
- The counterfactual.

5.1.3 The benefits arise as a result of the engagement between Universities and businesses and the joint shaping of activities. The supply of activities by Universities helps shape demand and the benefits that flow.

5.2 Business Characteristics

5.2.1 The main business characteristics were:–

- They tended to be independent (74%) and without subsidiaries.
- The majority (61%) had fewer than 25 employees.
- A small group had been trading since before 1950, but almost a fifth had been founded in the last two years.
- A sixth of the businesses were new start-ups (since 2013), and a sixth had been spun out of a University.
- A fifth of businesses were larger, with over 200 employees.
- The majority had one site in the UK, but almost a quarter had offices outside the UK, in Europe and elsewhere.

5.2.2 The businesses that engaged with the Universities spanned a range of manufacturing and service sectors, with concentrations in high-tech sectors, for example, instruments (12%), engineering and machinery (7%), R&D (14%), and some of the business services (22%).

5.2.3 Compared to the national population of businesses, the Universities engaged more with high-tech companies, as well as larger businesses and spin-outs.

5.2.4 The businesses overwhelmingly intended to grow over the next three to five years, with two fifths intending to grow significantly.

5.2.5 Most of the businesses (79%) had introduced new or significantly improved products or services in the last three years, and six in 10 had introduced new processes. Three quarters were using new technologies. The smallest companies were less likely to create new products and services, and least likely to use new technologies. Companies engaged in manufacturing were more likely to be using new technologies

(83%, compared with an average of 51%). Half the companies had registered or applied for patents in the UK.

- 5.2.6 Data from the Community Innovation Survey (CIS) are not directly comparable, but indicate that only 20% of enterprises with 10 or more employees had introduced an innovative product or process to market over the period 2010–12, and 15% had carried out internal R&D.²⁶ The businesses engaged in HEIF activities interviewed are clearly more ‘innovation-active’, to use the CIS terminology, than typical businesses in the UK.

5.3 Engagement with Universities

- 5.3.1 The most important aims that businesses had, from the outset, which motivated them to engage with the Universities, were developing new or existing products and processes (52%), gaining University and business contacts through events (50%), undertaking collaborative research (38%), and the development of their technological base. Around one in three were aiming to increase turnover and employment.

- 5.3.2 The largest companies were the most likely to say that their aims included a greater awareness of what the University could offer (87%), with high proportions also looking for business advice on sales and marketing, R&D, and technology testing. Graduate recruitment and CPD were important to this group. Medium businesses were more likely to be motivated by increased sales and turnover, increased employment, and product development.

- 5.3.3 Manufacturing companies were the most likely to be looking for advice on R&D and technology development, whereas high-tech companies were the most likely to want contract research.

“We wanted to gain insights into technology and innovation issues.” [Business view.]

- 5.3.4 A small group of companies had been involved with the Universities for 25 years, whereas others had only just engaged.

- 5.3.5 To achieve their aims the most common type of engagement in University activities over the past three years was participation in networking events (57%), with seminars and workshops. This was followed by collaborative research (45%) to help exploit technology and IP which arose through existing University contacts or introductions at events. Just under one in three businesses had received advice on technology issues and, linked to this, the development of products and processes.

- 5.3.6 The largest businesses were the most likely to commission consultancy research (47%). Medium businesses were the most interested in careers and recruitment services (40%). Manufacturing companies were the most likely to use advice on

²⁶ BIS. The Community Innovation Survey.

technology development (61%) and to engage in collaborative research (73%) and KTPs (49%).

Figure 5.2 Engagement with Universities



Source: PACEC Interviews with Businesses, 2014.

- 5.3.7 To meet their aims, businesses could engage in several interrelated activities (and the Universities arranged the activities to allow this to take place and assist the progression of firms). The average number was six, with the number of activities typically within a range of four to eight. They could start with events and progress to enterprise support and, in some cases, the research services. Others could combine CPD with the research services. Other businesses, where one service was used,

could occupy the incubation centres and benefit from the mentoring/advice, and gain access to machinery/equipment and attend some relevant events.

“So it’s a sort of a ladder, if people come in half-way up that’s fine. It’s not that you have to start at the bottom and work your way up.” [University view.]

- 5.3.8 The vast majority of companies said up to five staff members were interacting with the University, and in just over a third of cases there was only one person involved – mainly the small firms. In the more mature relationships 20 staff could be engaging. Some had used government funding to support this interaction, including KTPs (21%) and Innovation Vouchers (12%).

5.4 The Business Benefits: Business and University Views

- 5.4.1 The business benefits are central to the research and flow from the package of KE activities provided by the Universities. Some nine in 10 businesses thought that their interaction with the University was important, i.e., for almost a fifth it was critically important, for four in 10 very important.

- 5.4.2 Businesses in the service sector were more likely to say their interaction with the Universities had been critically important (one in three) compared to other sectors.

“We acquired the patent from the University.” [Business view.]

- 5.4.3 Almost all businesses said the KE engagement was successful. For one in five it was completely successful and one in three highly successful. For a quarter it was moderately successful and for some one in seven just partially successful. A lack of success was the result for a very small minority while a similar proportion was unsure, mainly because it was too early to say.

- 5.4.4 Manufacturing businesses were the most likely to say their interactions with the University had been completely successful (two thirds). Companies in high-tech fields were least likely to be satisfied, with only 7% saying the interaction had been completely successful and almost one in five saying it was wholly unsuccessful.

“A pleasant relationship. I cannot speak too highly of their helping with printed electronics, which is a new subject.” [Business view.]

- 5.4.5 The benefits to business in terms of their skills, practices, and outputs were wide-ranging, arising from attendance at events and involvement in networks, advice on enterprise and business growth, the innovation and research outputs and practices, recruitment and placements, and the business performance effects. The effects of individual KE activities on business performance are difficult to disentangle, as businesses are likely to participate in several activities.

“The students are our audience.” [Business view.]

5.4.6 Below we show the specific benefits that flowed comparing the business to University views. **The results are shown in Table 5.3 below with columns showing the business and University views. We show the views for the businesses and Universities separately below to allow them to be compared.** Overall the results showed that the Universities thought the impacts were stronger but the pattern was similar to the views of businesses.²⁷

- **Events/Networks**

Businesses. A third of businesses considered that participation in seminars, workshops, and conferences, together with the networking opportunities, allowed them to get a better understanding of the business issues they faced, what the solutions were, and what the trends and opportunities were for their businesses. Specifically, these related to the themes and subjects that were customised by the Universities for the events to address business needs. There were opportunities to discuss the issues with other businesses and specialist University staff – this dialogue could be continued after the events and lead to ongoing relationships. The events gave businesses the opportunity to identify and select contacts and collaborators (29%) for future initiatives such as innovation and research. They had a better knowledge of what staff in the Universities offered and how they could be approached and engaged. (See Table 5.2.)

Universities. Generally, the University staff said that businesses had improved their skills and practices to participate in events and networks (62%) and use University publications and website content (31%). As a result they benefited from better information (64%) and had a better understanding of the issues they faced and how to resolve them through improved ideas (51%). (See Table 5.2.)

“We have got huge momentum. [...] What we have done, which is all round knowledge exchange, is try to bring the communities together and be a hub, really, within the ecosystems.” [University view.]

- **Enterprise Support**

Businesses. The initial advice businesses received made it easier to start their businesses and subsequently grow. The survey showed that some one in three had started in the past few years. Hence the indications were that almost all of them had benefited from the University support. This finding is confirmed by the HEFCE report on the value of University business start-ups and spin-outs where most alumni assisted by Universities considered it to have been effective, particularly citing course content on enterprise, workshops on business issues, and advice on practicalities of setting up in business.²⁸ A third also said they had improved skills for enterprise and a fifth the skills for the management of their businesses for growth once it was underway.

Universities. For six in 10 University staff, businesses had improved their skills for business growth, enterprise, general business management, and starting up a business, and the businesses had consolidated and grown. Around half of University staff thought they were better equipped to assist business spin-outs from Universities and start-ups.

²⁷ The main reason for this was that University staff could comment on the relatively large number of activities they were engaged in. Businesses tended to be involved in fewer activities compared to University staff.

²⁸ PACEC. HEFCE. The Value of Student Start-ups and Spin-outs. 2015.

“They are taken through from the idea to the final point, which is actually putting them in front of investors.” [University view.]

- **Innovation and Research**

Businesses. The Universities play an important role in innovation systems and collaboration, which allows them to develop significant support and advice for businesses who engage in innovation. A fifth of businesses considered that they had improved their overall innovation skills as a result of KE and, related to this, four in 10 improved their skills for the development, and testing, of technologies. These improved the outputs and the use of technology for businesses. They were able to apply the technologies to products and processes (sometimes through prototypes) and consider the options, feasibility, and likely costs and profits for the business. Linked to these, some one in six businesses had improved their R&D practices and their ability to absorb ideas and create IP (20% and 13% respectively). The cumulative effect was the positive impact on their capability to develop products and the exploitation of technology and IP. Hence the overall outputs of innovation had improved. Some one in three businesses were better able to participate in collaborative research (primarily with the Universities) and 30% and 22% in contract and consultancy research respectively. They had been able to identify the University staff and outputs required and agree terms with the Universities.

Universities. On the important issue of innovation, the University staff said that there were positive impacts on businesses. Their innovation practices had improved, along with their ability to engage in collaborative research and absorb ideas (some six out of 10 University staff). There was a knock-on effect, strengthening the creation and commercialisation of IP and the development of products and services (40% to 45% of University staff). Businesses were also more willing to use the Universities for contract research.

The bottom-line effect was that just over four out of 10 University staff said that businesses had improved their performance (through higher levels of turnover, recruitment, and profits) as a result of engagement with Universities.

- **Development of Products and Services**

Businesses. The combination of KE activities meant that some four in 10 businesses had developed specific products and services, which was a key aim. They had worked with the University staff to develop and apply the technologies in a practical way for the products and services that would help improve the business performance. They were mainly in the high tech sectors. One in six had developed processes either for their internal use or for clients, and one in 10 had registered/patented IP that could be commercialised. A number of business managers said that they were likely to produce products and services, while recognising that it took time for the benefits of innovation to feed through. The gestation time could be between two and three to between four and five years on average.

Universities. Some 45% of University staff thought that products and services had been developed by businesses.

- **Recruitment of Student Placements/Graduates**

Businesses. The student placements in businesses through KE and subsequent recruitment was important to businesses. Just over a fifth of businesses said they had benefited from placements, which allowed specific business issues/problems to be addressed, and the recruitment of students.

Universities. Just over half the University staff said that they had student/graduate placement initiatives and programmes.

- **Improved Professional Skills**

Businesses. For some University staff their CPD activities, in association with other forms of support, was an important component of KE. Within this context a fifth of businesses said they had strengthened their specialised professional skills especially for innovation and business management.

Universities. Some six in 10 University staff considered that the professional skills of businesses had been developed. CPD played an important role in this along with some of the other activities on enterprise and innovation.

“So they reached the end of their technological capability. Somebody from them asked ‘We’ve got this problem, can anybody help?’ So we’ve got them on this scheme. Within three months they’d solved their main problem through this KE scheme. We tied up with KTP and helped them file IP, which they now own, so they’ve got proof. Now they’re looking to recruit graduates and promote growth.”
[University view.]

Table 5.1 Benefits for Businesses: Business and University Views

	Percentages	
	Businesses	Universities
Events/Networks		
Ability to participate in networks/events etc.	45	59
Better understanding of business issues	33	63
Improved information on future trends and opportunities	34	66
Better understanding of issues and solutions	26	63
Ability to identify/select contacts/collaborators	29	58
Skills developed for working with HEIs	40	54
Enterprise Support		
Better start-ups/spin-outs	24	51
Improved practices for enterprise	34	44
Better business management	21	62
Business growth achieved	23	63
Innovation and Research		
Improved skills for innovation	21	61
More able to absorb ideas	20	55
Improved collaborative research outputs	31	60
Better results from contract research	30	42
Better results from consultancy research	22	45
Ability to apply/develop technology	38	40
Improved skills for creation/commercialisation of IP	13	46
Ability to develop products/services	39	45
Improved Professional Skills	20	61
Recruitment of student placements/graduates	22	52
Products/Processes		
Development of products/services	40	45
Development of processes	16	-
Commercialisation of IP	13	44
Other	33	-
Any of the above	90	-

Source: PACEC Interviews with Businesses, 2014; PACEC Interviews with University staff

“The University took my slight idea and helped me develop it into a social enterprise.”
[Business view.]

The Non-Monetised Benefits: Business and University Views

- 5.4.7 An important issue for the research is the benefits to businesses arising from the KE/HEIF activities that are over and above what has been paid for. These additional benefits do not form an income stream for the Universities and have not been monetised as a proxy for impact. To assess this, and disentangle them, the businesses and Universities were asked to consider these benefits. This is partly the result of the charging and co-investment policies adopted by Universities, in terms of whether they charge at all for some services, or where they do charge but not the full cost and the Universities co-invest for the wider public good.
- 5.4.8 Taking all businesses, the majority that were interviewed said that they had paid to participate in the KE activities, i.e., two thirds. Services mainly paid for were collaborative, contract, and consultancy research, followed by student placements. As a percentage of those that had actually participated in each activity (rather than as a percentage of all businesses), the most commonly paid-for services were again the research services followed by incubation/innovation space and the use of machinery and equipment. (See Table 5.2 below.)

Table 5.2 KE Activities/Services Paid For

	Paid for, as a percentage of all respondents	Paid for, as a percentage of those that had participated in each activity
Events/Seminars/Conferences/Networks	11	15
Enterprise advice/development	3	5
Continuing professional development	2	22
Research and other facilities:–		
– Contract research	17	80
– Collaborative research	22	57
– Consultancy research	23	69
– Incubation/innovation space/premises	8	40
– Machinery/Equipment	2	33
Student placement/Careers:	11	24
Other activity:	17	40
Any of the above	63	-
None of the above	37	-

Source: PACEC Interviews with Businesses, 2014

- 5.4.9 The expenditure overall varied considerably between businesses. A third did not pay to participate. Almost one in 10 paid up to £1K, while around one in five paid £1K to £9K and one in four £10K to £99K. One in six paid over £100K. As a result of this variability, and the existence of a small but significant number of businesses with very high expenditure, the median expenditure (including those who did not pay) was around £3K, while the median was much higher, at around £150K.
- 5.4.10 Overall, businesses who paid said the services they used were value for money. Relatively high numbers cited the research services (especially consultancy

research), where they had customised outputs in terms of their needs, followed by student placements and enterprise advice. The events were also good value (although many were not charged for), as some were thematic relative to needs and useful contacts were made and issues discussed. (See Table 5.3 below.)

Table 5.3 KE and Value for Money – Where Businesses Paid

	Percentages of all respondents
	Percentage of those that participated
Enterprise advice/development	67
Continuing professional development	50
Research and other facilities:-	
– Contract research	57
– Collaborative research	79
– Consultancy research	100
– Incubation/innovation space/premises	63
– Machinery/Equipment	50
Student placement/Careers:	77
Other activity:	82
Any of the above	80
None of the above	20

Source: PACEC Interviews with Businesses, 2014

5.4.11 On the key question of the extent to which the benefits were over and above what was paid for and did not form an income stream for Universities, some 33% of businesses who had paid for services said there were benefits over and above what had been paid for, compared to some 30% of University staff (including the academic staff and KE managers). The main views were as follows:-

- **Events/Networks**

Businesses were able to identify contacts and collaborators (35%) amongst University staff and businesses, gain insights into trends and opportunities, especially for technologies, and better understand issues and solutions (almost one in three for each), which helped lead to process and product development. They also said they had improved their ability to contribute to events and network activity and had developed skills for working with HEIs (32%).

The University staff said businesses were better able to understand issues facing them and ideas/solutions to address them.

- **Enterprise Support**

The enterprise support services were assistance to start-ups and spin-outs (a fifth) and management skills. The main benefits were enterprise and business growth underpinned by the skills that had been developed (27% for each).

The University staff endorsed these views. Businesses were better equipped to start-up and spin-out and acquire improved enterprise skills (41, 39, and 40% of University staff respectively) and grow their businesses (44%).

“Our current portfolio of our holdings in companies that were spin-outs is valued anywhere between £80–100m.” [University view.]

- **Innovation and Research**

The main innovation outputs were the improved skills for technology development and testing and the ability to participate in collaborative research with positive results (some four in 10 for each), improved skills for developing products and services (a third), and R&D skills (a quarter). Hence, the development and application of technology was improved for inclusion in products and services.

The University staff focussed on collaborative research, primarily to support the exploitation of technology, in conjunction with contract and consultancy research (between the University staff and businesses of all sizes).

- **Products/Processes**

A third of businesses had developed products and services for the market.

Just over a quarter of businesses said they had developed processes (for themselves internally or for clients) and products and services.

For the University staff, businesses had developed products and services (a third of University) and processes.

- **Professional Skills**

A quarter had improved their professional skills, primarily as a result of CPD training which improved overall business management and innovation.

Forty-three per cent of University staff said that they offered CPD to staff to underpin and incentivise KE.

- **Recruited Placements/Graduates**

One in five said the benefits from student/graduate placements were over and above what had been paid for and that student placements had helped resolve technology and business operational issues. They provided a very useful pool for recruitment.

- 5.4.12 These comprised significant non-monetised benefits, over and above what was paid for as income to the Universities, which helped the businesses innovate and grow.

Table 5.4 Business Benefits Over and Above What Were Paid For: Business and University Views

	Percentages of all respondents	
	Businesses	Universities
Events/Networks		
Ability to participate in networks/events etc.	24	54
Improved information on business issues/ideas	24	62
Insights on future trends and opportunities	29	67
Better understanding of business ideas, issues and solutions	30	77
Ability to identify/select contacts/collaborators	35	67
Skills developed for working with HEIs	32	61
Business Advice/Enterprise	22	
Better start-ups/spin-outs	27	40
Improved enterprise practices	24	40
Better business management	24	38
Business growth achieved	27	44
Innovation and Research		
Improved skills for innovation	19	55
More able to absorb ideas	22	23
Improved skills for R&D, and outputs	24	37
Improved collaborative research and outputs	41	21
Better results from contract research, and outputs	19	13
Better results from consultancy research, and outputs	19	-
Improved skills for technology development	40	27
Improved skills for creation of IP	13	38
Ability to develop products/services	32	54
Improved Professional Skills	25	29
Recruited Placements/Graduates	22	-
Products/Processes		
Development of products/services	32	54
Development of processes	22	-
Commercialisation of IP	13	53
Other	25	-

Source: PACEC Interviews with Businesses, 2014

- 5.4.13 Generally, based on the views of those interviewed, the benefits for businesses tended to be greater where there was interaction with those Universities with larger HEIF budgets and who tended to be more research intensive. They usually have more staff in KE and KE activities which have matured over time. However, it was

recognised that Universities with lower levels of funding had important specialisms that businesses benefited from.²⁹

5.5 Business Performance Impact : Business and University Views

5.5.1 The outputs and benefits that come from the University KE services potentially translate into business performance outcomes and impacts, i.e., sales, employment, productivity/cost reductions, and profits. These performance outcomes were discussed with businesses and Universities. Some 45% of the businesses interviewed said they had increased sales as a result of KE and participating in the HEFCE-funded initiatives. For a quarter, sales increased between 1% and 10%, while one in 10 claimed the increases were over 50%. The increase in employment and productivity/cost reductions were similar. In terms of bottom-line profits that resulted, around four in 10 attributed this to KE, many in the lower ranges of 1% to 10%. See Table 5.5.

5.5.2 Overall some 50% of businesses said they had improved their performance which was similar to the views of University staff, i.e., 44%. Twenty-two per cent of businesses had improved their performance in all four of the metrics set out in Table 5.5 below.

Table 5.5 Business Performance Impacts (%): Business Views

Change/Impact	Sales	Employment	Cost Reduction / Productivity	Profits
0	55	53	58	62
1-10%	24	20	10	23
10-20%	6	12	10	8
20-50%	4	7	7	4
50-100%	3	2	4	3
100%	6	4	8	2
Don't know	2	2	2	2

Source: PACEC Interviews with Businesses, 2014

5.5.3 The University staff concurred with the business views that businesses had improved their overall business performance in terms of sales, employment, and profits as a result of services not fully paid for.

5.5.4 It is noted that many of the businesses were start-up/spin-out and early stage businesses. They were also innovative businesses, in that initial products and services that had been developed, with support from the Universities, had not, as yet,

²⁹ The correlation between scale and benefits would be assumed. See HEFCE, Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector. Tomas Coates Ulrichsen: Centre for Science and Technology and Innovation Policy (CSTI) University of Cambridge. 2014

produced revenue/sales streams. It was likely that these could be significant given that the companies were in the high growth innovative and higher technology sectors.

“We’ve had a number of student and graduate start-ups. We’ve had two or three very successful student start-ups which now have turnover in the millions. [...] Our HEIF money and ERDF projects, where we’ve combined the activity ... we’ve created jobs. We’ve supported business start-ups, we’ve safeguarded jobs. We’ve given business assistance, we’ve got nice case studies of work we’ve engaged. Some are flourishing, others are surviving and they mightn’t have survived without the input and advice and guidance from us.” [University view.]

5.6 The Benefits by Types of Businesses

5.6.1 The Universities engaged with businesses across all size bands (by employment and turnover), although individual initiatives were focused on different types of businesses. For example, the incubation support was targeted on start-ups and spin-outs, with corporate partnerships, contract research, and CPD more relevant to medium-sized and larger firms. In the past few years engagement and KE activities had increased with the smaller and medium-sized businesses, for over a quarter of Universities, compared to the start-ups and spin-outs.

5.6.2 The Universities usually focussed their activities on key sectors rather than spreading them across all sectors. The focus and take-up of services and the subsequent benefits were mainly with businesses in the high-tech sectors. However, the profile did depend on where the Universities were located and the innovation/high-tech activities in their regions. The national and international role Universities played and the priority given to them also influenced the choice of sectors and they tended to be the more high-tech ones. Key sectors are shown below.

- Creative industries in, for example, graphics and visual media communications and electronics.
- Health, pharmaceuticals, life sciences, and bio activities
- Engineering and materials science, across sectors from construction to electronics
- Environmental science including carbon reduction, energy production and efficiency, and eco-construction.

“We start with problems and we solve the problem. That’s one of the beauties of working in engineering, that most of our work is driven by an initial industrial or environmental problem which we then cast in a research question/hypothesis, do the fundamental research which then solves the problem. We have then got impact, knowledge – which can be transferred out of the University.” [University view.]

5.6.3 The data from the businesses showed that those who benefit most were the high-tech businesses and those in the service sector. High-tech companies cited improved R&D skills, and service companies cited improved skills for business growth. The

largest companies had the greatest improvement in their business skills concerning intellectual property and R&D.

- 5.6.4 Looking specifically at the areas where companies said they had experienced benefits over and above what they had paid for, the smallest companies identified skills for working with HEIs (44%), and the largest companies identified IP skills (41%). Manufacturers identified process development (62%), and high-tech businesses identified innovation skills (43%) and R&D skills (32%).

“We gained a lot of knowledge about what we could do better.” [Business view.]

- 5.6.5 The smallest companies were least likely to see quantifiable improvements in their sales, employment, and profits. This was often because they were at the early stages of starting up.

- 5.6.6 Manufacturing companies were the most likely to see the Universities as very important to the production process, and in particular to technological development, testing and prototyping, product and process development, and taking products to market.

“High level engagement on technology issues of strategic importance.” [Business view.]

5.7 Changes in Business Attitudes Towards KE : Business and University Views

- 5.7.1 As a result of the interactions with Universities and the build-up over time, just over a half of businesses had developed more positive attitudes to KE and recognised the role of Universities and the benefits of engagement. Almost all the businesses said their culture of University engagement had strengthened and it was more the norm, which resulted in improved practices to engage with Universities.

“They have a very strong understanding of our world that we work in. They shaped their academic research around our world.” [Business view.]

- 5.7.2 Medium-sized businesses were the more likely to highlight positive changes in that they recognised the benefits of working with Universities, and were more willing to engage with them, and seek advice. The larger businesses were the least likely to be willing to share information and ideas, compared to firms in the other size bands, and were more protective of their IP and innovation outputs.

“A closer relationship, and higher regard for each other, through long interaction and experience.” [Business view.]

- 5.7.3 Manufacturing companies were less likely to cite positive changes in their attitudes to working with Universities, and less likely to have increased their involvement in networking, events, and dissemination. Those in the utilities and the high-tech

sectors had more positive attitudes to working with Universities, recognised the role of Universities, and would share information and ideas. The firms in the business services and tourism sectors were more willing to engage with Universities, compared to the manufacturing sectors, but less willing to do so compared to the utilities and high tech firms.

“It is a very beneficial relationship, in both directions.” [Business view.]

- 5.7.4 The University staff agreed that businesses had developed more positive attitudes to KE. Approximately three quarters thought the businesses were more positive and recognised that Universities could play a useful role to help address what businesses were trying to achieve. Generally it was considered that more staff in individual businesses were willing to become involved in KE (40% of University staff), a third were more willing to seek business advice, and a fifth of University staff said that businesses were willing to use the Universities for CPD.
- 5.7.5 The Universities took the view that businesses had become more involved across the range of KE activities, especially with the enterprise support/enterprise, innovation, and training/professional development activities (some three quarters of University staff). Two thirds of University staff thought there was greater business involvement in research activities (contract, collaborative, and consulting research), while half cited greater business use of student/graduate placements in industry.

Constraints on KE Participation

- 5.7.6 The day to day activities of businesses and the need to deal with ‘events’ meant that around a third of them faced constraints which limited their KE interactions. The main factors constraining participation on the demand side (for businesses) were a lack of time and other business priorities (just over a tenth for each). On the supply side (what the University offers), the barriers were the University bureaucracy (primarily the procedures that Universities go through to make decisions) for one in seven, together with the perceived inflexibility of University rules and the difficulty in agreeing terms and contracts (especially where IP may be an issue), cited by around one in six for each. The other constraints were relatively small. (See Table D1.5.)
- 5.7.7 The Universities considered that the businesses were hindered from engaging in KE primary because they lacked time and could be overtaken by events (one in nine University staff) or they had other priorities (three quarters). They also had insufficient resources to engage with Universities (38%) or they lacked the appropriate skills to access and engage with Universities (18%). Part of constraint here was an information failure, i.e., the businesses were not necessarily aware of what the Universities offered or how they could be accessed.
- 5.7.8 Some University staff thought that the Universities might not be sufficiently attractive to businesses. For example, the Universities were too bureaucratic in terms of the procedures they went through to make decisions and ensure businesses met their criteria (almost one in three University staff) and/or they had rules which were which

were inflexible (one in four). There was a view that it could be difficult to strike research contracts with Universities because there were issues over IP ownership and publications which could disclose IP, the different (and usually shorter) timescales businesses required for outputs (38%), and the difficulties businesses had in finding University partners (30%). Universities were positively seeking to make it easier for businesses to engage with them but considered that some of the complications of their admin systems were necessary.

The Role of Universities in Innovation

- 5.7.9 To gain further insights into the role of University innovation, the businesses were asked where they thought that the Universities were important, i.e., from the development of concepts and basic and applied research through to taking products and processes to market. These form the technology readiness levels (TRLs).³⁰ Primarily the main strength of Universities was at the conceptual stage for innovation, combined with basic and applied research (some four in 10 of businesses for each) and less so at the product development and exploration stages (i.e., less than half).

“It is a fact that Universities are managed as businesses and are spinning out businesses left, right, and centre.” [Business view.]

Table 5.6 The Role of Universities in Innovation

	Percentages of all respondents
Development of concepts	78
Basic research	80
Applied research	80
Development of technologies and their application	75
Feasibility/testing/prototypes	73
Product/process development	43
Taking products to market/exploitation	41
Any of the above	88
None of the above	12

Source: PACEC Interviews with Businesses, 2014

5.8 The Counterfactual

- 5.8.1 To complete the assessment of benefits, businesses were asked what the outcomes might have been without KE engagement with the Universities. Some four in 10 businesses thought they would not have been able to achieve these outcomes without the engagement with the Universities.

³⁰ Innovate UK. The technology readiness level in the innovation process. Innovate UK. The evaluation of collaborative R&D. PACEC. 2012.

- 5.8.2 Of the six in 10 saying they might have been able to go ahead with the same, or similar, activities anyway, almost one in five thought they would have resulted in the same benefits. For just over a half they would have been later in time (55%), smaller in scale (41%), and different in scope (25%). Half said they would have relied on internal resources to achieve the results, primarily through switching expenditure, reducing costs, or improving their revenue streams – although that were some uncertainties about these sources. One in 10 would have used government grants, or would have obtained investment from other companies, and 7% would have found external investors during their early stages, such as business angels, or VC groups as they matured.
- 5.8.3 The largest companies, and businesses in the manufacturing sector, were the most likely to think they could have made other arrangements and achieved similar results.

Table 5.7 Counterfactual. KE Activities and Benefits with HEIF Funding

	Percentage of those that participated
Not gone ahead at all*	43
Gone ahead anyway*	57
Where activities went ahead and benefits resulted (% of 57% above)	
- in the same way	10
- later in time	31
- smaller in scale	23
- different in scope	14

Note: Those stating the activities would “definitely, probably or possibly” have gone ahead (or not)
Source: PACEC Interviews with Businesses, 2014

“I have great gratitude, and I would not be where I am without them – the Universities.” [Business view.]

- 5.8.4 The data on the percentages of businesses who would have gone ahead with their activities anyway if they had not engaged with the Universities can be analysed in terms of all businesses interviewed, i.e., 10% of all businesses (not just those that would have gone ahead anyway without University engagement) would have gone ahead in the same way, for 31% their activities would have been later in time, 23% said they would have been smaller in scale and one in seven (14%) thought they would have been different in scope. It is not possible to say which specific activities and benefits would have gone ahead or resulted anyway without University engagement.

University Practices

- 5.8.5 The key University strengths that businesses identified included the quality of research, the depth of knowledge, and the reputation for expertise.
- 5.8.6 Businesses said, in their view, that the main constraints University staff faced, in terms of their participation in KE activities, were teaching (20%) and research (15%) priorities and an overall lack of time (19%, rising to 24% of businesses in the service

sector). University bureaucracy (8%) and an inflexibility of University rules (10%) were also mentioned. Manufacturing companies were significantly more likely to complain about University bureaucracy (15%).

“I’ve been involved in Universities for 12 years, and I have seen a dramatic improvement in KE. Universities are now dynamic, valuable in their support, and no longer strictly academic. The Research Council has helped this trend.” [Business view.]

- 5.8.7 The overwhelming majority of businesses said Universities had become more willing to engage with businesses than they used to be, with 55% of businesses saying they had become much more willing to engage, rising to 87% of businesses in the service sector. Manufacturing companies were more likely to say that Universities had become much more willing to engage, compared to the business services and tourism sectors and utilities.

- 5.8.8 Generally, the businesses considered that the research intensive Universities were more willing to engage with businesses, compared to the others.

“The big change is that they [the Universities] are now more driven by impact in what they do. This is a real change for the better. HEFCE was driven by publications, and measured Universities by research. Before, they were only interested in theoretical research. Now, HEFCE is interested in impact. So there is no longer a conflict between Universities and business. Formerly, Universities could be penalised for dealing too much with businesses. Now, they are praised and measured favourably for doing so.” [Business view.]

- 5.8.9 Two thirds said Universities could improve the assistance they offered to businesses. Suggestions included streamlining the rules and bureaucracy, and making it easier to agree contracts and working relationships (especially where IP and research were the focus) and locate/access University staff working on particular technologies.

“To better understand the difference between research and innovation, they should try to use Industry Advisory Groups to align their research with innovation, because innovation does not mean invention. It means turning a new idea into money.” [Business view.]

“There are many scientists that are doing work useful to us, but we don’t know it. It should be easier than it is to identify and locate and access technologies of value to us.” [Business view.]

“The challenge which Universities have is to comprehend their own staff, technology, and facilities, and match them with business needs. The challenge is knowing their own capabilities, because they are so big.” [Business view.]

“Technology Transfer Offices should follow up results; they deal with early businesses, but never follow up in person when the business is growing.” [Business view.]

6 The Benefits for Social and Community Groups

Panel 6.1 Summary

In this chapter, the benefits to the social and community groups that interacted with the Universities are examined. The key points are as follows:–

- Many of the interviewed organisations were charities (for example, in the arts), social enterprises, and voluntary groups. They were typically small and locally based, and provided services to individuals and other community groups as well as services to the types of social groups they focussed on.
- The main activities with Universities were interaction and access to collaborative partners and advice with service development and delivery. In some cases, this involved financial support and resources in kind through student volunteers. The groups did not usually pay to engage.
- The main benefits of involvement with the Universities included increased access to networking and events, the identification of collaborators (in the University and amongst other organisations), and improved insights into issues faced with services and solutions to address them with Universities.
- Several of the groups had levered in additional funding from elsewhere.
- Universities were thought to be more willing to engage with groups than they had been previously.
- There were some constraints to participation for community groups, in terms of perceived University bureaucracy, the inflexibility of rules, and difficulties negotiating agreements. Some were not sure what Universities offered or how to access staff. The community groups considered that clearer pathways to engagement and increased funding for groups would be useful.

6.1.2 In this chapter, the benefits to the social and community groups that interacted with the Universities are examined: There can be benefits both to organisations and to individuals in the community they liaise with and provide services for, e.g., client groups. The focus is on the views of the organisations and the Universities that they engaged with. Generally, the number of organisations was relatively small compared to the number of businesses that were involved with Universities. The chapter covers:–

- The characteristics of groups.
- Engagement with University.
- The benefits to organisations.
- Changes in attitudes to KE.
- Constraints to participants.
- The counterfactual.

6.2 The Characteristics of Groups

6.2.1 In terms of characteristics, many of the organisations interviewed were charities (for example, in the arts and drama sectors), social enterprises, and voluntary and community groups. They tended to be located in the local areas/regions of the Universities they engaged with. They were typically small, and provided services to

individuals in the types of social groups they focussed on and other community groups. Examples include:–

- Local arts, drama/theatre groups, and music groups who organise activities, for example, for young people from more deprived areas. Their links can be with local schools and residents groups to help increase participation, not just in the events but in University places.
- Social enterprises who provide support to other community groups and/or to local residents, such as the elderly or those with health issues. Student volunteers are an important resource for these groups.
- Voluntary and community groups who interact with their local residents, for example, ethnic minority groups. They can work closely with local authorities and other agencies to help meet needs and integrate residents into the community.

6.2.2 Some of these groups had University staff as members of their management teams, which demonstrates the degree of engagement and involvement.

6.2.3 There has also been funding for collaborations from a range of organisations, such as Universities, professional organisations, or national cultural institutions. This support helped organisations recruit employees. There were some joint ventures with Universities as spin-out not for profit social enterprises.

6.3 Engagement with Universities

6.3.1 Links to the Universities are very strong. There was a growing culture of working with Universities. The community groups tended to have had advice and, in some cases, financial support from the University and resources in kind, with University staff and students acting as volunteers and participating in the delivery of services and events. The Universities could also offer premises for activities. In some cases there was collaborative research with the Universities, for example, in ecosystems, medical ethics, or arts events and productions. The organisations had also benefited from management and legal advice.

6.3.2 The main objectives for University interaction were to gain access to collaborative partners and help with service development and delivery. Extensive networks were created with other community groups, schools, colleges and other Universities, and some businesses to improve resources and services. On the whole, interactions with Universities were seen as important to achieving improved performance and successful outputs/outcomes.

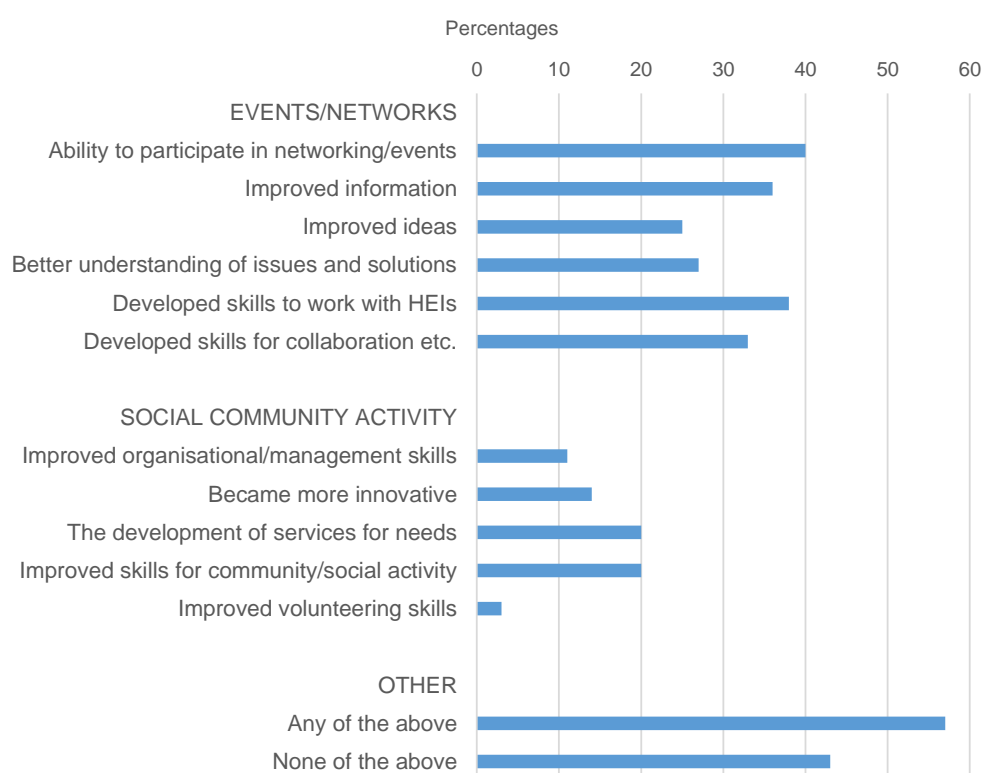
6.4 The Benefits to Organisations and Universities

6.4.1 The main benefits of involvement with the Universities included, in the view of these groups, increased access to networking and events and improved insights into issues faced with services and ideas and solutions to address them. There was a better understanding of community needs which helped improve the outputs of engagement with local groups and residents to ensure needs were met. The groups were better

able to collaborate with the Universities on future opportunities. Skills had been developed for starting and developing their organisations, the management of them, and the customisation of services. All the groups said their services had benefited from University involvement which helped meet the needs of clients.

6.4.2 Overall the University staff said, in their view, the community groups had improved their ability to engage in networks and contribute to events (four in 10 University staff), and had developed skills to allow them to work with HEIs; they had a better understanding of the issues faced in the community and had developed ideas and solutions to meet needs (around a quarter of University staff). The groups had improved their skills and services for community activity and become more innovative. See Figure 6.2.

Figure 6.1 The Benefits to Community Groups. Skills and Outputs



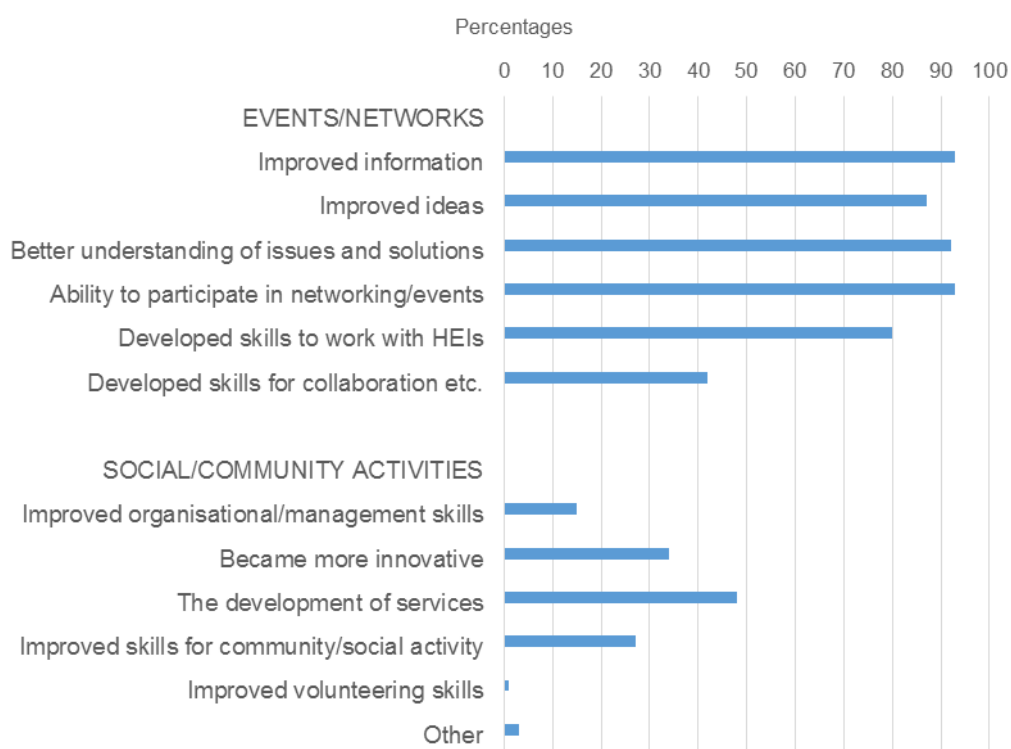
Source: PACEC Interviews with University staff

6.4.3 The Universities took the view that the community groups had developed more positive attitudes towards KE. Almost half of University staff said the groups recognised the role of Universities in terms of the issues the groups faced. A third thought the groups were willing to engage more fully with Universities and recognised the benefits arising from KE. The groups involved more of their staff in KE and were willing to share information and ideas.

6.4.4 The social and community groups had become more involved in KE, mainly in events and networking activities and initiatives aimed at community development. There were also some student/graduate placements in projects and volunteering.

- 6.4.5 There were benefits to the Universities who developed the skills of staff to work with the groups and residents on key issues and gain a better understanding in 'real world' situations. The Universities raised their visibility to local groups to help the latter understand more fully what the University did, where prior to KE activities there was a lack of understanding. There were definite benefits for the Universities in terms of research projects that were based on community issues and the role of community groups. The outputs fed into the teaching and curriculum for students.
- 6.4.6 As with the businesses, the Universities were of the view that there were non-monetised benefits for the community and social groups which were over and above what was paid for, although they did not usually pay to engage with Universities. The main ones were improved information and ideas combined with a better understanding of the solutions to issues. The ability to participate in events and work with Universities had been strengthened. There were ultimate benefits for individuals, including those living in the more deprived areas.

Figure 6.2 Community and Social Groups. Non-Monetised Benefits



Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

- 6.4.7 Several of the social enterprises had become financially independent, or had levered in additional funding from elsewhere.

"It was pump-priming, support which has created a lasting community, and paid off multiple times." [Organisation view.]

“That’s brought in additional funding. More than matched by the moneys we’d put in from HEIF over the life-time of the project. After three years it became self-sustaining. That was a HEIF-funded project that we then ran. Who are the beneficiaries of that? The local communities and our students.” [University view.]

6.5 Constraints to Participation

6.5.1 Constraints to participation for the community groups included University bureaucracy (primarily in terms of timescales) and the inflexibility of rules, the difficulty of negotiating agreements, and a perceived unwillingness of some University staff to engage at a community level. Some were not sure what Universities offered, or how to access staff.

6.5.2 The University staff thought that the groups did not have sufficient time to engage with them (this was the main constraint), they had other priorities, and they lacked resources. To some extent they also lacked the skills to identify University partners, and might not be aware of how to access University staff or find out what Universities could offer them or how Universities could work with them. Insufficient rewards for the staff of groups was not an issue.

6.5.3 The University staff thought the community groups might be deterred by the perceived bureaucracy (in terms of the procedures to make decisions), the inflexibility of University rules, and the difficulty of finding University staff with appropriate skills to work with them. It was difficult to identify which University staff would work with groups, particularly for interdisciplinary projects. Planning timescales could be very different between the Universities and other organisations.

6.5.4 Community groups thought that University staff had a lack of time, and other teaching and research priorities.

6.5.5 There was some concern, amongst both community and University staff, that it was difficult to get support because the outputs could not be quantified.

“People want to fund what is measureable, even if it’s not what’s important.” [University view.]

6.6 The Counterfactual

6.6.1 The community groups were divided on the counterfactual, with just under half saying they possibly could have succeeded without University help but that the benefits would have been later in time and smaller in scale, whereas others said they could not have done so and the engagement with Universities was very important to them.

6.6.2 Universities were thought to be more willing to engage with groups than they had been previously. Clearer pathways to engagement and increased funding for groups were the main ways of improving KE.

6.6.3 A number of Universities ran KE projects and initiatives with cultural institutions that are in themselves social and community groups, or have strong links with them, often at a local level. Other research shows that these groups actively network and connect, not just with the Universities but with local communities. The creative and performing arts in particular develop 'social capital' as skills and capabilities for residents in the local area through, for example, theatre and performances with local people, young people, and schools. This capital helps to strengthen the skills base of local communities. University work with theatre groups and all cultural organisations, galleries, and libraries helps to attract visitors to the area and hence create economic benefits through expenditure, income, and jobs.³¹

"They know they are creating part of the story, they create the words, the play, and they then come and perform it at the main theatre. It is part of the public programme and the parents and carers come along. Generally the schools are in areas of social deprivation and we were told that we shouldn't expect the parents and carers to come, but the parents and carers did come and they loved it and one of the teachers said it had changed the culture in the school and they are now participating in school activities as well." [University view.]

³¹ UK-IRC Cultural Connections. The Role of Arts and Humanities in Competitiveness and Local Development. 2014

7 Wider Economic and Social Benefits

Panel 7.1 Summary

The key points from this chapter are as follows:–

- Most of the Universities had strengthened their activities to reflect the characteristics of the economy and needs in their local areas. The activities focussed on needs and services for community and social groups, brought about by liaison with specific support organisations.
- Universities had sought to strengthen the local economic development infrastructure through partnerships with organisations.
- The interactions and joint activity with groups focussed on steps to increase access to and participation in University events, addressing social exclusion, and helping to promote community and cultural events.
- The Universities had adopted some key activities to assist local/regional growth. They focussed on SMEs, enterprise skills, regional sector/cluster development, innovation skills, and promoting the area.
- Discussions with the Universities and businesses indicate that they purchase significant proportions of their components, goods, materials, and services from the region. This income for suppliers helps to support indirect employment opportunities.
- The research showed that the Universities have extensive networks of engagement and collaboration with external partners in the wider infrastructure and the innovation ecosystem. The priority ones were with local authorities, local enterprise partnerships (LEPs), employer groups, and business associations, as well as other Universities and public sector agencies (especially the NHS and trusts in the health sector).
- Over the past few years and in the HEIF funding period 2011–15 collaboration had increased significantly (for half the Universities) with the local authorities and the LEPs – the Universities were represented on committees and groups that set out policies and priorities and were associated with raising funds and resources and helping to implement initiatives.

7.1.2 Apart from the direct engagement with businesses and community groups, Universities play a key role in the wider economy locally, regionally, and nationally, which results in spill-over effects. The impacts may be direct or indirect. For the Universities, this was an important dimension that featured in their aims for KE. Some nine in 10 said they had strengthened their activities to reflect the characteristics of the economy and needs in their local areas/regions. The research intensive and the arts Universities are more likely to have done so. In this chapter we examine:–

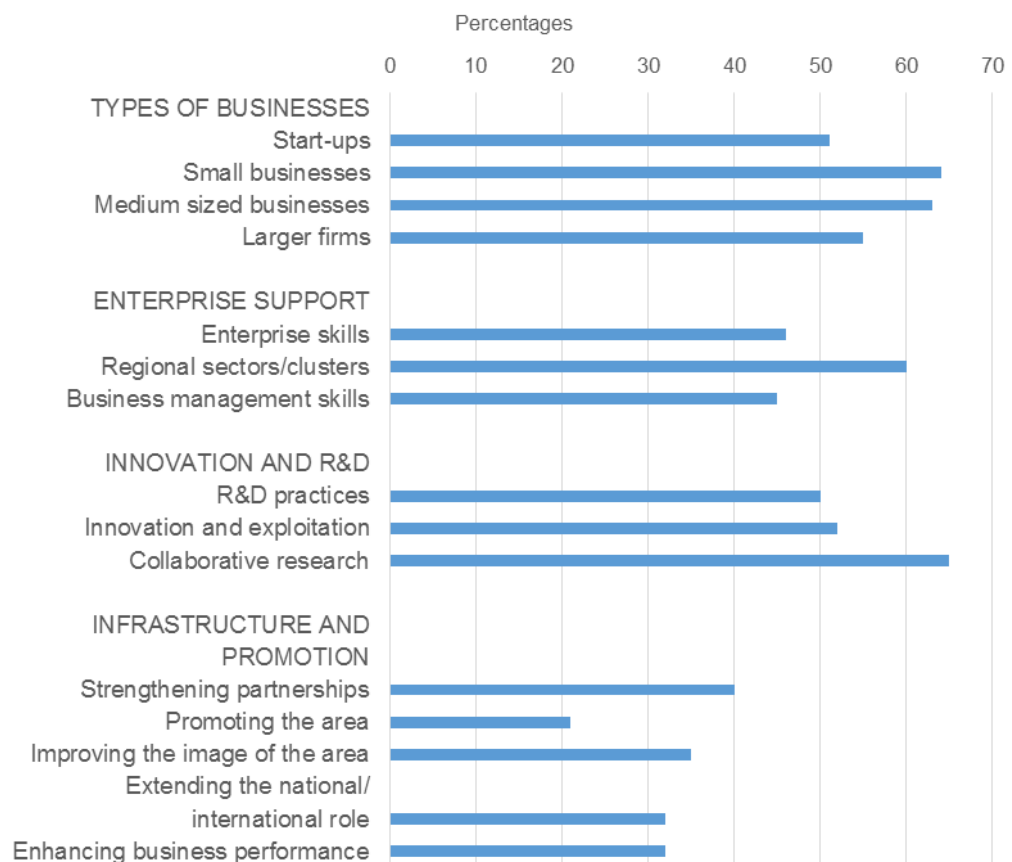
- The Strengthening of Regional Economies through Enterprise Services.
- Wider Community and Social Benefits.
- Developing the Regional Economic Infrastructure.

7.1.3 Universities had sought to strengthen the local economic development infrastructure through partnerships with a wide range of organisations, including LEPs, local authorities, and business groups (some 40% of Universities). They sought to improve the image of their areas (a third) and directly promote the areas (a fifth).

7.2 Strengthening Local Economies Through Enterprise Services

- 7.2.1 The main enterprise services that had been strengthened to support regional growth and development were collaborative research (two thirds of Universities), innovation, commercialisation, and R&D (50% of Universities for each), business management skills, and key sectors/clusters (60%).
- 7.2.2 The Universities had adopted some key activities to assist local and regional growth. The main ones focussed on:–
- Types of Businesses. The businesses they focussed on tended to be SMEs, followed by larger firms and start-ups.
 - General Enterprise Support. Enterprise skills for business management and growth, and regional sector/cluster development.
 - Innovation and R&D practices and outputs, innovation and exploitation of technologies, and collaborative research initiatives.
 - Promoting the Area. Improving the image of the area, and enhancing the national/international role of the area.
- 7.2.3 Just over half the Universities considered that they had contributed to the overall economic performance of their localities/regions and elsewhere.

Figure 7.2 Universities and the Focus on Regional KE Activities



Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

- 7.2.4 A further feature of the wider effects are the purchasing linkages that the Universities and the businesses they assist develop with suppliers locally and in the region. Discussions with the Universities and businesses indicate that they purchase significant proportions of their components, goods, materials, and services from the region. This income for suppliers helps to support indirect employment opportunities. Previous studies have shown that, for businesses assisted by Universities, some 33% to 50% of their purchases are made from the local region, depending on the specific needs of businesses in different industrial sectors.³² The purchases, together with those of employees in assisted businesses and suppliers, result in important regional multipliers that stimulate employment and income.
- 7.2.5 Enterprises assisted by Universities also play a role in the short and longer-term diffusion of technology and innovative practices. The effects in the short to medium term cover customers, suppliers, and collaborators in the regional economies and nationally. These arise through the sales of goods and services that house the technology to customers, the use of technology and IP by suppliers (often within the framework of supplier contracts on outputs and quality), and work with collaborators, for example, on innovation and technology issues. Both suppliers and collaborators can benefit from agreements and licenses to utilise IP.
- 7.2.6 This technology diffusion effect was assessed to some extent with businesses involved in this study. For University KE initiatives other studies provide evidence that University assisted businesses and collaborators in research can have positive effects on customers, suppliers, and collaborators. For customers, some 48% to 59% of University-assisted business mention this in research, compared to 17% to 32% who have positive impacts on suppliers, while 13% to 19% have positive effects on competitors.³³
- 7.2.7 Within this context the high-tech sectors provide a focus, as do some key technologies, and the Universities play a role by developing links between businesses, advisers, and investors who provide both loan and equity finance for businesses (i.e., business angels and VC groups)
- The highlighted sectors include energy, chemicals, pharmaceuticals, biosciences, medical and other instruments, electronics and engineering, computing and software, IT, and R&D linked to manufacturing and business services.
 - The technologies were both enabling technologies (which were largely cross-cutting) and market/product technologies. They included smart construction materials, bioactivities and life sciences, nanotechnologies, creative industry (in graphics and visual media), energy and low-carbon, environmental and remediation technologies, efficiency electronics/lighting, lasers, plastic electronics, fluid flows, computing/software systems and regenerative medicine.

³² UCL Advances, Economic Impact Assessment of UCL Advances Activities. PACEC. 2014. University of the West of England, iNets Monitoring and Evaluation. PACEC. 2013.

³³ Innovate UK, Evaluation of Collaborative R&D between Universities and Business. PACEC. 2012.

- 7.2.8 An important wider impact of Universities is the contribution to the regional labour market. This arises as a result of the businesses they assist with student placements, and through teaching and research (which are influenced by the KE activities and have become integrated), and the graduation of students who are recruited by employers in the region. The recruitment of graduates and student placements is a powerful means of KE as skills and knowledge are transferred. The businesses interviewed took student and staff placements through the Universities and recruited graduates. Other studies give some indication of the degree to which employers in a given region recruit from the University. The figures show that around 5% of employers recruit staff from Universities in their local area.³⁴

“You will improve your employability and you will do better at getting a graduate level job. We can measure that.” [University view.]

- 7.2.9 In combination, these wider benefits, coupled with the expertise within Universities, have influenced the extent of inward investment to their regions. Businesses often locate to take advantage of the expertise, the prospect of recruiting skilled graduates, and the positive image that Universities bring to their regions. Investors originate primarily from Europe, North America, and the Far East. These investors have significant impacts in terms of jobs and income in the region and positive benefits to their supply chains and collaborators through indirect jobs and improvements in practices especially for innovation.³⁵

- 7.2.10 It was considered that the economic benefits in the context of the locality/sub-region were relatively large (for 20% of Universities), where the geographical areas were relatively small or remote and there was less other activity, and relatively moderate to small for three quarters of Universities in smaller geographical areas and/or where there was significant other activity. There had been wider social effects as a result of the economic benefits in that more people had jobs and improved incomes.

7.3 The Wider Community and Social Benefits

- 7.3.1 Some nine out of 10 Universities had strengthened their KE activities funded through HEIF to help bring about wider community and social benefits in their areas.
- 7.3.2 The activities focussed on needs and services for community and social groups. The initiatives on needs covered meetings and liaison with organisations that provide support to specific groups, for example, on housing, training/skills, and welfare issues, as well as resourcing issues faced by the voluntary sector. There was liaison with teachers and staff at schools/colleges and consultations with

³⁴ PACEC Studies: University of Hertfordshire, Social and Economic Impact of the University. 2005; 2009. University of Plymouth, Economic and Social Impact. 2009. Essex University, The Impact of Essex University. 2011.

³⁵ Foreign Direct Investment and UK Suppliers – the impacts on innovation activities. PACEC. 2013.

organisations/voluntary groups on needs in their areas and what residents in deprived areas may require.

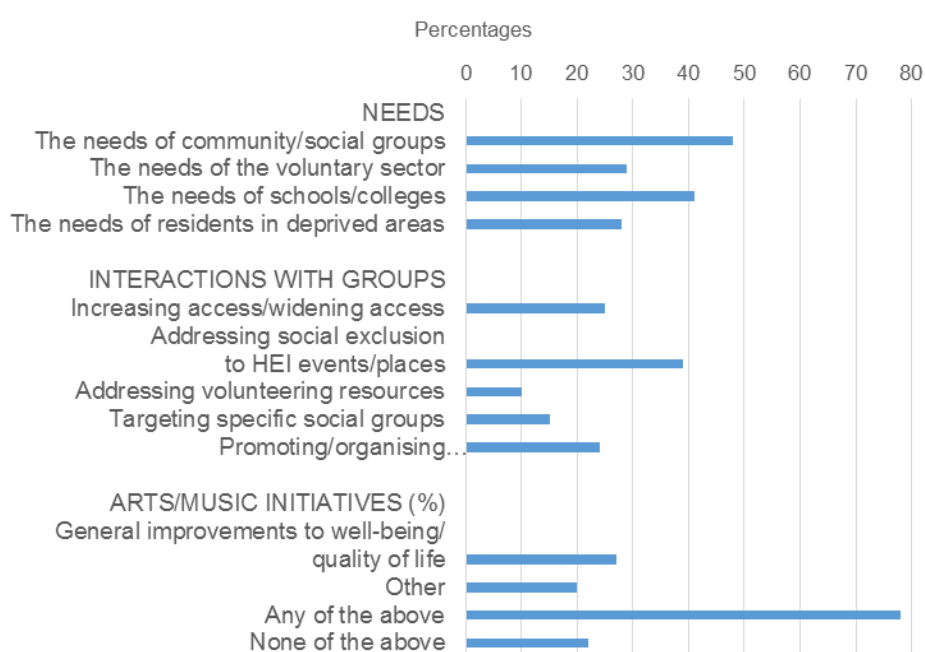
7.3.3 The interactions and joint activity with groups focussed on steps to increase access to and participation in University events (or those run with community groups), as well as access to University places, addressing social exclusion and the resources available through voluntary groups and social enterprises, and helping to promote community and cultural events.

7.3.4 There were also initiatives in arts and music to encourage arts charities (including theatres) to engage with residents (in particular, young people) to organise performances and to highlight and promote the artistic ability of some ethnic groups (for example, ethnic music) with concerts and recordings.

“So that’s really got us trying to leverage this money and make sure that the linking of various activities from the research partnerships creates knowledge exchange, employability for students, social responsibility, internationalisation. We support achievement of all those goals. They’re all aligned to top-line goals of the university – ‘the red thread’ as companies call it, or ‘line of sight’.” [University view.]

7.3.5 Some of the Universities had developed teaching, research, and business incubation facilities in deprived areas, which helped to encourage engagement and the take-up of opportunities.

Figure 7.3 The Focus of Community and Social Activities



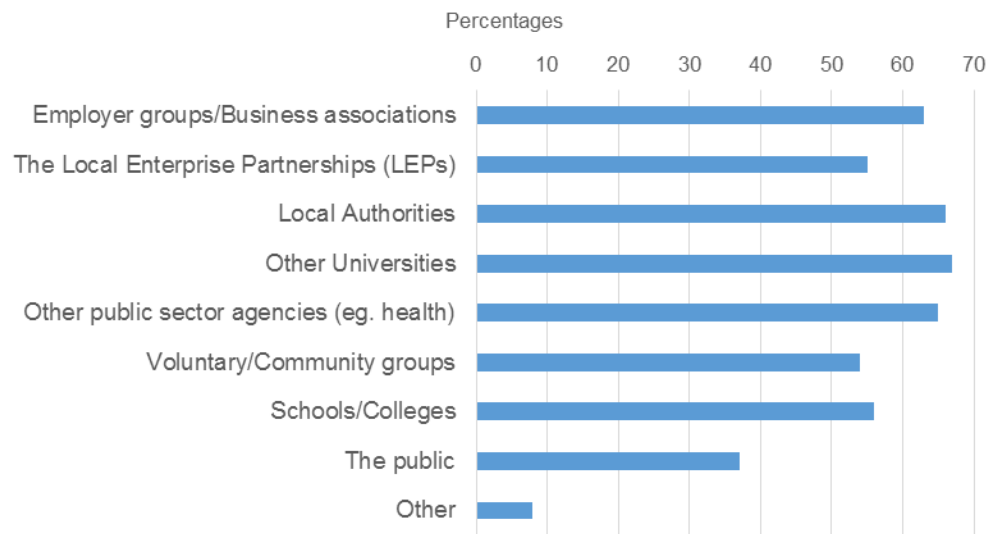
Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

7.3.6 It was considered that, in the context of social and community issues faced, the impacts locally/regionally had been moderate (for four out of 10 Universities),

reflecting overall needs in the area, and significant for one in 10 at a neighbourhood level.

7.4 The Regional Economic Development Partnerships

- 7.4.1 The Universities have a longstanding role in helping to build and shape the regional economic development partnerships and infrastructure and shaping policies and initiatives to address issues, stimulate innovation, create opportunities for businesses and residents, and monitor and evaluate growth. The development of partnerships helped strengthen the overall economic development infrastructure and the innovation ecosystem. The partnerships include, for example, employer and business associations (such as chambers of commerce and business sector groups), local authorities, LEPs, the health authorities, FE colleges and schools, and the voluntary and community sector, amongst others.
- 7.4.2 The research showed that the Universities have extensive networks of engagement and collaboration with external partners within the wider infrastructure and the innovation ecosystem. Some two fifths of Universities said they had strengthened their links with the local economic infrastructure and partnerships. Overall a half to two thirds of Universities led the development of active links. The priority ones were with the local authorities (at county, borough, and district levels) and the employers groups and business associations, as well as other Universities and public sector agencies (especially the NHS and trusts in the health sector). Just over half the Universities actively collaborated with the LEPs. The LEPs, with their business partners, and local authorities in particular, have developed significant initiatives to address economic development and regeneration issues with regional and central government funds. Some Universities had worked closely with the LEPs to successfully bid for funds from the Department for Communities and Local Government (DCLG) and the EU (e.g., ERDF). Over half the Universities also had links to and collaborated with voluntary and community groups, social enterprises, charities, and schools and colleges.
- 7.4.3 The important partners in the innovation ecosystem were research organisations, (including other HEIs), the relatively large number of innovating businesses in the region (including those in the innovation/incubator centres), other research organisations such as Research and Technology Organisations (RTOs), the intermediaries who provide investment (business angels and VC firms), and advisers on IP and legal issues.

Figure 7.4 Collaboration and Engagement with External Partners

Respondents could select more than one option; so percentages in any column may sum to more than 100
 Source: PACEC Interviews with University staff

- 7.4.4 Over the past few years and in the HEIF funding period 2011-15 collaboration had increased significantly (for half the Universities) with the local authorities and the LEPs – the Universities were represented on committees and groups that set out policies and priorities and were associated with raising funds and resources and helped to implement initiatives. Links had also been strengthened with other Universities, employers, and business associations, and the voluntary sectors (for 35% to 40%), and with schools/colleges and other public sector agencies (around a quarter of Universities).
- 7.4.5 The Universities mainly collaborated with employer groups and associations in specific sectors. The sectors included key high-tech activities and businesses that were more likely to be innovative.

8 The Advantages and Disadvantages of HEIF/Lessons Learnt

Panel 8.1 Summary

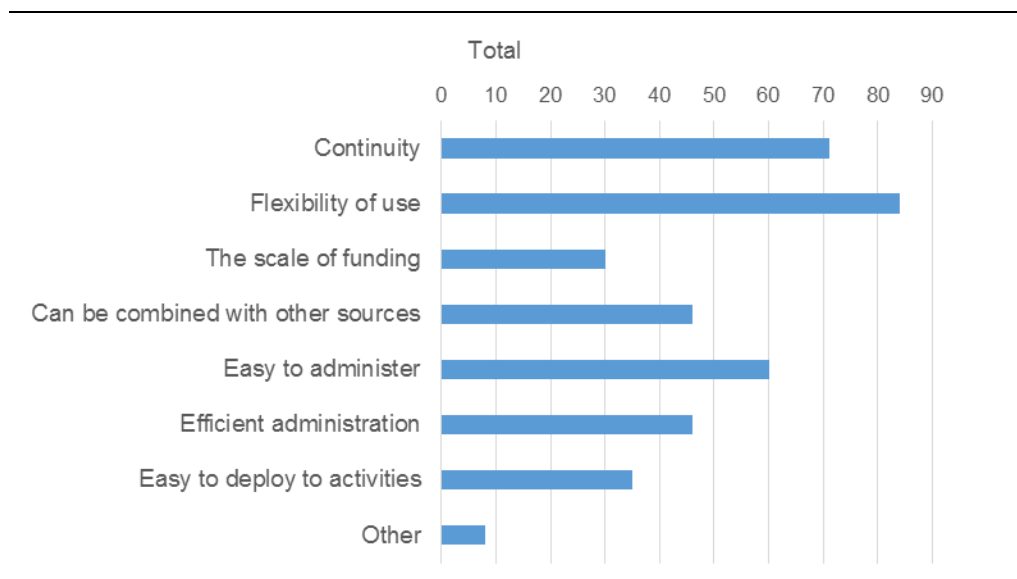
The key points from this chapter are as follows: –

- For the Universities, the strongest advantages of HEFCE KE funding are said to be its flexibility of use, its continuity, and the ease of administration.
- The key lessons for staff are: –
 - More staff need to be from a commercial background.
 - More staff knowledge and technical expertise are needed over a wide range of fields.
 - Teams are small and specialised, and can be destabilised by staff turnover.
- The key lessons for projects are: –
 - Diversity of project portfolios is recommended.
 - The focus should be on impact and benefits to participants.
 - Projects tend to be of long duration, sometimes 10 years, before impacts could be measured.
- The key lessons on partners were: –
 - SMEs can have capacity issues which delay projects, especially if other priorities arise.
 - There should be opportunities across the community for a wide range of groups.
- The main improvement requested was a streamlined administrative procedure for smaller projects, which are currently as complex to administer as large projects and so have a disproportionate overhead.
- Overall, Universities were very positive towards KE funding and the wide range of benefits it supports in relation to its scale.

8.2 Advantages and Disadvantages

8.2.1 For the Universities, the strongest advantages of HEFCE KE funding were said to be its flexibility of use (84%), its continuity (71%), and the ease of administration (60%). The arts Universities were least likely to mention ease of administration, possibly indicating that the administrative structures are less suited to arts University projects. The medium research intensity Universities were the most enthusiastic about flexibility of use and the scale of funding. The top six research Universities appreciated being able to combine the funding with other sources. (See Figure 8.2.)

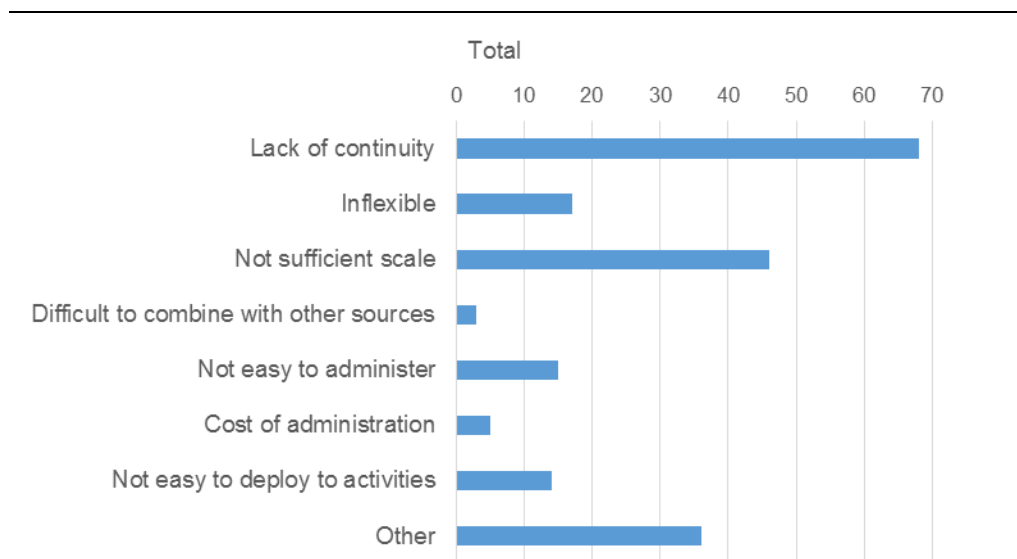
Figure 8.1 Advantages of HEIF KE Funding



Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

8.2.2 The main disadvantages of HEFCE funding that the Universities raised were a lack of continuity (68%) and insufficient scale (46%) of funding. (See Figure 8.2.)

Figure 8.2 Disadvantages of HEIF KE Funding



Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

"I intimated that it hasn't been a panacea for us. Because what happens is that you can't do something long term strategically if you don't have the HEIF money earmarked long term. I think our long-term plans would've been a cradle-to-grave view that says 'If we'd known 10 years ago that we'd get HEIF funding for 10 years we'd have had a different strategy'. We'd have done a lot more with it." [University view.]

“Now we turn away more applications than we admit. We try and find other routes for the ones we don’t fund with HEIF.” [University view.]

8.3 Best Practice

- 8.3.1 The Universities tended to say they looked for examples of best practice within their own HEI (81%) and from other national HEIs (82%); the arts Universities were the least likely to look for inspiration from other national HEIs. The top six research Universities were the most likely to look for examples from businesses and business organisations (82%, compared with an average of 47%, and falling to only 13% of the low research intensity Universities).

8.4 Monitoring/Research

- 8.4.1 Almost all the Universities (98%) said they had strengthened their monitoring and evaluation practices for KE activities to at least some extent. The aims of monitoring were described as meeting HEFCE requirements, measuring KPIs, identifying success, demonstrating financial impact, and ensuring good use of resources. The information was used to assess performance, identify good practice, and improve funding bids.
- 8.4.2 Just under half the Universities (44%) said they carried out research into the changes in business skills, innovation, and business performance. This fell to 17% of the high research intensity Universities.
- 8.4.3 Some of the Universities carried out research to assess the wider economic (41%) and societal (17%) benefits, and the changes for community and social groups (28%). The majority of the top six research Universities (89%) and the arts Universities (86%) did not engage in any research into economic and social benefits.

8.5 Key Lessons

- 8.5.1 The non-University external consultees were asked what the key lessons were that they had learnt from their KE experiences. These fell into a number of categories:–
- Staff
 - It was thought that more staff needed to be from a commercial background.
 - More staff knowledge and technical expertise was needed over a wide range of fields.
 - Teams were small and specialised, and could be destabilised by staff turnover.
 - Projects
 - Diversity of project portfolios was recommended.
 - The focus should be on impact and benefits to participants.

- Some KE innovation projects with businesses could be of long duration, it could be a number of years before impacts could be measured.
- Partners
 - SMEs could have capacity issues which delayed projects, especially if other priorities arose for them which, they considered, Universities needed to recognise.
 - There should be opportunities to engage in KE projects for a wider range of community and social groups.

8.5.2 The main improvement requested was more streamlined administrative procedures for smaller projects that are less research intensive, and which are just as complex to set-up as large projects and consequently have disproportionate overheads. An example given was outreach work in schools, which required more complex contracts. This related to the way Universities administered projects funded with HEIF and other sources, not access to HEIF funds.

8.5.3 There was also a view that the activities could be more integrated, both to allow a progression from events to specific enterprise and innovation support and to ensure that support could be clustered, for example, events, enterprise, and innovation could form a package around key themes or needs.

8.5.4 Overall, Universities were very positive towards KE funding.

“It’s a small amount of money in the grand scheme of things, but by God it supports a lot of stuff.” [University view.]

“So we’re doing something right: the companies love it, the students love it. We want to do more of that.” [University view.]

9 The Conclusions

- 9.1.1 This chapter draws on the results of the research presented in the earlier chapters to provide conclusions to the study. To address the main aims and objectives of the research and the specific topics in the brief related to them, the chapter covers:–
- The non-monetised achievements and benefits from ongoing HEFCE KE funding;
 - The extent to which HEFCE KE funding is an effective and efficient means of supporting the activities that lead to these achievements and benefits.
 - The extent of embedding KE in HE mission, leadership, strategy, and institutional structures, and University staff capabilities.
 - Any negative consequences or disadvantages from HEFCE KE policy and funding to date.
 - Areas for improvement in the future, and how these might be achieved.
- 9.1.2 The issues include the extent to which the KE policies and activities address perceived market failures such as inadequate information flows and knowledge.
- 9.1.3 The conclusions also cover the HE contributions to supporting SMEs and local area/sub-regional economic development as an input to implementation of the Witty Review recommendations.³⁶
- 9.1.4 The notion of non-monetised benefits is complex. They relate primarily to benefits to participants in KE that are difficult to monetise, and can include those over and above what participants have been paid for. They cover wider organisational and capacity-building benefits for the economic development infrastructure and the wider innovation ecosystem. In addition, they embrace the wider spill-over effects from direct University support to businesses through KE and the impacts where the infrastructure has been strengthened.
- 9.1.5 The current practice of measuring impacts is to use income (paid by participants in activities) as a proxy for the monetised benefits. The assumption is that the price paid reflects a willingness to pay related to the value participants obtain. There can be benefits not captured by the price paid.
- 9.1.6 The results of the work are subject to the qualification and caveats made in the introduction.

³⁶ Witty. A., Encouraging a British Invention Revolution. Sir Andrew Witty's Review of Universities and Growth. 2013

9.2 The Non-Monetised Achievements and Benefits

- 9.2.1 The evidence shows that the benefits of KE funded by HEIF are substantive and wide ranging. They are attributable to the consistent policy stance and activities of Universities that have been strengthened and shaped over time to identify and respond to the issues and needs of internal University staff as well as external partners, especially businesses (including SMEs), community and social groups, and other organisations in the private and public sectors. In doing this, the Universities have progressed to further integrate KE with teaching and research, embedded KE as normal practice, and established a KE culture. The Universities have been able to achieve a significant strengthening in their KE skills and capability cutting across disciplines and covering events and networking, advice for start-ups and business growth, innovation and product and process development, professional development, student and staff placements, and support for community and social groups.
- 9.2.2 The strengthening and supply of KE activities has positively influenced the demand side and the take-up of KE services amongst businesses, community and social groups, and the wider public. This influence is not just in terms of scale but the quality and consistency of KE required.
- 9.2.3 The non-monetised benefits are of two main types: those that impact directly on businesses and social and community groups who directly engage in the University-led KE initiatives, and the wider economic and social effects characterised by University contributions to strengthen the economic development and innovation ecosystem and the more indirect spill-over effects.

The Non-Monetised Benefits for Businesses

- 9.2.4 The research shows that the benefits have been considerable. Substantial numbers of businesses have participated in the suite, or portfolio, of University KE initiatives including the events and networking development services, enterprise support and advice, the assistance for innovation and research (including contract, collaborative, and consultancy research), professional development, and student/graduate placement initiatives. As a result, they have strengthened their skills and practices and improved their performance. The main benefits are:–
- Businesses were able to identify contacts and collaborators, gain insights into trends and opportunities, and better understand issues facing them and solutions (a fifth for each), which resulted in clear business outputs. They also said they had improved their ability to contribute to events and network activity and had developed skills for working with HEIs.
 - The enterprise support services, i.e., assistance to start-up, spin-out and grow the business and develop enterprise skills, were strengthened, resulting in start-ups that were able to consolidate and grow.
 - The main outputs from innovation services were the improved skills for innovation, technology development, and testing, and the ability to participate in collaborative research with positive results for the exploitation of technology, improved R&D skills and skills for developing products and services, and the creation of IP. A fifth improved their skills to engage with Universities for contract research (and obtained positive results). The skills

resulted in improved innovation, the use of technology, and its application for businesses.

- Businesses had successfully developed processes (for themselves internally or for clients) and products and services.
- The student/graduate placements had helped resolve business growth and innovation issues for many businesses and had led to recruitment.
- A third to four in 10 businesses had improved their overall business performance in terms of sales, employment, productivity, and profits.

9.2.5 These comprised significant non-monetised benefits which helped the businesses innovate and grow.

9.2.6 Increasingly, the focus of Universities has been on SMEs, along with start-ups and spin-outs, while responding positively to the requirements of larger firms and industry's global players.

9.2.7 Based on the views of businesses and the Universities, these benefits were largely gross additional, taking account of what may have occurred anyway in the absence of the University KE initiatives. Some four in 10 businesses said the benefits were unlikely to have resulted without the Universities. Where they may have occurred between a half and a quarter said they would have been later in the time, smaller in scale, and narrower in scope.

9.2.8 The relationship that has developed between Universities and businesses indicates that the businesses are more likely to engage in KE activities in the future, and their experience has given them a positive outlook on KE.

9.2.9 Generally, based on the views of those interviewed, the benefits for businesses tended to be greater where there was interaction with those Universities with larger HEIF budgets and who were more research intensive. They tend to have more staff and more KE activities which have matured over time. However, it was recognised that Universities with lower levels of funding had specialisms that businesses benefited from.³⁷

9.3 The Non-Monetised Benefits for Social and Community Groups

9.3.1 The social and community groups have experienced a wide range of benefits that have allowed them to improve their skills, practices and methods of organisation, and services for specific groups. These have helped meet the needs not just of the groups but the residents they liaise with and provide services for. They have participated in the events and networks and utilised the KE advisory services and resources of the Universities. The main benefits identified are:–

³⁷ The correlation between scale and benefits would be assumed. See HEFCE. Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector. Tomas Coates Ulrichsen: Centre for Science and Technology and Innovation Policy (CSTI) University of Cambridge. 2014

- The social and community groups had a better understanding of issues faced and ideas/solutions to address them.
- They were better able to network and collaborate with Universities and gain access to staff/University staff.
- The community and social groups had improved their management and innovation skills and practices.
- They had developed their services more to meet the needs of client groups and their skills for engagement with them.

9.3.2 Generally, the social and community groups and the Universities considered that in the absence of the KE initiatives few of the benefits would have occurred anyway. However, some of the groups thought they could have succeeded. Where they did, the benefits were likely to have been later in the time and smaller in scale.

9.4 The Wider Economic and Social Impact

9.4.1 There are several types of non-monetised effects which arise from the activities of the Universities and the businesses that have engaged with them. The Universities have a longstanding role in helping to build and shape the regional economic development infrastructure and partnerships and the innovation ecosystem to address issues, stimulate innovation, monitor and evaluate growth, and create opportunities for businesses and residents.

9.4.2 The research showed that the Universities have extensive networks of engagement and collaboration with external partners in the wider economic development infrastructure and the innovation ecosystem. Overall, a half to two thirds of Universities led the development of active links. The priority ones were with the local authorities (at county, borough, and district levels) and the employers groups and business associations, as well as other Universities and other public sector agencies (especially the NHS and trusts in the health sector). Just over half collaborated with the LEPs. The LEPs, with their business partners, and local authorities in particular, have developed significant initiatives to address economic development and regeneration issues with local, regional, and central government funds. Some Universities assisted LEPs to successfully bid for funds from DCLG and the EU (e.g., ERDF). Over half the Universities also had links to and collaborated with voluntary and community groups, social enterprises, charities, and schools and colleges.

9.4.3 In the innovation ecosystem, collaboration has been extensive, with liaison and collaboration with research organisations, sector and business groups, other Universities, a relatively large number of innovating businesses (including those in incubator/co-working centres and innovation and technology centres), and intermediaries who provide investment (such as business angels and VCs) and advice on IP and legal issues. Some of the Universities had databases of specialist advisors who provide services to businesses on innovation issues.

9.4.4 Over the past few years, collaboration has increased significantly, for around half the Universities.

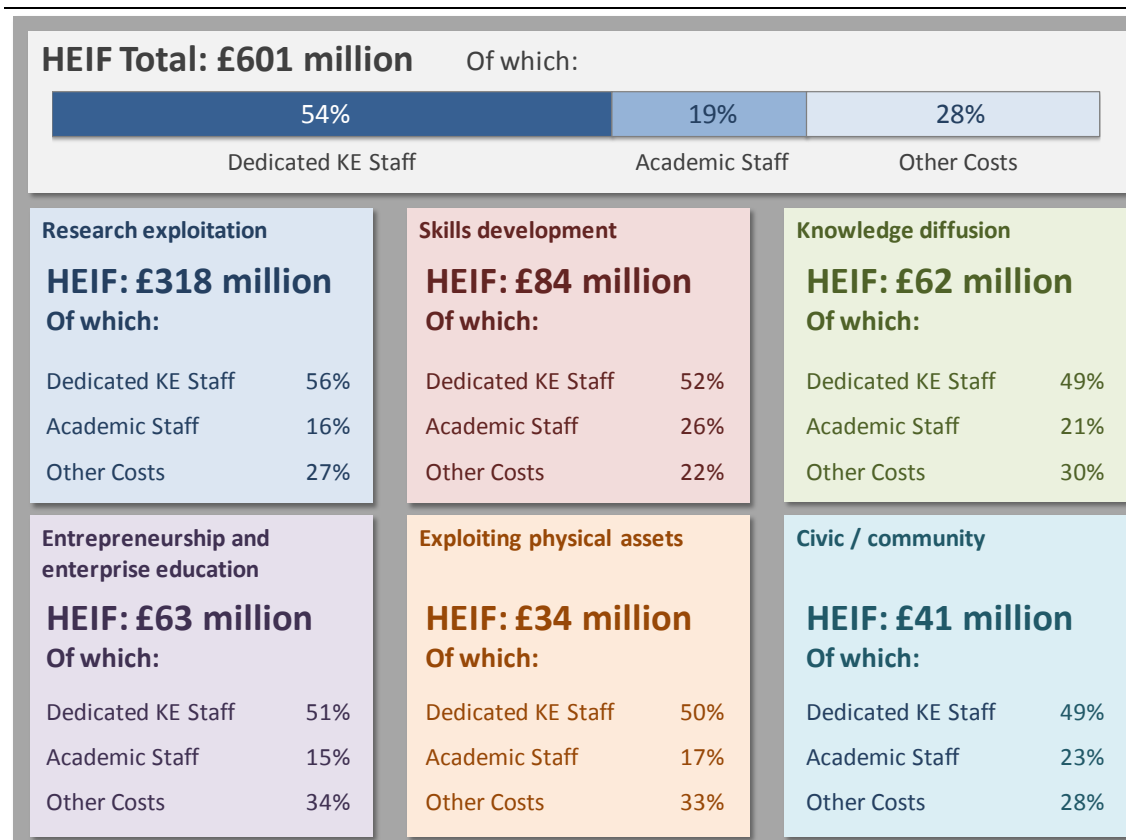
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- 9.4.5 The work with the partnerships has led the Universities to strengthen and support regional growth and development through more of a focus on:–
- SMEs, while still engaging with start-ups and larger businesses.
 - General enterprise support through cluster/sector support, business growth, and enterprise skills.
 - Innovation and R&D. Improved innovation support across business needs and collaborative research activities.
 - Working with partners to improve transport and IT infrastructure, promote the area and strengthen the image of their regions nationally and internationally, and encourage inward investment.
- 9.4.6 Nine out of 10 Universities had strengthened their activities with partners to help bring about wider community and social benefits.
- 9.4.7 The main business services that had been strengthened to support regional growth and development were collaborative research (two thirds of Universities), innovation and commercialisation and R&D (50% of Universities for each), business management skills, improvements to the labour supply through the stock and quality of graduates, and professional development.
- “The KE impact on the student experience is the understanding of the industries they might be going into, and in many cases the opportunities to work in those industries or have real live experience of those industries before they graduate so the path into work, into employment, is shortened. It makes that very successful.” [University view.]*
- 9.4.8 There were also steps taken to encourage access to and involvement in University events, as well as access to University places, to widen participation and help address social exclusion and the take-up of young people on University courses.
- 9.4.9 There were also initiatives in arts and music to encourage arts charities (including theatres) to engage with residents (in particular young people) to organise performances and to highlight and promote the artistic ability of some ethnic groups (for example through music) with concerts and recordings.
- 9.4.10 Some of the Universities had developed teaching, research, and business incubation facilities in deprived areas which helped to encourage engagement and the take-up of opportunities.
- 9.4.11 Further features of the wider effects were through the firms assisted by Universities, in that they purchased local supplies of goods and services which, together with the expenditure of employees, supported indirect jobs and income and subsequent GVA. The Universities and businesses play a role in the diffusion of technology through their customers, suppliers, and collaborators through sales, purchases, and the creation and licensing of IP. The Universities, through their KE placement activities and graduates, make a significant contribution to the regional labour markets, upgrade skills and provide employees for organisations across all sectors. The combined activities of Universities, coupled with their in-house expertise, have helped
-

structure inward investment and the location of enterprises to their regions especially from Europe, North America, and the Far East.

9.5 The Effectiveness and Efficiency of Funding

- 9.5.1 The effectiveness of HEIF KE funding is reflected in the achievements and benefits outlined above for the businesses and social and community groups, as well as the wider effects and spill-overs.
- 9.5.2 The efficiency is reflected in the scale and nature of the achievements and benefits compared to the costs. The non-monetised benefits by nature are qualitative and do not lend themselves to a traditional cost benefit analysis. The analysis here, and presentation of results, is based on a cost benefit balance sheet where the inputs, or costs, in terms of HEIF expenditure, can be quantified and the outputs and outcomes are qualitative and difficult to quantify (i.e., they are difficult to monetise).
- 9.5.3 The cost benefit balance sheet below shows that the HEIF budgets and expenditure for the case study Universities was £197m and £626m for all Universities in the period 2011–15. The HEIF funding was used to lever in funds from several other sources. Apart from other University and HEFCE monies, the main public sector sources were ERDF, local authorities, and the health sector, as well as significant funds from the private sector. These funds were allocated mainly across specific support and services. The planned allocation of HEIF funds based on the 2011–15 HEIF strategies (thus excluding the top-up funding available in 2012/13–14/15) is shown below, in Figure 9.1.

Figure 9.1 Allocation of HEIF funds by activities (HEIF 2011–15 strategies)



Note: Excludes the additional funding of £26m. Additional allocations were made available in the three academic years 2012/13 to 2014/15, bringing the total funding to £626m.

Source: HEIF2011-15 strategies, PACEC analysis

- 9.5.4 The non-monetised benefits, expressed in qualitative terms, span the range of KE initiatives and the wider economic and social effects and spill-overs.

Table 9.1 Cost Benefit Balance Sheet

Inputs £ms (2011-14)	Qualitative Non-Monetised Benefits
HEIF Case Study Universities £197m	Business Benefits.
Total HEIF £626m	Skills from KE to understand issues and develop ideas and solutions
- Research exploitation £318m	Benefits to start-up/spin-out businesses. Consolidated start-ups and improved management to achieve business growth
- Skills development £84m	Improved innovation, the development of technology and IP through testing and application to products and processes
- Knowledge diffusion £62m	The successful development of marketable products and processes
- Entrepreneurship and enterprise education £63m	The commercialisation of IP and products and services
- Exploiting physical assets £34m	Improved business performance (sales, employment opportunities, productivity, profits)
- Civic, social community group activities £41m	Increased benefits for SMEs
Dedicated KE staff 54% of inputs	Support and outputs for high-tech and innovative clusters/sectors
Academic staff 19%	
Other costs 28%	
Other KE Sources	
Other HEFCE Funds	
- Other public sector	Social and Community Group Benefits
- Private sector	Greater understanding of issues and solutions for organisations, local community groups, and clients
- Voluntary/community sector	Development of services to meet the needs of local groups and residents
- Other	Increased benefits to meet needs for partners and residents
- In kind contributions	
University Skills/Capabilities enhanced through HEIF (These are both input, and also a benefit in terms of improved capabilities for longer-term benefits)	Wider Economic and Social Benefits
- The stronger KE culture	Shaping and developing regional partnerships, e.g., LEPs, local authorities, business groups
- KE integration and embedding with research and teaching	Strengthening the innovation system through businesses and regional agencies
- The skills and practices and subsequent outputs for KE across a wide range of initiatives	Improved enterprise support for SMEs, start-ups, and larger firms with a focus on key technologies and sectors
	Stronger supplier linkages resulting from University engagement and business growth
	Greater technology diffusion
	Labour market benefits
	Stimulation for inward investment to University regions from student placement and graduates

Note: Includes the enhancement of £26m. The balance sheet is presented to build on and develop the balance sheet in the HEFCE Third Stream/OSI evaluations of 2004.

Source: PACEC.

- 9.5.5 The effectiveness and efficiency of KE had been improved by the steps Universities have taken to work with a wide range of partners and strengthen the economic development infrastructure and organisations in the innovation ecosystems in their regions and nationally. The degree of collaboration helped to secure the benefits, outputs, and outcomes in a more cost-effective way than otherwise would have been the case.
- 9.5.6 Almost one in three Universities considered that they would not have developed their KE policies and activities at all without HEIF funding, which in turn would have impacted on their skills and practices for KE. For those that would have gone ahead anyway, i.e., 62%, some 5% would have continued in the same way. However, for half, the activities would generally have been smaller in scale (i.e., fewer activities and a smaller number of participants), for almost half they would have been narrower in scope and nature, and for 38% the activities would have taken place later in time. Some one in 10 interviewees were not sure what the alternative course of action would have been.
- 9.5.7 Overall, the results show significant additionality attributable to HEIF funding, in the 2011–15 period, in spite of the view that KE capacity and skills had been built up in the Universities prior to this time. For many interviewees, without the HEIF funding it would have been difficult to support the KE teams and the KE activities. There were few other sources of funding available, in spite of the income generated, in particular, from the research projects.
- 9.5.8 These benefits are shared by significant numbers of businesses and social and community groups. In terms of businesses, for the case study Universities, the estimates for individual Universities range from scores to hundreds of businesses per annum and 25 to 50 social and community groups. Grossed up, the totals nationally are in the tens of thousands, but probably less than 50,000, per annum.

9.6 The Embedding and Integration of University Practices

- 9.6.1 The research shows that, while KE policies and capabilities had built up over a number of years from the first funding period of 2000, the mission and practices had become more embedded and integrated in the past three to four years. This in itself has allowed the KE activities to be more effective and potentially more efficient. There are several features of this:–
- The KE activities cut across a wide range of different University disciplines, faculties, departments, and specific initiatives.
 - Leadership responsibilities are combined with training and professional development, leading to promotion for some staff. Recent innovations include KE ‘Champions’.
 - KE and research are integrated to a large extent and have become more integrated in recent years for the vast majority of Universities.
 - The KE culture amongst University staff and the Universities has strengthened considerably, and the majority of Universities thought the culture had become embedded.

- 9.6.2 Underpinning these features, and underlying embeddedness and integration, the KE activities had impacted positively on the skills and practices of University staff, including academics and KE managers. These skills, and the outputs and outcomes associated with them, covered the events and networking activities, general enterprise support, innovation and research, the student and graduate placement services with external partners, CPD, and the ability to work with the community and social groups.

9.7 Advantages and Disadvantages of KE Policy and Funding

- 9.7.1 Overall, the HEIF KE funding, as a model of providing funds rather than the level of funds, had positive features for the Universities primarily because it allowed flexibility and continuity over the four-year period and was easy and efficient to administer.
- 9.7.2 However, it was considered that there was also a lack of continuity as the funding was time based over four years. The end of the funding period resulted in uncertainty amongst almost all Universities. There were concerns about the future employment prospects of staff dedicated to KE contracts and adverse impacts on the capability and infrastructure if funding were not to continue or be reduced in scale. This would have a knock-on effect across the Universities, amongst the partnerships that had been developed, the economic development infrastructure and innovation ecosystems, and subsequently on the businesses and social and community groups.
- 9.7.3 One of the aspects of funding levels, as well as the balance between different roles at the University, was the constraints faced by University staff. These mainly related to other priorities (often teaching and research), a lack of time, and to some extent the relatively short timescales that needed to be met for external partners.

9.8 Potential Improvements to Delivery

- 9.8.1 Based on the consultations, these fall into two main categories: the strategic direction of KE, and the operational issues, although in practice they interrelate. The ideas put forward have not been tested and vary by University, depending on the resources available to them, through direct HEFCE funding and leveraged funds, and the capacity and capabilities of staff.
- 9.8.2 At the strategic policy level, there may be more scope for a closer 'strategic fit' between the activities that Universities organise and those of their partners in the wider economic development infrastructure and the innovation ecosystem. This may help create synergies, added value, and efficiencies. Research by Universities on the external policies and activities of partners could assist this process. However, it is recognised that the University strengths and contributions are unique. While the interface with teaching and research has undoubtedly matured, the responsibilities in relevant departments could be strengthened through lead University staff or 'champions'. The interrelationship between the different University KE activities could be developed more, for example, to create greater links and synergies between them

and to provide more of a 'pathway' for external participants, i.e., as businesses and social/community groups develop and progress, different activities become more appropriate to them. The activities can be seen as an upwards 'escalator' along which the participants travel.

9.8.3 At the operational level several points have been raised that some Universities are already addressing. The main ones include:–

- Reduce the extent of bureaucracy, as perceived by businesses and social and community groups. Contracts especially for contract, collaborative, and consultancy research were mentioned, along with the inflexibility of University practices.
- Reduce the timescales for agreeing contracts and for the outputs of research. The businesses, in particular, sought shorter time scales for the outputs because of commercial pressures.
- Make it easier for external partners to identify potential University partners and collaborators.
- Seek to raise awareness amongst University staff of the commercial needs and priorities of businesses.

9.8.4 These are given equal priority.

9.9 Market Failure and Systems Issues

9.9.1 Overall, the results of the research demonstrate that KE, with HEIF funding, has gone some way to addressing market failures that provide the rationale for the policies and activities. The information asymmetries have been partly addressed for those that engage in KE amongst the Universities themselves and the external partners. Businesses were able to recognise the need for support and how to obtain it from Universities and, for innovation activities, where there can be considerable uncertainties, businesses are more aware of specialist support and, by using it, can demonstrate opportunities to partners who are potentially excessively risk averse.

9.9.2 The extensive links and collaboration between Universities and external partners go some way to addressing institutional failures, for example, in the innovation ecosystems in response to needs.

Appendix A Bibliography

- 1 The HEIF/KE submissions for the case study Universities.
 - 2 The Annual Monitoring Reports for the case study Universities.
 - 3 The Higher Education and Business and Community Interaction (HEBCI) surveys for the case study Universities.
 - 4 PACEC. HEFCE. Evaluation of the Effectiveness and Role of HEFCE/OSI Third Stream Funding. 2009
 - 5 UK-IRC Cultural Connections. The Role of Arts and Humanities in Competitiveness and Local Development. 2014.
 - 6 CIHE. UK-IRC. Enhancing Impact. The Value of Public Sector R&D. 2012.
 - 7 UK-IRC. The Dual Funding Structure for Research in the UK. 2013.
 - 8 PACEC. CBR. Knowledge Exchange and the Generation of Civic Culture and Community Impacts. 2010.
 - 9 PACEC. Innovate UK. The Evaluation of Collaborative R&D between Universities and Business. 2012.
 - 10 PACEC. HEFCE. The Value of Student Start-ups and Spin-outs. 2015.
 - 11 Witty, A., Encouraging a British Invention Revolution. Sir Andrew Witty's Review of Universities and Growth. 2013.
 - 12 HEFCE. Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector. Tomas Coates Ulrichsen: Centre for Science and Technology and Innovation Policy (CSTI) University of Cambridge. 2014.
 - 13 Hughes, A., Kitson, M., Bullock, A., and Milner, I. (2013), The Dual Funding Structure for Research in the UK: Research Council and Funding Council Allocation Methods and the Pathways to Impact of UK Academics: A Report from the Centre for Business Research and the UK-IRC for the Department for Business, Innovation and Skills
 - 14 Technology Strategy Board. Evaluation of Collaborative R&D Between University and Business. PACEC. 2012.
 - 15 UCL Advances, Economic Impact Assessment of UCL Advances Activities. PACEC. 2014.
 - 16 University of the West of England, iNets Monitoring and Evaluation. PACEC. 2013.
 - 17 Technology Strategy Board, Evaluation of Collaborative R&D Between Universities and Business. PACEC.
 - 18 PACEC Studies: University of Hertfordshire, Social and Economic Impact of the University. 2005; 2009. University of Plymouth, Economic and Social Impact. 2009. Essex University, The Impact of Essex University. 2011.
 - 19 BIS: Community Innovation Survey
 - 20 BIS/PACEC. Evaluation of Business Links.
 - 21 Scottish Enterprise. Evaluation of the Scottish Seed Fund and Scottish Venture Fund. PACEC.
 - 22 The Impact Agenda of Research Councils. Universities UK and HEFCE. Joint Statement. 2015.
 - 23 PACEC. HEFCE. Strengthening the Contribution of English Higher Education Institutions to the Innovation System: knowledge exchange and HEIF funding. April 2012.
- Technology Strategy Board. PACEC The technology readiness level in the innovation process. 2012.

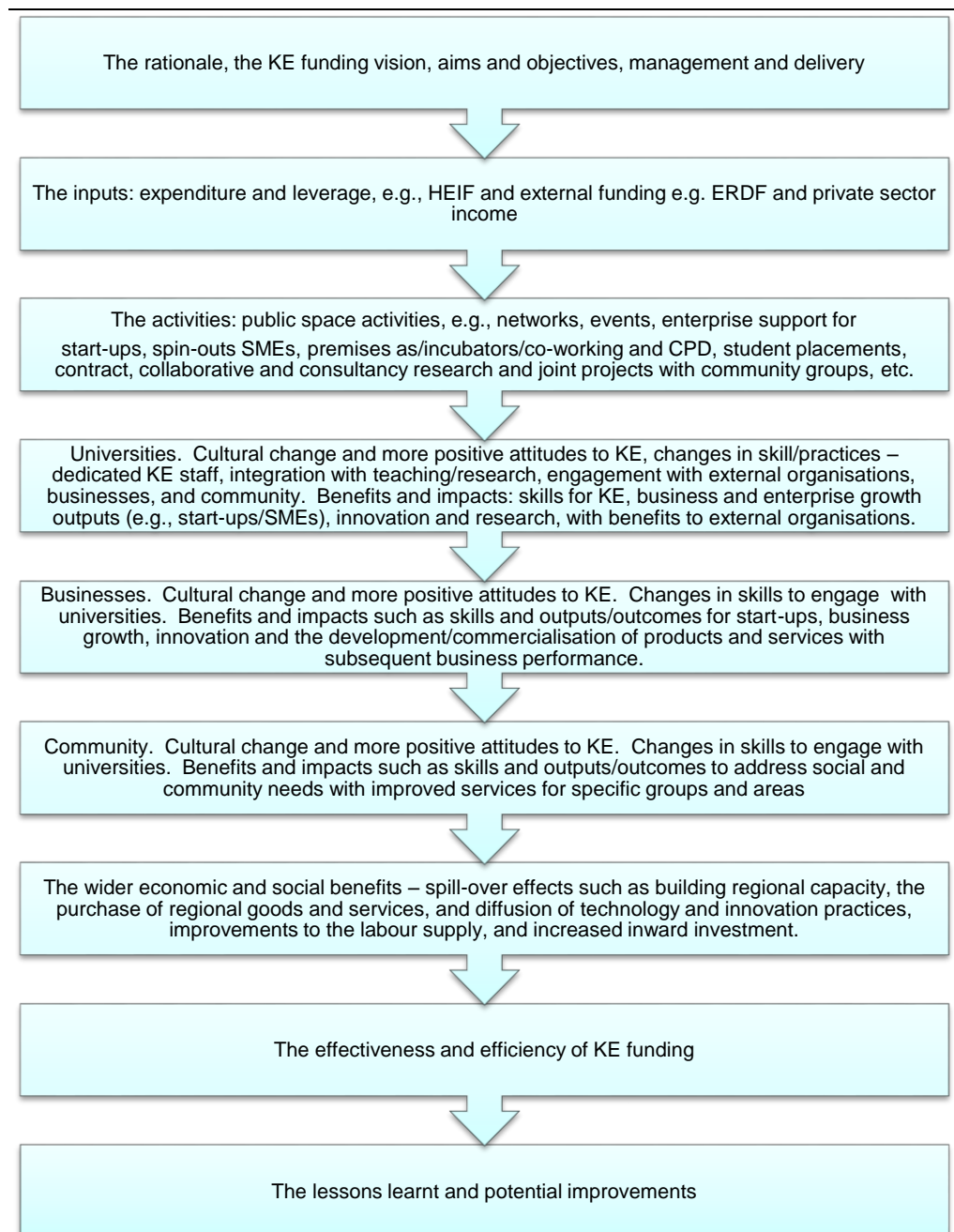
Appendix B The Case Study Universities

Table B1.1 Case study HEIs

Cluster	Number of HEIs	HEIs studied	HEIF 11-15 (£)	Region	Staff FTE	Student FTE
Top six research	6	University of Cambridge	£2,850,000	East of England	4,720	18,812
		Imperial College London	£2,850,000	London	3,493	15,060
		King's College London	£2,850,000	London	3,333	21,393
		University of Manchester	£2,850,000	North West	4,439	34,937
		University of Oxford	£2,850,000	South East	5,738	19,919
		University College London	£2,850,000	London	4,904	23,670
High research	5	Cranfield University	£2,850,000	South East	648	2,790
		University of Birmingham	£2,850,000	West Midlands	2,833	25,295
		Institute of Education	£1,021,022	London	318	2,938
		University of Sheffield	£2,850,000	Yorkshire and the Humber	2,632	23,311
		University of Southampton	£2,850,000	South East	2,575	20,924
Medium research	6	Oxford Brookes University	£1,637,663	South East	862	14,238
		Brunel University	£1,124,470	London	882	12,613
		University of Hertfordshire	£2,850,000	East of England	1,131	19,665
		School of Oriental and African Studies	£475,221	London	450	4,835
		University of Plymouth	£1,504,655	South West	1,373	24,112
		University of Sunderland	£1,033,888	North East	661	12,252
Low research	5	University of Derby	£674,476	East Midlands	763	12,777
		Liverpool Hope University	£684,878	North West	247	5,493
		Southampton Solent University	£876,722	South East	618	11,384
		Leeds Beckett University	£1,501,198	Yorkshire and the Humber	1,047	20,883
		University of Lincoln	£509,526	East Midlands	603	10,665
Arts	3	University of the Arts London	£2,519,630	London	998	16,222
		Royal College of Art	£300,811	London	119	1,380
		Royal Northern College of Music	£254,194	North West	64	711
Total	25		£45,468,354		45,451	376,279

Appendix C The Logic Chain and Research Methodology

- C1.1 The logic model is the starting point for the assessment of KE funding is **setting out its rationale, vision, aims, and objectives**, with management and delivery systems and responsibilities. We then proceed to consider **the resources or inputs**, and funding streams, including the core formula-based funding and leveraged funds that contribute to the achievements. We next consider the **activities** (e.g., public space activities and the collaborative activities) which flow from the funding, with the understanding that if HEI staff have access to the resources, then they can use them to accomplish their planned activities. When the planned activities are implemented they will hopefully deliver the **outputs** and outcomes for Universities, businesses, and social and community groups (for example, positive attitudes towards KE, engagement and collaboration, integration of teaching and research, start-ups, innovation, business growth, business performance, and solutions to address issues/challenges faced by communities or groups). **Wider economic and social benefits and spill-over effects** can result as indirect effects on the collaborators in the KE and innovation networks.
- C1.2 The logic chain illustrates the flow of activities and outputs/outcomes associated with KE as potential indicators or measures of change. However, they are 'softer' or qualitative indicators largely based on perceptions, views, and evidence of activity.

Figure C1.1 The Logic Chain for HEFCE KE/HEIF Funding

Source: PACEC

- C1.3 The outputs and outcomes that result from KE will be examined as the initial benefits. They will be considered against what may have occurred in the absence of KE in the counterfactual.

The Inception Meeting

- C1.4 The aim was to discuss the study issues and access to key sources of information, for example, the background reports on policy and relevant research, the University HEIF strategies, the Annual Monitoring Reports prepared by Universities, and the HEBCIS returns for December 2014. The proposed methodology, the case study,

and the survey topics were discussed in outline, together with the proposed methods of analysis, and the report structure and outputs.

- C1.5 A vertical steering group was set up which provided comments and guidance at the key stages of the project.

The Desk Study

- C1.6 The purpose of this was to provide a context for the research and to identify and select information on KE activities that could complement and contrast with the views of the consultees in the University case studies and surveys. The main sources were:–

- The HEFCE funding for KE, in particular HEIF.
- The HEIF/KE submissions for the case study Universities.
- The Annual Monitory Reports for the case study Universities.
- The Higher Education and Business and Community Interaction (HEBCI) surveys for the case study Universities.
- The evaluations and appraisal carried out by HEFCE on HEIF.
- The report on KE performance and impact of HEIF³⁸.

- C1.7 These and other reports are shown, along with others referred to, in Appendix A.

Case Studies with Universities

- C1.8 The case studies were selected to allow the results to be aggregated and analysed to provide a representative assessment of the HE sector as a whole. Twenty-five Universities were identified and agreed to participate.

- C1.9 The methodology for selecting the case studies was based on the approach used for the 2009 study. In summary, this comprised an analysis of HEI characteristics and indicators that were relevant to KE. Initially, six Universities were identified as the main research HEIs (based on, for example, their research income, the number of research staff, RAE rating, and overall research intensity). A second group of four creative arts and design HEIs were selected at random from the population of arts institutions. A third group of HEIs was identified using a principal components/characteristics analysis (comprising relevant indicators such as research income, IP reporting, spin-off licences, patents, and business engagement). These were graded into three levels of high, medium, and low research clusters. Six HEIs were selected for case studies from the higher and medium levels and eight from the lower level as this consisted of a larger group of HEIs.

- C1.10 The case study sample selected in 2009 is used for the current research programme, with some adjustments. The rationale for this is threefold:–

³⁸ PACEC. HEFCE. Evaluation of the Effectives and Role of HEFCE/OSI Third Stream Funding. 2009.

- Research on the main key criteria³⁹ showed that the characteristics of the Universities have remained relatively unchanged between 2009 and 2014, i.e., the research intensity levels and the creative and arts design group.
- The sample allowed a significant proportion of HEIF and levered income to be covered.
- The Universities also gave adequate coverage geographically and by size.

- C1.11 The sample of 30 HEIs in 2009 was then adjusted for the current study to exclude seven HEIs, mainly in the lower research intensity and arts categories, who did not receive HEIF/KE funding in the 2011–15 period. This left 23 HEIs. To these, two new HEIs were added to bring the overall total to 25. The case study Universities are shown in Appendix B.
- C1.12 For each University, interviews were held with a representative group of staff nominated by, in most cases, the PVC with responsibility for research and KE. As well as the PVC, interviews were held with heads of faculties and departments, or senior staff in KE offices who were implementing initiatives supported with HEIF and KE funding. Interviewees provided an overview of the strategic aims and direction of KE, as well as commenting on the achievements of activities and initiatives.
- C1.13 In the 25 case studies, interviews were held with 120 University staff, with an average of between four and five per University and a range of 12 and two for individual Universities.
- C1.14 The topics used for the interviews are shown in below. They focus on aims and activities of the Universities and their views on impacts and achievements, including the non-monetised ones. These were scoping discussions with Universities as part of the design stages. The interview discussion guides, and questionnaires, were piloted as part of the research.

Research with External Organisations

- C1.15 The purpose of the research was to obtain the views and perceptions of organisations on the type of engagement with Universities, the activities they had participated in, and what the benefits were for them. Two approaches were used – a survey of businesses that interacted with Universities, and case studies with a cross section to provide further insights into the benefits. The Universities were asked to provide contact information for a representative group of businesses across their range of KE activities and initiatives. These businesses were characterised by University, initiative, sector, size, and location, and a telephone interview held with each of them.

³⁹ Hughes, A., Kitson, M., Bullock, A., and Milner, I. (2013), The Dual Funding Structure for Research in the UK: Research Council and Funding Council Allocation Methods and the Pathways to Impact of UK Academics: A CBR and UK-IRC for BIS. This demonstrated high stability in rankings of Universities across a wide range of components of research income, including IP/business engagement, etc., over the period 2002-10.

Follow-up interviews were held, where necessary, to provide further information on the benefits. Interviews were held with some 200 businesses.

- C1.16 Discussions were also held with a sample of organisations engaged in University, community and social initiatives. For example, projects could be in the arts and culture or in community development initiatives with a focus on specific social groups. Some 20 interviews were held with these organisations.

The Interview Topics

- C1.17 The topics used for the interviews with Universities, the businesses, and the community groups were as follows:–

- a Universities. PVCs for research, heads of faculties and departments, managers of KE offices, initiatives, projects and companies.
 - The interface between roles, responsibilities and aims/objectives for KE research and teaching.
 - The inputs to KE activities. HEIF expenditure, other sources, leverage and external funders, influences on funding levels.
 - The KE activities and initiatives funded by HEIF. Charges, discounts and costs recovered.
 - The management of KE activities. Management groups, staff incentives and policies.
 - The impacts and achievements of KE activities. Numbers of staff, geographical focus, external collaboration, sectors and size of businesses, changes in culture and attitudes, impacts on staff skills and practices, constraints faced by staff for KE activities.
 - Business benefits of KE. Changes in attitudes and types of involvement, impacts on skills and business outputs and outcomes/performance, payment for participation in KE and benefits over and above payments, constraints on participation.
 - Community and social benefits of KE. Changes in attitudes and types of KE, impacts on skills, outputs and outcomes, payment and benefit over and above what is paid for.
 - Wider economic and social benefits. Changes in focus and wider benefits.
 - The counterfactual. The benefits and achievements without/lower HEIF/KE funding.
 - The advantages and disadvantages of the HEFCE/HEIF funding mechanism.
 - Monitoring and evaluation of KE activities and lessons learnt.
- b Businesses.
 - Business characteristics. Size, age, sector, geography, growth ambitions and innovation activities.
 - Participation in KE activities. Main activities that businesses participate in and number of staff, payment and value for money, take-up and other government KE schemes.
 - Aims of KE interaction with the Universities.
 - The benefits and achievements of interaction. Overall importance to the business, extent of success, changes in attitudes to KE and culture and levels of investment, impacts on skills and outputs, outcomes and

performance, impacts over and above what was paid for, constraints on participation.

- The importance of Universities to the innovation process.
- The counterfactual and what may have occurred without participation.
- University practices and constraints to KE, potential improvements.

c Community and Social Groups.

- Characteristics of the organisations, e.g., specialisms and target groups/clients
- The aims of engagement with the University.
- The activities participated in, e.g., events, networks, research projects.
- The benefits, e.g., improved knowledge/information, willingness to engage, skills and practices.
- Improved services for client groups.
- Constraints to KE activities and lessons learnt.

The Analysis

C1.18 To complete the analysis, databases were set up for each of the surveys with University staff and businesses. The results of the surveys with Universities and businesses were weighted so as to reflect the characteristics of all Universities that received HEIF. In-house software and SPSS were used to analyse the results. The analysis showed, for example, the shares, or proportion of respondents who had similar or different views on the benefits. The outputs allowed responses to similar issues/topics to be compared, contrasted and triangulated for different types of interviewees, for example, University staff⁴⁰ and businesses. The analysis examines the views of all Universities and views based on the intensity of research activities and arts Universities. The business results were analysed by size (by employment) and industrial sector, including manufacturing, services, and the high tech sector. We report on these results where there are differences.

A sample of interviews with University staff were recorded, with the consent of the interviewees, and transcribed to provide a source of typical quotations to support some of the main points made. All interviews were used to complete a discussion guide.

⁴⁰ These comprised academic staff (including PVCs for research and heads of departments) and staff in KE teams as non-academics who implement KE activities.

Appendix D Tables Text is Based on

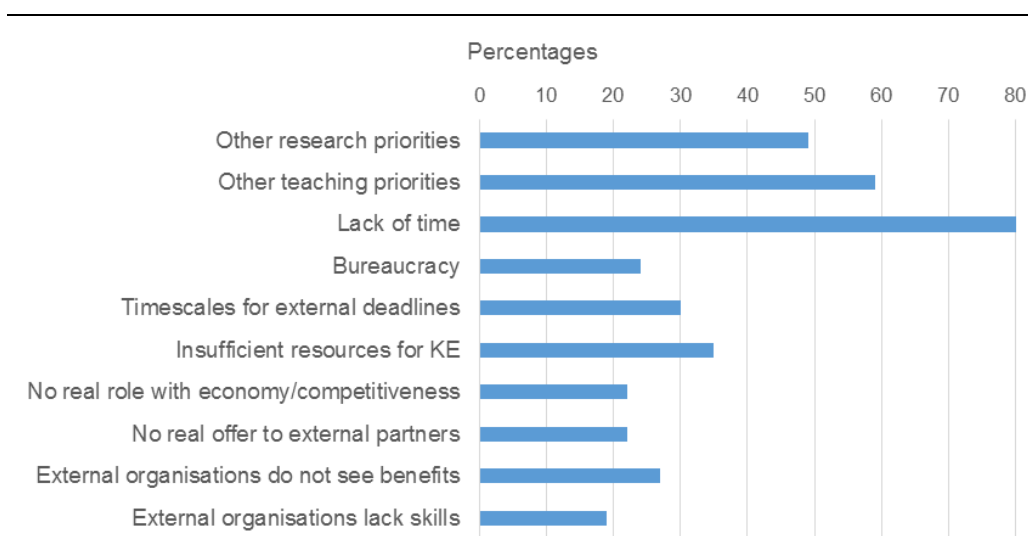
D1.1 These tables amplify some of the results in the chapters in the report.

Table D1.1 Additional Allocations of HEIF Funding for 2012–13, 2013–14, 2014–15

Institution	2012-13	2013-14	2014-15
University of Oxford	£500,000	£500,000	£500,000
Imperial College London	£500,000	£500,000	£500,000
University College London	£500,000	£500,000	£500,000
University of Cambridge	£500,000	£500,000	£500,000
University of Manchester	£500,000	£500,000	£500,000
University of Southampton	£500,000	£500,000	£500,000
King's College London	£500,000	£500,000	£500,000
University of Leeds	£500,000	£500,000	£500,000
University of Liverpool	£500,000	£490,192	£490,192
University of Birmingham	£500,000	£439,820	£439,820
University of Hertfordshire	£500,000	£426,174	£426,174
Newcastle University	£500,000	£409,982	£409,982
University of Bristol		£384,501	£384,501
University of Sheffield		£382,965	£382,965
University of Nottingham		£360,394	£360,394
Queen Mary, University of London		£337,775	£337,775
University of Warwick		£332,424	£332,424
Cranfield University		£318,923	£318,923
University of York		£290,702	£290,702
London Business School		£283,887	£283,887
University of Leicester		£246,644	£246,644
University of Surrey		£234,461	£234,461
London School of Economics and Political Science		£230,945	£230,945
Loughborough University		£230,209	£230,209
University of Durham		£200,000	£200,000
Coventry University		£200,000	£200,000
University of Exeter		£200,000	£200,000
<i>Total</i>	£6,000,000	£9,999,998	£9,999,998

Note: Case study Universities are shown in bold.
Source: HEFCE

Figure D1.1 Constraints to University Participation in KE : University and Business Views



Source: PACEC Interviews with University staff

Table D1.2 The Diversity of HEIF KE Activities by Research Intensity of Universities (2011-15)

	Percentages of all respondents By Cluster					
	Total	Top Six research	High research	Medium research	Low research	Arts
Seminars/Workshops	92	88	100	91	83	100
Public lectures	46	31	53	34	64	33
Conferences	68	70	73	73	57	42
Network building and development	65	70	67	68	55	64
Publications in academic journals	38	18	40	62	7	11
Other publications	29	13	33	42	7	22
Website development/content	18	52	7	30	5	29
Blogs/tweets etc.	11	12	7	22	0	11
Information	50	76	53	48	38	58
Advice – enterprise/student start-ups	54	79	47	56	55	44
Advice – spin-outs	48	71	53	35	59	33
Advice – SMEs	50	60	33	57	62	47
Advice – larger businesses	54	40	47	77	38	33
Advice – business management	40	40	33	48	38	33
Advice – innovation/IP	42	75	47	38	26	60
Premises	25	19	27	39	7	11
Incubation space and support	42	30	27	46	59	56
Finance: investment, loans, grants	13	35	0	19	7	56
Training/CPD	45	40	53	48	24	58
Contract research	49	35	73	42	36	22
Collaborative research	61	52	60	68	45	89
Consultancy/research	43	35	67	34	31	11
Licensing IP	23	53	40	17	7	0
Joint ventures	24	38	40	25	0	11
Knowledge Transfer Partnerships (KTPs)	47	35	47	55	45	22
Other placements	38	22	40	52	21	31
Visits to groups	42	31	53	35	38	44
Joint projects	51	28	47	64	48	29
Information exchange	43	17	47	46	41	31
Civic events	28	9	47	13	24	44
Volunteering for groups	20	11	33	10	17	33
Other activity	11	25	0	22	0	40
Number of respondents	98	6	31	34	21	5
<i>Effective Sample Size</i>	52	22	12	22	11	10

Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Survey of Heads of Faculties/Department 2014 (Q19)

Table D1.3 Expenditure on University KE Activities (2011-15)

£s	Percentages of all respondents
	Total
None	34
< £1,000	17
£1k - 9k	17
£10k – 99k	28
£100k - 999k	12
£1m or more	3

Source: PACEC Interviews with Businesses, 2014

Table D1.4 Positive Changes in Attitudes : Business and University Views

	Percentages of all respondents	
	Businesses	Universities
More positive attitudes	54	77
Recognise the benefits	55	66
Recognise University's role	57	71
More willing to share information/ideas	35	53
Willing to engage more fully with HEI staff	46	53
More staff involved with HEIs	23	36
More willing to seek business/innovation advice	38	37
Other changes	8	-

Source: PACEC Interviews with Businesses, 2014

Table D1.5 Business Constraints to Participation with Universities : Business and University Views

	Percentages of all respondents	
	Businesses	Universities
Business		
Other priorities	11	74
Lack of time	13	89
Insufficient resources to engage	9	38
Difficulty finding HEI partners	4	18
Little personal gain/rewards	4	11
Universities		
University bureaucracy	14	29
Inflexibility of University rules	11	33
HEIs do not meet needs	8	2
Not sure what HEIs offer	8	30
Difficulty agreeing terms/contracts with HEIs	12	35
Cost of University services	9	-
Other	9	-
Any of the above	36	-
None of the above	64	-

Source: PACEC Interviews with Businesses, 2014

Table D1.6 The Community/Social Benefits of KE with HEIF Funding

	Percentages of all respondents By Cluster	
	Total	
More positive attitudes	47	
Recognise the benefits of KE	36	
Recognise University's role	45	
More willing to share information/ideas	23	
Willing to engage more fully with HEI staff	36	
More community staff involved in KE with HEIs	24	
More willing to seek advice	21	
More willing to be innovative	17	
More willing to seek CPD training for their staff	5	
Other changes	3	
Any of the above	59	
None of the above	41	

Respondents could select more than one option; so percentages in any column may sum to more than 100
Source: PACEC Interviews with University staff

Table D1.7 Constraints that Prevent Community/Social Groups from Participating in KE Activities

	Percentages of all respondents By Cluster	
	Total	
Groups		
Other priorities	54	
Lack of time	85	
Insufficient resources for KE	44	
Few skills to engage partners	26	
Insufficient rewards	13	
Few personal gain/rewards	3	
Universities		
University bureaucracy	49	
Inflexibility of University rules	32	
Difficulty finding University partners	27	
Timescales for external deadlines	15	
Any of the above	93	
None of the above	0	

Respondents could select more than one option; so percentages in any column may sum to more than 100
 Source: PACEC Interviews with University staff

Appendix E List of Abbreviations

BIS	Department for Business, Innovation and Skills
CBR	Centre for Business Research, Cambridge
CIHE	Council for Industry and Higher Education
CIS	Community Interaction Survey
CKE	Centre for Knowledge Exchange
CPD	Continuing professional development
DCLG	Department for Communities and Local Government
ERDF	European Regional Development Fund
FE	Further education
FTE	Full-time equivalent
GVA	Gross value added
HE	Higher education
HEACF	Higher Education Active Community Fund
HEBCIS	Higher Education – Business and Community Interaction Survey
HEFCE	Higher Education Funding Council for England
HEI	Higher education institution
HEIF	Higher Education Innovation Funding
HEROBC	Higher Education Reach Out to Business and the Community
HESA	Higher Education Statistics Agency
IP	Intellectual property
KE	Knowledge exchange
KPI	Key performance indicator
KTP	Knowledge transfer partnership
LEP	Local Enterprise Partnership
NGO	Non-governmental organisation
PSRE	Public sector research establishment
PVC	Pro vice-chancellor
QR	Quality Research
R&D	Research and development
RTO	Research and Technology Organisation
SEC	Science and Enterprise Challenge
SME	Small and medium-sized enterprises
TRL	Technology readiness level
UC	University Challenge fund
UK-IRC	UK Innovation Research Centre (at Cambridge University and Imperial College)
VCG	Venture capital group